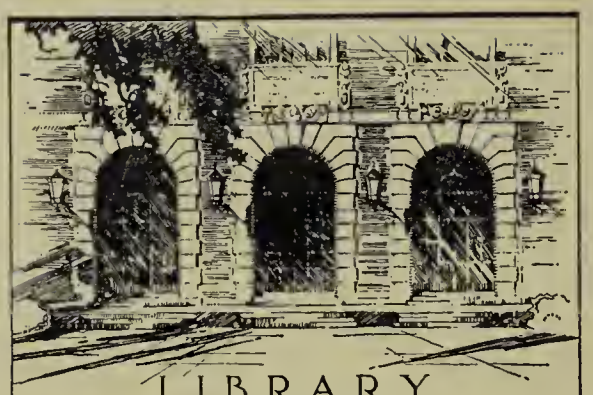


LIBRARY
OF THE
UNIVERSITY
OF ILLINOIS

610.5
AM
v.65
cop.6

REMOTE STORAGE

NATURAL
HISTORY

MAR 22 1948

The Journal

OF THE

American Medical Association

A MEDICAL JOURNAL CONTAINING

THE OFFICIAL RECORD OF THE PROCEEDINGS OF THE ASSOCIATION, AND THE PAPERS READ AT THE ANNUAL SESSION, IN THE SEVERAL SECTIONS, TOGETHER WITH THE

MEDICAL LITERATURE OF THE PERIOD

EDITED FOR THE ASSOCIATION UNDER THE DIRECTION OF THE BOARD OF TRUSTEES BY

GEORGE H. SIMMONS, LL.D., M.D.

VOLUME LXV : : : : : JULY—DECEMBER, 1915

AMERICAN MEDICAL ASSOCIATION, CHICAGO, 1915

OFFICERS OF THE AMERICAN MEDICAL ASSOCIATION—1915-1916

GENERAL OFFICERS

PRESIDENT—WILLIAM L. RODMAN - - - - - - - - - Philadelphia
PRESIDENT-ELECT—RUPERT BLUE - - - - - - - - Washington, D. C.
FIRST VICE-PRESIDENT—ALBERT VANDER VEER - - - - - - - Albany, N. Y.
SECOND VICE-PRESIDENT—GEORGE B EVANS - - - - - - - Dayton, Ohio
THIRD VICE-PRESIDENT—DONALD CAMPBELL - - - - - - - Butte, Mont.
FOURTH VICE-PRESIDENT—HERBERT C. MOFFITT - - - - - - San Francisco
EDITOR AND GENERAL MANAGER—GEORGE H. SIMMONS - 535 N. Dearborn St., Chicago
SECRETARY—ALEXANDER R. CRAIG - - - - - - - 535 N. Dearborn St., Chicago
TREASURER—WILLIAM ALLEN PUSEY - - - - - - - - - - Chicago

BOARD OF TRUSTEES

W. W. Grant - - - - - - - Denver, 1916
Frank J. Lutz - - - - - - - St. Louis, 1916
Oscar Dowling - - - - New Orleans, La. 1916
Philip Marvel - - - - - - Atlantic City, 1917
Philip Mills Jones - - - - San Francisco, 1917
W. T. Sarles - - - - - - Sparta, Wis., 1917
M. L. Harris, Secretary - - - - Chicago, 1918
W. T. Councilman, Chairman - - - Boston, 1918
Thomas McDavitt - - - - St. Paul, Minn., 1918

JUDICIAL COUNCIL

Hubert Work - - - - - - Pueblo, Colo., 1916
Randolph Winslow - - - - - Baltimore, 1917
A. B. Cooke - - - - - Los Angeles, Cal., 1918
Alexander Lambert, Chairman - -New York City, 1919
James E. Moore - - - - - - Minneapolis, 1920
Alexander R. Craig, Secretary, 535 N. Dearborn St., Chicago

COUNCIL ON HEALTH AND PUBLIC INSTRUCTION

H. B. Favill, Chairman - - - - - Chicago, 1916
Walter B. Cannon - - - - - - Boston, 1917
W. S. Rankin - - - - - - Raleigh, N. C., 1918
H. M. Bracken - - - - - - Minneapolis, 1919
Milton Board - - - - - Louisville, Ky., 1920
Frederick R. Green, Secretary, 535 N. Dearborn St., Chicago

COUNCIL ON MEDICAL EDUCATION

W. D. Haggard - - - - - Nashville, Tenn., 1916
James W. Holland - - - - - Philadelphia, 1917
H. D. Arnold - - - - - - - Boston, 1918
Arthur D. Bevan, Chairman - - - Chicago, 1919
Robert C. Coffey - - - - Portland, Ore., 1920
N. P. Colwell, Secretary - 535 N. Dearborn St., Chicago

COUNCIL ON SCIENTIFIC ASSEMBLY

J. Shelton Horsley - - - - - Richmond, Va., 1916
E. S. Judd - - - - - - Rochester, Minn., 1917
Roger S. Morris - - - - - - Cincinnati, 1918
George H. Simmons - - - - - Chicago, 1919
Alexander R. Craig, Secretary of the Association, ex-officio.

COUNCIL ON PHARMACY AND CHEMISTRY

O. T. Osborne - - - - - New Haven, Conn., 1916
Torald Sollmann - - - - - Cleveland, Ohio, 1916
M. I. Wilbert - - - - - Washington, D. C., 1916
Reid Hunt - - - - - - - - Boston, 1917
J. H. Long - - - - - - - - Chicago, 1917
Julius Stieglitz - - - - - - - Chicago, 1917
David L. Edsall - - - - - - - Boston, 1918
R. A. Hatcher - - - - - New York City, 1918
A. W. Hewlett - - - - - Ann Arbor, Mich., 1918
John Howland - - - - - - Baltimore, 1919
Henry Kraemer - - - - - Philadelphia, 1919
C. L. Alsberg - - - - Washington, D. C., 1919
John F. Anderson - - New Brunswick, N. J., 1920
F. G. Novy - - - - - Ann Arbor, Mich., 1920
George H. Simmons, Chairman - - Chicago, 1920
W. A. Puckner, Secretary - 535 N. Dearborn St., Chicago

SECTION OFFICERS

PRACTICE OF MEDICINE—Chairman, Roger S. Morris, Cincinnati; Vice Chairman, John A. Lichty, Pittsburgh; Secretary, James S. McLester, Empire Bldg., Birmingham, Ala.

SURGERY, GENERAL AND ABDOMINAL—Chairman, E. W. Andrews, Chicago; Vice Chairman, Fred. T. Murphy, St. Louis; Secretary, E. S. Judd, Rochester, Minn.

OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY—Chairman, Edward Reynolds, Boston; Vice Chairman, Alfred B. Spalding, San Francisco; Secretary, Brooke M. Anspach, 119 S. 20th St., Philadelphia.

OPHTHALMOLOGY—Chairman, Walter R. Parker, Detroit; Vice Chairman, Vard H. Hulen, San Francisco; Secretary, George S. Derby, 7 Hereford St., Boston.

LARYNGOLOGY, OTOLOGY AND RHINOLOGY—Chairman, Hill Hastings, Los Angeles; Vice Chairman, William R. Murray, Minneapolis; Secretary, Francis P. Emerson, 520 Commonwealth Ave., Boston.

DISEASES OF CHILDREN—Chairman, T. C. McCleave, Oakland, Calif.; Vice Chairman, E. P. Copeland, Washington, D. C., Secretary, F. P. Gengenbach, 1434 Glenarm St., Denver.

PHARMACOLOGY AND THERAPEUTICS — Chairman, R. A. Hatcher, New York; Vice Chairman, J. R. Arneill, Denver; Secretary, M. I. Wilbert, 25th and E Sts., N. W., Washington, D. C.

PATHOLOGY AND PHYSIOLOGY — Chairman, F. P. Gay, Berkeley, Calif.; Vice Chairman, James Ewing, New York; Secretary, Isabella C. Herb, 110 S. Ashland Blvd., Chicago.

STOMATOLOGY — Chairman, F. B. Moorehead, Chicago; Vice Chairman, Arthur D. Black, Chicago; Secretary, Eugene S. Talbot, 31 N. State St., Chicago.

NERVOUS AND MENTAL DISEASES — Chairman, George A. Moleen, Denver; Vice Chairman, M. A. Bliss, St. Louis; Secretary, A. S. Hamilton, 513 Pillsbury Bldg., Minneapolis.

DERMATOLOGY—Chairman, Howard Morrow, San Francisco; Vice Chairman, Everett S. Lain, Oklahoma City; Secretary, H. H. Hazen, 1621 Connecticut Ave., Washington, D. C.

PREVENTIVE MEDICINE AND PUBLIC HEALTH—Chairman, William C. Rucker, Washington, D. C.; Vice Chairman, James Adams Hayne, Columbia, S. C.; Secretary, O. P. Geier, Ortiz Bldg., Cincinnati.

GENITO-URINARY DISEASES — Chairman, Louis E. Schmidt, Chicago; Vice Chairman, Francis McCullum, Kansas City, Mo.; Secretary, W. F. Braasch, Rochester, Minn.

HOSPITALS—Chairman, L. W. Littig, Davenport, Iowa; Secretary, John A. Hornsby, Tower Bldg., Chicago.

ORTHOPEDIC SURGERY — Chairman, Russell A. Hibbs, New York; Vice Chairman, E. W. Ryerson, Chicago; Secretary, Emil S. Geist, 614 Syndicate Bldg., Minneapolis.

.610.5
AM
v.65
cop.6

REMOTE STORAGE

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 1 CHICAGO, ILLINOIS JULY 3, 1915

PAYNE

MAR 17 '48

CLOSED ETHER AND A COLOR SIGN

JOHN BRYANT, M.D.
BOSTON
AND
YANDELL HENDERSON, PH.D.
Professor of Physiology, Yale Medical School
NEW HAVEN, CONN.

This paper is the result of personal experience as an anesthetist and of rather extensive observations of anesthetic routine in the hospitals of this country and of Europe on the part of one of us (J. B.), and of experimental and theoretical studies on the circulation and respiration under anesthesia by the other. Although we shall have occasion to discuss here the topic of "open" versus "closed" methods of etherization, and in particular to report observations with a simple bag method of administration, the primary purpose of this paper is a more general one, namely, to emphasize the hitherto unappreciated, or at least undefined, importance and significance of a color sign.

We shall show that the distinction between pinkness and pallor in a patient under ether is the distinction between a well-sustained circulation and a syncopeal condition — a condition resembling if not identical with shock. We shall show that the pallor and syncope are the results of acapnia induced by a too "open" method, and that with a "closed" method by which a fair amount of rebreathing can be maintained an excessive loss of carbon dioxid is prevented. Visceral tonus is thus maintained and the circulation supported, as evidenced by the pink color of the skin. The results of recognizing this sign, which depends on the presence of a normal volume of blood in cutaneous vessels, and regulating the rebreathing by it, are (1) a smooth and uneventful anesthesia, and (2) an almost complete avoidance of a prolonged period of emergence, nausea, and gas pains.

We have first to consider the much debated question of "open" versus "closed" ether. From the time of the discovery of its anesthetic action down to only a few years ago, ether was almost universally given by a "closed" or semiclosed method. Doubtless it frequently happened that fresh air was shut off almost to the point of suffocation. To avoid this, the Germans in particular have in general gone to the other extreme with the "open" or "drop" method. Properly speaking, however, the term "open" can scarcely be applied to most of the so-called "open" methods used in this country, or even to some of those seen in Germany. The many layers of gauze with which the mask is usually covered offer a considerable resistance to a free exchange of air, while the dead space within the mask into and from which the patient rebreathes often amounts to several hundred cubic centimeters.

We believe that no one who has had any considerable experience with a really open method of etherization (without preliminary medication) will deny that among its common characteristics are a dripping frosted mask, affording a very poor surface for volatilization, and a prolonged first stage, often followed by rigidity, pallor and labored breathing on the part of the patient. During many of the open ethers seen by one of us in Germany it was necessary to invoke the closed "ether-rausch" mask to get the patient under sufficiently to allow the further progress of the operation. The patient who, throughout a prolonged operation, has had a really open ether anesthesia, is likely to leave the table with skin pallid, with coverings drenched in perspiration grown cold from evaporation, and vitality depressed almost to the point of shock. He then becomes a subject for much anxiety on the part of the staff on account of his general condition and his intense nausea and prolonged vomiting. Even more important is the fact that an intestinal paresis often develops accompanied by distention with gas. This may last two or three days or more, and may even result fatally. If once the attention is fixed on the point, the observer soon begins to appreciate that in the great majority of cases the intensity of this distressing clinical picture varies in direct proportion to the degree to which the etherization was really open, and inversely with the extent to which the anesthesia was, properly speaking, closed.

Very different are the results when ether is administered, as is often still to be seen in country practice here, by means of a cone made of a towel. This simple but effective method insures a considerable degree of rebreathing. The patient in many cases receives what really amounts to a good closed ether, and comes through the operation with color excellent, skin warm and dry, breathing quiet, regular and uninterrupted, and pulse strong and not greatly accelerated. A patient so treated does not usually have any considerable amount of nausea or vomiting, and his convalescence is not made a torment by gas pains. Why?

Today the answer is clear beyond a reasonable doubt.

It is: Because the extent of the rebreathing was such as to counteract to a great extent the hyperpnea induced by the ether. The patient was thus protected from the loss of an excessive amount of carbon dioxid at a time when, as under all anesthetics, its rate of production in the tissues was subnormal. The circulation and respiration, the intestinal tonus and peristalsis were thus supported by one of the normal and necessary physiologic stimulants. In spite of the rebreath-

ing and conservation of carbon dioxid, if a sufficient supply of fresh air was admitted to the mask to prevent cyanosis or even any degree of purple color in the skin, there was at all times an ample oxygen supply. This condition is equally necessary to the maintenance of vitality, since anoxemia induces acidosis and a general intoxication. Under ether, pallor is a sign of a weakened circulation, due in most cases to acapnia, which must be counteracted by increased rebreathing and conservation of carbon dioxid. A purple tint in the skin is a sign of insufficient oxygen and an indication for less rebreathing and more fresh air. Thus acapnia and anoxemia are the Scylla and Charybdis between which the anesthetist must steer a middle course. His sailing orders should be: Keep the patient pink.

For the sake of comparison it may be pointed out that under nitrous oxid-oxygen anesthesia given by a rebreathing method — the accepted and proper procedure since Gatch[1] demonstrated its value — the body's store of carbon dioxid is conserved. The circulation is thus supported, and pallor is extremely rare. Insufficient oxygen is almost the sole danger to be guarded against. The patient's color varies between pinkness, and a purple or even cyanotic tint; the former indicates an adequate oxygen supply, and the latter a deficiency. Both of these colors have, however, one condition in common: a considerable volume of blood in the cutaneous vessels on account of a normal degree of tonus in the visceral blood vessels. These conditions contrast strongly with those often seen under open ether. Here cyanosis is rare, while pallor is common, and is the sign, exactly as in ordinary life, of an abolition of visceral tonus, with its consequent great reduction in the volume of the circulating blood. It is the special function of the rebreathing in closed methods of etherization no less than with nitrous oxid to prevent such a circulatory depression. We are inclined to believe that to a great extent the special virtues claimed for nitrous oxid in contrast with ether are not inherent, but due to the fact that the former is administered by rebreathing and the latter by more or less open methods.

The conclusion that closed is absolutely to be preferred to open ether had been reached by one of us (J. B.) by observation in many clinics and by trial and comparison of the two methods, before the reason was made obvious by the recent advances in our knowledge of the part which carbon dioxid normally plays in the maintenance of respiration, circulation, and intestinal tonus and motility. Later, with this idea in mind, many of the larger European clinics were visited and their various methods observed. In Germany one sees for the most part open methods. To see closed ether given as a routine one must go to France or Denmark, the two countries most resistant to German influence. It is especially in Copenhagen at the clinic of Professor Rovsing that one may see what can be done with a rebreathing method of etherization. No one who has once seen a series of anesthesias in his clinic at the beautifully appointed Rykshospital can thereafter forget or doubt the advantages obtained by Rovsing's simple closed ether method.

Rovsing's mask,[2] modified from that of Wancher, consists merely of a thick pliable rubber face piece with a hard rubber sleeve and a sheet of "gaudafil"[3] tissue (about 75 centimeters square) gathered roughly into the form of a bag (with an air capacity of 3 or 4 liters) and tied over the hard rubber sleeve with tape. The entire contents (50 c.c.) of a freshly opened small bottle of ether is poured through the sleeve into the bottom of the tissue bag, and all is ready.

In one form or another the essential features of this device have been in use at the Rykshospital for ten years, and it is now used exclusively in Rovsing's clinic even for lung cases. There is no chilling of the respiratory tract, for the patient's own breath warms the ether vapor before it is inhaled. The rate of vaporization is easily augmented, when necessary: the anesthetist merely places his hand under the bottom of the bag, which hangs down 20 centimeters or more below and beside the patient's face, and thus warms and agitates the liquid ether which it contains. There is no waste evaporation of unused ether, nor do the patient's expirations blow it off and out of the mask. The expenditure of only 60 to 75 c.c. of ether is usually sufficient to maintain surgical anesthesia in an adult for an hour and a half or two hours. When the operation is ended, the sheet of gaudafil is untied from the face piece, and washed. The entire device is readily and without injury carried in one's coat pocket.

It is noteworthy that although the device constitutes absolutely the irreducible minimum of apparatus (since it eliminates even the dripping can or bottle), it affords nevertheless uncomplicated, instantaneous, and to a considerable extent independent control over two conditions, namely, on the one hand the amount of ether vaporized and inhaled, and on the other the degree of rebreathing and the supply of fresh air. The separate control of these processes is especially to be emphasized in any properly devised modern method of administering a gaseous or vaporized anesthetic. In this particular apparatus the two processes seem to work out quite naturally and, indeed, more or less unintentionally, since the use of this mask and bag at the Rykshospital is based wholly on experience and not at all, so far as we are aware, on the theory of rebreathing as a preventive of acapnia. Whatever the basis, however, it is certainly true that the condition of the patient both during and after anesthesia is, so far as the effects of the anesthesia itself are concerned, extraordinarily good as to color, pulse, respiration, general reaction and freedom from nausea and vomiting.

We wish to dwell particularly on one fact which appears to us to be especially significant. It is that at the end of a laparotomy under this method of anesthesia, it is a not uncommon sight to see the intestines active in peristalsis. Under open methods of anesthesia this condition is so rare as to be almost unheard of, while the occurrence of gas pains is as common a sequel of open methods as it is rare in Professor Rovsing's clinic. What is the meaning of this? Animal experimentation affords, we believe, a certain explanation. Thus, it is a well-recognized fact that when animals are etherized by ordinary methods, and the abdomen is opened without special precautions, peri-

1. Gatch, Willis D.: Nitrous Oxid-Oxygen Anesthesia by the Method of Rebreathing, The Journal A. M. A., March 5, 1910, p. 775; The Use of Rebreathing in the Administration of Anesthetics, Nov. 11, 1911, p. 1593.

2. Rovsing: Abdominal Surgery, Clinical Lectures for Students and Physicians, Translation by Pilcher, Philadelphia, 1914.

3. Gaudafil is an artificial membrane, apparently of some substance related to celluloid, strong, durable, flexible, transparent, and entirely unaffected by ether or by boiling. One piece of the tissue is good for twelve to sixteen anesthesias when properly cared for. Under various names it is obtainable from nearly any European firm carrying medical supplies. The same material, or something closely similar, is now coming into common use in this country to cover candies and other foods in shop windows.

stalsis is practically never seen. Even expert investigators[4] succeeded only in exciting a form of movement which the later observations of Cannon,[5] by means of the Roentgen ray and also with the saline bath, showed to be quite abnormal. Meltzer[6] even went so far as to urge that the act of opening the abdomen discharged a reflex inhibition on the intestines. It remained for one of us[7] to show that entirely normal peristalsis is readily produced and maintained with very little protection to the intestines and stomach, in the widely opened abdomen of a dog under morphin and ether, provided that a tube of a size sufficient to involve considerable rebreathing is attached to the animal's trachea or to the mask over its head.

These facts, clinical and experimental, taken together appear to us to afford a practically absolute proof of the suggestion put forward by one of us some years ago in connection with the acapnia theory, that postoperative gas pains and intestinal paresis are, usually at least, due to excessive loss of carbon dioxid through the lungs and to a less extent from the exposed viscera themselves. It is true that this claim was combated by Hooker[8] on experimental grounds, but he seems to have overlooked the fact that in the living body, carbon dioxid exists not as a gas but dissolved, largely combined with alkalies, and in part ionized. Conclusive and entirely impartial evidence on the subject is afforded by the work of Rona and Neukirch.[9] They have shown that for a nutrient fluid (Tyrode's as compared with Locke's fluid) in which a piece of excised intestine exhibits its tonus and rhythmic activity, the carbonic acid ion is a peculiarly, and in fact an almost critically, important ingredient.

Returning now to the color sign, we have first to show that excessive pulmonary ventilation is capable of inducing the depression of the circulation indicated by intense pallor, and second that the gases in the Rovsing bag during an anesthesia are in such percentages as to justify the importance which we assign to their inhalation.

On the first of these points we would refer to the series of papers in which one of us demonstrated that acapnial shock can be experimentally produced in dogs, and attempted to trace the processes involved.[10] While many of the facts there for the first time described have been confirmed by other investigators, this confirmation has not been generally extended to the application which it was attempted to make of them to the problem of shock. Thus Edsall,[11] in experiments on forced breathing in men, observed all the characteristic distressing effects of a temporary artificial acapnia. He even found it necessary to restrain the subjects "in order to avoid bad results." But he adds that "none of the men showed any signs of shock. The blood pressure remained essentially unaltered." It is probable that Edsall refers here only to the arterial pressure. He entirely overlooks the fact, repeatedly emphasized by Henderson, that in acapnia the arterial pressure is not lowered to any great extent until an extreme stage is attained — when it falls rapidly and usually fatally — but that up to this stage there is a progressive decrease in the volume of the blood stream (circulation rate) because of a greatly, and finally a fatally, lessened venous return to the right heart. In surgical shock (apart from the acapnia question) this fact of the primary importance of decreased venous return, not vasomotor failure, has recently been confirmed by Mann[12] (working with Prof. W. D. Gatch), and by Morison and Hooker.[13] It may also be mentioned here that Dr. J. S. Haldane, whose work has been the foundation for the greater part of recent progress in regard to respiration, the blood gases, acidosis, etc., writes to one of us that by a new method of determining the circulation rate in man he finds that after forced breathing the volume of blood returning to the right heart is greatly decreased.

What one has himself experienced is, however, more convincing than any citations of authorities. We would therefore urge the reader himself to perform some of the simple experiments on the subject of respiration recently published by one of us[14] for teaching purposes and already adopted in many medical schools. If this is too much trouble, let the reader the next time that he happens to give an open ether try the experiment of breathing in time with the patient and to approximately the same volume. In most cases it will not be many minutes before the anesthetist will need attention nearly as badly as the patient. Let him then try it again, but this time with a paper bag held over his nose and mouth, and no ill effects will be experienced. Or if this is still too much to ask, we would submit the following memorandum of a rather extreme but decidedly instructive case, written at our request by a student, Mr. H. W. Haggard, in the present second year class in the Yale Medical School, a day or two after the regular laboratory work in the physiology of respiration was begun:

> I did forced breathing violently for two and a half minutes. Prior to this I had felt reasonably well. During this period of breathing I became first "shaky" and somewhat dizzy. This first trembling weakness grew into a violent nausea with a horrible feeling of "goneness" in the pit of my stomach. I was forced to take hold of the table to keep from falling. My eyes, up to now closed, I opened. The room seemed to reel and then became quite dark and I would have fallen if my partner had not steadied me. My feet tingled and went to "sleep"; my hands followed.
>
> The above covered a period of two and a half minutes. I then involuntarily stopped breathing. After a short apnea I took deep sobbing involuntary breaths. I am told that I was very pale. My face felt drawn and my lips were dry. My head ached violently in the frontal fraction. After some time my hands were normal in feeling—a little later my feet.
>
> I went home feeling miserable. My supper of crackers and milk I vomited shortly after eating. My head ached persistently. I went to bed and slept fitfully and restlessly. My throat was dry and sore—my lips dry.
>
> About 3 a. m. I awoke hungry and feeling perfectly normal.

In regard to this statement of experiences, we would merely say that in his interest in the experiment, which was new to him, Mr. Haggard performed it perhaps a little more vigorously than the laboratory directions require. Although a healthy and vigorous young man, he is much more susceptible than most persons to the

4. Bayliss and Starling: Jour. Physiol., 1899, xxiv, 127.
5. Cannon: Mechanical Factors of Digestion, London and New York, 1911.
6. Meltzer, S. J.: The Nature of Shock, Arch. Int. Med., July, 1908, p. 571.
7. Henderson, Yandell: Am. Jour. Physiol., 1909, xxiv, 66.
8. Hooker: Am. Jour. Physiol., 1912, xxxi, 47.
9. Rona and Neukirch: Arch. f. d. ges. Physiol., 1912, cxlviii, 273.
10. Henderson, Yandell: Acapnia and Shock (seven papers), Am. Jour. Physiol., 1908-1913, xxi-xxxi.
11. Edsall: Medical Communications of the Massachusetts Medical Society, 1912, xxiii, Article 2.
12. Mann: Bull. Johns Hopkins Hosp., 1914, xxv, 205.
13. Morison and Hooker: Am. Jour. Physiol., 1915, xxxvii, 86. Porter and Quinby: Ibid, 1908, xx, 500. Seelig and Lyon: Ibid, 1908, lii, 45.
14. Henderson, Yandell: Respiratory Experiments on Man, THE JOURNAL A. M. A., April 11, 1914, p. 1133.

effects of acapnia. But neither the excessiveness of the pulmonary ventilation and consequent degree of acapnia, nor the acuteness of the effects exceeded what is often to be seen in the operating room as the result of the stimulating effects on respiration of ether administered by a truly open method.

On this last point we may further instance some experiments[15] performed recently by one of us on himself and others in the laboratory. In these experiments a mixture of 5 per cent. ether vapor in air was prepared in a large bag. There was first a preliminary normal period in which the rate and amplitude of breathing was recorded graphically, and the volume of air exhaled per minute was measured by means of a gasometer connected with an expiratory valve on a mouth piece. Then the bag of air and ether vapor was connected to the inspiratory valve on the mouth piece, and this inspired for several minutes or almost to the point of unconsciousness. In all cases the rate of breathing was quickened and deepened, and the volume exhaled into the spirometer greatly increased. The bag was then disconnected, so that the subject again received fresh air, and the record and measurement continued. They showed in some cases marked and prolonged apnea, interrupted with gasps, exactly as after voluntarily forced breathing, and a decrease in the volume of air breathed corresponding to the excess noted during the period of etherization.

On the second point mentioned above as requiring demonstration — that of the composition of the gases in the mask and bag of such a closed device as that of Rovsing — we can report the following observations and analyses. They were made at the New Haven Hospital on cases of Dr. J. M. Flint, to whom we are greatly indebted for the opportunity.

ANALYSES OF GAS SAMPLES FROM ROVSING'S BAG *

Samples	Ether	Carbon Dioxid	Oxygen	Remarks: Color, Etc.
1	10.15	3.18	9.03	Man; bad subject, purple.
2	7.11	2.39	13.35	Boy; pale pink.
3	10.35	3.01	6.96	Boy; somewhat cyanotic.
4	9.45	2.79	15.85	Boy; pink.
6	9.92	2.67	16.78	Boy; pink, mask partly open.
8	8.90	3.27	8.35	Boy; light anesthesia and slight cyanosis.
9	10.35	2.69	10.15	Boy; good condition, respiration 32, pulse 110.
Average:	9.32	2.85	11.50	

* The figures all represent percentage by volume. The analyses were made with a Haldane apparatus, the ether being absorbed by prolonged shaking with concentrated sulphuric acid in a small glass bulb.

These observations were not intended to illustrate the benefits of the method — they are established by the general results stated above — but to show the extent to which conditions are controllable under it. In considering the data in the table it must not be forgotten that the mask is kept at nearly all times partly open. The bag is thus used to afford fractional, not total rebreathing. Thus if the gases in the bag are 10 per cent. oxygen, 3 per cent. carbon dioxid, and 10 per cent. ether, and the mask is held so that one half of each inspiration is fresh air (oxygen about 21 per cent.), the gases actually entering the lungs will be 15.5 per cent. oxygen, 1.5 per cent. carbon dioxid and 5.0 per cent. ether. If the mask is held closer so that one third of the inspiration is fresh air and two thirds drawn from the bag, the inhaled gases will be approximately oxygen 13.7, carbon dioxid 2.0, and ether 6.7 per cent.

With these points in mind it will be seen from the analyses that the tension, or partial pressure of ether vapor in the bag is such that the mask can readily be lifted sufficiently to allow the patient to draw in 30 or 40 per cent. of fresh air with 60 or 70 per cent. from the bag and thus receive the 6.7 per cent., or 51 mm., of ether vapor shown by Boothby[16] to be the optimum. At the same time the patient inspires about 2 per cent. of carbon dioxid, since the amount of this gas in the bag is fairly constant around 3 per cent., while the oxygen content of the air inhaled varies, owing to the wider variations of this gas in the bag, from about 11 to 18 or 19 per cent. We would particularly point out the close correspondence between the notes regarding pinkness and cyanosis, and the high and low oxygen percentages in the bag. In general, physiologists take 13 per cent. as about the figure down to which variations in the oxygen content of the inspired air are without immediately appreciable effect, while Teter[17] states that in a patient under nitrous oxid, cyanosis appears when the oxygen falls below 11 per cent. — a figure with which our analyses are in close agreement. Evidently pinkness certifies an adequate oxygen supply.

We would particularly emphasize the importance of all measures which tend to lessen hyperpnea and loss of carbon dioxid during the induction period of ether anesthesia. There is a widely prevalent belief that some patients require an enormously greater amount of anesthetic than do others. Boothby[16] has shown, however, that there really is little or no variation in the anesthetic tension of ether for different individuals. Doubtless a greater amount is needed to saturate the tissues of a fat person than those of a thin one. But we are convinced from an extensive experience on the part of one of us in etherizing dogs, that the huge quantities of ether required to bring some subjects into anesthesia depend, not on the amount absorbed, but almost wholly on the amount wasted by being blown off the mask during the large and rapid expirations. The respiratory center of different subjects, both dogs and men, varies greatly in the readiness with which it passes into a condition of abnormal excitement and activity. It is not very unusual to find dogs which practically cannot be brought to anesthesia with ether alone administered by an open method. They blow it away as fast as it can be poured on, and faster than it can be properly volatilized. They thus become intensely acapnic. With a closed mask, on the contrary, such subjects require no more ether than do others of a more placid temperament and less readily excitable respiratory center. Evidently in such animals, as Boothby's observation suggests to be the case with difficult subjects among men, the reason for the prolongation of the initial periods with open ether is not that they require more anesthetic, but that owing to the enormous waste, they actually absorb less than the placid subjects which quietly inhale practically all of the ether administered. It is especially the patients of this character who, when etherized by an open method, develop pallor, depression of the circulation and respiration, and subsequently nausea, vomiting and gas pains.

For the prevention of these conditions there are two auxiliary procedures which are of an importance second only to the use of a closed method. They are

15. Henderson, Yandell: Tr. Am. Gynec. Soc., 1914; Surg., Gynec. and Obst., 1914, p. 386.

16. Boothby: Jour. Pharmacol. and Exper. Therap., 1914, v, 379.

17. Teter, Charles K.: The Limitations of Nitrous Oxid with Oxygen as a General Anesthetic, The Journal A. M. A., Nov. 23, 1912, p. 1849.

proper preliminary medication, and so far as possible the absence of anxiety and fear in the mind of the patient. Theoretical, clinical and experimental grounds alike support the advantage of administering a half hour or more before every ether anesthesia, in which it is not specially contraindicated, a hypodermic of morphin and atropin in the dosage of one-fourth grain of morphin, and 1/100 grain of atropin for a healthy adult. The advantages of this prophylaxis against hyperpnea, and excitement of other functions with their subsequent depression, far outweigh in importance all of the alleged disadvantages of such preliminary medication. These statements do not apply equally to chloroform. It may also be pointed out that the amount of ether administered to a morphinized patient may be and should be considerably less than in the case of one without preliminary medication. Morphin and atropin should also be administered much more freely during the twenty-four hours following operation than is now usually done. Even from the wholly objective standpoint of conserving vitality and accelerating recovery, the advocates of nonmedication have in our opinion entirely failed to present reasons sufficiently clear and forcible to weigh against the disadvantageous results of suffering and its subconscious processes.

Essentially the same reasoning[18] applies to the prevention of fear and anxiety and to the development of the confidence of the patient in the anesthetist. We see a child or animal develop respiratory excitement (crying) from anticipation of suffering almost as easily as from actual pain. A dog or cat which is scared and distrustful is an extraordinarily difficult subject for anesthesia compared to the same animal when handled gently by one whom it trusts. Among men, the will often exerts an inhibition which produces a misleading impression of placidity. With the first few breaths of ether vapor, this inhibition is lost, and the underlying excitement manifests itself in hyperpnea and struggling — prolonged, difficult to overcome, and extremely deleterious in their subsequent effects.

The measures of psychic prophylaxis are especially important with nervous cases in which the respiration and other functions are disturbed to an unusual degree during the first half hour or more of anesthesia. In such cases, postoperative shock is more often the fault of the anesthetist than of the surgeon. Provided that there is no considerable loss of blood, and with continual swabbing, there is often more than the surgeon himself realizes — good general anesthesia will shield a patient, or an animal under experiment, almost completely from a surprisingly great amount of rough operation and insult. But no degree of surgical finesse or care mitigates the drain of vitality induced by badly managed general anesthesia.

During anesthesia it is important that respiration should so far as possible be unobstructed. To this end a small pillow should be placed under the nape of the neck — not a large one under the occiput, as is often done. The patient should be kept warm and dry by means of woolen coverings. It would be well if the body temperature were taken every fifteen minutes, since cooling is common and greatly depresses vitality. The optimum rate of respiration under ether for an adult seems to be between 30 and 35 per minute, as Teter states to be the case also with nitrous oxid. The optimum level of anesthesia is one at which muscle tone is not yet entirely abolished, as evidenced by the ability of the patient to support his own chin with little assistance from the anesthetist. Patients who snore in normal sleep should be allowed to snore peacefully under anesthesia. In the fat type of person specially addicted to it, it affords audible evidence of the optimum depth of anesthesia. However annoying to the hearer, snoring is a process which normally marks some of the happiest moments in the lives of most of us.

As regards the determination of just what constitutes "pinkness" as a skin color, it is of course to be recognized that, owing to the wide variations in pigmentation, it is not at all the same tint in one patient as in another. Anesthetists accustomed to nitrous oxid know at a glance in even the yellowest skin whether the blood is well oxygenated or not, and it is equally easy after a little attention to tell whether the cutaneous capillaries are well filled with blood or are anemic. In case there should be any doubt on this point, it is easily dispelled by the following test: One end of a glass slide (such as is used for mounting microscopic preparations) is pressed firmly on the skin of the forehead or the back of the hand over bone. A normal cutaneous circulation is evidenced when the area from which the blood is thus expelled shows white against a reddish border.

Finally, we wish frankly to admit that much remains to be done to unravel the reasons for the ill effects of acapnia. As regards the depression of the circulation, the accumulating evidence offered by many competent investigators tends, as we have shown, to substantiate the view that the failure is not primarily on the arterial side (arterial pressure), but that it is due to a stagnation of the blood in the visceral capillaries and veins, and a decrease in the stream to the right heart analogous to that induced by hemorrhage. It is not primarily the heart or the vasomotor nervous system that fails. The initial failure appears to be in some as yet ill-defined peripheral mechanism. The difficulty in explaining this consists in determining the relative importance of several possible processes which physiologic knowledge already suggests. For example, the investigations of Bohr, Haldane and Douglas, Barcroft[19] and others have demonstrated that the amount of carbon dioxid in blood exerts a powerful influence in reducing the avidity of hemoglobin for oxygen. Conversely, acapnia increases greatly the tenacity (pleionexy) with which the blood passing through the peripheral vessels holds on to its oxygen. It is therefore possible, as Haldane has suggested to one of us, that overventilated blood, that is, blood rich in oxygen and poor in carbon dioxid, may be so lacking in capacity to give off oxygen to the tissues in amounts and at pressures adequate to their needs, that the tissue cells undergo an oxygen starvation.

CONCLUSIONS

1. The same general facts and the same character of direct evidence which have established rebreathing as a proper and beneficial adjunct of nitrous oxid in general anesthesia demonstrate the advantages of rebreathing and the use of closed methods also in the administration of ether.

2. Many of the special advantages claimed for nitrous oxid as compared with ether are probably due to the fact that the former is now generally adminis-

18. Scholz: Beitr. z. klin. Chir., June, 1914.

19. Barcroft: Respiratory Function of the Blood, Cambridge, 1914.

tered by rebreathing methods, and the latter by open methods, rather than to the particular qualities of the two anesthetics themselves.

3. Evidence is here adduced to show that to a very large extent the depression of the circulation and respiration, and the postoperative nausea, vomiting, intestinal paresis and gas pains incidental to etherization by open methods are the results of acapnia.

4. On this account we urge the adoption of closed and rebreathing methods, preliminary administration of morphin and atropin, and avoidance of fear and excitement.

5. The Rovsing mask and bag afford a satisfactory and efficient method of controlling the rebreathing and rate of ether administration, combined with the utmost simplicity.

6. The principal point of this paper is that by observing the color of the skin it is possible to estimate the condition of the circulation. Pallor under ether usually indicates a circulation depressed because of acapnia and needing to be restored and maintained by more rebreathing and conservation of the body's store of carbon dioxid. Excess of rebreathing and deficiency of oxygen are indicated by a cyanotic tint. The rule for the anesthetist is: Keep the patient pink.

THE BACTERIOLOGY OF THE URINE IN NONSUPPURATIVE NEPHRITIS

ITS ETIOLOGIC AND THERAPEUTIC SIGNIFICANCE *

GEORGE F. DICK, M.D.

AND

GLADYS R. DICK, M.D.

EVANSTON, ILL.

A causal relation of the infectious diseases to nonsuppurative nephritis, especially the acute form, is accepted, but our knowledge of the exact mechanism by which nephritis is produced is not satisfactory. In acute nephritis, where the closest connection between the specific infections and nephritis exists, there is a strong tendency to consider bacterial action as the cause of the nephritis. In an excellent review of the literature, Herrick[1] states that it is the common belief that nephritis in acute infections is due to toxins caused by the bacterial invasion of the body.

Of chronic nephritis, some cases are attributed to nonrecovery of the acute forms, while others are connected with chronic infections, such as tuberculosis and syphilis. After disposing of these cases and those due to known poisons, as lead, there remain others so obscure in their etiology as to be attributed to metabolic products, or antinephritic toxins generated by the body.

While studying the bacteriology of scarlet fever,[2] we were surprised at the frequency with which bacteria were found in the urine during the acute stage of the disease. It occurred to us that the frequency of nephritis as a complication of scarlet fever might be due to excretion of bacteria through the kidney. Later[3] we had occasion to report the demonstration of large numbers of bacteria in the urine of two typical cases of parenchymatous nephritis. The work with which the present report is concerned can best be presented by discussing: (1) the bacteriology of the urine in health; (2) the bacteriology of the urine in diseases other than nephritis; (3) the bacteriology of the urine in nephritis; (4) the etiologic significance of the bacteria found in the urine of nephritis, and (5) their importance in therapy.

I. THE BACTERIOLOGY OF THE URINE IN HEALTH

Hort[4] found great difficulty in obtaining sterile urine from healthy individuals either by catheterization, or by collecting in serial glasses. He obtained positive cultures in all of ten cases in which catheterized specimens were examined. Hort states, however, that in these cases the technic admitted of air contamination, and that in one case, in which the outlet of the catheter was protected from the air, no growth was obtained. In a series of cultures of the urine in the bladder, obtained from animals by suprapubic puncture, the urine was sterile. Hort used the urine itself as a culture medium, and, although an attempt was made to study the kind of bacteria obtained, no good idea can be obtained from cultures in fluid mediums as to the number or kind of bacteria present in healthy urine. The work of Davis[5] is more satisfactory. In a series of forty-three cases he made cultures of 1 c.c. of urine on aerobic and anaerobic blood agar plates. In thirty-eight cases, no growth was obtained. In two cases, a few colonies of colon bacilli were found. In two cases, several colonies of pseudodiphtheria bacilli grew, and in one case, gram-negative cocci developed. Leube[6] states that the vesical urine under normal conditions is free from bacteria. A consideration of the bacteriology of the urethra will explain the difficulty of obtaining sterile urine in health. Pfeiffer[7] found pseudodiphtheria bacilli in 83.7 per cent. of cases examined. Ohlmacher,[8] in eighty cases, found pseudodiphtheria bacilli in the anterior urethra in 12 per cent. It is stated[9] that *Staphylococcus aureus* and *albus* are commonly found in the urethra. Schenck and Austerlitz[10] found the female urethra sterile in one half of the sixty cases examined. In others, with few exceptions, harmless bacteria were found.

In order to find out the number and variety of organisms obtainable in health with our technic, the following cases were examined. Cultures of 2 c.c. of catheterized urine were made in deep tubes of dextrose agar; aerobic and anaerobic cultures on blood ascites agar were made from the sediment of 15 c.c. of centrifuged urine.

CASE 1.—Boy, aged 8 years, convalescing from scarlet fever. Urine was slightly alkaline to litmus; cloudy with carbonates; no albumin; sediment negative. Three culture tubes of 2 c.c. each were sterile, and a fourth tube showed one colony of pseudodiphtheria bacilli.

CASE 2.—Normal pregnancy. No casts, albumin, leukocytes or erythrocytes. Cultures were sterile.

CASE 3.—Normal puerperium. No albumin, casts, red blood cells or leukocytes; cultures gave eleven large, yellowish colonies of staphylococci in 2 c.c. of urine.

CASE 4.—Normal puerperium. No albumin, casts, red blood cells or leukocytes. The cultures were sterile.

---

* From the Memorial Institute for Infectious Diseases and St. Joseph's Hospital, Chicago.

* Owing to lack of space, this article has been abbreviated in THE JOURNAL by omission of some of the case reports. The complete article appears in the authors' reprints. A copy of the latter will be sent by the authors on request.

1. Herrick: In Osler and McCrae: Modern Medicine, 1909, vi, 103.
2. Dick, G. F., and Henry, G. R.: Jour. Infect. Dis., 1914, xv, 85.
3. Dick, G. F., and Dick, G. R.: The Bacteriology of the Urine in Two Cases of Parenchymatous Nephritis, THE JOURNAL A. M. A., Nov. 7, 1914, p. 1661.
4. Hort: Jour. Hyg., 1914, xiv, 509.
5. Davis, Jour. Infect. Dis., 1910, vii, 599.
6. Leube, quoted in Kolle and Wassermann: Handbuch, 1914, i, 992.
7. Pfeiffer: Arch. f. Dermat. u. Syph., 1904, lxix, 379.
8. Ohlmacher: Jour. Med. Research, 1908, xiv, 109.
9. Kolle and Wassermann: Handbuch, 1914, iv, 367.
10. Schenck and Austerlitz: Kolle and Wassermann, Jena, 1914, vi, 459.

It will be seen that the results from the examinations which we made agree with the work quoted. It seems fair to assume, therefore, that by catheterization of healthy individuals, urine may be obtained which contains few or no organisms per cubic centimeter, and that these organisms will be of the types described as inhabitants of the normal urethra.

II. THE BACTERIOLOGY OF THE URINE IN DISEASES OTHER THAN NEPHRITIS

On account of the important bearing on the etiology of nephritis, the bacteriology in the diseases other than nephritis will be dealt with in detail.

A. The Specific Infections.—Because of its importance from the standpoint of epidemiology, the bacteriology of the urine in these diseases has received much attention.

Pasteur early demonstrated the excretion of anthrax bacilli in the urine of animals affected by the disease, and pointed out the danger of spreading the infection in this way. It appears settled that in the following instances either the specific organism or the virus of the disease is excreted in the urine: smallpox, hog cholera, glanders, plague, chicken cholera, erysipelas of swine, relapsing fever, pneumonia at times, tuberculosis, Malta fever, diphtheria, typhoid fever, paratyphoid fever and, according to some, leprosy. Raskay[11] found influenza bacilli in the urine following an attack of influenza. Tunnicliff[12] found streptococci in the urine at some time during the disease in twenty-eight out of fifty scarlet fever patients, and we[13] were able to demonstrate the similarity of the bacterial flora of the urine to that of the blood and the throat in the acute stage of the disease. The frequency with which Klebs-Loeffler bacilli are present in the urine of diphtheria patients is in some doubt. According to Conradi and Bierast,[14] they occurred in fifty-four cases of 155 examined. The bacilli were not numerous and occurred mostly during the first week of the disease, but were found in one case nine weeks afterward. Beyer[15] found diphtheria bacilli in all of nineteen cases examined and also in diphtheria carriers. Some cases were associated with albuminuria and casts. At least some of the bacteria were virulent. Koch[16] found diphtheria bacilli in the urine in only two of twenty-six cases examined. Both these cases were fatal.

According to Walsham,[17] Brown,[18] Walker[19] and others, tubercle bacilli may be excreted by apparently normal kidneys.

Concerning the presence of typhoid bacilli in the urine, some interesting observations have been made. McCrae[20] states that from 20 to 25 per cent. of all the typhoid urines contain the bacilli. Sometimes several hundred million are excreted per day. The appearance of bacteria in the urine does not correspond to the period of bacteremia, rarely occurring before the third week, and they may be found first during convalescence. Acute diffuse nephritis may be associated.

B. Focal Infections.—In contrast to the specific infectious diseases, we have been able to find but little concerning the bacteria of the urine in focal infections other than those of the urinary tract. The work of Kirk[21] is therefore especially interesting.

Kirk found the urine to contain bacteria in various focal infections, especially surgical wounds, and thought it of value in prognosis. He mentions the fact that in a fracture of the ulna in which staphylococci were found in the urine, the operation resulted in suppuration. Kirk also isolated pneumococci from the urine of a patient with a pneumococcus lung abscess.

We have had opportunity to make the following observations in this connection:

CASE 5.—Chronic appendicitis of two years' duration in a woman, aged 27. No albumin, casts, erythrocytes or leukocytes in the urine. The cultures gave three colonies of staphylococcus and four colonies of streptococcus in 2 c.c. of urine.

CASE 6.—Diabetes mellitus and pyorrhea alveolaris in a woman, aged 45. No albumin, casts, erythrocytes or leukocytes in the urine; 2,000 c.c. passed in twenty-four hours; 5 per cent. sugar; 2.3 gm. ammonia. The cultures gave colonies in 2 c.c. of urine too numerous to count of staphylococcus and streptobacillus. The latter was gram-positive; aerobic; mannite unchanged; lactose and dextrose, acid; milk, acid and coagulated; blood, slightly hemolyzed.

CASE 7.—Acute articular rheumatism, pyorrhea alveolaris, hyperthyroidism in woman, aged 33. No albumin, casts, erythrocytes or leukocytes in the urine. Cultures gave in 2 c.c. of urine about six colonies of streptococcus and of a bacillus which was spore-forming; mannite, lactose and dextrose, acid and bleached; milk, acid; grayish-brown, moist film on plain agar.

CASE 8.—Multiple tuberculous arthritis with chronic suppuration of one interphalangeal joint in a woman, aged 18. No albumin, casts, erythrocytes or leukocytes in the urine. In cultures from 2 c.c., numerous colonies of streptococci and staphylococci. Cultures from the suppurating joint showed staphylococcus.

CASE 9.—Chronic ethmoidal sinusitis in a woman, aged 34. No albumin, casts, erythrocytes or leukocytes in the urine. The cultures gave five colonies in 2 c.c. of: (*a*) Streptococcus in moderately long chains, aerobic and anaerobic; blood, hemolyzed; milk, acid and coagulated; dextrose, mannite and lactose, acid; colonies, pinpoint to 1 mm., grayish, translucent. (*b*) *Micrococcus catarrhalis;* gram-negative; occurring singly, in pairs or in clusters; good growth on ordinary mediums in small, translucent colonies; no change in reaction of mediums. (*c*) Pseudodiphtheria bacillus, gram-positive, pleomorphic, beaded, barred and clubbed, aerobic and anaerobic; slight hemolysis; dextrose, unchanged; milk, alkaline; growth on mannite and lactose litmus agar, blue.

Cultures from the nasal secretion showed streptococcus, similar to that of the urine, and *Micrococcus catarrhalis* as the predominant organisms.

III. THE BACTERIOLOGY OF THE URINE IN NEPHRITIS

Articles setting forth the theory of the infectious nature of nephritis have appeared frequently in the literature since 1888. Attempts to cultivate organisms from the urine have formed the basis of many of these reports. Owing to the inadequacy of the methods employed, the bacteria obtained by most workers have been saprophytes, which occur in the normal urethra.

It is significant that some observers, as Scheidemandel[22] and Lustgarten and Manneberg,[23] state that bacteria are found more frequently in smears of the urinary sediment than in cultures. These authors found streptococci repeatedly in smears when cultures were negative. It may be noted in this connection that of the organisms which we found, streptococci are the most easily recognized in smears of urinary sediment. Klieneberger[24] reports two cases of acute parenchymatous nephritis due to paratyphoid bacilli in which, on account of negative blood cultures, he thought the infection was nonhematogenous.

11. Raskay: Virchows Arch. f. path. Anat., 1913, ccxiii, 511.
12. Tunnicliff: Personal communication.
13. Dick, G. F., and Dick, G. R.: Jour. Infect. Dis., 1914, xv, 85.
14. Conradi and Bierast: Deutsch. med. Wchnschr., 1912, No. 34, p. 1580.
15. Beyer: München. med. Wchnschr., 1913, lx, 240.
16. Koch, Kolle and Wassermann: Handbuch, 1914, v, 976.
17. Walsham: Tr. Brit. Cong. Tuberc., 1901, London, 1902, iii, 583.
18. Brown, Lawrason: The Significance of Tubercle Bacilli in the Urine, THE JOURNAL A. M. A., March 13, 1915, p. 886.
19. Walker: Johns Hopkins Hosp. Rep., 1904, ii.
20. McCrae, in Osler and McCrae: Modern Medicine, ii, 162.
21. Kirk: Med. Press and Circ., 1914, xcviii, 62.
22. Scheidemandel: München. med. Wchnschr., 1915, lx, 1922.
23. Lustgarten and Manneberg: München. med. Wchnschr., 1913, lx, 1778.
24. Klieneberger: Berl. klin. Wchnschr., 1914, li, 69.

Since our report of the bacteriology of the urine in two cases of parenchymatous nephritis,[3] we have examined eighteen cases, of which seven were acute nephritis and eleven chronic nephritis. These were cases of clinically typical nonsuppurative nephritis without, so far as could be ascertained, lesions of the urinary tract other than nephritis. No cases with positive Wassermann tests, or evidence of active tuberculosis, are included in the series. Catheterized specimens of urine were obtained with as much care as possible to avoid contamination. Part of this urine was sedimented at high speed (from 3,000 to 3,500 revolutions per minute), and cultures from the sediment made aerobically and anaerobically on goat's blood ascites agar or human blood agar, slants. Two c.c. of uncentrifuged urine were mixed with melted dextrose agar at 40 C. (104 F.) in deep agar tubes and incubated at from 35 to 37 C. (95 to 98.6 F.). As a rule, the examinations of these cultures were made at the end of a week or ten days. It was seldom that growth was obtained in less than forty-eight hours.

Case 10.—Scarlatina, chronic mitral stenosis and insufficiency, myocarditis, acute nephritis in a woman, aged 55. History of measles, diphtheria, pertussis, varicella, mumps, grip. Blood pressure, 130 mm.

On admission the urine was yellow, slightly clouded; 1.022 in specific gravity; containing albumin and an enormous number of finely and coarsely granular casts; some leukocytes, some small round cells, and spherical and pear-shaped epithelial cells. As patient recovered, the urine gradually became normal, and at time of discharge, there was no evidence of nephritis.

In shake cultures made with 2 c.c. of urine, the colonies were too numerous to count; they consisted of a small bacillus, gram-negative, anaerobic; growth on blood ascites agar composed of minute, transparent colonies; no change in the medium apparent; growth on ordinary mediums not obtained.

Case 11.—Diphtheria, acute hemorrhagic nephritis in a woman, aged 28. The urine was cloudy, brown; showing albumin, coarsely and finely granular casts, which were not especially numerous; some leukocytes, small round cells, spherical and pear-shaped epithelial cells, and numerous erythrocytes. The urine remained brown for a week. A catheterized specimen, taken seventeen days after the onset of nephritis and after the urine had returned to a natural yellow color, still showed in the centrifuged sediment many erythrocytes, some leukocytes, small round cells, epithelial cells, and coarsely and finely granular casts. Before the patient left the hospital, the urine had become normal. The cultures gave numerous small colonies in 2 c.c. consisting of bacilli and cocci. The bacillus was small, gram-negative, anaerobic; growth on blood ascites agar in minute, transparent colonies; no change in the blood; growth on ordinary mediums not obtained. The coccus was gram-positive; only one colony and this did not grow in transfer.

Case 12.—Diphtheria (severe), acute nephritis (mild), in a girl, aged 8 years, who had had scarlatina and measles.

On admission a few hyaline casts were found in the urine. A catheterized specimen taken two weeks later contained a trace of albumin and a few hyaline and finely granular casts, no erythrocytes or leukocytes. Four weeks after admission, the urine showed neither albumin nor casts.

Blood ascites agar slants showed a good growth of streptococci at the end of twenty-four hours. They were gram-positive, in chains of moderate length, both aerobic and anaerobic; growth on blood agar, delicate and transparent without change in the blood. Shake cultures made with 2 c.c. of urine showed in each tube several colonies of pleomorphic, gram-positive bacilli resembling in size, morphology and staining, diphtheria bacilli.

Case 17.—Bronchopneumonia; pleurisy with effusion; pyorrhea alveolaris; cardiac hypertrophy; acute exacerbation of chronic nephritis in man, aged 33, who remembered no previous illness. History of headache, two years; polydypsia; dyspnea; edema, four weeks; cough one week; vomiting two days; pain in lumbar region; coma. Blood pressure, 190 mm. The urine was voided involuntarily in small amounts; brownish in color, heavy precipitate of albumin; many hyaline, and finely and coarsely granular casts; numerous erythrocytes, fewer leukocytes; spherical and pear-shaped epithelial cells. As the patient improved, the urine increased in volume to 3,000 c.c. in twenty-four hours; specific gravity, 1.007; erythrocytes disappeared; casts persisted; albumin in twenty-four hours, 6 gm. The colonies from 2 c.c. urine were too numerous to count. They consisted of: (*a*) Pseudodiphtheria bacillus, beaded, barred and clubbed, aerobic, in grayish, translucent colonies from pinpoint to 1.5 mm. in diameter; blood unchanged; good growth on ordinary mediums; lactose, mannite and dextrose, unchanged; milk, gradually made alkaline. Eight agar slants injected subcutaneously did not kill a guinea-pig. (*b*) Streptococci, gram-positive, in short chains; better growth aerobically; dextrose and lactose, acid; milk, acid and coagulated; mannite and blood, unchanged. (*c*) Bacilli, small, anaerobic, gram-positive; best growth on blood agar; blood, unchanged; growth on other mediums slight and mediums unchanged.

Case 18.—Chronic nephritis; acute exacerbation in man, aged 35, who had been sick one week complaining of headache, edema, pain in epigastrium, vomiting, and dark and scanty urine. Heart hypertrophied. Blood pressure, 170 mm. The urine was brown, with heavy precipitate of albumin, many hyaline casts, some granular casts and erythrocytes, few leukocytes and epithelial cells. In the cultures, seventeen colonies developed from 2 c.c. of urine; streptococci in pure culture, in fairly long chains of oval, gram-positive cocci; better growth aerobically; moderate hemolysis; colonies opaque, whitish, from 1 to 1.5 mm. in diameter; dextrose, lactose, milk, acid; mannite unchanged. Growth in bouillon formed a white sediment of small, spherical colonies, leaving the fluid above clear.

Case 19.—Bronchopneumonia, arteriosclerosis, chronic nephritis in man, aged 72. Patient deaf and dumb. Wrote on paper that he had had cough and pain in chest five days. Blood pressure 180 mm. Teeth lost; slight enlargement of the cervical lymph glands; slight cardiac hypertrophy; small area of bronchopneumonia in right axilla. Urine had specific gravity, 1.021, trace of albumin, many hyaline and finely granular casts, no erythrocytes or leukocytes. No growth was obtained in dextrose agar shake cultures. On blood ascites agar slants, aerobic and anaerobic, many colonies were obtained of: (*a*) Pseudodiphtheria bacilli, gram-positive, beaded and clubbed, growing both aerobically and anaerobically; blood, unchanged; milk, alkaline; lactose, mannite and dextrose agar, unchanged; small, grayish-white, opaque, convex colonies. (*b*) Cocci, small, gram-positive, strictly anaerobic, occurring singly or in clusters; growth very delicate one of pinpoint, transparent colonies; growth on ordinary mediums good without change in reaction of dextrose, lactose, mannite, saccharose or milk; blood unaltered. (*c*) Bacilli, small, gram-negative, pleomorphic, showing clubbing at height of growth (forty-eight hours), anaerobic; pinpoint, transparent colonies on blood ascites agar without change in medium; no growth on ordinary mediums.

Case 20.—Diffuse dilatation aorta (Wassermann reaction on both blood and spinal fluid negative), extreme cardiac hypertrophy; uterine fibroids and hemorrhages; chronic nephritis in woman, aged 45. Patient denied all infectious diseases, saying that she had never been sick in her life. No headaches or edema. Blood pressure, 240 mm. About 1,000 c.c. of urine in twenty-four hours; with specific gravity, 1.016; containing albumin, a trace at times; at other times, none; hyaline casts few but constant. Cultures from 2 c.c. of urine gave from fifteen to twenty colonies of a small, pleomorphic bacillus, sometimes slender, sometimes plump; showing marked beading and clubbing at height of growth (forty-eight hours), gram-negative, anaerobic; no growth on ordinary mediums; on blood ascites agar, minute, transparent colonies; no change in the blood.

In the accompanying table the organisms on the left of the heavy black line are those found in the urine of healthy individuals. As might be expected, they were found in many of the cases of focal infection and nephritis. It is the presence of the organisms to the right of the heavy black line that indicates a variation from the normal in the bacteriology of the urine. In this group streptococci occur most frequently. These organisms were present in the urine of focal infections in four of five cases examined, and in eleven of the twenty cases of nephritis. The various streptococci were not identical, but varied considerably in their cultural characteristics. The organisms which are peculiar to nephritic urine for the most part are tendency to bizarre forms, and were often slightly larger.

IV. THE ETIOLOGIC SIGNIFICANCE OF THE BACTERIA FOUND IN NEPHRITIC URINE

The constancy with which bacteria are found in the urine of nephritics suggests at once that they may cause the disease. There are, however, two ways in which their presence might be accounted for without assuming that they produce the nephritis. First, bacteria might ascend from the urethra and exist as saprophytes in the nephritic urine, rendered a better culture medium by its serum albumin. That this is not the case is indicated by a number of observations:

THE INCIDENCE OF VARIOUS ORGANISMS FOUND IN THE URINE IN HEALTH, FOCAL INFECTIONS WITHOUT NEPHRITIS AND IN NEPHRITIS

Case Number	Diagnosis	Organisms Found in the Urine															
		Staphylococcus	Pseudodiphtheria	Gram-positive Anaerobic Coccus	Gram-negative Spore-forming Aerobic Bacillus	Gram + Barred and Beaded Anaerobic Pleomorphic Bac.	Anaerobic Gram — Diplococcus	Strepto-Bacillus	Large Gram + Anaerobic Bacillus	Diplococcus Catarrhalis ?	Gram + Spore-forming Bacillus, Aerobic	Streptococcus	Diphtheria Bac.	Small Gram + Anaerobic Bacillus	Small Gram — Anaerobic Bacillus	Spirillum	Pigment-forming Bacillus	Small Gram — Aerobic Bac.
1	Health	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	Health	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	Health	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	Health	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	Chr. appendicitis	+	..	..	..	..	..	..	..	..	..	+	..	..	..	..	..	..
6	Diabetes mellitus, pyorrhea alveolaris	+	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..
7	Acute articular rheumatism; pyorrhea alveolaris	..	..	..	+	..	..	..	..	..	..	+	..	..	..	..	..	..
8	Tuberculous arthritis; secondary infection	+	..	..	..	..	..	..	..	..	..	+	..	..	..	..	..	..
9	Ethmoidal sinusitis	..	+	..	..	..	..	..	..	+	..	+	..	..	..	..	..	..
10	Acute nephritis	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..
11	Acute nephritis	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..
12	Acute nephritis	..	..	..	..	..	..	..	..	..	..	+	+	..	..	..	..	..
13	Acute nephritis	+	+?	..	..	..	..	..	..	..	..	+	..	..	..	..	..	..
14	Acute nephritis	+	..	..	..	..	..	..	..	..	..	+	..	..	..	..	..	..
15	Acute nephritis	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..
16	Acute nephritis	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..	..	..
17	Chronic nephritis	..	+	..	..	..	..	..	..	..	..	+	..	+	..	..	..	..
18	Chronic nephritis	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..	..	..
19	Chronic nephritis	..	+	+	..	..	..	..	..	..	..	..	..	..	+	..	..	..
20	Chronic nephritis	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..
21	Chronic nephritis	..	+	..	..	..	+	..	..	..	..	..	..	+	..	..	..	..
22	Chronic nephritis	+	..	..	..	..	..	..	..	..	..	+	..	..	+	..	..	..
23	Chronic nephritis	+	..	..	..	..	..	..	+	..	..	..	..	+	..	..	..	..
24	Chronic nephritis	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..
25	Chronic nephritis	+	..	..	..	..	..	..	..	..	..	+	..	..	+	..	..	..
26	Chronic nephritis	..	+	..	..	..	..	..	..	..	..	+	..	..	..	..	..	..
27	Chronic nephritis	..	..	..	..	+	..	..	..	..	+	..	..	..	..	..	..	..
28*	Chronic nephritis	..	..	..	..	..	..	..	..	..	..	+	..	..	+	+	+	..
29*	Chronic nephritis	..	..	..	..	..	..	..	..	..	..	+	..	..	+	..	..	+

* Cases of previous report.

classed as small, gram-negative, or gram-positive, anaerobic, pleomorphic bacilli. It is impossible to say that these organisms are identical, but they at least very closely resemble one another. Gram stain was often an unsatisfactory means of differentiation, as it was not strongly positive or negative. They are cultivated with considerable difficulty. They grow without hemoglobin, but not without ascites or serum. They are strict anaerobes. It may be noted that they resemble closely the bacilli described by us in anaerobic cultures of the throat, blood and urine in scarlet fever in which nephritis is so common. In four cases these organisms were found in pure culture. Cases 15 and 27 lacked both streptococci and the small, pleomorphic organisms. The peculiar anaerobic, curved, pleomorphic, gram-positive organism found in these cases somewhat resembled diphtheria bacilli, showed more

1. In the cases in which it was tried, we found the urine itself, as obtained by catheter, a poor culture medium for the bacteria it contained.

2. It was possible in a number of cases to find foci of infection in which the bacterial flora was similar to that of the nephritic urine. One of the cases of nephritis reported previously[3] was a good example of this. A second case (Case 14) had, in the pus from the otitis media, a hemolytic streptococcus, apparently identical with that found in the urine. That the bacteria associated with focal infections are found in the urine without nephritis is shown by the work of Kirk and by Case 9 of our series of focal infections, in which the streptococcus and *Micrococcus catarrhalis* were found both in the focal infection and in the urine. The easiest explanation of this assumes that the bacteria in the focus of infection gain entrance

to the blood stream and are excreted through the kidneys.

3. The opportunity was afforded by necropsy to obtain bacteria directly from the cortex of the kidney by means of cultures of the kidney tissue. The kidney was obtained from a fatal case of diphtheric nephritis without endocarditis. The following bacteria were found: innumerable colonies of virulent diphtheria bacilli; few staphylococci, and streptococci. It will be seen that even in diphtheria, in which there is preeminently a local production of toxin and not so extensive invasion of the blood stream, bacteria were isolated in large numbers from the nephritic kidney.

A number of attempts have been made to isolate bacteria from the kidney of nephritis.

Thus Councilman[25] made cultures from forty-nine cases of acute and subacute nephritis, and found bacteria in the kidney only in cases of general septicemia. The cultural methods which he used, however (aerobic cultures on Loeffler's blood serum), were inadequate. Brewer[26] made cultures of a kidney which he removed from a case of post-scarlatinal nephritis. The cultures remained sterile after three days. He does not mention the cultural methods used. Heyn[27] described a nephritis due to tubercle bacilli in which there was connective tissue proliferation without tubercle formation. He was able to demonstrate tubercle bacilli in the lesions of such kidneys. That bacteria are found in the kidneys of fatal cases of scarlatina we were able to show in a study of the anaerobes associated with the disease.

From these considerations, and the facts presented concerning the excretion of bacteria by the kidneys in various infectious diseases, it seems most likely that the bacteria of the urine in nephritis reach the kidney through the blood stream. They may or may not multiply in the urine.

The question arises as to whether the injury to the kidney present in nephritis is the effect of the organisms found in the urine, or whether the kidney, injured from other causes, is permeable to bacteria in an abnormal degree, thus accounting for the organisms present in the urine. The following case of chemical nephritis caused by phenol (carbolic acid) poisoning helps to decide this question:

Case 30.—Hungarian, aged 27, no history obtainable, except that he took phenol. The physical examination was negative except for severe erosions of the cheeks, tongue, roof of the mouth, and the throat. The urine on admission showed many erythrocytes, some blood casts, some leukocytes and much albumin. In a few days the urine became normal. Cultures taken at the height of the nephritis yielded in 2 c.c. of urine three colonies of *Staphylococcus albus*.

The bacteriology in this case of chemical nephritis, then, resembles the bacteriology of the urine in health rather than that of the urine in other cases of nephritis. This case, although far from conclusive, would indicate that the bacteria found in nephritic urine are not simply the result of an increased permeability of the kidney. The question, then, must be considered as to whether the bacteria found in the urine are the cause of the associated nephritis, or are excreted in much the same manner as are the specific organisms of the infectious diseases. It may be stated that it is precisely in those diseases in which bacteria, or specific viruses, are frequently found in the urine that nephritis most often occurs. There is some discussion as to whether or not the passage of bacteria through the kidney with absolutely no resulting lesion is possible. In typhoid fever we have the best example of what appears to be an excretion of bacteria by clinically normal kidneys. Typhoid bacilli are usually found in the urine, not during the period of bacteremia, but later in the disease or during convalescence. Kanjajeff[28] examined the kidneys of patients excreting typhoid bacilli through clinically normal kidneys, and found small foci of necrosis under the capsule of the kidney. He obtained typhoid bacilli in culture and demonstrated the bacilli in sections from such foci. Again Wyssokowitsch[29] did not find elimination of bacteria in the urine after injection of large numbers into the blood, except when the kidneys showed evidence of injury. It must be remembered that such injury may be very small; in some cases, only such as might result from the retention of the bacteria for a short time in the kidney capillaries. Pernice and Scagliosi[30] inoculated from 0.25 to 2 c.c. of broth cultures of anthrax and *Bacillus pyocyaneus* into guinea-pigs, rabbits and dogs intravenously, intraperitoneally and subcutaneously, and observed two hours later hemorrhages and desquamation of the epithelium of the tubules and glomeruli. It is plain that while the possibility of bacteria passing through the kidney without the production of lesions is questionable, there is no doubt that such passage does frequently result in injury to the kidney, variable in extent.

V. THE PRODUCTION OF EXPERIMENTAL NEPHRITIS BY MEANS OF THE BACTERIA FOUND IN NEPHRITIC URINE

From the consideration of the effects of the passage of bacteria through the kidneys, it would be surmised that experimental nephritis in animals might be produced by bacteria, and considerable work along this line has been done.

As early as 1888, Roux and Yersin[31] produced congestion and occasional renal hemorrhage by the injection of diphtheria toxin into animals. Lyon[32] produced round-cell infiltration by injection of diphtheria toxin. Frothingham,[33] in a more recent investigation, concludes that the vessels of guinea-pigs and rabbits are not susceptible enough to diphtheria toxin to make it appear hopeful to secure permanent renal lesions with sublethal doses. Pernice and Scagliosi[30] studied the effect on the kidneys of injections of *B. anthracis* and *B. pyocyaneus* in dogs. They obtained hemorrhage and desquamation in tubules and Bowman's capsules with epithelial degeneration and the urinary findings of nephritis. They mention that injection of live bacteria is more effective than injection of filtrates. Le Count and Jackson[34] studied the renal lesions in rabbits inoculated with streptococci. They described degenerative, exudative and proliferative changes. Longcope[35] produced round-cell infiltration by repeated injections of horse serum. Le Count and Jackson emphasize the need of careful examination of control animals in studies on experimental nephritis. Dayton[36] compared the urinary and necropsy findings in dogs, in 47.6 per cent. of which he found chronic nephritis, and concluded that repeated urinary examinations would reveal the presence of such nephritis.

25. Councilman: Medical and Surgical Reports of the City Hospital, Boston, 1897, p. 31.
26. Brewer: Am. Jour. Urol., 1913, ix, 549.
27. Heyn: Virchows Arch. f. path. Anat., 1901, clxv, 42.
28. Kanjajeff, in Kolle and Wassermann: Handbuch, 1914, iii, 768.
29. Wyssokowitsch in Kolle and Wassermann: Handbuch, i, 215.
30. Pernice and Scagliosi: Virchows Arch. f. path. Anat., 1894, cxxxviii, 521.
31. Roux and Yersin: Ann. de l'Institut Pasteur, ii, 629.
32. Lyon: Jour. Path. and Bacteriol., 1903, xxviii, 430.
33. Frothingham: Jour. Med. Research, 1914, xxx, 365.
34. Le Count and Jackson: Jour. Infect. Dis., 1914, xv, 389.
35. Longcope: Jour. Exper. Med., 1913, xviii, 678.
36. Dayton: Jour. Med. Research, 1914, xxxi, 177.

Experiments were made on animals in which repeated examinations of the urine failed to reveal any evidence of kidney lesions. The animals were kept under observation in a metabolism cage. The effect of injections of each of the two groups of organisms most commonly found in nephritis was observed, that is, streptococci and small anaerobic bacilli.

EXPERIMENT 1.—Dog received an intravenous injection of the growth from six slants of the bacilli from Case 10, of scarlatinal nephritis. The growth was very sparse, clouding the fluid less than would a single slant of typhoid bacilli. The injection was followed in about one-half to one minute by vomiting, involuntary urination and defecation, convulsions and coma. The injection was made late in the afternoon. The dog died the following night. During the coma, involuntary defecation occurred, but no urination. The postmortem examination showed cloudy swelling of the liver and kidneys. The bladder was empty.

EXPERIMENT 2.—Rabbit received two injections of bacilli from Case 20.

March 24: Urine negative daily since March 18. Received intravenously the growth from six agar slants (growth very scant).

March 25: Received intravenously the growth from six agar slants.

March 26: Found dead. Early lobular basal pneumonia; urine from bladder shows a heavy precipitate of albumin (Purdy test); no casts or leukocytes. Renal capsule strips readily, leaving smooth surface. The cut surface shows the cortex light in color and bulging.

EXPERIMENT 3.—Rabbit received three injections of the bacilli from Case 20.

March 16: Urine negative. Received six agar slants intravenously.

March 17: Urine negative. Received a second injection of four slants intravenously.

March 18: Urine showed a trace of albumin and a few hyaline casts.

March 22: Urine negative. Received six agar slants. The animal died almost immediately with convulsions. Peritoneum contains 10 c.c. of clear, colorless fluid; pericardium contains 1 c.c. of similar fluid. Renal capsule strips readily, leaving smooth surface; cut surface shows cortex light in color and bulging; markings obscured. Extreme degeneration of cells of glomeruli and convoluted tubules; tubules filled with desquamated cells.

EXPERIMENT 4.—Rabbit received repeated intravenous injections of smaller quantities of organisms from Case 20.

March 26: Four slants intravenously.

March 29: Urine negative. Received four slants intravenously and one slant subcutaneously.

March 30: Urine negative. Received six slants subcutaneously.

April 1: Urine negative. Received four slants (poor growth) intravenously.

April 2: Urine negative. Received five slants (fair growth) intravenously.

April 8: Urine, twenty-four-hour amount, negative. Received five slants intravenously.

April 14: Urine: albumin and many epithelial cells; no casts found.

April 15: Urine: albumin present, no casts found.

April 16: Urine albumin present and no casts found. Received five slants intravenously.

April 20: Urine: albumin and many coarsely granular casts; no leukocytes.

April 22: Urine showed trace of albumin, many hyaline and granular casts, few leukocytes.

April 24: Received four slants intravenously.

April 26: Urine showed many hyaline casts, a few finely granular casts, no albumin.

April 27: Received two agar slants intravenously.

April 28: Single voiding showed albumin, hyaline and coarsely granular casts. The rabbit has been allowed to live in the hope of obtaining a contracted kidney.

EXPERIMENT 5.—Rabbit received intravenous injections of anaerobic bacilli and anaerobic cocci from Case 19. The organisms from this case grew very sparsely. The proctocol follows:

March 9: Urine negative. Received nine slants of mixed bacilli and cocci intravenously.

March 10: Urine negative. Received six slants mixed bacilli and cocci intravenously.

March 12: Received four slants of the bacilli and three of the cocci.

March 13: Urine negative.

March 15: Urine negative.

April 6: Received four slants of bacilli and four of cocci intravenously.

April 7: Urine contained a trace of albumin and finely granular and hyaline casts with an occasional cell attached; numerous round and pear-shaped epithelial cells, some polymorphonuclear leukocytes. Received five slants each of cocci and bacilli intravenously.

April 9: Urine: trace of albumin, hyaline casts and finely granular casts, occasional leukocytes, epithelial cells and round cells.

April 12: Received five slants each of cocci and bacilli intravenously.

April 13: Urine: albumin present and casts numerous, hyaline and finely granular with a few cells attached; one epithelial cast found.

April 14: Urine: albumin present and numerous hyaline casts; few coarsely granular casts; some finely granular casts; few red cells, leukocytes and epithelial cells.

April 15: Trace of albumin and hyaline casts.

April 16: Trace of albumin and many hyaline casts. Rabbit killed by blow on the head. Necropsy: peritoneum contained 2 c.c. of clear fluid; some fluid in pericardial and pleural cavities. Kidneys weighed 12 gm. together (weight of kidneys of control rabbit of about the same weight, 9.5 gm.). The capsule stripped readily, leaving a smooth and strikingly mottled surface on which dark brownish-red areas alternated with light yellowish areas. On cut section, the markings lost: and cortex and medulla indistinguishable, showing yellowish and reddish brown streaks through both. Microscopic examination: The most marked change is swelling and fatty degeneration of the cells of glomeruli and convoluted tubules, although to some extent all of the epithelium is affected. There is some new connective tissue proliferation, especially marked in small areas just beneath the capsule of the kidney. The Bowman's capsules and tubules contain granular débris.

EXPERIMENT 6.—Rabbit injected with streptococci from Case 18. The organisms were not toxic as were the organisms previously used, and were readily grown, so that much larger quantities were used.

March 12: Urine negative. Received one large slant intravenously.

March 15: Received one-fourth large slant intravenously.

March 16: Urine negative.

March 17: Received 10 c.c. broth culture intravenously, and 30 c.c. hypodermically.

March 18: Urine contained albumin; no casts.

March 19: Albumin and many coarsely granular casts, few epithelial cells.

March 22: No albumin; no casts.

March 23: Received 10 c.c. of broth culture intravenously and 20 c.c. of broth culture hypodermically.

March 24: Albumin: trace; no casts. Received 10 c.c. broth culture intravenously and 10 c.c. subcutaneously.

March 25: No albumin; no casts.

March 26: Urine contained a trace of albumin; no casts. Received 10 c.c. of broth culture subcutaneously and intravenously.

March 27: Found dead. The necropsy was negative except for cloudy degeneration of the liver and kidney changes. The kidneys were swollen; the capsule stripped readily, leaving a smooth, slightly mottled surface. The cut surface was soft and light colored with very indistinct markings. Microscopically, the kidney showed degeneration and desquamation of epithelium of the convoluted tubules and Bowman's capsule.

These experiments show that the bacteria isolated from the urine of nephritis are capable of producing both the urinary and the anatomic findings of nephritis. That they are capable of producing some of the symptoms of nephritic intoxication is shown by the following observation: In Case 21, the patient had complained of very severe headache and some nausea after meals for seven years. After these symptoms had subsided under treatment in the hospital, a vaccine prepared from the organisms found in the urine was injected in the hope of producing a beneficial effect. A first injection of 2½ million organisms subcutaneously was followed by headache and nausea, which the patient described as similar to those of which he had previously complained. These symptoms, which were not associated with a rise in temperature, reached their height a few hours after injection and persisted for about forty-eight hours. A second and third injection were followed by similar symptoms, so that the dose of vaccine had to be reduced, although the initial dose was small as compared with the customary dosage of vaccines of other organisms.

It has been commonly assumed that the symptoms of intoxication in nephritis are due to retained metabolic products. From extirpation experiments, Fischer[37] concludes that the loss of renal tissue is not sufficient to explain the toxic phenomena of nephritis. The toxicity of the bacteria of nephritic urine as shown by animal experiments and by vaccine is for this reason of added interest.

Though pathogenic bacteria were present in the urine of all our cases, except that of chemical nephritis, it seems unlikely that there are no cases of nephritis due to soluble toxins alone. A bacteriologic study of the urine is, therefore, of primary importance in every case of nephritis.

The excretion of bacteria through the kidneys in focal infections and in acute infectious diseases indicates that both prophylactic and curative measures in cases with positive bacteriologic findings should be directed toward (1) removal of foci of infection from which bacteria might enter the blood stream, and when this is impossible, as in the acute infectious diseases, toward (2) minimizing their action on the kidney.

Of the drugs which act as urinary antiseptics, hexamethylenamin is most efficient. Hinman[38] reached the conclusion that hexamethylenamin in 15-grain doses is of little antiseptic value at the level of the kidney, as he did not find formaldehyd in quantities sufficient to inhibit bacterial growth in urine obtained from the renal pelvis. Clinical experience, on the other hand, has demonstrated the efficiency of hexamethylenamin in freeing the urine of typhoids from the bacilli.[39]

We have already pointed out that in typhoid, the bacilli are present in foci within the kidney tissue. Considerable work has been done on the use of hexamethylenamin as a preventive of nephritis in scarlet fever. From Griffith's[40] review of the literature, it appears that most observers have found it of value; but there are those who assert that it is of no use. The discrepancy in results might be explained by failure to control the dosage by testing the urine for formaldehyd. Controlled in this way, the results in a series of cases to be reported from the Durand Hospital of the Memorial Institute for Infectious Diseases are encouraging.

The danger of hematuria might be taken as a contraindication to the use of hexamethylenamin in nephritis. It was given in Cases 10, 13, 14 and 17 of acute nephritis and in Cases 18, 21, 22, 24, 26 and 27 of chronic nephritis in this series and in the two cases previously reported. Care was taken to employ the smallest dose which gave a positive test for formaldehyd in the urine with the phenylhydrazin nitroprussid test. There were no unfavorable results, except in Case 21, when an attempt to give as large doses as the patient could tolerate was followed by vesical irritability and hematuria. These symptoms subsided on stopping the drug.

In cases of chronic nephritis with positive bacteriologic findings, the advisability of giving autogenous vaccines is naturally to be considered. It has been tried in too few cases to warrant any conclusion as to its efficacy. The effect of vaccine in Case 21 indicates that if it is employed, the toxicity of the organisms should be taken into account in determining the dosage.

637 South Wood Street.

37. Fischer, M. H.: Edema and Nephritis, New York, John Wiley & Sons, 1915, p. 493.
38. Hinman: Tr. Am. Assn. Gen. Urin. Surg., 1913, viii, 235.
39. Shattuck, in Forscheimer's Therapeusis of Infectious Diseases, New York, 1914, ii, 25.

DIFFERENCES IN THE DIGESTION IN ADULTS AND INFANTS

J. F. McCLENDON, PH.D.
Instructor in Physiology, University of Minnesota Medical School
MINNEAPOLIS

The differences in the digestive process in adults and infants have been the subject of so many contributions that it would be impossible to review the literature in a paper of this length; but some recent work is of especial interest in shedding new light on this subject. We are still very ignorant of the chemical nature of the digestive enzymes, but are learning more of the conditions under which they act.

Sorensen[1] has made careful studies of the relation between the acidity or alkalinity of the solution and the rapidity of the action of different enzymes. The acidity is measured by the concentration of the hydrogen ions. The optimum concentration of hydrogen ions for peptic digestion was found to be about 0.04 normal, and the rate decreased if the acidity was increased or decreased. At about 0.0001 normal it was about a half to a fifth as rapid, and at about 0.2 normal it was about 0.9 to 0.5 as rapid, depending on the duration of the experiment and the method of analysis.

It is well known that trypsin acts better in an alkaline medium, and Michaelis and Davidsohn[2] have shown that its action decreases as the alkalinity decreases, and still more if the solution becomes acid, so that at a hydrogen ion concentration of 0.0001, it

40. Griffith, in Forscheimer's Therapeusis of Infectious Diseases, New York, 1914, ii, 133.
41. Simon: Ztschr. f. Urol., 1914, viii, 253.
1. Sorensen, S. P. L.: Biochem. Ztschr., 1909, xxi, 131.
2. Michaelis and Davidsohn: Biochem. Ztschr., 1911, xxxviii, 280.

ceases altogether. Rona and Arnheim[3] have found the same thing true of erepsin.

It occurred to me that the rate of digestion in the stomach and intestine might be studied by continuous observation of the hydrogen ion concentration. For this purpose new apparatus was perfected,[4] one method being the construction of a hydrogen electrode which could be lowered into the stomach. In this way curves were plotted of the rise in acidity in the stomach.[5] The other method consisted in the use of an Einhorn duodenal tube kept in the stomach.

Although all the determinations were made with the hydrogen electrode, the indicator method of determining the reaction was tested. When the sample was already colored, indicator papers were found to work better than the solutions. Ordinary indicator papers are not always sensitive enough. It is better to soak Schleicher and Schüll's ash-free filter paper No. 589 in a solution of the dye and dry it. In case of a natural indicator, if it will dissolve in absolute alcohol, this solution is used to color the paper in order that no salts may be transferred to the paper. The edge of the paper is touched to the solution, and as the solution rises in the pores of the paper, the coloring matters are precipitated in the pores; but the acid or alkali rises higher and gives the characteristic reaction with the indicator above the place where the color of the sample is precipitated. Pure water rises still higher; therefore the upper limit of the moist area should not be taken to indicate the reaction.

The hydrogen ion concentrations at which some indicators change the contents of the digestive tract are as follows: methyl violet and tropeolin 00, 0.01; dimethylamidobenzol, 0.005; congo, methyl orange and alizarin, 0.0001; litmus and p-nitrophenol, 0.00001; neutral red, 0.000005; rosolic acid, 0.0000005; phenolphthalein, 0.00000005.

It was found that the heavier the meal and the more protein it contained, the more slowly the acidity rose. After the average meal, however, the acidity rises rapidly during the first hour, more slowly during the second hour and remains about stationary during the third, fourth and fifth hours. During the first hour very little peptic digestion can take place, and the most rapid digestion is delayed until from two to three hours after finishing the meal.

The acidity curve is thus an index of the efficiency of the stomach to take care of a meal, and a whole hour is saved by the ability of the stomach to raise the acidity an hour sooner. The acidity rises to its maximum an hour sooner in some stomachs than in others, and these stomachs are emptied through the pylorus sooner than the others, and hence made ready for another meal.

This brings us to the question of the infant's stomach, and it was investigated at the request of Dr. Sedgwick in the same way so far as was practicable. In this work Dr. Rood Taylor assisted, and collected all samples. The acidity of the infant's stomach (of the first month) remains nearly stationary during the first hour, after which it rises steadily until the next meal, and if this is delayed four hours it may become as acid as the adult stomach. The question arises as to what this has to do with the digestion. The milk does not wait to be digested before passing out of the stomach, and when the acidity is high enough for protein digestion, there is little milk in it to be digested.

A study of the duodenal contents offers a suggestion in explanation of this anomaly. The duodenal contents are more acid than the full stomach, the hydrogen ion concentration being about 0.0008, despite the presence of bile and pancreatic juice. At this acidity, considerable peptic digestion could take place, according to the careful studies of Sorensen. Pepsin was looked for and found to be always present in the infant's duodenum. In determining this, 0.1 c.c. of duodenal contents was mixed with 2 c.c. of a dilute solution of edestin kept slightly acid with a phosphate mixture, and incubated for two hours at 37 C. (98.6 F.). At the end of that time the undigested edestin was precipitated with a few drops of a saturated solution of sodium chlorid. A precipitate was observed only in the controls, however, owing to the rapid peptic digestion.

Trypsin was likewise determined, by the digestion of a dilute alkaline solution of casein for twenty-four hours in an incubator. It seemed to be much less abundant than the pepsin, however, from the fact that the casein was not always completely digested in twenty-four hours; but some undigested casein could be precipitated by neutralization of the solution with acetic acid.

The reaction of the duodenal contents of the infant is such as would allow peptic and tryptic digestion to occur simultaneously, and the question arises, whether or not this reaction is maintained in the ileum. Owing to our inability to obtain intestinal juice, comparative data must be used in this discussion. The feces of the infant are acid,[6] and it is simplest to assume that the intestine is acid all the way down rather than that it is first acid, then alkaline and then acid again. Furthermore, it is chiefly the pancreatic juice that makes the adult intestinal contents alkaline (Boldyreff). The adult duodenal contents are alkaline, notwithstanding the highly acid fluid coming down from the stomach. I found the hydrogen ion concentration of the adult duodenal contents to be about 0.00000002, and it was not made acid by pouring in a fair proportion of gastric juice. This is about the same alkalinity as found by Auerbach and Pick[7] in the intestine of dogs, and seems to be characteristic for the adult mammalian intestine. The content of the common bile duct is a fluid like a carbonate solution, whose reaction is not easily changed, and which gives the characteristic reaction to the contents of the small intestine. The same reaction is characteristic of the feces according to Michaelis.[6] The production of bile in the infant is very small, and is not nearly sufficient to neutralize the gastric juice; consequently it is probable that all of the digestion in the infant takes place in an acid medium.

It is well known that the infant's stomach is especially rich in lipase. In addition to the lipase in mother's milk, the stomach secretes lipase. I found the fat-splitting action of the duodenal contents of the infant to be as great in an acid medium as in an alkaline medium. A saturated solution of tributyrin was used, and the digestion determined by measuring the surface tension with a stalagometer. This test is very

3. Rona and Arnheim: Biochem. Ztschr., 1913, lvii, 84.

4. McClendon, J. F.: New Hydrogen Electrodes and Rapid Methods of Determining Hydrogen Ion Concentrations, Am. Jour. Physiol., July, 1915; A Direct Reading Potentiometer for Measuring Hydrogen Ion Concentrations, ibid.

5. McClendon, J. F.: Acidity Curves in the Stomachs and Duodenums of Adults and Infants, as Plotted with the Aid of Improved Methods of Measuring Hydrogen Ion Concentrations, Am. Jour. Physiol., July, 1915.

6. Michaelis: Die Wasserstoffionenkoncentration, Berlin, 1914, p. 112.

7. Auerbach and Pick: Arb. a. d. k. Gsndhtsamte, Berlin, 1912, xliii, 155.

delicate, and if any difference existed, it should have been detected. The failure to find a difference indicates that the lipase coming from the stomach is so abundant as to make the detection of pancreatic lipase in the mixture difficult. At any rate, the fat-splitting action of the duodenal contents is very rapid in an acid medium, and since there is no starch to be split, there is no reason to suppose that an alkaline reaction is necessary for the infant's digestion.

Since the infant may some day become a man, the question arises as to what becomes of the digestion in the transition process. We observed that the infant's duodenum is not too acid for tryptic digestion, and therefore, when the acidity of the intestine in the growing child decreases so that peptic digestion can no longer take place, it is still equipped with an efficient agent for proteolysis.

The study of the acidity of the stomach during this transition period was begun by Huenekens.[8] He found that the acidity of the infant's stomach remained low at least five years if it was fed on milk, but on a mixed diet excluding milk and including meat, the acidity of the 17-months-old infant is sufficient for peptic digestion. The proteins of the milk bind and partially neutralize the acid. My results indicate that no stimulus is necessary for the secretion of acid, but the question could not be decided without finding some means of estimating the total quantity of acid secreted, which cannot be done by the titration method unless carbonates and phosphates and proteins are entirely excluded from the stomach.

Since writing this paper I have read that of Rehfuss, Bergeim and Hawk[9] describing acidity curves by the titration method. Their curves rise more rapidly and then fall. The rise is probably due to the use of the Ewald meal with low acid binding power, and the collection of the sample next to the wall of the stomach. The fall may be due to the regurgitation of duodenal contents. My curves are not complete, and hence show no fall at the end.

SUMMARY

The acidity of the stomach and reaction of the duodenal contents was measured by means of hydrogen electrodes. Indicator papers were calibrated so that clinicians may determine hydrogen ion concentrations approximately.

After a normal meal, the acidity of the adult stomach reaches its maximum in from two to three hours, the rise in acidity being more rapid the lighter the meal.

The height to which the acidity rises varies with the individual, the highest observed in a normal individual being 0.1 normal (about 0.4 per cent. of pure hydrochloric acid). The hydrogen ion concentration of the duodenal contents is 0.00000002 normal. This is slightly alkaline, since that of pure water is 0.00000011 at 25 C. (77 F.).

The acidity of the infant's stomach rises slowly after the milk begins to leave it, and four hours after nursing may be the same as some normal adult stomachs. That of the gastric juice of the new-born is 0.005.

The acidity of the duodenal contents of the infant is 0.0008, and hence it is probable that both peptic and tryptic digestion take place in the intestine of the infant. Pepsin was always found and was apparently more abundant (active) than the trypsin.

8. Huenekens: Ztschr. f. Kinderh., 1914, xi, 297.
9. Rehfuss, M. E.; Bergeim, Olaf, and Hawk, P. B.: Gastro-Intestinal Studies, II, The Fractional Study of Gastric Digestion, THE JOURNAL A. M. A., Sept. 12, 1914, p. 909.

AUTOSERUM THERAPY IN THE TREATMENT OF PSORIASIS AND OTHER SKIN DISEASES*

J. SCOTT WILLOCK, B.S., M.D.
Assistant in Dermatology, Medical Department, Johns Hopkins University
BALTIMORE

Stimulated by the striking results recently obtained by Gottheil,[1] and partially confirmed by Fox[2] and Hilario,[3] in the treatment of psoriasis by autoserum therapy, a careful trial was given to this method of treatment during the past winter at the Johns Hopkins Dispensary.

Previous to Gottheil's articles in 1914, autoserum therapy had been used spasmodically in Europe in different cutaneous diseases with greatly varying results. References to this literature are given in the articles mentioned in the preceding paragraph.

TECHNIC

We used the same general methods in all of our cases. From 80 to 100 c.c. of blood were withdrawn, usually from a vein at the bend of the elbow, and centrifuged as soon as it had clotted. From this amount of blood, from 25 to 45 c.c. of serum were obtained and immediately injected intravenously into the patient. A period of from three quarters of an hour to two hours elapsed from the time the blood was withdrawn until the serum was injected.

The great difference in the time required for the treatment is accounted for chiefly by the way the blood acted during centrifugalization. The blood from one patient would require only from five to ten minutes to separate, giving a fine clear serum; whereas another patient's blood would not give an equally good serum after an hour or more. This difference was observed with bloods which were put in the centrifuge at the same time, showing that it could not be due to any mechanical defect in that instrument. The amount of fat in the serum, which causes it to be cloudy when the blood is drawn shortly after meals, did not seem to bear any relation to the time necessary for this operation. The bloods of the three cases of dermatitis herpetiformis were remarkable for the rapidity with which a clear serum separated, the time required never being over fifteen minutes, and sometimes only five minutes was necessary. On the other hand, the blood in the three cases of eczema separated with great difficulty, and it was almost the rule that after an hour or more the serum was still not clear. In the cases of psoriasis no constant rule was observed, but the blood of individual cases usually acted the same at the different treatments.

The following dermatoses were treated: psoriasis, 10 cases; eczema, 3 cases; dermatitis herpetiformis, 3 cases; chronic urticaria, 1 case; lupus erythematosus, 1 case. These cases were all given four or more injections. A number of other patients were given only one or two injections, but as they did not give the treatment a fair trial, they are not included in this report.

* From the Dermatological Clinic of the Johns Hopkins Hospital.
1. Gottheil and Satenstein: Med. Rec., New York, 1914, No. 14, p. 620.
2. Fox, Howard: Autogenous Serum in the Treatment of Psoriasis, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2190.
3. Hilario: Jour. Cutan. Dis., November, 1914.

PSORIASIS, TEN CASES

The summary which we have given of these cases shows their general character in regard to duration, distribution, etc., so that it is not necessary to go into the detailed history of each of them.

All cases except one were given four injections of serum at intervals of four days to a week, during which time no other treatment was given. Immediately after the last injection the patient was put on chrysophanic acid ointment and carefully watched. Usually two strengths of the ointment (1 per cent. and 10 per cent.) were given to the patient to be used on corresponding sides of the body in order that any difference in their efficiency might be noted. In no case was the difference in result marked; in some patients the 10 per cent. ointment would give slightly better results, and in others the 1 per cent. would be more efficacious.

While receiving the serum injections, none of the patients improved and several became somewhat worse. After being put on chrysophanic acid ointment, some of the cases cleared up fairly rapidly, while the others were very obstinate, in this way acting as any other series of psoriasis cases would act which had been treated with chrysophanic acid alone. Indeed, other cases of psoriasis, treated, during this same period, with chrysophanic acid alone, did as well if not better than the cases treated with the combined serum and chrysophanic acid; this is all the more true if we consider the time lost in giving the serum.

One of the series was a private case of a rather severe type, which, after seven injections, even with the use of chrysophanic acid ointment, did not markedly improve. The others were all dispensary patients, selected on account of their intelligence and ability to cooperate in the treatment.

Autoserum therapy in the treatment of psoriasis was, in our experience, very disappointing. It is of interest to note that in two cases pigmentation followed after the lesions cleared up, and in two other cases the glans penis was involved. This is a rather high percentage for either of these conditions.

SUMMARY OF PSORIASIS CASES

Case	Sex*	Age, Yrs.	Total Duration	Duration of Present Attack	Distribution	Type	General Health	Remarks
1	♂	34	5 years	1 year	General, numerous lesions	Chronic	Very nervous; otherwise good	Obstinate case.
2	♀	28	20 years	4 weeks	General, numerous lesions	Chronic	Good	Cleared up fairly rapidly.
3	♀	34	6 years	.....	General, fairly numerous	Acute	Good	Cleared up fairly rapidly.
4	♂	26	12 years	Never entirely free	General, chiefly on legs and back	Chronic	Good	Obstinate on the legs.
5	♂	25	15 months	3 months	Scalp and a few lesions on abdomen	Acute	Good	Sites of old lesions were pigmented.
6	♂	31	3 years	8 months	General, numerous lesions	Acute	Good	Sites of old lesions were pigmented.
7	♂	21	4 years	Never entirely free	Scattered lesions on back, a few on chest and scalp, corona of glans penis	Acute	Good	Cleared up rapidly.
8	♂	23	2 years	4 months	Scalp, elbows, scattered lesions on body; patches on legs	Chronic	Good	Patches on legs very obstinate.
9	♂	20	2 months	2 months	Scalp; about half dozen spots on body; glans penis	Chronic	Good	Scalp involvement of chronic type and very obstinate.
10	♂	14	5 months	5 months	General, numerous lesions	Acute	Good	Cleared up rapidly.

* In this column, ♂ denotes male, and ♀ female.

ECZEMA, THREE CASES

Here are included two cases of eczema of the male genitalia and one case of fissured eczema of the hands. They were also given at least four serum injections at intervals of from four days to a week.

One case was quite severe, the lesions having been present for two years and involving the pubic region, penis, scrotum and inner surface of the thighs. These parts were somewhat crusted, reddened, infiltrated and at times weeping. The patient had been previously treated in the dispensary for some months without much benefit. October 20, 37 c.c. of serum were injected, and an ointment of salicylic acid and oil of cade was used. November 4, the condition was about the same; 35 c.c. of serum were injected. November 9, the patient was no better; 38 c.c. of serum were injected. November 16, the patient was somewhat better. He was told to bathe the parts gently every two days, after which to apply the following ointment; salicylic acid (4 per cent.) and zinc oxid (12 per cent.); also 38 c.c. of serum were injected. November 23, the patient said he was better than he had been for two years; the parts were almost clear; the scrotum was somewhat leathery; 42 c.c. of serum were injected. December 10, the patient was still better; the scrotum was slightly leathery; no serum was injected or ointment given. November 16, the patient was slightly worse; salicylic acid and zinc oxid ointment were again prescribed. December 28, the patient was better after using the ointment again. January 14, he was still practically well, but gets worse if bathing and the ointment are withheld.

This very chronic case was markedly improved, but it is a question whether it was due to the serum or to the more careful local treatment.

The other two cases of eczema, which were treated in a similar manner, had not been seen by us before. They were improved only when the serum injections were supplemented by local treatment.

DERMATITIS HERPETIFORMIS, THREE CASES

One of these cases, a strong healthy farmer boy, aged 18, and a private patient, came under observation during his first attack in the spring of 1914. The eruption was papulovesicular and was generally distributed over the whole body and face. At this time the usual lotions, ointments, vaccines, etc., together with baths and diet, were used by Dr. Gilchrist, with no results. Finally he tried injections into the buttock of 10 c.c. of the patient's whole blood. After the second of these injections very marked improvement occurred. During the summer of 1914, these injections were continued at intervals of a week by Dr. Ketron, with the result that the eruption practically disappeared and the patient had great confidence in the treatment. In January, 1915, the patient had a mild relapse and was then referred to me. During the next three

months ten serum injections were given. During this time the disease was present in a very mild form, only an occasional group of excoriated papules being seen. However, as soon as the warm weather of spring arrived and the patient became overheated by hard work, a very acute outbreak occurred, while he was still receiving the serum injections. This eruption was of general distribution and of a macular erythema multiforme type. Dr. Gilchrist considers that the striking improvement which took place in this case while being treated by him and Dr. Ketron was definitely due to the whole blood injections.

A second case was that of a man aged 70, who had suffered intensely with the disease for fourteen years. Six weeks after the second injection, the patient's body was clear and he said he was better than he had been for fourteen years; this statement was borne out by his family and physicians who had treated him for at least a part of that period. During the six weeks' interval, however, the patient had passed through an attack of erysipelas. It is well known that, during an acute infection, a chronic condition will very often clear up. This might have been the cause of the great improvement in this case. However, he again became gradually worse even under treatment, and at the time of the seventh injection, two months after the period of great improvement, his condition was about the same as when first seen.

The third case was in a man aged 59, who had suffered from the disease for one year. His body was covered with numerous oozing surfaces, varying in size from a pea to a bean, which represented the bases of ruptured vesicles. After the first injection there was a most marked improvement, both objectively and subjectively. However, although he was given an injection every week, he became gradually worse, and finally his condition became such that he could not come for further treatment.

It is to be noted that all of these cases of dermatitis herpetiformis were at first markedly improved, but they, also, all relapsed while under treatment. Also, these patients were themselves enthusiastic at first over the treatment. Our results were not such as to impress us as to the efficiency of serum injections in cases of dermatitis herpetiformis, although they seemed to relieve the symptoms at first.

CHRONIC URTICARIA, ONE CASE

This had been present in a man, aged 24, for over a year. Wheals were almost continually present, sometimes in very large numbers. There was no improvement after four injections at weekly intervals.

LUPUS ERYTHEMATOSUS, ONE CASE

A dozen or more rather acute lesions, varying in size from a pea to a quarter, were present over the face and neck. After one injection there was marked improvement. However, seven more injections were given with no result, and the condition slowly became worse.

CONCLUSIONS

As a result of treating carefully and observing the effects closely in ten typical cases of psoriasis, we have come to the conclusion that autoserum therapy is of no significant value in the treatment of this condition. Neither have we been able to confirm the claims, so enthusiastically made by other authors, relative to the increased efficiency of weak chrysophanic acid ointments when used after the patient had already received a series of autoserum injections. Other patients, treated by us with 1 or 2 per cent. chrysophanic acid alone, did just as well as those receiving the combined autoserum and chrysophanic acid, and thereby saved the time necessary in giving the autoserum injections.

In one very chronic case of eczema, which had been treated by us without the serum with poor results, the patient practically recovered when the serum injections were used. However, the improvement began only after the local treatment was changed; bathing was especially efficacious in this case.

Three patients with dermatitis herpetiformis improved markedly after one or two injections, but all sooner or later relapsed while under treatment. As this disease is considered a nervous manifestation, the early improvement might possibly have been due to mental suggestion.

In one case each of chronic urticaria and lupus erythematosus, we obtained no results.

While our series of cases is small, nevertheless each case has been carefully watched over a considerable period. We, therefore, feel justified in stating that autoserum therapy cannot have any very marked permanent effect in the dermatoses here considered. In the three cases of dermatitis herpetiformis, however, a marked temporary effect was obtained.

It is a point of considerable interest that the serum should separate very rapidly in the three cases of dermatitis herpetiformis and very slowly and poorly in the three cases of eczema.

TREATMENT OF BURNS OF THE EXTREMITIES

WITH SPECIAL REFERENCE TO THE PREVENTION OF DEFORMITIES AND PRESERVATION OF FUNCTION

CHARLES A. PARKER, M.D.
CHICAGO

It is a common observation that great deformities and serious interference with function frequently follow extensive burns of the extremities, especially when they involve the regions of joints. Burns of the axillary region leave the contracting scars that draw the arm against the body, preventing more or less completely abduction of the affected member. Burns of the groin cause flexion of the hip on the body. Burns about the elbows and knees produce only flexion deformities, as the flexors practically always overcome the contractures on the extensor surfaces. With the wrist and fingers the same general rule holds true that burns on the extensor surfaces produce much less interference with function by scars in these regions. Scars following burns at the ankle are more likely to produce equinus than calcaneus, and lateral deformities are apt to be caused. Burns of the feet and toes are likely to be less serious on account of their deformities than on account of the scar tissue interfering with the normal weight-bearing function.

Deep burns involving muscles, joint structures and bones, or causing complete loss of members, from the very nature of the primary injury, can offer only such imperfect recoveries as are compatible with similar destruction of tissue from other causes. Here the destruction is so great that the muscles and joints are no longer adapted to their proper functions, and even amputation itself may be necessary.

It is intended, rather, in the present discussion to consider the treatment of such burns of the third degree involving the limbs and their connections with the body, that besides destroying more or less extensively the skin over the affected region, leave the

deeper structures comparatively intact and ready to resume their functions when the surface is healed. I believe that *in this class of burns, however extensive they may be, as long as they are compatible with life, healing may and should be obtained without deformity and with good function.*

The sweeping character and the far-reaching importance of this declaration become strikingly apparent when we consider the many distorted and often useless limbs which result from extensive but superficial burns, that is, limited practically to the skin and its subjacent tissues, constantly coming to the surgeon for relief. And, too, the particularly unsatisfactory results of the treatment of the contractures of burns adds further emphasis to the supreme importance of their prevention.

The healing process in extensive burns, in spite of the various proposed methods of treatment, is usually a long one with the development of much scar tissue whose subsequent contraction is the ultimate cause of the deformity. In general, the longer the time of healing, the greater the amount of scar tissue; and the greater the amount of scar tissue, the greater the ensuing deformity, provided the situation is favorable for its development. As a corollary, the shorter the time of healing, the less severe is likely to be the resulting deformity.

From any and all standpoints, rapid healing is to be desired. This is of prime importance, and may be enhanced by various forms of skin grafting and local measures.

In extensive burns, however, at the best the time is often long and much scar tissue is formed. And here comes in the second principle of treatment, the prevention of contractures in the developing scars. These two factors, the rapid healing of the burns and the prevention of contractures in the developing scars, while in themselves suggesting nothing more than a common desire, when combined in the proper manner produce such gratifying results that the method should supplement or replace all previous methods of treatment where limbs are involved and contractures may occur.



Fig. 1.—M., Sept. 24, 1913, showing extent of burn.



Fig. 2.—M., Oct. 8, 1913, showing method of applying adhesive plaster.



Fig. 3.—M., Oct. 18, 1913, showing completed dressing with removable plaster-of-Paris splint.

To exemplify: In burns involving the whole thickness of the skin there is a slough to be thrown off before much healing or epidermization can occur. This may take two or three weeks or even longer. Most of the healing is delayed until this is accomplished.

This stage cannot be greatly shortened, as the separation comes from below as a natural reaction of the tissues. The cutting away of all sloughs over an extensive wound, as advocated by some, is a serious additional shock and not a safe rule of practice; nor is there logical evidence that it prevents the toxemia against which it is aimed.

Such dressings may be applied as are most easily changed and cause the least disturbance to the patient. I am inclined to use the plain wet dressing to facilitate the progress in this stage.

After the slough comes the aggressive treatment. Here the skin grafts can be used, and with varying degrees of success. Where they are successful, the first factor in the treatment is easy of accomplishment. How frequently, though, this is not effective either from lack of material or inability to provide a proper surface on which it may grow. These become the uninteresting hospital cases doomed to shifting services and an interminable round of experimentation with new and old methods and measures.

Continuous healing can be obtained in these cases and cures effected in very reasonable periods of time, when we compare them with similar instances requiring several years of treatment.

When the slough is removed, it is my practice to treat the wound, an ulcer, with adhesive plaster strips until it is finally healed. This does not interfere with skin grafts that can be laid under the strips if desired, but is used principally where grafting is inefficient or cannot be used, that is, in the large class of burns left wholly or partially without an epidermal cover. It is to the healing of these burns that I wish to give most of my attention, the healing of an ulcer following a burn.

Tissues grow only with heat and moisture. For practical purposes, a dry cell is a dead cell. The epidermis protects the soft structures beneath by its rela-

tive impermeability. A scab formed of dried serum, cells and bacteria is a good protection only when it is impervious and keeps the subjacent parts warm and moistened in their own serum. Over large surfaces it accomplishes this very incompletely, every movement breaking it, exposing more tissue to drying and death, and becoming itself eventually a prey to saprophytes with irritation of the tissues. It is a slow and unsatisfactory, if persistent, method, and accompanied by the largest amount of scar tissue with its accompanying contracting tendencies. It may be the only practical method of treatment in many types of burns, but is far from being the best where the adhesive plaster can be applied.

METHOD OF USING ADHESIVE PLASTER

To illustrate, let us take the case of a boy who, as part of his burn, had complete circular loss of the skin on the left leg from the groin to the ankle except an area above the knee about the width of a finger (Figs. 6, 7 and 8).



Fig. 4.—M., Nov 19, 1913, showing progress of healing.



Fig. 5. — M., Jan. 21, 1914, showing extent of healing and the abducted position of the arm.

After separation of the slough, ribbons of adhesive plaster from 1 to 1¼ inches wide and long enough to encircle the limb and lap slightly were placed around his limb from ankle to perineum, leaving no granulations exposed. To be more explicit, the first band was put around the ankle partly on good skin and partly on the burn, and the ends overlapped an inch or so. The next strip slightly overlapped the upper border of the first one, just enough to keep it from slipping on the wet tissues, and was carried around the limb like the first one. The third followed the second in a similar manner and so on till the area was entirely covered and had enough stability to stay in place and serve its function in keeping in the serum and preventing cells dying from dryness (compare Fig. 4). Over this were placed several layers of gauze to take up the secretion that worked out through between the strips at various places, although no arrangement was made for drainage. At first narrow strips were left open for drainage; but the granulations quickly occupied these areas, became exuberant and bled, and otherwise interfered with the healing; so the spaces were dispensed with entirely, with a much smoother course to the healing. Every day the gauze was changed as it became soiled. Twice a week—on my visiting days—the adhesive plaster was changed. This was easily accomplished by getting the blunt point of scissors under it at one end of the leg and cutting across all strips from the bottom to the top or the top to the bottom of the leg, when the plaster would fall from the leg as it was not adherent to the moist, or granulating surface.

Just here is where the first shock comes to the novice in this method. Of course there is a flow of pus from inside the plaster when it is opened, but there is very little left remaining on the limb as it is so fluid it comes off with the plaster and drops from the limb itself. Such as remains on the healthy skin is sponged off and the plaster is renewed in the same manner as it was first applied. Antiseptics must not be used in any manner that might result in their touching the wound itself, for they can only do harm in destroying new epidermal and other cells that are so necessary for healing. The wound will always remain infected and must be healed under that condition rather than abused under the impression that it can only be healed when aseptic or approaching an aseptic condition.[1]

The adhesive plaster on convex surfaces absolutely prevents the development of exuberant granulations, thus allowing a continuous growth of epithelium from the margins. This mechanical effect is an important one, as any one who has had to control this condition knows. It does not adhere to the exposed surface, which is always moist, so that it can be removed with the least injury to the new tissues, bleeding rarely occurring. It prevents tissues growing into the mesh of gauze with the consequent pain, blood and loss of valuable cells on removal. The ease with which it can be applied and removed is no small matter in the care of large burns, as the dread and pain of changing dressings materially reduces the resistance of the patient, particularly of children, and may easily be the determining factor for recovery or death.

The danger of absorption of pyogenic products, I believe, is no greater than in other forms of treatment, as under a complete scab, the most effective condition for natural healing, there is the same closed container around the affected area. On the other hand, the pressure of the strips in all probability controls the amount of secretion to some extent by its direct pres-

1. Drops of serum obtained from the surface of such a burn a few minutes after the removal of the adhesive plaster have been examined microscopically without showing microbic content, and cultures from similar droplets have remained sterile; so that although this is by no means always the case, it does show the striking propensity of the tissues to take care of themselves when put into the best physiologic condition for resistance.

sure effect on osmosis. Surplus secretion is not a necessity of healing; it is only an incident; and its prevention is more conservative than supplying continuous means for its removal.

I have written thus at some length and detail on this phase of treatment, as the rapidity of healing is an important factor in the control of the subsequent contractures.

THE PREVENTION OF CONTRACTURES IN DEVELOPING SCARS

This is another instance of curing by prevention. The burned areas show little or no tendency to contractures previous to healing or epidermization, but contractures rapidly develop with epidermization and may be very extensive and deforming by the time the whole area is healed. These contractures can be prevented by holding the limbs in the proper positions constantly during the long stage of healing and for several months thereafter. As a general rule, the limbs should be held with all joints in extension, the arm abducted from the shoulder, the elbow, wrist and fingers extended and the lower limb in a straight line with the body, the ankle at right angles to the leg and the toes extended.



Fig. 6.—R. O., Sept. 24, 1913, showing condition of burn after three months' treatment.



Fig. 7.—R. O., Nov. 5, 1913, showing removable plaster cast applied to prevent contractures after application of dressing.

Burns on the extensor surfaces only seldom cause deformities or much limitation of motion, and give much less concern in treatment; yet they heal much more rapidly when kept free from motion. In fact, *fixation is one of the most important factors in securing rapid healing.*

Plaster of Paris has served my purpose for fixation of any part of a limb.

After a burn is completely dressed, as mentioned in the earlier part of the paper, a circular plaster-of-Paris splint is applied with the limb in the desired position. When this is hard, it is cut into halves or in such manner that it can be removed for dressing, after which it is reapplied and thus used throughout the healing, if it is six months or a year or more. For the shoulder and axilla, a cast around the body with an extension laterally and upward for the arm was used effectively throughout a period of six or seven months. The arm piece had a removable upper portion, and the body piece was opened on the side opposite the abducted and extended arm. This was easily removed for dressings and reapplied after its completion. For burns of the groin, the body and affected limb should be similarly controlled during the healing.



Fig. 8.—R. O., Sept. 2, 1914, showing healed burn with straight leg.

In the case of H. M., both of whose legs were involved with almost complete loss of skin from the ankles to the perineum, the healing took place in about five and one-half months, the child in the meantime passing through a severe attack of scarlet fever.

This child wore casts at night for several months after leaving the hospital. His gait was natural, as the legs remained extended and flexible, but flexion could only be made to near a right angle, as the thickened tissues folded up behind the knees interfered with further movement in that direction.

The little girl, M., was extensively burned on the right chest, shoulder and upper arm, involving the skin of the elbow. The chest area measured about 10 by 10 inches.

The effect of six and one-half months' treatment is seen in the successive photographs (Figs 1-5) with the position of the arm in abduction. The entire arm had healed, the top of the shoulder, most of the side and part of the axilla, when an attack of chickenpox completely destroyed resistance, some skin was lost and the child died. The pictures preserve the evidence of what had been accomplished, and show the method.

A boy, A. S., had been treated about three and one-half years for an extensive burn of the right leg, when he came under my care in January last year, with coarse cordlike scars behind the knee, forming an inelastic contracture of about 30 degrees, and a disturbing toe drop. The entire region of the knee cap and a surrounding region about 3 inches in diameter were granulating and had never been healed. With local adhesive plaster dressings and a series of casts, the limb was entirely straightened in the course of two or three months, when a tenotomy was performed to bring up the foot, which was then held straight in plaster. The entire region, which was very slow in healing, was completely covered with firm epidermal covering Sept. 7, 1914.

The boy R. O. (Figs. 6-8), came into the Children's Memorial Hospital, June 28, 1913, and was entirely healed Sept. 2, 1914, with complete extension of the knee and enough flexion for all practical purposes. He will wear a night splint for a while till we believe we are safe from a recurrence.

All of these cases had skin grafts which started out well but often melted entirely away after existing for a week or two. As a matter of fact, most of the healing has been done from the edges and must of necessity have been quite continuous to cover such large areas in such comparatively short periods of time. The areas of complete destruction of skin in the left leg of R. O. must have been at least 180 square inches, as the affected part of his leg measures 20 inches long by an average circumference of 9 inches, all of which was entirely denuded except an area about as wide and half the length of the index finger just above the patella. This boy had other extensive burns on the buttock and the leg which healed meanwhile.

The scars in all cases treated from the start have remained comparatively flexible and thin, and there has been no evidence of contractures throughout the healing process and in the months that I have observed them afterward. I have not a large number of cases to report, rather, principles which I believe can be supported; and, if they can be, it puts a new responsibility on us, as we must in the future in the presence of such knowledge regard the severe contractures of limbs following the class of burns described at the outset of the paper an evidence of neglect of proper

measures of treatment, either on the part of the physician or the patient or the one in control of the case.

The illustrations show the methods of applying dressings and casts and the burns in various stages of healing.

7 West Madison Street.

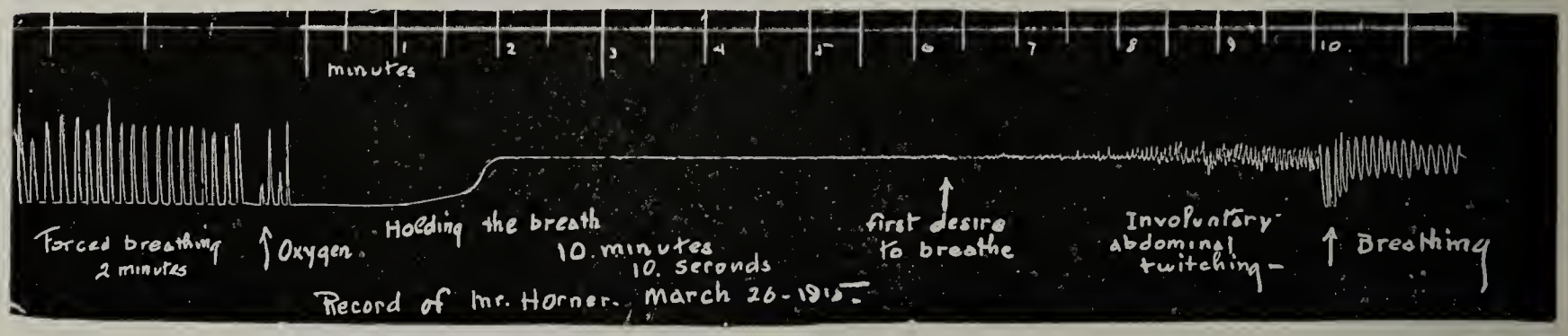
EXPERIMENT IN RESPIRATION

SAXTON POPE, M.D.
Instructor in Surgery, University of California, College of Medicine
SAN FRANCISCO

In the course of some experiments in respiration bringing out the theories advanced by Yandell Henderson, an undergraduate student in the University of California Medical School held his breath ten minutes.

This was accomplished while having the student lie on a table, with a pneumographic belt attached about his thorax and communicating with a kymograph.

Slow, deep inspirations were taken for two minutes; this eliminated a good portion of the carbon dioxid from the blood. A breath of oxygen was then taken and the time marker started. The tracing is here shown. A slight relaxation of the respiratory muscles is indicated at two minutes. No desire to breathe was experienced until six minutes had elapsed. The



Tracing of experiment in respiration.

belt having been placed over the diaphragm, the pulse rhythm is shown throughout. From this time on, the conscious effort to hold the breath increased until an involuntary twitching of the abdominal muscles was quite apparent; but no respiration took place. All the time the pulse was full and strong, the color good. No oxygen want appeared.

At the expiration of ten minutes some vertigo occurred and the impulse to breathe having become imperative, the first inspiration was taken—ten minutes and ten seconds having elapsed. No great hyperpnea, no weakness, no heart changes appeared. The student rose from the table and went about his class work. Mr. Horner, on whom this experiment was tried, is a swimmer and has participated in underwater contests. So far as I know this is the longest period of voluntary suspension of respiration on record.

Good Air.—It is quite clear that the principal thing which makes the air of confined spaces harmful, aside from the special problems presented by dust and fumes, is overheating, especially when combined with excessive moisture. Any temperature over 70 F. puts a strain on the heat-regulating mechanism of the body, keeps the blood in the skin away from the vital organs, and produces far-reaching impairments of the efficiency of the nervous system, the digestive system, and the body as a whole.—Winslow.

BLOOD CHANGES IN WORKERS WITH THE ROENTGEN RAY, AND APPARATUS FOR PROTECTION

PRELIMINARY REPORT *

M. MILTON PORTIS, B.S., M.D.
CHICAGO

It is generally known that workers with the Roentgen ray are exposed to danger. Just how much the danger is, and just how protection can be best secured, still remain a problem. With the recent popularity of the fluoroscopic method of examination, the danger to the operator becomes more serious.

The majority of roentgenologists know relatively little about the systemic and blood changes to which they are exposed, because they do not want to know about them. Complete protection probably cannot be attained by any of the known methods. Adequate relative protection, however, can be accomplished with proper modification of the apparatus as it is now used. The problem is a twofold one: protection against, first, the primary ray, even though it is filtered, and second, the secondary ray, which is present in appreciable amount in all parts of the room.

Experiments have shown that in normal animals, blood changes can be produced by the Roentgen ray. It is rational to assume that individuals exposed to small doses for a long time should also show blood changes. In Vienna some years ago, a roentgenologist died of lymphatic leukemia, and later another died in Munich of the same disease. One writer reports ten cases of leukemia in Roentgen workers. Siebenrock observed a similar case in a man working with radium.

The published accounts of the animal experiments do not all agree. All report changes in the number of leukocytes. Usually, this is a reduction in the number in varying degree, according to the time and frequency of the exposure. Heineke exposed mice, guinea-pigs and rats to the Roentgen ray, and observed within a few hours a high-grade disturbance of the lymphocytes and lymphatic tissues, including the lymph glands, spleen and the lymphatic structures of the intestine. Later on, bone marrow changes were manifested.

Other observers record changes of a different type in the white blood cells, which are more in accord with the findings in the blood of the Roentgen workers examined by me. This report covers a number of cases observed for the past year, but only in two cases was a blood examination procured before the work was begun. The later paper will include more cases examined under such conditions. The leukocyte counts were all made an hour before meals. I am indebted to

* Read before the Chicago Roentgen Society, June 4, 1915. The complete paper will be published in the Archives of Internal Medicine.

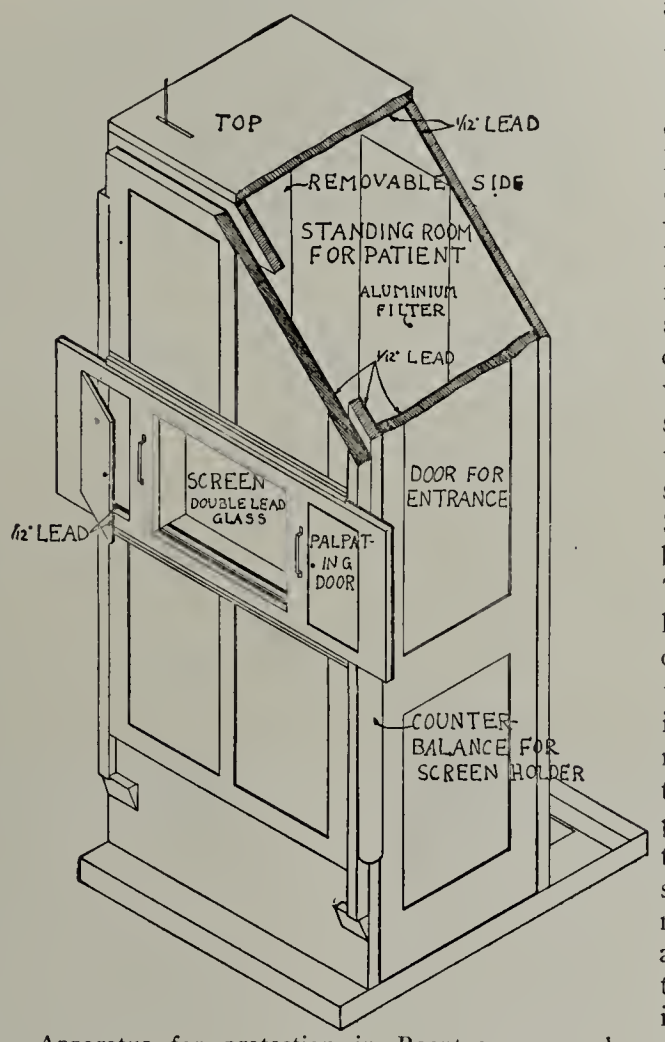
Drs. Capps, Beifeld, Moody and Coleman for most of the blood examinations. In the later paper, Dr. Beifeld will present the details of many blood smears studied, and submit drawings of peculiarities of various cells.

There has not been a uniform blood picture. The majority, however, show a diminution of the total number of leukocytes, which in some cases has been progressive. The lymphocytes were commonly relatively increased, and, at times, this was the most pronounced finding. A closer examination of the lymphocytes showed abnormal varieties described by some as unripe forms and by others as irritation forms. Myelocytes were found in three of the cases in small number. The red corpuscles and platelets were not affected, and the hemoglobin only slightly reduced.

Professor Milliken, of the University of Chicago, was kind enough to make some observations in my Roentgen-ray room before any changes were attempted. Both the primary and secondary rays were estimated by means of the gold-leaf electroscope. The time taken for the gold-leaf to fall through a given distance was used as a standard. It was suprising to observe the amount of secondary ray in various parts of the room.

After much study, the apparatus shown in the diagram was devised by Mr. L. R. Curtis, superintendent of St. Luke's Hospital. On all sides, the box is enclosed with one-twelfth inch lead, and the screen is covered by two pieces of three-sixteenth inch lead glass. Professor Milliken repeated the observations on the modified apparatus, and no appreciable primary or secondary rays were found in any part of the room. The horizontal fluoroscope is now being modified in a similar manner.

In conclusion, it may be said that although real danger of systemic changes in Roentgen workers exists with unprotected apparatus, yet with proper protection, there is comparative safety. The studies thus far have shown a varying degree of susceptibility to the effects of the Roentgen ray. It is not intended to discourage fluoroscopic examinations, but rather to urge all workers to use proper precautions.



Apparatus for protection in Roentgen-ray work.

122 South Michigan Avenue.

Child Labor in the Carolinas.—When I consider what remains to be done for the protection of the children in North and South Carolina I am forced to conclude that up to the present we have not progressed very far. North and South Carolina have a larger percentage of child workers in the manufacturing industry than any other states in the country. If the persons engaged in these industries should march by, every ninth person would be a child under 16. These children leave school forever at 12—often younger in North Carolina where there is practically no enforcement—to work eleven hours a day in our factories.—From an address by Wiley H. Smith, *National Child Labor Conference.*

A CASE OF INTUSSUSCEPTION DUE TO A FIBROMA OF THE ILEUM*

JOHN W. MEANS, M.D.

AND

JONATHAN FORMAN, M.D.

COLUMBUS, OHIO

Benign neoplasms of the intestinal canal are not common enough to be placed in the category of ordinary occurrences, if the so-called adenomatous polypi are excluded. According to Mallory,[1] these polypi are "probably best regarded as congenital anomalies." The report of this case is of interest and seems justified, in view of the fact that only a very small number of similar cases have been recorded in literature. The clinical aspects of the case are submitted by Dr. Means and the pathologic findings by Dr. Forman.

History.—Mrs. F., white, aged 37, entered my service in the Protestant Hospital, Feb. 18, 1915, complaining of colicky pains in the abdomen and vomiting. The present illness began February 9, when she was awakened in the middle of the night from a sound sleep by severe abdominal cramps. She was nauseated and soon vomited. She got out of bed, drank some water and immediately vomited this. At this time the vomitus consisted of a dark green-looking fluid. She was disturbed most of the night but finally dropped off to sleep again. The next day she was somewhat relieved, but had frequent short attacks of colic in the lower abdomen, which were always accompanied by vomiting. The bowels, which had been rather loose two or three days prior to the onset of pain, became constipated, and had moved only two or three times as the result of enemas since February 9. The patient had not passed any flatus, although her abdomen had been somewhat distended. Attacks of colic and vomiting had alternated with intervals of comparative ease. Fearing that the attacks were brought on by eating, she had taken but little food. On the night before admission, the patient was awakened from sleep by an attack similar to the first one, but this time the vomitus was foul-smelling material and great in quantity. Since this, vomiting had been continuous and the vomited matter foul. The patient said that she had become very much weaker in the last few hours.

The patient was the mother of two healthy children. Her menstrual cycle was normal. Family history was negative. The patient had always enjoyed good health. The bowels up until two or three days preceding the primary attack had been regular, never requiring the use of a cathartic. The patient says she had never passed any blood to her knowledge. Examination of the blood at time of admission revealed 23,000 leukocytes, 89 per cent. of which were polymorphonuclear and hemoglobin 90. Urine was negative.

Examination.—Patient is well nourished; rather fleshy. Skin and mucous membrane appear somewhat pale. Examination of the heart and lungs, negative. Examination of the abdomen shows it to be quite distended, especially in the upper portion. Percussion note is tympanitic all over, more

* From the College of Medicine, Ohio State University.

1. Mallory: Principles of Pathologic Histology, 1914, p. 487.

pronounced above umbilicus. There is no distinct rigidity of the musculature although the right side is more resistant than the left. Patient complains of but very little pain on palpation. In the right iliac fossa, there is an area of tenderness on deep pressure. There are no masses palpable.

The diagnosis rested between intestinal obstruction and appendicitis, but a careful review of the history and physical findings seemed to point toward the former. Immediate operation was advised and accepted

Operation.—Under ether anesthesia, a right rectus incision was made; when the peritoneum was opened, the intestines were seen somewhat distended, although not discolored. Further examination revealed a mass in the right iliac region which was found to be the cecum with the ileum intussuscepted through it and up into the colon. The intestinal coats appeared normal, there being no infiltration or exudate, showing that the intussusception was probably of very recent occurrence. The tip of the intussusceptum was easily found just below the hepatic flexure, but when reduction was attempted in the usual manner, it did not slip out so readily as a recent intussusception should. Search for the reason of this revealed a small round mass about the size of an egg further up in the colon, which seemed to be attached by a pedicle to the tip of the intussusceptum. This, when pushed downward, caused an easy reduction. With reduction complete, the tumor rested in the ileum about 10 inches from the ileocecal valve, causing bulging of the intestinal walls. Resection of the bowel was unnecessary. A longitudinal incision was made through the intestinal wall directly over the tumor, which was found to be fastened by a pedicle, half an inch in diameter and 1 inch in length and apparently arising in the submucosa. The base



Fig. 1.—Gross specimen.

On section, the mass appeared edematous, giving off an abundance of clear watery fluid. The covering appeared to be an intact mucous membrane. The tissue was placed in the appropriate fixatives, cut and stained with hematoxylin and eosin, with phosphotungstic acid hematoxylin, and with thionin after the method of Hoyer for the demonstration of mucin.

Microscopic examination showed the tumor to be composed of cells which are widely separated by the fluid in the tissue (Fig. 2). There was a rather marked infiltration with cells of the lymphocytic series, especially with the lymphocytic type of plasma cell and with only an occasional polymorphonuclear neutrophilic leukocyte. The mucous membrane was intact and normal in its position and appearance, except for its edematous condition (Fig. 3). The tumor cell presented an elongated, flat nucleus. The cell had elaborated both fibroglia fibrils and collagen fibrils. The collagen fibrils were separated into strands by the fluid of the tissue. The Hoyer stain for mucin was negative.

Diagnosis.—A pedunculated fibroma, which had become edematous, growing in the submucous coat of the ileum and projecting into the lumen of the intestine.

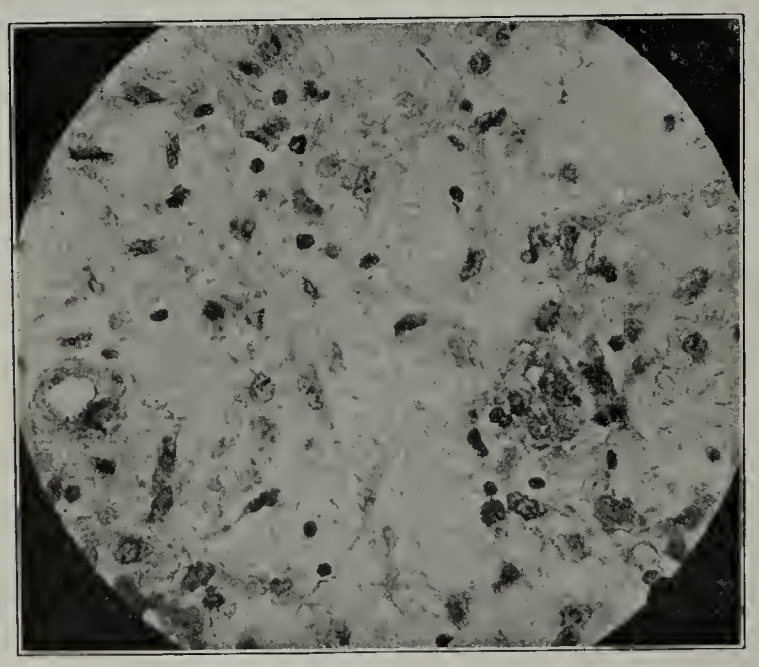


Fig. 2.—Photomicrograph showing the cell type of the tumor.

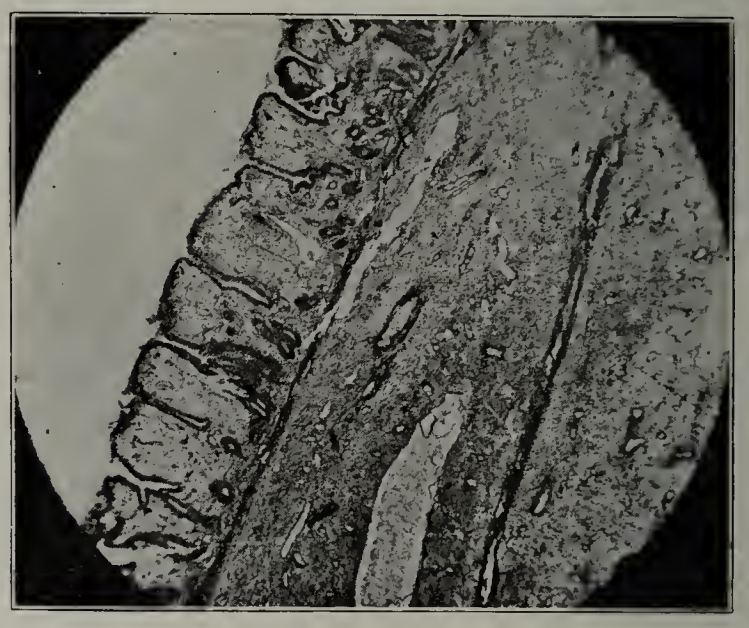


Fig. 3.—Photomicrograph showing the relation of the mucosa to the tumor.

was readily dissected out, the tumor removed, and the submucosa closed by a purse string. The ileum was then sutured and the abdomen closed in the usual manner. The woman made an uneventful recovery and was discharged from the hospital in two weeks.

Pathologic Findings.—The specimen was a mass measuring 3.5 by 4 by 3 cm., exhibiting a reddish surface covered with small villous projections giving it a resemblance to the dorsal surface of the tongue (Fig. 1). This covering was continuous over the mass except at one end. There was an area here 2 by 1.5 cm., which presented a raw surface, evidently the point of attachment.

There are certain features in this case, aside from the rarity of the type of growth, which make it of considerable interest. In the first place, the woman did not reveal any history of such a tumor prior to the onset of the present trouble. Close questioning after operation failed to call to her mind anything which might indicate intestinal disturbance. The size of the tumor, which was sufficient to distend the lumen of the bowel, would suggest long duration, and it would seem that some manifestations should have been present.

Another interesting point is the progression of the symptoms from those of an intermittent obstruction with its accompanying attacks of colic, to an intussusception and complete obstruction. Based upon a comparative study of teaching specimens of intussusception produced on dogs, the intussusception in this case could not have been present more than five or six hours, for had a longer time elapsed, the bowel coats

would certainly have shown evidence of infiltration and congestion.

The mechanism in the production of this intussusception deserves some consideration. It is quite possible that, in consequence of the intermittent obstruction with its increased peristalsis and the attempts of the intestine to push the tumor mass forward, traction on the attachment of the pedicle caused a contraction ring which allowed the part of the bowel immediately above to commence the process of invagination.

The type of intussusception here is ileocolic, which, according to statistics, comprises only about 8 per cent. of all cases. It is the only type of intussusception in which the progression takes place at the expense of the intussusceptum. The reason for the high leukocytosis is hard to explain from the clinical and pathologic findings, as nowhere were there any evidences of inflammatory change.

A search through the current literature verifies the statement of textbooks as to the rarity of this growth. Dewis,[2] in 1906, collected thirty-six myomas, myofibromas and fibromas occurring in the intestine. Eleven of these were situated in the ileum. Only five were fibromas. Elliott and Corscaden,[3] in 1911, reported 300 cases of intussusception. Myxomas and fibromas had been the etiologic factor in eleven cases of this series. Since there is some question as to whether myxoblastomas should be placed in a class distinct from fibroblastomas, they are included as a group. In 1912, Haggard[4] referred to a case occurring in the practice of F. S. Watson of a fibroma measuring 2 by 3¼ inches. In 1913, H. O. Pantzer[5] reported a fibroma measuring 1½ by 2½ inches occurring in a girl aged 15. These are the only cases of intestinal fibroma which we have been able to find reported.

2. Dewis: Boston Med. and Surg. Jour., Oct. 18, 1906.
3. Elliott and Corscaden: Ann. Surg., liii.
4. Haggard, W. D.: Tumors of the Small Intestine, THE JOURNAL A. M. A., July 27, 1912, p. 253.
5. Pantzer: Am. Jour. Obst., 1913, lxix, No. 5.

Elevator Accidents.—The number of persons injured and killed in the United States by preventable elevator accidents is appalling, and is increasing constantly, owing to the never-ceasing erection of buildings within which countless elevators are installed, adding greatly to those already in use throughout the United States. It was estimated in 1912 that there were in that year between 7,000 and 8,000 fatal accidents on elevators, and about 10,000 persons injured. From 1908 to 1912 in New York City alone, upward of 400 persons were killed on passenger and freight elevators, and a greater number were injured.—*Safety Engineering.*

BLASTOMYCOSIS OF THE EYELIDS WITH REPORT OF CASES*

EDWARD JACKSON, M.D.
DENVER

This paper has been written to place on record two cases of a disease hitherto supposed to be rare, and still inadequately noticed in the periodical literature and text-books on ophthalmology, and to call attention to its clinical importance, the disastrous results, through distortion of the lids, of failure to recognize it, and its excellent prognosis under proper treatment.

REPORT OF CASES

CASE 1.—J. A. R., aged 68, native of Ohio, resident many years in Colorado. Other history unimportant. The present disease began in 1911 as a small nodule on the right cheek. Since that time he had been under the care of four competent ophthalmologists. The disease had been slowly, but rather steadily, progressive, and the diagnoses given had been lupus and skin cancer.

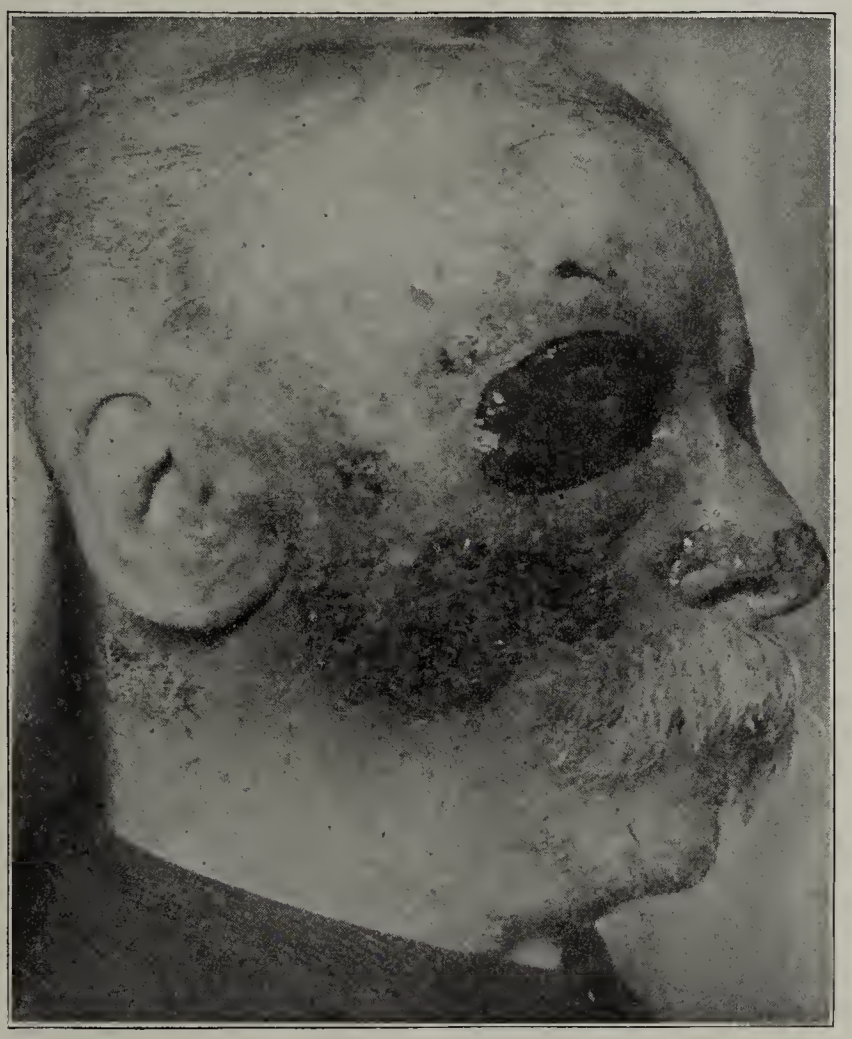


Fig. 1 (Case 1). — Dark area is the everted conjunctiva. Largest active lesion on cheek. Others on nose and about the ear. Scar tissue covers whole of right forehead.

March 15, 1912. A superficial cicatrix occupies the entire right side of the forehead and scalp to the median line, and back to the occiput. On the right side both lids are completely everted by traction of the cicatricial skin. The upper lashes occupy about the normal position for the eyebrows; the lower lid is drawn down and out, so that the lower punctum is 10 mm. from its normal position; the conjunctival sac is completely everted. The lid margins are flattened out so that the conjunctiva and skin of the face present one continuous plane of tissue. The cornea is gray, opaque, and the sclera hidden by thickened conjunctiva. The cicatricial skin is not adherent to the deep tissues. On the left side a patch of scar tissue has drawn the upper lid away from the eyeball, so that the nasal third of its margin is drawn up over the upper inner angle of the orbit. The left cornea is still readily covered by the outer portion of the upper lid, and the eyeball is normal. Vision: Right, light perception; left, 4/8 mostly.

Active lesions, such as will be described in connection with Case 2, were present on the lower part of the right cheek, right side of the neck below the ear, right side of the nose, and at the upper, outer margin of the orbit. These lesions were sharply bounded, with a margin elevated about one-eighth of an inch above the neighboring skin surface. The examination of pus from the active lesions showed the presence of numerous budding organisms, such as characterize blastomycosis.

On account of the extensive skin lesions away from the eye, the patient was referred at once to Dr. A. J. Markley, to whom I am indebted for the accompanying picture, Figure

* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1, and some notes on the case. The most extensive active lesions were curetted under cocain infiltration and dressed with boric acid ointment. Potassium iodid was given in doses rapidly increased to the limit of toleration. By the middle of May all active disease had disappeared. But some of the scars showed small areas of trophic ulceration.

Massage of the scars, particularly of those dragging on the left upper lid, was continued, and plastic operations were suggested. Irritation of the exposed conjunctiva required the use of boric acid solutions and occasional applications of silver nitrate and glycerole of tannin. Operation was deferred while the patient spent the summer in his old home in the East. On his return he was suffering from chronic cystitis, with renal involvement, and he died in September. There was no indication of systemic blastomycosis.

CASE 2.—Mrs. E. R. S., aged 39, was referred to me by Dr. H. B. Sprague of Salt Lake City. Her previous history was negative. She had noticed a swelling which she thought a stye on the left upper lid the middle of April, 1914, which gradually extended under treatment, at first by her family physician, and then by two specialists, successively. The lesions grew progressively worse, and about May 1 a spot appeared on the lower lid near the nose. Later a third lesion appeared toward the outer end of the upper lid.

The treatment included various operations: Removal of the growth by cutting; pus squeezed out with forceps; ten openings in the upper lid; and opening and scraping the lid under ether. The second specialist operated on the lower lid under cocain. The lesions continued to extend, and great pain was complained of, for which an anodyne was taken at night.



Fig. 2 (Case 2).—Lesions progressive for seven months. Cicatricial contraction still comparatively slight.

Nov. 23, 1914 (more than seven months after the initial lesion). Both lids are swollen to double their normal thickness and wrinkled. There are three ulcers as shown in Figure 2, the first in the nasal margin of the upper lid, 15 mm. long by 6 mm. broad. About the outer canthus one 7 mm. by 5 mm. On the lower lid one 10 mm. by 8 mm. These all presented the same general characteristics. The surface presented large, rather flabby granulations, between which a moderate purulent discharge could be pressed out. Near the edge the granulations were covered at some points by brown scabs. The edge of the lesion was elevated and thickened, suggesting the edge of a rapidly extending epithelioma, but more acutely inflamed, quite soft to touch, and containing at many points minute abscesses, 1 or 2 mm. in diameter, or smaller, from which pus was readily pressed out. Smears from the pus showed a few diplococci and the rounded and budding figures of the so-called blastomycetes. Her vision and eyeballs were normal. The conjunctiva was only slightly hyperemic.

Nov. 24, 1914. A 4 per cent. solution of silver nitrate was applied to the whole surface of each of the ulcers, and potassium iodid was given, 10 grains three times a day; the dose to be increased each day.

November 28. The secretion of pus was greatly diminished and the granulations looked healthy.

December 18. The lesions had healed completely, three weeks after she commenced to take the iodid. The thickening of the lids is almost gone. Near the middle of the upper lid there is a slight notch where tissue was excised at one of the operations; and some displaced lashes that may be drawn against the cornea and require subsequent treatment. Otherwise she is quite well.

The maximum dose of iodid was 37 grains three times a day. This was now discontinued. She has remained quite well since. There was no reason to suspect either syphilis or tuberculosis in this case, and the diagnosis of rheumatism, made by one of her attendants, seemed to have no substantial basis.

HISTORY

At the meeting of the American Dermatological Society in 1894, Gilchrist presented sections of a skin lesion which contained the double-contoured, highly refractive bodies subsequently identified as blastomycetes. Six weeks later Buschke described a skin disease in which he had found coccidial bodies, which Busse later described in *Virchows Archiv* under the title "Saccharomyces Hominis." This case, besides the skin lesions, showed systemic infection, and at the necropsy, lesions of lungs, kidneys and spleen.

Later Gilchrist and Stokes[1] reported a case in which the lesions involved the skin of the lids, causing destruction of the lids of both eyes. The importance of the disease to ophthalmologists was brought out by the papers of Wood[2] and Wilder,[3] who each reported a case occurring in his own practice. Wood brought together nine cases, including that of Wilder, in which the eyelids had been involved in this disease. Since that time the condition has been described and illustrated in the textbooks of Ball and Fox, and briefly described in those of Weeks, de Schweinitz, Wood and Woodruff, and Jackson, but it still remains unnoticed in the majority of textbooks on diseases of the eye published within the last three years. The best account is found in the American Encyclopedia of Ophthalmology. The only allusion to it in any European work is a bare mention in Axenfeld.

ETIOLOGY

The constant finding in the abscesses of this disease of an organism somewhat related to yeasts and the moulds, and its pathogenic character, as proved by experiments, render it certain that this organism is the essential factor in causation. Just what place this organism should be assigned in any botanical scheme is still uncertain. The name "blastomycosis" or "blastomycetic dermatitis" has been proposed and used in a tentative way. That it was one of the saccharomycetes was the suggestion of Busse.[4] Ricketts[5] concluded that it was an oïdium. Ophuls[6] suggested for the allied organism he had to deal with the name coccidioides. De Beurmann and Gougerot[7] proposed to class such organisms in the genus called *Zymonema*. Whitman,[8] who has made the most advanced study of the subject, concludes that the organism may belong either to the *Manascaceae*, or the *Exoascaceae* of

1. Gilchrist and Stokes: Bull. Johns Hopkins Hosp., 1896, vii, 129; Jour. Exper. Med., 1898, iii, 53.
2. Wood: Ann. Ophth., 1904, p. 92.
3. Wilder, W. H.: Blastomycosis of the Eyelid, THE JOURNAL A. M. A., Dec. 31, 1904, p. 2026.
4. Busse: Virchow's Arch. f. path. Anat., 1895, cxl; cxliv.
5. Ricketts: Jour. Med. Research, 1895, i, 373.
6. Ophuls, W.: Coccidioidal Granuloma, THE JOURNAL A. M. A., Oct. 28, 1905, p. 1291.
7. De Beurmann and Gougerot: La Tribune méd., 1909, xlii, 501.
8. Whitman: Jour. Infect. Dis., 1913, xiii, 85.

Engler and Prantl. But he points out that only a study of the plant in its natural habitat can settle the question of its botanical relations.

Slight differences have been observed in the growth and reproduction of the organisms obtained from different cases; and it is not unlikely that two or more different species exist, all pathogenic, but differing as to the clinical picture they produce. This view is supported by the rather sharp line of demarcation between cases in which only the skin seems to be affected, and those of so-called systemic blastomycosis. The former continue superficial without any systemic manifestations for many years, and are curable without relapse. The latter very generally begin with pulmonary symptoms, or relatively deep-seated abscesses, are almost always fatal, and sometimes run their course in a few months.

Sometimes the history of an injury is given through which the invading organism is supposed to have found entrance. In both my cases such history was lacking, and in the second any previous local injury was positively denied. My two cases represent both sexes, but the great majority of recorded cases have occurred in men, though a few have been in women. The youngest patient on record (Kessler[9]) was a girl who became affected when between 4 and 5 months old, and was completely cured before she was 11 months old. My first case, infected when 64 years old, is the latest in life that I have noted. A large proportion of the patients have followed occupations that exposed them to contact with low vegetable forms of life, but no particular occupation seems to be responsible for any considerable proportion of cases.

DISTRIBUTION AND FREQUENCY

This disease has sometimes been called the "Chicago disease," because of the earlier cases, a very large proportion were reported from that city. But among these cases were many persons who, in all probability, became infected in Wisconsin, Iowa, Indiana, and even in the Southern states. The first case came from Baltimore. Others have been reported from Philadelphia, New York, Boston and New Orleans. My own cases represent Denver and Salt Lake City. A series of cases of systemic blastomycosis has been reported from California, and it has been claimed (Rixford[10]) that these differed from other forms of blastomycosis, and they have sometimes been spoken of as the "California disease."

It seems more probable that the apparent frequency of the disease in certain centers is due to greater frequency of its recognition than to any restriction in the geographical distribution. My two patients have been seen within three years. Judged by my own experience, six oculists have failed to recognize these cases to one who happened to have them sufficiently in mind. Gilchrist's first case was long treated by Duhring as one of typical scrofuloderma. Kessler, making his first report of a case, states that he has previously seen two similar cases. If, as seems certain, these cases are widely distributed, and have usually passed unrecognized, the condition is certainly much more frequent than the published cases would indicate.

The local disease seems to have a special predilection for the lids. Pusey[11] states that of nine cases of blastomycosis which have come under his care, six showed lesions on the lower lid. This proportion is much higher than holds for the mass of reported cases. Wood concluded that one-fourth of the cases affected the lids, and probably this is not too high a proportion for the cases that are not systemic.

DIAGNOSIS

This may ultimately rest on the microscopic findings of the organism. But the clinical history and appearances of the case are sufficient to indicate its character with great certainty. The active lesion at once suggests epithelioma. But the infiltrated margin is soft and contains minute abscesses throughout its whole extent. Similar abscesses are to be found in the floor of the ulcer. The whole appearance of the lesion as seen on the patient, or represented in photographs or plates, is different from that of any other lesion that we encounter about the lids.

In making the diagnosis, epithelioma, tuberculosis and syphilis are to be excluded. No doubt some of the cases reported as striking cures of skin lesions of the lids by potassium iodid, in which the diagnosis of syphilis was based on the therapeutic test, have really been cases of blastomycosis. It is also probable that many of the older cases of tuberculosis or lupus affecting the lids were of this character. If the disease is borne in mind, it is not likely to be overlooked. When it receives proper attention in our text-books it will be recognized as quickly and certainly as any of the important inflammations involving the lids.

TREATMENT

Briefly, this is the administration of potassium iodid in doses rapidly increased toward the limit of tolerance. This method was first suggested by Bevan.[12] In both of my cases it constituted practically the whole of the treatment. The curetting of the lesions or application of nitrate of silver, or similar solutions, may bring about a condition more favorable to healing. But the iodid is the essential agent, as the history of Case 2 illustrates. The testimonay on this point with reference to cases of skin blastomycosis is almost unanimous. The experience in systemic blastomycosis has tended to throw doubt on it, since many of these cases have gone on to a fatal termination, in spite of very large doses of potassium iodid. But a close examination of case histories seems to show that in the systemic disease, although it may differ essentially from the disease here under discussion, the few cures and instances of marked temporary improvement have occurred after administration of potassium iodid.

The beneficial effects of other methods of treatment, as the administration of copper salts, and the application of the Roentgen ray, have been reported of cases in which the iodid was also used. The value of the drug rests wholly on an empirical basis, but may well be compared with that of mercury in syphilis, or quinin in malaria. Attempts at vaccine treatment have been made,[13] but the best results were observed while the iodid was being taken. However, the injection of vaccines was followed by a distinct general and local reaction, and the experiments in this direction may yield valuable results.

Except through involvement of the lids, blastomycosis seems to have little tendency to affect the eyes.

9. Kessler, J. B.: Blastomycosis in an Infant, THE JOURNAL A. M. A., Aug. 17, 1907, p. 550.
10. Rixford: Tr. Am. Surg. Assn., 1914, xxxii, 99.
11. Pusey, W. A.: Tr. Sec. on Ophth., A. M. A., 1904, p. 389.
12. Bevan: Brit. Jour Dermatol, July, 1899
13. Stober, A. M.: Systemic Blastomycosis, Arch. Int. Med., April, 1914, p. 509.

Generally the conjunctiva is involved only through the exposure produced by eversion of the lids. Churchill and Stober[14] report a case of systemic blastomycosis in which the conjunctiva of the right eye was red and edematous five weeks before death. Attempts to elicit an ophthalmic reaction similar to that obtained with tuberculin have failed.†

REFERRED PAIN IN FLATFOOT

MAX STRUNSKY, M.D.
NEW YORK

Referred pain in flatfoot and weak feet is being constantly overlooked, especially when the referred pain is in a remote part of the body or when the arches to all appearances and tests seem normal and may even be higher than normal. The pain, however, must indisputably be a symptom of arch strain, since the proper support of the arches brings relief from the pain which heretofore resisted firmly all known therapeutic means.

Lately I met a striking example of such a case.

Case 1.—Man, aged 26, baker, for two weeks was compelled to give up his work entirely because of a distressing lumbago which had been plaguing him for some time. An examination showed that the spine was not in the least tender, nor was there any spasm of muscles. Seated in a chair, he could easily bend far forward so that inflammation of the vertebrae was ruled out. Sacro-iliac disease was eliminated, because with his knees stiff he could bend forward till his finger tips touched the ground. He had no sciatica, because there was not the least tenderness over the course of the sciatic nerve, no matter how hard we pressed. The cycle of extreme hip movements was unimpaired. There was no inflammation or static disturbance of the feet. An imprint of the arches found them to be normal, and they were even slightly higher than the normal. All other examinations of the body were negative, the complaint being exclusively limited to a distressing, gnawing pain in the small of the back which radiated down to the outer side of the legs. The patient had been treated for some time with aspirin, massage, the high-frequency current, strapping of the back, etc., without benefit. I padded the arches with felt, and the pain eased immediately. A pair of celluloid plates was made for him and he returned to work. Now he writes that he feels perfectly well.

Another case of this character which I treated two years ago impressed me:

Case 2.—Salesman, aged 22, complained of pain in the small of the back, also of pain between the shoulder blades and pain along the outer side of the arms. Examination was negative. The arches seemed normal. The patient was treated with massage, hydrotherapy, baking, drugs, etc., for a long time without becoming better or worse. All kinds of diagnoses were made in this case, from neurasthenia down to eyestrain. Glasses which were fitted for him failed to relieve him. One day a shoe clerk gave him a pair of arches, and the pain ceased immediately. He still wears his plates and has remained well ever since.

That pain in the inner side of the knee is often due to arch strain is a fact that even our junior assistant in the hospital is well trained to consider. I am not speaking of the numerous fanciful symptoms which some have attributed to arch strain, as paresthesia of the outer side of the thigh, nausea, vertigo, etc., but rather of the more common tangible pain due directly to arch strain.

What is the cause of this referred pain? If there is an inflammation in the feet, it is easy to understand that pain may manifest itself in any part of the nerve trunk where a nerve ending is pressed by the inflammatory process. But how explain the pain when there is not the slightest tenderness or irritation in the feet, especially the referred pain in a remote part of the body not even supplied by the lumbar and sacral plexus? The referred pain from arch strain is due rather to disturbance in muscle balance. The arch is practically the pivot on which the anterior flexor muscles and the posterior extensor muscles of the body are riveted. Any disturbance of the arch causes more strain to fall on one group of muscles, and a compensatory lessened strain on other groups of muscles. Referred pain in flatfoot, especially in the remote part of the body, is due therefore to traumatism of the muscles caused by the disturbance in muscle balance.

It is strange that though the importance of flatfoot and weak feet as a cause of painful feet is at present so much overestimated, there should be many cases in which the pain due to arch strain is treated for all kinds of conditions. One fact which may guide us to a right diagnosis of referred pain due to arch strain is that, though there is no tenderness in the feet and the arches may appear normal or even higher than normal, still the patients have occupations which compel them to stand for many hours at a time. Also, no other treatment besides the relief of the arch strain has any effect on the pain to make it better or worse. As a test, padding the feet with felt may suddenly stop all pain.

236 West Seventieth Street.

14. Churchill, T., and Stober, A. M.: A Case of Systemic Blastomycosis, Arch. Int. Med., April, 1914, p. 568.

† The discussion on this article will appear in an early issue.

SUPPURATION OF THE FOREARM TREATED BY IMMERSION IN A SALT SOLUTION BATH

Samuel Salzman, M.D., Toledo, Ohio

In view of the extensive use of hypertonic salt solutions in the treatment of wounds, in the European war hospitals, and the excellent results obtained, I wish to record a case in which the use of such solution was followed by complete cessation of suppuration of the bones of the forearm.

On entering the surgical service as intern to Dr. Morton at the Cook County Hospital, September, 1909, I found among my pus dressings a case of very extensive suppuration of the bones of the forearm. The patient was a young man, German, aged 19, who had received half a dozen fractures by falling from the roof of a dwelling. The fractures had all healed kindly except the bones of the forearm. Here a very extensive osteomyelitis was present, the predominating organism being the *Bacillus pyocyaneus*. The discharge was so profuse and foul that I conceived the idea of putting the entire arm in a potassium permanganate bath to deodorize it.

I had a specially constructed trough made of galvanized tin with an outlet tube which could be regulated. A continuous flow of a very weak warm permanganate solution was kept up for twenty-four hours. The forearm and lower arm were entirely immersed in the solution.

After twenty-four hours, fearing permanganate poisoning, I discontinued the bath, but the young patient begged to have it restored, as he thought that it had done him considerable good. The bath was restored, but instead of the permanganate solution I used a strong salt solution. This was kept up forty-eight hours and discontinued because the arm was very much swollen and tense.

I was astounded next day, on dressing the arm, to note scarcely any pus on the dressing, and at the end of the week the wound was clean and granulating.

I do not hesitate to make the statement that the forearm would have been sacrificed soon except for the wonderful effect of the continuous bath. In fact, Dr. Morton had had a roentgenogram taken and studied with a view to amputation.

234 Michigan Street.

Special Article

PRACTICAL PHARMACOLOGY*

(Continued from page 2137)

XXVI

ANTIMONY

The systemic effects of antimony resemble those of arsenic so closely that they do not require detailed discussion here, but it is important to remember that the early vomiting and diarrhea following the use of toxic doses of antimony may be due to local action, though early vomiting usually serves to prevent the occurrence of severe toxic symptoms.

The occurrence of diarrhea, on the other hand, indicates that the poison has either entered the duodenum or has been absorbed, and both may occur. Should the administration of the usual emetic dose of antimony fail to produce vomiting, as sometimes happens, poisoning may result unless the drug is removed from the gastro-intestinal tract. When there is reason to fear its toxic action efforts should be directed toward its removal, as in the case of arsenic.

Limewater, a pint or less, the oxid or carbonate of magnesia, or tannin should be administered,[1] and the stomach washed promptly and thoroughly. If precipitants are not at hand no time should be lost in efforts to get them before washing the stomach. After the stomach has been washed the patient should receive 30 gm. (1 ounce) of magnesium sulphate in about 500 c.c. (1 pint) of water in order to remove any of the antimony that has passed into the intestine.

If antimony remains in the gastro-intestinal tract for a sufficient length of time corrosion occurs, with absorption, and the gastro-intestinal symptoms are augmented by the systemic actions of the poison in the way described under arsenic, and in that case washing of the stomach and saline purgatives would be of little use, though they would at least do little harm.

Antimony is usually absorbed very slowly indeed, hence its longer sojourn in the gastro-intestinal tract favors the local irritant action, and interferes correspondingly with its use for the systemic effects.

This slow absorption with the resulting prolonged local gastro-intestinal action is the basis for its use as a nauseant, otherwise it would be inadmissible to employ so toxic an agent for that purpose while we have so many harmless agents that are capable of inducing nausea.

As little as 0.15 gm. (2½ grains) has caused death when vomiting was delayed or absent, but such an occurrence is rare, and much larger doses have been survived.

Severe poisoning seldom follows the therapeutic use of antimony at present, because it is little used except as a nauseant, the dose for this purpose being too small to cause toxic symptoms even though absorption takes place, and emesis nearly always occurs if large doses are employed.

But for the difficulty of securing the systemic action without the gastro-intestinal disturbances, antimony might be used for almost any of the purposes for which arsenic is employed. It is still used in psoriasis when the condition fails to yield to other forms of treatment, and it is used occasionally for trypanosomiasis.

The systemic effects are best attained by intravenous injection, the subcutaneous injection being too painful.

DOSAGE

Certain of the uses and doses of antimony have been discussed under the emetics. Camac states that he used from 0.01 to 0.015 gm. (⅙ to ¼ grain) of the sodiotartrate about once a week, in the treatment of a case of sleeping sickness which had apparently become resistant to atoxyl.

The ointment was formerly used externally but it sometimes produced extensive abscesses and is now rarely employed.

For materia medica see Emetics.

PHOSPHORUS

The action of phosphorus resembles that of arsenic and antimony to a certain extent. Thus the administration of very small amounts to young animals causes an increase in the growth of bones, apparently through stimulation of the osteoblasts. At the same time it causes the deposit of dense bone in cancellous tissue, but the prolonged administration causes the absorption of the latter. Small doses of phosphorus have much less effect on the bones of adult animals, but these also show some deposit of dense bone.

Phosphorus, like arsenic, causes some increase in the red blood cells, though it does not appear to increase the total amount of hemoglobin in the blood. Small doses do not appear to induce other notable pharmacologic actions unless long continued.

There are usually no symptoms observed immediately after a poisonous dose of phosphorus has been taken by the mouth, but after some hours there is gastro-intestinal pain with vomiting and sometimes diarrhea. The vomited matter has a garlic-like odor, and this with the phosphorescence which it exhibits in the dark, are characteristic and suffice for a diagnosis in otherwise doubtful cases.

Following the early symptoms there is usually a period of several days during which the patient suffers no disturbance, after which he may be seized again with vomiting and diarrhea; the liver is enlarged and tender; the patient is jaundiced and suffers prostration with its attendant circulatory disturbances, partly due to the direct action of the poison on the heart. Hemorrhages occur in various tissues, and the vomitus, feces and urine may contain blood.

There is a fatty infiltration of the liver, heart and other organs, secondary to the disturbances of metabolism, whereby there is an increased destruction of protein. Death from heart failure occurs in about one week in fatal cases, but severe symptoms may be followed by recovery, in which case the organs that have been infiltrated with fat become cirrhotic from the proliferation of interstitial connective tissue; but it is said that this occurs more markedly in poisoning by repeated doses than after a single large dose. This cirrhosis affects the liver and gastro-intestinal tract to a greater extent than the kidneys, and these effects of course induce the usual secondary results.

Acute phosphorus poisoning sometimes occurs from swallowing rat paste. It is very slowly absorbed from the gastro-intestinal tract, and when the patient is seen shortly after the poison has been swallowed the efforts

* This is the twenty-sixth of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

1. Cushny advises the use of strong tea as a precipitant for antimonial salts.

should be directed toward removing as much of it as possible and oxidizing the remainder. The stomach should be washed with a very dilute solution of copper sulphate, 2 gm. (30 grains) in about 500 c.c. (1 pint) of water, or 2 gm. (30 grains) of copper sulphate dissolved in 50 c.c. (2 fluidounces) of water may be administered as an emetic, and about 0.1 gm. (1½ grains) may then be administered in a glass of water with a view to causing the phosphorus remaining in the stomach to become coated with metallic copper; this being rapidly converted into an insoluble phosphid. As an alternative to the use of copper sulphate in the wash water, and later, one may wash the stomach with a large amount of solution of potassium permanganate, 0.1 to 0.2 per cent., and later administer a glassful of water containing 0.3 gm. (5 grains) of potassium permanganate. As this salt attacks organic matter and other readily oxidizable substances, it is much more effective in oxidizing poisons if it be given after the stomach has been washed than if it be given while the stomach is filled with food.

Hydrogen peroxid and oil of turpentine are sometimes recommended as oxidizing agents in phosphorus poisoning, but the peroxid is decomposed so rapidly in contact with mucous membranes and body fluids that it can act on the phosphorus only if it be brought into immediate contact with it in the stomach, and oil of turpentine is also of doubtful value.

Unless the stomach is emptied almost immediately after the phosphorus has been swallowed, some of it will have passed into the duodenum, where it will be out of reach of the antidotal measures just discussed; it is absorbed very slowly indeed, and the intestine should be emptied as promptly as possible, preferably by using a large dose of magnesium sulphate, 30 gm. (1 ounce) dissolved in about 500 c.c. (1 pint) of water. A small dose of copper sulphate may be dissolved in the solution of magnesium sulphate if it be at hand, or it may be administered later.

Fats and oils should be avoided while the phosphorus remains in the gastro-intestinal tract, as they interfere with the efforts at oxidation and favor absorption of the poison.

When later symptoms of phosphorus poisoning have developed alkalies should be given, preferably citrates and bicarbonates, to neutralize the large amount of acid formed in the tissues.

Workmen employed in factories where white or yellow phosphorus is used are subject to a peculiar necrosis of the jaw bone which was formerly attributed to the action of phosphorus that had gained access through carious teeth; but it seems probable that the bone is first affected by phosphorus that reaches it through the circulation, rendering it susceptible to bacterial action. This truly terrible affliction is less common when red "amorphous" phosphorus is used, and is almost unknown when the sesquisulphid of phosphorus is employed, as it now is quite commonly in the manufacture of matches.

THERAPEUTIC USES

Phosphorus favors the deposition of calcium in growing bones, and it is probably useful in osteomalacia, in rickets and possibly in bone that is undergoing repair; but the action on the blood corpuscle formation does not justify its use in anemia, in which iron and arsenic are preferable.

It has been used in various affections of the central nervous system for its supposedly tonic or stimulant action, but it has little direct action on the central nervous system, and there is no evidence of its value in these conditions for which it is recommended principally by the manufacturers of nostrums intended to supply phosphorus in a form more readily available than that in the inorganic phosphates, and it is used less by educated physicians for such purposes than formerly.

DOSAGE

The average dose of phosphorus is 0.5 mg. (1/120 grain), to be given several times daily. A somewhat larger daily dose is recommended in osteomalacia, in which as much as 5 mg. (1/12 grain) may be given in the course of a day; but such doses cannot be considered altogether safe.

Phosphorus may be given in pills which may be made by using one of the many fairly permanent mixtures of phosphorus with suet, wax, or rosin, or by triturating phosphorus with a little sulphur under water, until liquefied; the water is poured off and a suitable excipient added. It may also be given dissolved in olive oil or cod-liver oil, or in alcoholic solution in the form of an elixir. It may be prescribed for children somewhat as follows:

Phosphorus	0.01 gm.	1/6 grain
Cod-liver oil....to make	100 gm.	3 fluidounces

Free the oil of contained air by heating to 150 C. and allow to cool, then add the phosphorus to 150 C. and warm to about 80 C. and shake until the phosphorus is entirely dissolved.

Two teaspoonfuls of this solution may be given daily, but it is said that even this amount taken daily for several days has caused death, and its use is not recommended.

For alcoholic solutions, the phosphorus is preferably dissolved in chloroform and mixed first with absolute alcohol, then with a mixture of alcohol or glycerin and elixir, care being taken to keep well within the solubility of phosphorus in the several solvents.

Practically all of the preparations of phosphorus deteriorate on keeping and, if it is desired to give this substance in an active form, care must be exercised to have the mixtures freshly prepared from materials that will comply with the official requirements. It will also be necessary to see that proper precautions are observed to free the solvent, particularly an oil, a fat or a resin, of air or free oxygen so as to avoid deterioration as much as possible.

MATERIA MEDICA

Phosphorus, U. S. P., occurs in commerce as a semitransparent, wax-like solid, usually in the form of cylindrical sticks. It has a distinct and disagreeable odor and taste, is luminous in the dark when exposed to air and should be kept under water in well-closed vessels, in a moderately cool place, protected from light. Phosphorus is nearly insoluble in water, slightly soluble (1:350) in absolute alcohol or (1:400) in glycerin, and soluble (1:80) in fatty oils and in ether; also (1:25) in chloroform and very soluble (1:0.5) in carbon disulphid.

The official or medicinally active form of phosphorus may be converted by means of heat into the red or allotropic modification of the element. This red or "amorphous" phosphorus is permanent in dry air, is insoluble in ordinary solvents, and is generally considered to be non-poisonous.

The difficulties involved in the therapeutic use of phosphorus in the elemental state have led to the introduction of various compounds intended to supply phosphorus to the organism, and while it is possible that some of these preparations may have therapeutic properties, their advantages are not very obvious; but, on the other hand, there is no question that rational therapeutics has been interfered with by the sensational way in which most of them have been advertised.

Among the first of these compounds were the hypophosphites, which were introduced into therapeutics about half a century ago by Churchill, who supposed that they influenced nutrition favorably and who therefore advised their use in tuberculosis.

A typical salt of this class is:

Calcii Hypophosphis. — Calcium Hypophosphite, U. S. P., which occurs as colorless, transparent crystals, small lustrous scales, or white crystalline powder, odorless and having a nauseating bitter taste. It is freely soluble (1:65) in water and is practically insoluble in alcohol.

Calcium hypophosphite is incompatible with iodids and oxidizing agents. Caution should be observed in dispensing the substance, as an explosion may occur when it is triturated or heated with substances rich in oxygen, particularly nitrates and chlorates, that may be affected by a powerful reducing agent. It is not recommended for therapeutic use.

It has long been stated that the hypophosphites undergo little or no change in the body and that they are excreted in the urine practically unchanged. Nevertheless they continue to be exploited widely in the form of various nostrums.

One of the most widely advertised — hence one of the most popular — of these is Fellows' syrup of the hypophosphites. It contains several bases, in combination with hypophosphorus acid, quinin and strychnin, to which is probably due any medicinal value that the preparation may have. It is unnecessary to prescribe an expensive nostrum of this type merely because one wishes to give his patient small doses of quinin or strychnin. The official compound syrup of the hypophosphites is little better than the nostrum just mentioned, and contains nine supposedly medicinal ingredients in syrup. It is not in keeping with modern therapeutic teaching to use such complex mixtures.

The continued influence of Churchill's teaching is also evident in the formulas of many of the proprietary emulsions of cod-liver oil that are advertised to physicians and to the public. Nearly all of them contain mixtures of hypophosphites that can serve no useful purpose, but usually render the preparation more disagreeable to the taste.

When it began to be accepted by educated physicians that the hypophosphites were superfluous, other phosphorus compounds were introduced and glycerophosphates, lecithin and nuclein were offered.

Lecithin is abundant in various tissues and is especially abundant in eggs, but it is sometimes claimed that the raw or combined forms of lecithin, such as that existing in eggs, cannot be utilized so well as the uncombined. It is obvious, however, that the healthy organism is capable of obtaining its normal supply from the lecithin-bearing compounds of the food, and there is no evidence that the free substance is ever necessary. The average diet of a healthy man contains from 5 to 15 gm. (75 to 225 grains) of lecithin, and this can be increased easily when patients can take an abundance of egg-yolk.

Glycerophosphoric acid consists of phosphoric acid in which an atom of hydrogen has been replaced by the glycerin radical, and has the formula $H_2(C_3H_5(OH)_2)PO_4$. The glycerophosphates of calcium and of sodium are described in New and Nonofficial Remedies.

Lecithin consists of the ester of oleic, stearic, palmitic or other fatty acid with glycerophosphoric acid combined with cholin; hence it is spoken of as a phosphorized fat. The lecithins obtained from different sources differ somewhat in their composition, but this does not appear to be of any great importance in regard to their utilization by the body.

The nucleins consist of proteins combined with nucleic acid and are derived from the nucleoproteins of cells. Nucleic acid varies slightly but not essentially, in its composition, depending on the source from which it is obtained, that from yeast cells — the usual source of commercial nucleins and nucleic acid — containing almost exactly 10 per cent. of phosphorus.

The composition of the nucleins varies rather widely with the method of preparation, but nucleic acids are definite chemical substances. They may be decomposed, yielding phosphoric acid, a carbohydrate, and purin and other bases..

Liver, kidney, brain and sweetbread are rich in nucleoproteins, hence in nucleic acids, and these foods may be used when it is desired to administer nuclein or nucleic acid, but lean meats are relatively poor in nucleoproteins. The purin bases derived from nucleoproteins are the precursors of uric acid; hence brain, liver, kidney, and sweetbread are to be withheld when the formation of uric acid should be limited as much as possible.

Lecithin, the glycerophosphates, nuclein and nucleic acid are discussed in New and Nonofficial Remedies.

Sanatogen is one of the many compounds that are exploited as containing a particularly active form of phosphorus. This product has been referred to on several occasions in the reading pages of THE JOURNAL and is discussed at some length in "Nostrums and Quackery."

(*To be continued*)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. ITS ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

CAUSTICK APPLICATORS, SPECIAL (Silver Nitrate, 50 per cent.).—Wooden sticks 12 inches long, tipped with a mixture of silver nitrate 50 per cent. and potassium nitrate 50 per cent.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by Antiseptic Supply Co., New York City.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, JULY 3, 1915

A THIRTIETH ANNIVERSARY—PASTEUR AND RABIES

July 4, 1885, Joseph Meister, an Alsatian boy 9 years of age, was severely bitten by a rabid dog. This was the first human patient on whom, July 6, 1885, Louis Pasteur used the protective treatment for rabies which he had proved on animals. In a delightful little volume entitled "Pasteur and After Pasteur," Stephen Paget has well said that there ought to be a calendar of the healing art to remind us of all such days. In these turbulent times when men and nations are gaining everlasting reputations in the death-dealing art, when the names of great generals and brave admirals are on the lips of old and young alike, it is fitting that we should recall the glory of those who have succeeded in the beneficent work of rescue and in preserving rather than destroying life.

The story of Pasteur's great accomplishment in effecting the cure of rabies is fascinating in its details. By September, 1884, he had attained the last step of his method: he had proved that he could prevent the disease in dogs already bitten. Then came the crucial test on man, which event took place thirty years ago next Tuesday.

Pasteur's original method is still observed in essence if not in details in many parts of the world. Pasteur institutes devoted to the treatment of rabies are found in every civilized country. There are more than sixty of these antirabic clinics now in operation, the original Pasteur Institute of Paris having been opened in 1888.

What they have meant to humanity is best appreciated by comparing the prognosis of the past with the accomplishments of Pasteur treatment. When the infected wounds are promptly cauterized, the protection may be great. Usually this help is of little or no avail when the bites are multiple and lacerated; and when they are about the face and head, thorough cauterization is difficult or impossible. The statistics of Proust show that in a series of 117 cases which were not cauterized, there were ninety-six deaths; whereas there were only eighty-nine deaths among 249 cases in which cauterization was practiced. Let us contrast with these statistics of two generations ago the outlook as influenced by Pasteur's work. From 1886 to 1914 the world's record of death from rabies after antirabic treatment has been kept down to less than 1 per cent. Högyes has collected statistics for 54,620 persons treated at twenty-four institutes with a mortality of only 0.77 per cent. Bernstein's figures include 104,347 patients with a mortality of 0.54 per cent.

Surely these figures tell a victory against death in a way that puts the inhuman warfare of civilized nations in a sad light in comparison with this record, the fruits of one man's genius as a human benefactor. At this eventful anniversary we may recall the words of the chairman of the French Academy of Sciences when he arose to speak at the gathering before which Pasteur had described his first success in the treatment of rabies in man. "The date of the present meeting," he said, "will remain for ever memorable in the history of medicine and glorious for French science; for it is that of one of the greatest steps ever accomplished in the medical order of things — a progress realized by the discovery of an efficacious means of preventive treatment for a disease the incurable nature of which was a legacy handed down by one century to another. From this day, humanity is armed with a means of fighting the fatal disease of hydrophobia and of preventing its onset. It is to M. Pasteur that we owe this, and we could not feel too much admiration or too much gratitude for the efforts on his part which have led to such a magnificent result." Thirty years later these achievements have lost nothing of their original splendor.

THE PRESIDENT-ELECT

In connection with the celebration of the opening of the Panama Canal, it was fitting that Surgeon-General Rupert Blue of the Public Health Service should be elected to the highest office within the gift of the Association at the San Francisco session. The attention being given to improvement of the public health renders significant the selection at this time of a public health officer. General Blue represents an arm of the federal government which is in reality a part of the medical profession; there is indication, therefore, that the ideals of the profession as voiced by the Association will be advanced. There is indication also that public health work will receive a more active impetus, and that the profession will assume in greater degree its responsibilities in respect to public health work and claim its inheritance in this field — in other words, that preventive medicine will become even a more active function of the Association than it has been in the past.

Born in North Carolina, Dr. Blue was educated at the University of Virginia, and received his medical degree from the University of Maryland in 1892. Immediately thereafter he entered the U. S. Public Health Service as intern, and became assistant sur-

geon in 1893, passed assistant surgeon in 1897, surgeon in 1909, and surgeon-general in January, 1912. During this time, he was stationed at Baltimore, Galveston, Charleston, San Francisco, Portland, Ore., Milwaukee, New York, Norfolk and New Orleans, having been assigned to hospital, quarantine and other public health duty, all of which has fitted him for the high office which he now holds in the government, and which enables him to foresee the great work ahead and the part the medical profession should play in it.

Dr. Blue was sent to Italy by the president when cholera threatened our shores in 1900. In 1905, he was second in command of the measures taken in New Orleans and vicinity to eradicate yellow fever. In 1903, and again in 1907, he was placed in charge of plague-eradicative measures in California, and handled a difficult situation with the result not only that the disease was controlled, but also that all interests in the state were harmonized. The last-mentioned is perhaps the most important single work he has performed, and during its conduct he advanced and proved the principle that rat proofing is the essential means necessary to prevent plague in urban communities. As a result of the enforcement of rat proofing, he has demonstrated that the eradication of plague is entirely practicable, and, in consequence, that cities may be kept free from the disease.



PRESIDENT-ELECT SURGEON-GENERAL RUPERT BLUE
(Courtesy of Clinedinst, Washington, D. C.)

As director of sanitation of the Jamestown exposition, Dr. Blue had practical experience in the reduction of mosquito-breeding areas to prevent malaria. This work was in line with his interest in tropical diseases, which interest was later responsible for his making a special study of those diseases at the London School of Tropical Medicine, and for his assignment as adviser to the governor of Hawaii for the reduction of mosquito-breeding areas in that territory, with the object of guarding against the introduction of yellow fever and malaria after the opening of the Panama Canal. It was from this duty that he was called to become the chief of his service.

Perhaps the most significant achievement of Dr. Blue's career, however, has been the remarkable development of public health work under his direction, especially as relates to scientific research. Public health education by the federal government is important, but the conduct of investigations along broad lines, and continuously followed, is by all odds the most important function of the federal government in matters affecting the public health. These he has encouraged, as is evidenced by the many lines of new work undertaken in the recent past. Some of this work has been done in cooperation with other branches of the government, and a cordial system of cooperation seems to be one of the means taken now to advance public health work on the part of the government.

In no country, perhaps, is there a larger or better public health organization than in our own; but under present auspices it may be expected that this service will enlarge and become a governmental branch second to none, and fulfil the ideals which have been held by the profession and the American Medical Association for more than a quarter of a century.

THE WAR AND PRACTICAL DIETETICS

That "necessity is the mother of invention" is illustrated by a multitude of surprising instances from the chapters of history. The present European war and the situations which it is creating have brought fresh evidence of the compulsory adaptation of new devices and the enforced acceptance of previously undesired methods. One might well expect this in the domain of

the mechanic arts and the manufactures; but in the field of practical dietetics, in which the laws of nutrition, the food habits of generations and the inherited tastes of individuals play so dominant a part, revolutionary changes seem less likely to make any headway.

Prof. Adolf Schmidt[1] of the Medical Clinic at Halle has pointed out some unexpected situations created by the growing necessities of the war on the continent, calling for a change in the dietary of the German people. Every race diet has developed on the basis of products of the soil of the country. This was the invariable rule so long as means of transportation between different countries were primitive; but it is still a valid rule, as is notable in the case of those nations which have long since ceased to produce enough food from their own soil. The habits of taste have lasted longer than the food supplied by their own soil, and their needs are satisfied by importation. War, however, has interfered with this method of satisfying the acquired tastes. It has become advisable for economic reasons to restrict the consumption of many of the more popular and highly palatable foods, such as meats, eggs, and butter, all of which are digestible and nutritious. They must be replaced by less valued, coarser foods, of which rye bread, potatoes, vegetables and fruits are conspicuous examples. Sugar is available in great abundance as a carbohydrate nutrient, but obviously it should not be excessively employed in the diet.

A critical consideration of the shift in dietary components demanded by the exigencies of the times will reveal that it involves a change from a regimen abundant in protein, particularly in the form of animal foods, and relatively poor in cellulose-yielding products, to a dietary lower in protein and richer in the coarser cellulose-containing vegetables. In essence it represents the adoption of a vegetarian dietary.

Some of the prominent students of nutrition have long insisted that the present-day diet of the well-to-do is not in itself physiologically justified. In tracing the history of the present tendencies on the continent, Rubner[2] has pointed out that among the materials successfully used in the culinary art, a high place has always been held by the meat of mammals, fowls and fishes. These meats were the chief part of the meal, other foods of vegetable origin, as salads and vegetables, sweets and flour foods, being added. Bread remained in the background. The traditions of this culinary art have remained the same down to our days. The diet of the upper classes is the only one which provides the pleasures of the table; it is rich in protein and fat, it is not voluminous, does not overburden the stomach, tends less to obesity than any other diet, keeps the body, even of a lazy man, in good condition, and does not overwork the digestive functions. The less well-to-do reduce, of course, the amount of meat; but they use in its place bread and potatoes. This is called a mixed diet.

When the barriers between the classes fell, the middle classes gradually rose to the more luxurious food of the formerly privileged classes. The consumption of meat per head of population in Germany has risen three and a half fold during a hundred years, and now approximates that consumed in England and in the United States. In 1813 the consumption of meat in Germany per inhabitant was about at the level of that in Italy today. The large use of meat has come with the concentration of population in the cities. The same transformation has taken place in the United States. In 1820 only 5 per cent. of the population lived in cities of 8,000 and over, whereas, in 1910, 33 per cent. lived in such cities. This third of the population demands meat in increasing quantity, despite its increasing price.

In common with other modern writers, Rubner contends that this conventional diet of the well-to-do is not even healthful; for, on account of false notions of the strengthening effect of meat, too much meat is used by young and old and by children, and this is harmful. But this meat diet is publicly sanctioned; it is found in all hotels, it has become international and has supplanted almost everywhere the characteristic local culinary art. It has also been adopted in countries in which European culinary art was unknown. Long ago the medical profession started an opposition to the exaggerated meat diet, even before the vegetarian propaganda was started. It was maintained that flour foods, vegetables and fruit should be eaten in place of the overlarge quantities of meat.

The situation created by the war, accordingly, is likely to enforce on a large, national scale the experiment of a reduction in meat consumption and an increase in vegetarian directions which many physiologists have advocated. Schmidt has remarked that it will be interesting to observe whether the contentions of the former enthusiasts prove true — whether the incidence of obesity, gout, kidney disorders, arteriosclerosis, neurasthenia, constipation and related disturbances becomes reduced as a consequence of the new standards of living. Several factors stand in the way of the successful introduction of the new dietary regimen. It is not easy to bring an intelligent appreciation of the situation to the attention of all classes of people in the countries involved. The lower strata in particular will object to the withdrawal of food privileges they had begun to enjoy. There may be danger of undernutrition where really palatable food is not readily available. The chief obstacle to the successful adjustment to the new standards is not in the nutritive inadequacy of the rations as such, but in large measure in the neglect of the art of cooking

1. Schmidt, Adolf: Volksernährung und Diätetik in Kriegszeiten, Therap. d. Gegenw., 1915, lvi, 81; abstr., The Journal, April 24, p. 1459.
2. Rubner, M.: The Nutrition of the People, Jour. Home Economics, 1913, v, 11.

among the lower classes. It is far easier to prepare a service of meat or an egg dish than a really palatable course of vegetables. Boiled potatoes, sauerkraut, turnips and fruits become far more monotonous than a repetition of cooked meat with bread and butter. Schmidt points out that few housewives understand the art of preparing a hundred and one acceptable concoctions involving the use of the cruder vegetables, nuts and fruits. Indeed, he looks on the education of the housewife in the details of vegetarian cookery as a great national need in Germany today.

Here in the United States, where fortunately the blessings of peace have averted the necessity of a shift in dietary habits, we may do well to read the lessons derived from the European situation. Practical dietetics has not attained the high regard and the consideration which it deserves among us. In a country where the physiologic chemistry of foods and the physiology of nutrition are as far advanced as anywhere in the world, where the pure food propaganda is pushed to its extremest limits, cookery has not received its due share of attention. The institutional diet kitchen conducted along scientific lines is mostly a dream of those who appreciate its possibilities. And among the masses, ready-to-eat foods attain popularity at enormous prices, in part because of the widespread ignorance of how to make a crude food palatable by culinary processes. We ought not to wait until an unexpected necessity drives our American homes to learn the uses of the kitchen and to discover that it can often convert the coarsest products into table delicacies.

EMOTIONS AND DISEASE

The mental attitude of a patient is often an important factor in the outcome of his illness. In the light of present knowledge of bacteria and bacterial toxins, to attribute the onset of disease to mental states such as fear will undoubtedly encounter objection. Jensen,[1] however, believes that many instances of intestinal intoxication result from long-continued worry, fear and allied depressing states. His explanation is based on an analogy between physiologic changes which are thought to occur in shock and as a result of fear. Whether or not we choose to accept such a view, efforts at generalization are always stimulating and interesting.

A knowledge of the bacterial flora of the intestine or of the chemical end-products of these bacteria does not offer the key to the solution of intestinal intoxication. These are already fairly well known. The factors which are responsible for intestinal stasis and for the breakdown of the defensive mechanism of the body, which allows the passage of toxins through the intestinal wall and into the blood stream, are certainly of importance in the explanation of this condition.

In shock, splanchnic changes occur which may be responsible for increased absorption. The effects of shock during abdominal operations are described as a deep injection and distention of the intestine. The vasoconstrictor fibers of the splanchnic area are paralyzed, and distention of the bowel is a paralytic phenomenon primarily, not one of gas formation. The face and extremities become pallid because the blood has collected in the dilated splanchnic vessels. For the same reason the blood pressure falls. The beneficial effects of saline transfusions during shock are probably attributable to raising of the blood pressure and thus restoring a vital equilibrium. As a result of the intestinal paralysis, decomposition of food and the production of bacterial toxins are heightened, and at the same time conditions favoring increased absorption are at hand. Among these are an increase in the size of the inner surface of the bowel, giving a greater absorbing surface. Loss of vascular tone with dilatation of the blood vessels results in a slowing of the blood stream, and consequently a larger volume of blood is present and remains longer in the absorptive region. Finally, the intestinal walls and the vessels are both thinned, allowing absorption to occur more readily.

Jensen maintains that pain, worry and other unpleasant emotions, which he roughly classes under one head as fear, are likewise capable of producing dilatation of the intestines and of the splanchnic vessels. He holds that the pallor, faintness and gastro-intestinal and vesical disturbances which accompany fear are a result of this splanchnic dilatation. The fecal evacuation may be due to a sudden dilatation of a contracted pelvic colon and the dropping of feces into that part of the rectum which has to do with the evacuation reflex. The desire to micturate caused by worry or fear may be explained similarly. The loss of tone of the smooth muscle allows urine to escape through the relaxed internal sphincter, and, striking the posterior urethra, the urine stimulates the inhibitory reflex and results in a clamping down of this portion of the urethra and at the same time violent contractions of the walls of the bladder. Jensen defines worry as "a succession of fear states causing a loss of tone which becomes chronic." If worry in this sense causes intestinal stasis and increased absorption, it is conceivable that even when fear is removed, the intestinal tract may not be able to regain its tone for some time, since stagnation of blood in the splanchnic region would produce some degree of cell asphyxia, and even with restored normal conditions, time would be required in the repair of these changes. The advent of other periods of worry, bringing a return of splanchnic dilatation, would thus tend toward a continued intestinal stasis. Further, the formation of a habit

1. Jensen: Lancet, London, 1915, clxxxviii, 231.

of worry or fear has a lowering effect on the mental energy, and this in turn leads to an increased loss of tone and the development of a psychophysical vicious circle.

If Jensen's hypothesis is true, that intoxication depends on loss of visceral tone and that mental states influence the latter, then, since fear can paralyze the hollow viscera, it should follow that happiness and courage can cause splanchnic constriction and thus lessen the degree of absorption. Clinically this seems possible, since the journey back to health for many a patient has commenced when hope and courage were instilled into him. The so-called cures by the followers of Mrs. Eddy and allied cults must be explained on the basis that improved mental conditions aid in recovery from disease.

THE CULTIVATION OF VACCINE VIRUS IN VIVO

The desirability of obtaining a vaccine virus free from extraneous organisms is evident. In the vast majority of vaccinations, especially in later years, no ill effects have followed; occasionally, however, owing chiefly to the presence of extraneous organisms, a severe reaction at the site of vaccination occurs. This has been severe enough at times to raise objection on the part of others to submitting to vaccination. For this reason, efforts have been made by laboratory workers to reduce the number of bacteria in vaccine virus, either by growing the organism in pure culture, or by subjecting the vaccine pulp to the action of various antiseptics, or by a passage through the skin of certain animals, such as the rabbit, to bring about the same result.

Usually in the preparation of vaccine virus, glycerin in different percentages is added to the vaccine pulp, and the resulting mixture is allowed to remain at room temperature for a period, during which there results a great decrease in the number of nonspore-bearing bacteria. Some strains of virus have become accustomed to certain germicides, such as phenol (carbolic acid) by a gradual increase in the amount added to the pulp in successive generations. This has also had the effect of reducing the number of extraneous nonspore-bearing bacteria; but no methods heretofore used have had any very marked effect in reducing the number of spore-bearing bacteria.

Recently Noguchi[1] has reported the successful propagation of the organism of vaccine virus through sixty generations in the testicle of the rabbit. He has also reported the propagation of vaccine virus in the testicle of bulls. Henseval and Convent,[2] as early as 1910, attempted to use the testes of rabbits for the cultivation of vaccine virus, but their results were hampered by the fact that they failed to obtain a bacteria-free virus for purposes of inoculation. Noguchi has overcome this complication by freeing his vaccine virus of bacteria as a result of exposure of the emulsion of vaccine virus to ether. This bacteria-free virus was used for the inoculation of the testicles of rabbits. The multiplication of the virus within the testicle reaches its maximum on the fourth or fifth day after inoculation, and the quantity of virus apparently remains stationary until the eighth day, when diminution begins. At the end of five weeks, no more virus could be detected in the testicle. When tested for activity in the skin, cornea and testicle of rabbits, it was found that the reaction was practically identical, whether the virus employed for the inoculation was the original strain or the pure testicular strain, and the skin lesions produced in the calf with the two strains appeared to be identical. It was found that immunity could be conferred in rabbits by inoculation with the testicular strain against the skin strain of virus, as well as the converse of this. Several persons were vaccinated with the testicular strain of virus, and it was found that these persons reacted to the pure testicular strain in an entirely typical manner, including those in whom an original vaccination or revaccination was done. The vaccinal effects could not be distinguished from those arising from uncomplicated skin virus.

The practical importance of this work lies in the possibility of the propagation of vaccine virus free from bacterial contamination, thus removing all danger of accidental infection through the introduction at the time of vaccination of extraneous bacteria. It is almost impossible in the propagation of vaccine virus by the methods ordinarily practiced to obtain virus entirely free from bacteria, although many samples of vaccine virus have been examined in recent years showing that the number of bacteria per vaccine is extremely low. Noguchi believes that a comparison of the cost is in favor of the rabbit vaccine. He believes that for the propagation of 1,000 c.c. of finished vaccine, it would require about forty rabbits or four calves, and that the initial cost of the rabbits would be the smaller.

1. Noguchi, Hideyo: Pure Cultivation in vivo of Vaccine Virus Free from Bacteria, Jour. Exper. Med., 1915, xxi, 539.
2. Henseval, M., and Convent, A.: Contribution à l'étude expérimentale: l'injection de vaccine dans le testicule, Bull. de l'Acad. roy. de méd. de Belgique, Series 4, 1910, xxiv, 635.

Soda Fountains as Sources of Infection.—A. J. Lanza of the Public Health Service in an article in *Public Health Reports* on the interstate migration of tuberculous persons, says that soda-fountain utensils are common eating and drinking devices in the most vicious sense of the word. He has seen advanced consumptives at soda fountains, and as soda fountains are a common rendezvous for children, the danger is apparent. Soda-fountain attendants are likely to be careless in the handling and washing of cups, spoons and glasses, and he has observed on more than one occasion advanced consumptives put down glass and spoon which were then carelessly rinsed in standing water and placed on the shelf for the next customer. He says that in hotels, cafés and other eating places tableware is generally cleaned in machines, or at least soap and hot water are used, and while potentially sources of infection, the danger would be less than by the careless rinsing that suffices at soda fountains.

Current Comment

ACCIDENTS FROM BENZIN

Recently published statistics[1] regarding accidents in Germany from benzin during the year 1914 remind us that danger from industrial products or occupations could be averted if there were more widespread intelligence regarding the behavior of the materials used or the ways of supplying innocuous procedures. How serious the harm from benzin may be is illustrated by the fact that out of the reported accidents, 120 deaths and 154 serious injuries resulted in a single year. Most of these occurred in connection with the automobile traffic or the technical use and transport of benzin. Many arose from the household uses of the substance. Benzin is widely employed in the work of chemical cleaners and dyers. If it were widely realized that noninflammable substitutes for benzin[2] exist which are perfectly suited for most uses except power production and illumination, a considerable conservation of human life might result.

ARSENIC IN THE HAIR

The distribution of arsenic, after its introduction into the body, and the subsequent mode of elimination, are topics that have had a twofold significance. They are related to the therapeutic use of the substance as a drug, which is certainly not decreasing at the present time; and they have a bearing on the deportment of arsenic as a poison, and its consequent connection with medicolegal problems. Not infrequently, such questions as the possible earlier therapeutic administration of arsenic in cases of suspected acute poisoning, or the postmortem introduction of the element, have been confused by the conflicting nature of the evidence which the literature of toxicology has afforded. Ordinarily, it is stated that arsenic is excreted essentially by the kidneys. The elimination begins very soon after the administration, and may be prolonged for days and even weeks. The length of time varies in different reports according to the dosage, its possible repetition and perhaps other undiscovered factors. The intestine has played an insignificant part in the consideration of the removal of arsenic from the organism, except so far as ingested portions have failed of absorption. We are now assured on the authority of Professor Heffter,[3] the pharmacologist of the University of Berlin, that the skin and its appendages must also be looked on as a seat of elimination. The intake of both organic and inorganic compounds of arsenic into the organism in any way whatever, whether in repeated or single doses, leads to its deposition in the hair. This process is dependent on the continuation of life. Dead hairs do not take up arsenic. The element is present in the hair structure in a combination insoluble in water or alcohol, and its content may vary in man from one to five parts per hundred thousand. This inclusion in a part of the body destined to be cast off—a phenomenon which has, of course, been known for some time—may be looked on as one mechanism for ridding the organism of foreign substances. The entrance of arsenic into the hair proceeds more slowly and later than its deposition in the abdominal viscera. In rapid acute intoxications, the latter may exhibit the presence of arsenic without its having penetrated into the hair. In continued arsenical therapy, it may be fourteen days or longer before arsenic appears in the hair. On the other hand, the element vanishes with extreme slowness from the hair, so that its presence may still be demonstrated after months and even years. Arsenic can sometimes be found in the hair after it is no longer detectable in the liver or bones. The hairs retain the poison, and its excretion by means of these epidermal structures requires a long time. This fact involves a feature of medicolegal importance. The presence of arsenic in internal organs and its absence from the hair points to an acute form of intoxication. When the hairs are found to contain arsenic, while it is missing from the viscera, an earlier occasion of its introduction must be thought of. Indeed, Heffter asserts that an examination of the hair during life for arsenic is likely to verify or disprove the existence of a chronic form of intoxication with it.

1. Ztschr. f. angew. Chem., 1915, xxviii, 73. Jour. Indust. and Eng. Chem., 1915, vii, 542.

2. Benzin, one of the distillation products of crude petroleum, consisting of a mixture of hydrocarbons of the fatty acid series, must be distinguished from benzene, more frequently called benzol, which is the aromatic organic substance C_6H_6.

3. Heffter, A.: Ueber die Ablagerung des Arsens in den Haaren, Vrtljschr. f. gerichtl. Med., 1915, xlix, 194.

ANCIENT AND MODERN QUACKERY

Some of the mysteries of ancient poison lore and the intricacies of medieval pharmacy almost baffle our modern intelligence. It is not so difficult to appreciate the force of superstition, for that we have still with us today. Symbolism varies with the ages, but it is not lacking even in the most radical and up-to-date manifestations of human conduct. Yet we like to think of our times as essentially reformed and refined, freed from the indefensible prejudices of the dark ages. There is a fascination by way of assumed contrast in studying the medical and therapeutic ways of the earlier centuries. An essay by Dr. Corner[1] of the Johns Hopkins Hospital considers some of the famous remedies of old medicine. Among these was the famous theriaca of Mithridates Eupator, popular for centuries and prepared in later years at an enormous price out of more than half a hundred ingredients. It has been described as "an opiated sudorific, a sort of glorified Dover's powder." How history repeats itself will be suggested to modern students of the healing art from the fact that when the fame of theriac had become great, the drug passed out of the hands of physicians and became an article of commerce among the people. The troop of triacleurs has been replaced by the nostrum venders of the enlightened twentieth century. Psychology has certain constants that seem to represent limitations of the human mind. According to Corner, the elaborate public preparation of theriac by the Société de la Theriaque, corresponding to a modern patent-medicine syndicate, continued at

1. Corner, G. W.: Mithridatium and Theriac, the Most Famous Remedies of Old Medicine, Bull. Johns Hopkins Hosp., 1915, xxvi, 222.

Paris until nearly the beginning of the nineteenth century. He relates how the solemn ceremonies lasted from fifteen to seventeen days, beginning at 5 a. m. The session was opened by the presidents of the college of apothecaries and the faculty of medicine, the lieutenant-general of police and the king's procurator. The person to whom had been given the honor of making the theriac (and who evidently corresponded to the bewhiskered individual photographed on the label of the modern sure cures) addressed the audience, lauding the virtues of the drug, usually with many quotations from the ancients and much show of oratory. How much all of this sounds like the "testimonial" ceremony of an advertised nostrum! The dignitary gave a scientific description of the ingredients, exhibited them to the public gaze, and finally weighed and mixed them. The finished product was stored in a porcelain jar about three feet high (still extant in Paris) which was locked with three locks, the keys of which were held by three officials high in the councils of the apothecaries. Several times during the fortnight of preparation there were addresses and collations. "It is easy to see the psychologic and financial advantages of such pomp and circumstance," Corner writes. And he adds, "Imagine the effect of a public preparation of peruna on Mount Vernon Place in Baltimore, with addresses by the mayor and state chemist, the medical faculties attending in academic robes, assisted by Sousa's band!"

COMMEMORATION DAY AT SAN FRANCISCO

Before audiences that taxed the capacity of the halls, Commemoration Day Exercises were held at San Francisco. At the morning session President Rodman of the Association delivered a tribute to the work of Major-General Gorgas, who was, however, unable to be present. The addresses by Drs. Victor C. Vaughan, William J. Mayo, and William Allen Pusey, concerning infection and immunity, cancer, and syphilis, were greeted with exceptional interest. The setting apart of one day of the session as a tribute to the work of the medical service in the Canal Zone, which made the Panama Canal and the Exposition possible, was a particularly appropriate innovation.

Workmen's Compensation Laws.—The supreme court of Massachusetts has recently construed the workmen's compensation law of that state, which provides for compensation for "personal injuries arising out of and in the course of" workmen's employment to cover such cases as the following: A cook employed on a lighter had valvular heart disease. Through extra exertion in trying to save his effects when the lighter sank, his trouble was aggravated and he died. The industrial accident board found that his death arose out of and in the course of his employment, and this was upheld by the court. An optic neuritis with consequent blindness from poisonous gases which a workman came in contact with in the course of his work was held as a "personal injury" within the provisions of the statute. Occupational lead poisoning was also held by the court as included within the terms of the act. This stand of the court would indicate that in Massachusetts at least any of the occupational diseases would be considered within the purview of the compensation law.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CONNECTICUT

City Physicians Appointed.—Dr. Jacques H. Green, Waterbury, has succeeded Dr. Joseph F. Watts, Waterbury, as outside physician for the poor of Waterbury.——Dr. John J. Egan, Waterbury, has succeeded Dr. Arthur F. McDonald, Waterbury, as inside physician at the City Hospital, Brookside, Waterbury.

Public Health Legislation of 1915.—The general assembly, which adjourned last month, passed some excellent public health laws and improved by amendment some older laws. Among these may be mentioned: An act concerning the pollution of our inland and tidal waters; an act concerning the pollution of water supplies, which provides that no system of water supply shall hereafter be constructed until the plans thereof have been submitted to and approved by the State Board of Health; the board is empowered to make such orders as may be necessary to prevent the contamination of these supplies; an act amending an act concerning the appointment and duties of school physicians; this act makes the medical inspection of schools obligatory in all cities, towns or districts of more than 10,000 inhabitants; an act concerning town ordinances; this permits any town to adopt ordinances or by-laws for the promotion of health and to improve the sanitary condition of dwellings, outbuildings and premises connected therewith; an act concerning chiropody, requiring the licensing of all chiropodists after Jan. 1, 1916, and creating a state board of examiners; an act concerning the transportation of the bodies of deceased persons, authorizing the State Board of Health to make regulations concerning the preparation and transportation of bodies from or into any town or state; an act amending an act concerning the bottling and sale of drinking water; this act reduces the fee for the renewal of a license from $10 to $5; an act concerning the sale of narcotic drugs, which brings the state law into harmony with the national law, known as the Harrison Narcotic Act; and an act prohibiting advertising by fortune tellers, palmists, clairvoyants, etc., and the taking of money by fraudulent devices.

ILLINOIS

Masonic Hospital to be Dedicated.—The new Royal Arch Memorial Hospital at the Illinois Masonic Home, Sullivan, will be dedicated, July 5. Dr. Ralph H. Wheeler, as general chairman, will have charge of the ceremonies at which addresses will be delivered by General George M. Moulton, Chicago, and H. H. Montgomery, Carrollton.

Personal.—Dr. William P. Davidson, Sullivan, who received an impacted fracture of the anatomic neck of the right humerus by the overturning of his automobile, near Danville, recently, is improving and will soon be able to attend to his practice.——Dr. Egbert K. Dimmitt, Farmington, is seriously ill with disease of the liver in a hospital in Peoria, but is said to be improving.

Chicago

Billings Made Master of Science.—Harvard University, June 24, conferred the degree of Master of Science on Dr. Frank Billings, in recognition of his achievements in medicine.

School of Instruction for Midwives.—At a meeting of a subcommittee of the health committee of the Chicago city council, which is investigating illegal operations, it was recommended that a portion of the Iroquois Memorial Hospital be set aside and maintained as a school of instruction for midwives.

Coroner's Commission Issues Accident Prevention Book.—"Things You Must Know for Safety," is the title of the latest book issued by Coroner Hoffman's public safety commission. It contains thirty-two illustrations of preventable accidents, and figures showing that the coroner's campaign has been the means of reducing the number of fatalities.

IOWA

Health Survey.—Arrangements have been made for a health survey of Dallas County, which will be under the charge of Asst. Surg. K. E. Miller, U. S. P. H. S., and four

assistants. A house-to-house canvass of the county will be made and a campaign of education carried on.

Pathologic Laboratory at Waterloo.—Preliminary steps toward the installation of a pathologic laboratory at Waterloo were taken at a meeting of the Waterloo Medical Society, June 16, at which a committee of three, consisting of Drs. Frank W. Porterfield, Frank T. Hartman and Charles A. Waterbury, was appointed to visit the pathologic laboratories at Rochester, Minn., and Chicago, to purchase the necessary equipment for the laboratory and employ a director.

Northwest Iowa Physicians Organize.—The Northwest Iowa Medical Society met for permanent organization at Sheldon, recently, and adopted constitution and elected the following officers: president, Dr. William H. Myers, Sheldon; vice president, Dr. Louis L. Corcoran, Rock Rapids, and secretary-treasurer, Dr. Jay M. Crowley, Rock Rapids. The territory covered by this society includes the four northwest counties of the state.

Personal.—Dr. Cleanthus E. Birney, Esterville, who has been critically ill with tetanus, is reported to be convalescent. ——Dr. Bundy Allen, Keokuk, has been elected to the chair of roentgenology in the University of Iowa, Iowa City.—— Dr. James M. Howe, Hillsboro, was seriously injured in a collision between his automobile and a passenger train near Hillsboro.——Dr. Charles S. Woods, professor of preventive medicine in the Iowa State University, Iowa City, and state epidemiologist has resigned, his resignation becoming effective July 1.——Dr. Harve Ellis Harlow, in charge of the Pasteur department of the State Bacteriological Laboratory, Iowa City, has resigned and will engage in private practice. ——Dr. Thomas F. Kelleher, Des Moines, who has been seriously ill, is reported to be improving.——Dr. Mamie A. Coveny, Clinton, who was seriously injured in a fall as she was alighting from a street car, sustaining a dislocation and fracture of the humerus, is reported to be convalescent.

MARYLAND

Personal.—Dr. John A. Campbell Colston, Baltimore, one of the Red Cross surgeons stationed at Pau, France, has been promoted to the rank of senior surgeon to succeed Dr. E. Kirby Smith, who was the head of one of the two units stationed there and who resigned to go to Serbia to aid in the extirpation of typhus. After eleven months' service in France, Dr. Colston will leave for Baltimore, August 1.—— Dr. Thomas L. Shearer, Baltimore, who was appointed by the British government after the beginning of the war as examining physician of candidates, has sent a great number of ex-British service men to New York for enlistment.—— Dr. John C. Hemmeter, who has been seriously ill with appendicitis at his home on University Parkway, Baltimore, is reported to be very much improved, and his physicians, Drs. Lewellys F. Barker and Robert P. Bay, are now almost certain that he will not have to undergo operation.——Dr. William L. Smith, Riderwood, who has been ill, is reported to be improving.——Dr. William H. Welch of Johns Hopkins University left Baltimore, June 30, for China as one of the commission having for its object the systemization of medical education in that country.

MICHIGAN

Leprosy in Michigan.—Secretary John M. Burkart, secretary of the State Board of Health, states that there are six known cases of leprosy in the state.

Rare Cattle Disease Found.—Under date of June 12, it was reported that hemorrhagic septicemia was discovered among cattle on a farm near Forest Hill, Wexford County, and state pathologist Dr. E. T. Hallman is in charge of an investigation. Cultures have been made from the afflicted cattle. The disease is a very fatal one, from 50 to 90 per cent. of cattle affected, dying. It does not become so rapidly general as does foot and mouth disease.

Personal.—Dr. John N. E. Brown has been appointed superintendent, Dr. Angus McLean, chief of the surgical staff, Dr. Frank J. Slade, chief of the medical staff, and Dr. James E. Mead as the personal representative of Mr. Henry Ford, on the advisory board of the Henry Ford Hospital, Detroit. At present the hospital has 100 beds, but extensions will be made eventually for a 2,000 bed hospital, each patient having a private room.——Dr. Florence Huson, Detroit, who was strieken with cerebral hemorrhage in May, is reported to be critically ill.——Dr. Winfield S. Rowley, South Haven, was knocked down by an automobile and seriously injured, June 18.——Dr. Romeo H. Earle has resigned as a trustee of the village of Wayne.——Dr. Albert H. Beifeld, Ann Arbor, has been appointed professor of pediatrics in the Iowa State University, Iowa City, and head of the new detention hospital for which expenditures of $40,000 have been ordered.——Dr. Edward T. Abrams, Hancock, has been elected vice president of the State Board of Health.——Dr. Joseph B. Whinery has been elected chief of staff; Dr. Rowland S. Webb, vice chief of staff, and Dr. George H. Southwick, secretary of the medical staff of Butterworth Hospital, Grand Rapids.—— Dr. Dave B. Downing has resumed his duties as city physician of Detroit after five months' enforced idleness on account of diphtheritic infection of the eye.——Dr. Alexander McK. Campbell has been appointed surgeon at Grand Rapids for the Grand Rapids, Kalamazoo, Battle Creek and Allegan branch of the Michigan Railway Company, and Dr. Roy Thomas Urquhart, eye and ear specialist for the company.

MISSISSIPPI

Personal.—Fire at Summit recently caused serious damage to the building of Dr. J. R. Sample.——Dr. Louis H. Howard, Jackson, placed in charge of health affairs in the British, Dutch and French West Indies by the International Health Commission, has assumed his new duties, with headquarters at Trinidad.——Surg. Rudolph H. von Ezdorf, U. S. P. H. S., assisted by Tech. Asst. H. A. Taylor of the same service, is making a malarial survey of Lucedale and the vicinity.

State Board Matters.—Dr. Charles E. Catchings, Woodville, president of the State Board of Health, resigned at the semiannual meeting of the board, June 14, and Dr. S. Wade Glass, Lyon, was elected his successor.——Dr. Dudley W. Jones, Brookhaven, has been elected chief sanitary inspector of the board, succeeding Dr. Willis Walley, Richton.——The board adopted regulations providing that cuspidors be not allowed on railway coaches except in the smoking room; that every county courthouse shall be provided with a sanitary drinking fountain; that the use of the public drinking cup be prohibited; that all straws at soda fountains shall be protected from flies and dust by being kept in proper containers; and that any person, firm or corporation producing milk or by-products for public consumption in any public place, shall conform to all the rules and regulations of the State Board of Health pertaining to dairies.

NEW JERSEY

Rockefeller Foundation Laboratory.—The Rockefeller Foundation for Medical Research has begun work on the establishment of a hospital near Princeton for the study of diseases of animals. The ground, building and equipment of the laboratory will cost about $1,000,000, and the institution will be under the direction of Dr. Theobald Smith, professor of comparative pathology at Harvard University.

Personal.—Dr. Theodore W. Corwin has been elected president of the board of managers of the State Home for Tubercular Patients, Glen Gardner. Dr. W. C. Merritt of the staff of the institution has resigned and will practice in Petersburg, Va.——Dr. Charles S. Pancoast, Camden, is surgeon on the staff of General Gyula Dollinger, chief surgeon of the Hungarian army, in the Royal Hungarian Hospital, Budapest.

NEW YORK

Municipal Workshop for Tuberculosis Patients.—Plans have been perfected by the city health department of Buffalo to open a municipal workshop for the convenience of tuberculosis patients in connection with the Municipal Tuberculosis Hospital.

Personal.—Dr. Lawrence Hackett, Buffalo, has been secured as physician in charge of the bacteriologic laboratory to be started in Allegany County.——Dr. Leslie M. Wilkins, Lackawanna, was slightly injured in a collision of automobiles near Buffalo, June 15.

Laboratory Donated.—Willis Sharpe Kilmer has presented a fully equipped pathologic laboratory to the Binghamton City Hospital, and has agreed to maintain it for a term of years. The Binghamton Academy of Medicine, at its meeting June 15, voted to express to Mr. Kilmer the appreciation of the society for his gift.

Child Welfare Campaign.—The Child Welfare Exhibit has been on a tour through the northern section of the state during the past few months, and it was gratifying to note the large attendance at the public meetings. As a result of this exhibit, infant welfare stations have been authorized and will be established in Malone, Plattsburg, Ogdensburg and

Watertown. Little Mothers' Leagues were established in the schools in all the cities visited.

New Home for Convalescents.—The Burke Foundation for Convalescents, with a main institution for adults now open at White Plains, N. Y., is about to establish a thirty-bed branch for boys' convalescence at Bronxville, using the old country home and farm of the donor, the late Mr. John M. Burke. Boys from 10 to 16 will be taken free. It will be known as the "Sunny Brae, Boys' Branch," and will be under the direction of Dr. Frederic L. Brush, New York City, superintendent of the foundation.

New York City

Personal.—Dr. John C. MacEvitt, Brooklyn, had conferred on him the honorary degree of LL.D. at the St. John's College commencement in Brooklyn, June 11.

Convicted of Selling Wood Alcohol.—According to the Bulletin of the Department of Health, the Braustein Drug Co., Brooklyn, was convicted, June 3, in the court of special session of Brooklyn for selling wood alcohol for rubbing purposes labeled "alcohol." A fine of $200 was imposed and the justice suggested that the case be given wide publicity.

Lectureship Established.—Through the generosity of an anonymous donor, a lectureship has been established at Mt. Sinai Hospital in memory of the late Dr. Edward G. Janeway, who was for many years an associate of the medical staff of the institution. The foundation has been created for the purpose of inviting investigators to present the results before the staff of the hospital.

Simple Leaflet on Contagious Diseases.—During the school term of 1914 there were delivered to the teachers and pupils of the New York public schools 800,000 circulars regarding "The Getting and Spreading of Diphtheria, Scarlet Fever and Measles." To the teachers and pupils of the various parochial schools in the city were distributed 97,000 of these circulars. It is thought that the instruction will be welcome and that it will, in time, have a definite influence in reducing the prevalence of these diseases.

NORTH CAROLINA

For Care of Babies.—The James Walker Memorial Hospital, Wilmington, N. C., has donated the Bear Annex for the purpose of affording free treatment for infants of the community during the heated term. A sum of $3,000 has been secured for expense, and if the season's results are satisfactory, the management will likely build extensively for the continuance of this work in future summers.

State Health Officers Meet.—The fifth annual meeting of the North Carolina State Health Officers' Association was held in Greensboro, June 14, under the presidency of Dr. William M. Jones, Jr., Greensboro. "Sanitation in the Public Schools," "Rural Sewage and Its Disposal," "The Problem of Contagious Diseases," "The County Fight on Typhoid," were the four vital problems that occupied the session. The evening was wholly given to the tuberculosis problem. The following officers were elected: president, Dr. Daniel E. Sevier, Asheville; vice president, Dr. Charles T. Nesbitt, Wilmington; and secretary-treasurer, Dr. George M. Cooper, Clinton.

State Society Meeting.—The sixty-second annual session of the Medical Society of the State of North Carolina under the presidency of Dr. Lewis B. McBrayer, Sanatorium, N. C., was held in Greensboro. June 15-17. The annual meeting date was changed to the third week of April to avoid conflict with the American Medical Association sessions. The 1916 session will be held in Durham. The following officers were elected: president, Dr. Marshall H. Fletcher, Asheville; vice presidents, Drs. James L. Nicholson, Richlands; Dr. Lucius N. Glenn, Gastonia, and Dr. William H. Hardison, Creswell; secretary, Dr. Benjamin K. Hays, Oxford; and treasurer, Dr. William M. Jones, Jr., Greensboro.

Conjoint Session.—The annual conjoint session of the State Board of Health with the North Carolina State Medical Society was held in Greensboro. The State Laboratory of Hygiene reports a gain of 25 per cent. over the routine work of the previous year. It was announced that in accord with legislative action, the board proposed to establish at an early date a biologic plant for the preparation of vaccines, serums, etc. There was printed a monthly edition of 47,000 copies of the *Bulletin*, which is sent to every citizen desiring it. Health exhibits were held by the board in eight of the principal cities of the state, besides exhibits at Jacksonville, Fla., and one is now installed at the Panama-Pacific Exposition in San Francisco.

OREGON

Tick Fever.—Under date of June 16 Dr. Calvin S. White, Portland, Secretary of the State Board of Health, said that sixteen cases of Rocky Mountain spotted fever had been reported from eastern Oregon. It is announced that Surg. Lumsford D. Fricks, U. S. P. H. S., will be sent to Oregon to make an extended study of the disease in the state. Dr. Fricks has made similar studies in Montana, Idaho and Wyoming.

The Prevention of Tuberculosis.—At a meeting held in Portland, June 18, Dr. Kenneth A. J. Mackenzie, dean of the Oregon College of Medicine; Dr. Marius B. Marcellus, head of the Health Department; Mrs. Thomas Hunimon, vice-president of the Visiting Nurses Association; Mrs. Sadie Orr-Dunbar, corresponding secretary of the Oregon Federation of Women's Clubs, and Charles De Forest, field secretary of the National Association for the Study and Prevention of Tuberculosis, were appointed a committee to draw a tentative constitution and call a meeting in the near future for the formation of the Oregon Association for the Study and Prevention of Tuberculosis.

PENNSYLVANIA

Dispensary for Allentown.—The establishment of a free dispensary for the poor of Allentown was assured June 23, when it was announced that Mr. Max Hess had agreed to guarantee the salary of a physician to be in constant attendance at the institution. A committee was named to investigate suitable sites and make recommendations.

Druggists Adopt Policy of Publicity.—At the annual meeting of the Pennsylvania State Pharmaceutical Association, June 23, held at Forest Park, arrangements were made for a state-wide educational campaign by which the public is to be kept thoroughly informed in all matters in drug business and on legislature issues, particularly in their connection with public health and general welfare.

Philadelphia

Child Federation Appeal.—The Child Federation, to further its efforts for child welfare, has issued a strong appeal to fathers as voters to help better conditions of the neighborhood where they live.

Health Officials Appointed.—Miss Elsie Robbins has been promoted to third assistant bacteriologist in the Bureau of Health.——Edward A. Lees has been appointed assistant director of health and charities, succeeding Alexander M. Wilson, resigned, to become director of investigations in the department of charities in New York City.

Personal.—Dr. James K. Young has resigned the clinical professorship in orthopedic surgery in the Woman's Medical College of Pennsylvania, Philadelphia.——Dr. Hubley R. Owen, chief police surgeon of Philadelphia, is one of the representatives of the city government on the trip of the Liberty Bell to the Pacific coast.

Harrison Law.—Nine special "dope" cases were disposed of in the United States District Court on June 22. Convictions were returned in each case. Of the fifty defendants who were arrested and tried since the Harrison Law became active on March 1, not one case was lost by the government. All of the defendants either pleaded guilty or were convicted by a jury.

TENNESSEE

Personal.—Dr. Letcher E. Trent, Erwin, recently elected third assistant physician at the Iowa State Hospital, Mt. Pleasant, took up his new duties, July 1.

Leprosy.—What is said to be the first case of leprosy ever found in Tennessee has been reported from Dickinson County by the State Board of Health in the person of a 17-year-old boy who has been sent to the leper colony in Louisiana.

Tuberculosis Hospital for Prison.—Ground was broken, June 15, at the State Prison, Nashville, for a tuberculosis hospital, which is to be erected adjoining the east wall of the main prison. The hospital will cost about $20,000 and will accommodate 250 patients.

Physicians Preach Against Malaria.—Practically every pulpit in Memphis was occupied, June 20, by a physician of the city who expounded the gospel of malaria prevention. The program for Health Sunday was prepared by Dr. James L. Andrews, superintendent of the City Health Department.

VERMONT

Health Officers' School.—The seventeenth annual school for health officers of Vermont will be held in Burlington, July 19 to 22.

Cancer Study Meetings.—Under the auspices of the Vermont Medical Society and in its campaign to reduce the cancer mortality in the state, cancer study meetings were held at Rutland, June 8; Burlington, June 9; St. Johnsbury, June 10, and Montpelier, June 11. On each morning at 9 o'clock consulting and operating clinics were held. In the afternoon and evening addresses were delivered by Drs. Charles Francis Dalton, Burlington, secretary of the State Board of Health, on "Vermont's Cancer Situation," and "Is It Necessary for Vermont to Lose over Four Hundred a Year from Cancer"; by Jonathan M. Wainwright, Scranton, Pa., chairman of the Cancer Committee of the Medical Society of Pennsylvania, Scranton, on "The Field of the Medical Profession and the Laity in the Reduction of Cancer Mortality"; Dr. William Seaman Bainbridge, New York City, on "Some Practical Phases of the Cancer Problem," "What Can the People Do to Lower Vermont's Cancer Mortality," "A Stereopticon Cancer Clinic," "Danger Signals Illustrated," "The Cure of the Incurable," and "The Patient's Dilemma"; and by Dr. Francis Carter Wood, New York City, on "Practical Results of the Study of Cancer," and "What We Know About the Study of Cancer." The afternoon sessions were especially for the benefit of the medical profession, but the general public were invited to the evening sessions.

CANADA

Provincial Society Meetings.—The New Brunswick Medical Society will meet in Fredericton July 20 and 21.——The sixty-second annual meeting of the Medical Society of Nova Scotia will be held in Amherst, July 7 and 8, under the presidency of Dr. Charles A. S. McQueen, Amherst.

Sanitary Section Actively at Work.—The sanitary section of the army medical corps at Montreal was officially inspected June 16, and will shortly leave for the front.——Recruiting for No. 2 Field Ambulance depot, a session commenced at the Craig Street Drill Hall, Montreal, June 17. One company of twenty-seven men is to go forward to reenforce the companies already in the field.

Board of Health Officer Retires.—Hon. J. R. Armstrong, solicitor for the board of health of St. John, N. B., has retired after thirteen years' service. At a meeting held June 15, Judge Armstrong was presented with a cane and with an address expressing their regrets at the severance of his connection with the board and congratulating him on his appointment as county court judge.

University News.—Dr. W. A. S. Browne, Kingston, Jamaica, was the successful candidate for the McGill University, Holmes Gold Medal, for the highest aggregate in all subjects in the recent examinations.——The University of Manitoba has offered to provide the personnel of a stationary hospital for service in France. It will comprise nine physicians, seventeen nursing sisters and eighty-one rank and file.——The Western University, London, Ontario, proposes to erect a new medical building at a cost of $100,000.——The honorary degree of LL.D. was conferred on Dr. Francis J. Shepherd, Montreal, at the recent convocation of McGill University.——Dr. Edmond M. von Eberts, Montreal, has been appointed to administer and dispense the private funds of the McGill General Hospital, which, on last report, was to be located some 10 miles east of Calais.——The University of Toronto General Hospital for some weeks in England, at Folkstone, has not yet been assigned to duty. It may be sent to Malta or to Dieppe, France.

War News.—The Hon. Robert A. Pyne, Toronto, minister of education for Ontario, has left for England to confer with the War Office in connection with the proposal of the Ontario government to establish a war hospital in Britain.——A separate branch of the militia department of Canada is to be created to look especially after pensions. Medical boards are to be established in the various military districts of Canada to deal with the pensions for disabled Canadian soldiers. Another problem the Canadian government has to deal with is that of providing convalescent homes for returning soldiers.——Among others mentioned by Sir John French for distinguished service in the field, the names of several Canadian physicians appear. These are: Staff, Lieut-Col. Charles M. Foster, M.D., Toronto; Lieutenant-Colonel Ford; Lieut.-Col. David W. McPherson, M.D., Toronto; Lieut.-Col. Arthur E. Ross, M.D., Kingston; Major Hardy, M.D., Toronto; Lieut. Alfred K. Haywood, M.D., assistant superintendent Toronto General Hospital; Captain Bell, Winnipeg; Captain Brown; Captain Donaldson; Capts. John B. Fraser, Louis G. McKibbon, Thomas H. McKillip, Queen, Stone.——Capt. Francis A. C. Scrimger, M.D., Montreal, has been decorated with the Victoria Cross for valor on the field.——Of the 133 medical students who took the recent examination of the Ontario Medical Council, seventy-five have volunteered for overseas service. Thirty-six of them already had commissions, but had to take their final examinations before going to the firing line.——Maj. Thomas A. Stakey, Montreal, professor of hygiene in McGill University, has organized a sanitary section of the Canadian army medical corps. The equipment will be provided by the Canadian government.——Dr. Reginald de Lothbinere Harwood, Edmonton, Alberta, has been given command of the Fifty-First Battalion, C. E. F.——Capt. Robert J. Gardiner, Kingston, Ontario, has been appointed director of medical services of No. 6 divisional area.

GENERAL

New Officers for Medical Milk Commissions.—At the annual meeting of the American Association of Medical Milk Commissions held in Berkeley, Calif., June 18, Dr. John J. Thomas, Cleveland, was elected president; Dr. Otto P. Geier, Cincinnati, secretary; Dr. William J. Graf, Cincinnati, assistant secretary, and Dr. Julius P. Sedgwick, Minneapolis, treasurer.

Warning Against Typhoid.—The United States Public Health Service has issued a warning to the 400,000 government employees in the United States that they should be vaccinated against typhoid fever during the summer months. The bulletin states that seventy-five government employees die each year from the disease. The Secretary of the Treasury has established 164 stations where antityphoid inoculation may be obtained without expense.

Judges Appointed.—In an effort to popularize the social hygiene problem the American Social Hygiene Association several months ago announced the offer of a prize of $1,000 by the Metropolitan Life Insurance Company for the best original pamphlet on social hygiene for adolescents between the ages of 12 and 16 years. The following have been selected as judges in the contest, as recently given out: Mrs. Martha P. Falconer, Lee K. Frankel, Ph.D., Dr. Luther H. Gulick, New York; Miss Julia C. Lathrop, Dr. Milton J. Rosenau, Boston; Dr. Victor C. Vaughan, Ann Arbor, Mich., and Mrs. Ella Flagg Young, Chicago.

Session of Tropical Medicine Men.—The twelfth annual meeting of the American Society of Tropical Medicine was held in San Francisco, June 14 to 16 under the presidency of Capt. Charles F. Craig, M. C., U. S. Army. The society was presented with a bronze medal by Exposition Commissioner Charles A. Vogelsang, and the emblem was accepted on behalf of the society by Dr. John M. Swan, Rochester, N. Y., its secretary. It was decided to hold the next annual session at Washington, D. C., and the following officers were elected: president, Dr. Milton J. Rosenau, Boston; vice-presidents, Maj. Bailey K. Ashford, M. C., U. S. Army, San Juan, P. R., and Charles C. Bass, New Orleans; secretary-treasurer, Dr. John M. Swan, Rochester, N. Y., and assistant secretary, Dr. Allen J. Smith, Philadelphia.

The Fourth of July and Americanization.—A movement has been started to make the Fourth of July Americanization day for the thirteen million immigrants in the United States. Frederic C. Howe, commissioner of immigration at the port of New York, has addressed a letter to the mayors of American cities inviting them to participate and a plan has been worked out for the appropriate celebration of the day. Already many cities have accepted the invitation, and the Fourth of July, instead of being a day given up to meaningless noise, will have a new import for our new citizens in the making. The meeting in Philadelphia May 10 of the 5,000 newly naturalized citizens who listened to President Wilson's memorable address was perhaps the occasion which inspired the idea of making the movement for Americanization day general throughout the country.

Foes of Tuberculosis Meet.—At the annual meeting of the National Association for the Study and Prevention of Tuberculosis held in Seattle, June 16 to 18, Dr. John M. Glenn, New York City; W. H. Baldwin, Washington, D. C.; Dr. Edward R. Baldwin, Saranac Lake, N. Y., and Miss Maud Van Syckle, Detroit, were elected directors and the directors in turn elected the following officers: president, Dr. Theodore B. Sachs, Chicago; vice-presidents, Drs. Edward R. Baldwin,

Saranac Lake, N. Y., and Christen Quevli, Tacoma, Wash.; secretary, Dr. Henry Barton Jacobs, Baltimore; treasurer, Mr. William H. Baldwin, Washington, D. C., and executive committee, Drs. David R. Lyman, New Haven, Conn.; Orville W. McMichael, Chicago, and William C. White, Pittsburgh, and Messrs. William H. Baldwin, Washington, D. C.; Homer Folks, New York City, and Seymour Stone, Boston.

FOREIGN

Yellow Fever.—Under date of June 22, a press dispatch announced that yellow fever had appeared in Vera Cruz. Three cases had been reported.

Medical Missions Combine Work.—The Southern Methodists and Northern Baptists have united their medical work in Hu Chow, China, where the Methodists already have a hospital. This consolidation will increase the medical staff of the hospital and its equipment.

Postponement of Scandinavian Surgical Congress.—The Swedish, Danish, Norwegian and Finnish members of the board of the Surgical Association of the Northland have agreed to postpone *sine die* the annual meeting which was to have been held at Göteborg, Sweden, next month.

Postponement of International Conference on Cancer.—The *Hospitalstidende* states that the committee on cancer of the Danish Medical Association has decided to postpone till further notice the fourth international cancer conference, which was scheduled for 1916 at Copenhagen.

Illness of the King of Greece.—On the first week in June Kraus and Bier of Berlin and von Eiselsberg of Vienna were summoned to Athens to confer on the case of the King of Greece. According to cable reports, he was successfully operated on for empyema, and is now well on the way to recovery.

War Hospital Burned.—A telegram from El Paso, June 22, states that former Huertistas entered Chihuahua City, June 21, and set fire to the Tively Hotel, which was being used by General Velia as his base hospital. The report says that although 200 were rescued, more than 300 wounded were burned to death.

Deaths in the Profession Abroad.—G. Henricius, professor of diseases of women and children at the University of Helsingfors and president of the Cancer Research Society of Finland. He has published many works on obstetrics and the history of medicine in Finland, issuing them in German. ——F. Scordo, instructor in medical pathology at the University of Messina. He never recovered from injuries received in the Messina earthquake.

Union Medical College Purchased.—The China Medical Board of the Rockefeller Foundation announced on June 15 the purchase of the University Medical College at Pekin for $200,000. The college, which is the largest hospital and medical institution in China, has been owned by the London Missionary Society and supported jointly by six missionary organizations.——A commission will sail for China early in August to study the present medical conditions in that country and make investigation with especial reference to guide the future action of the board in China.

Famine Conditions in Mexico.—Reports to the American Red Cross from Nuevo Laredo show that practically no crops have been planted in that district and that the only source of supply of food for the coming year is the United States.——The corn supply in San Luis Potosi is scanty. The available supply of beans is not plenty and the new crop of wheat is scanty and difficult to obtain.——The director of the Pacific division of the American Red Cross has been sent to Mexico City personally to direct the relief operations of the American Red Cross in Southern Mexico. ——Arrangements are being perfected for the care of refugees who have just been brought from Galveston to Vera Cruz on the U. S. A. transport *Buford*.——Consul General Hanna, Monterey, advises under date of June 16 that 12,000 Mexican noncombatants were being fed by the council with corn supplied from the American Red Cross and that 15,000 will be under their care by the end of the week.——Gen. C. A. Devol, general manager of the American Red Cross, advises that he has arranged to supply Saltillo and Sabinas with rations of corn and beans.

WAR NOTES

Money for Italian Red Cross.—The Italian committee in Philadelphia, which is raising funds for the Italian Red Cross, announced on June 16 that $2,000 had already been secured for this purpose.

Red Cross Ambulances Burned.—In a fire which destroyed the extensive motor works at Park Royal, London, and which caused a damage of $500,000, 100 Red Cross motor ambulances ready for delivery were destroyed.

Castle Hospital Burned.—Dunrobin Castle, the Highland residence of the Duke of Sutherland, which has been utilized as a military hospital, was partially destroyed by fire, June 13. All the wounded soldiers and many of the pictures and other valuables were removed in safety.

Protests Seizure of Red Cross Equipment.—The Belgian minister to the United States has protested to the State Department in the name of his government and the International Red Cross against the seizure by the Germans of Belgian Red Cross funds and equipment.

New Field Hospital for War Zone.—A party of thirty-four surgeons and seventy-five nurses sailed for England for service in British field hospitals, June 22. The party is made up of physicians from the Harvard Medical School. Dr. Edward H. Nichols, Boston, is in command of the party.

American Red Cross in Italy.—The *Policlinico* of May 30 states that the Red Cross expedition, arriving at Genoa from New York on the *Caconic*, had intended to go to Budapest. As they found Italy in a state of war, they decided to place their services at the disposal of Italy and give up their plan of going to Hungary.

Auto Trucks for Red Cross.—The American Red Cross shipped on the steamship *Ioannina*, which sailed for the Piraeus, June 8, ten automobile trucks for the use of the American Red Cross Sanitary Commission in Serbia.——On the same ship eighty-nine tents and forty-two cases of hospital supplies and clothing for the Serbian Red Cross and American Red Cross hospital units in Belgrade were shipped.

New Hospitals in Italy.—The new civic hospital at Milan has just been inaugurated. Half of the expense of construction was subscribed by private individuals. It is built in scattered pavilions connected by covered corridors. The total expense is said to be about a million lire, that is, $200,000.——Bergamo's new hospital has also been inaugurated recently. The funds for this came from a legacy.——A large number of emergency hospitals have been prepared at various points in readiness for the war. At Rome the sick with chronic diseases who are able to be moved have been sent to outlying hospitals to leave room for wounded soldiers.

Typhus in Serbia.—Dr. R. Kirby-Smith of Tennessee, who has been in the typhus district in Serbia in the service of the American Red Cross, returned June 16. He reported the disease practically under control at Belgrade where he went to relieve Dr. Ryan, the American physician in charge of the hospitals in Belgrade, who was attacked by typhus. Dr. Kirby-Smith said he found Serbia one great hospital and thousands of the natives had died. In the main hospital at Belgrade there were 1,500 patients with four doctors to take care of them. The deaths in the hospital were from thirty-five to forty a day. Eventually the sanitary methods adopted by the Americans assisted by the available local forces began to show results and the epidemic began to abate.

Branch of the British Medical Association in Northern France.—A branch of the British Medical Association has been organized among the physicians with the army in France. It has been holding fortnightly meetings at Rouen for the last five or six months. The surgeons attached to the various hospitals at Rouen have also combined for concerted action. The council thus formed advises from time to time what line of treatment should be followed with different classes of injuries, and all the members of the council adopt it at once. By this means the method of treatment gets a fair and extensive trial, and a conclusive judgment can soon be passed on it. The *British Medical Journal* relates further that it is proposed to issue a leaflet for wide distribution when important experience has been accumulated on a given subject.

Defense of Italy Against Epidemics.—Our Italian exchanges state that the interior department organized last October measures for training in prophylaxis of epidemic diseases, and practical courses and exercises have been given in bacteriology at the central headquarters of the national public health service. Groups of the directors and assistants of the various local boards of health have been summoned in turn, and given a course in the latest bacteriologic technic. Practical courses on the prophylaxis of infectious diseases have been given to physicians at the various university centers, and are being continued. Courses to give an outline of the

technic of disinfection and official sterilization have been held in all the institutes for hygiene throughout the country and at numerous other points. These repeated courses are free and are open to all who wish to learn the fundamental principles for the defense against contagious diseases, but the course is designed especially for all connected with local boards of health, nurses and others. These courses have been vigorously carried on with practical instruction at twenty-four different cities, so they are accessible to all. Courses for training in first-aid work have also been given by private lecturers.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession for the week ended June 26, 1915, lists the following contributions:

Dr. Emery R. Hayhurst, Columbus, Ohio	$ 5.00
Benton County Medical Society, Rogers, Ark	5.00
Receipts for the week ending June 26	$ 10.00
Previously reported receipts	7,447.00
Total receipts	$7,457.00

PREVIOUSLY REPORTED DISBURSEMENTS

1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at $2.30	2,930.20
353 standard boxes of food at $2.28	804.84
Total disbursements	$7,310.04
Balance	$ 146.96

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Building, Pittsburgh.

Report on War Relief.—A report of the work of the War Relief Commission of the Rockefeller Foundation has recently been made. The commission sailed for Europe in November, 1914. It was soon found that it was too early for rehabilitation of the noncombatants, the worst sufferers, in the war region, and that the first work was to provide relief for starving and disease-swept nations. In Belgium the commission cooperated with other agencies and provided five full cargoes of supplies for Belgian relief at an expenditure of $1,000,000. A station was organized in Rotterdam for the sorting and distribution of the large quantities of clothing received. The Belgian refugee women in Holland were organized into sewing camps for which raw material and sewing machines were furnished in order to provide useful employment for the idle and underclothing for those who needed it. This work has been discontinued during June. About $90,000 was spent in this work. The sum of $20,000 a year has been provided for the benefit of scientific professors of Belgian universities working in laboratories in England. In northern France at first efforts were confined to the relief of distress in a few communities where it was most needed, and later was organized a comprehensive plan for the relief of the whole territory of northern France occupied by the German army. Dr. Alexis Carrel of the Rockefeller Institute was placed by the French government in charge of a military hospital near the firing line at Compiègne, and in order that the work of the hospital might be made of value to science the foundation provided apparatus and technicians to assist in research in bacteriology, chemistry and surgery as it developed in the hospital. In Serbia, after the visit of James and Bicknell of the War Relief Commission, by invitation of the Serbian government and in cooperation with the American Red Cross, the American Sanitary Commission, under the leadership of Dr. Richard P. Strong of Harvard, was established in Serbia, having in view chiefly the relief of the terrible typhus situation. After three months' work of this commission typhus has been checked in regions where it has been possible to institute sanitary measures. About $125,000 has been spent, of which the foundation furnished about $85,000, the rest having been supplied by other contributors to the Red Cross. In Poland a relief commission was established under the leadership of the American ambassador in Berlin, under a grant of $10,000 a month from the foundation. The German government then agreed to contribute $500,000 a month for the purchase of food and to stop all requisitions of food in Poland as soon as relief work began. Efforts to obtain grain from countries outside of Poland were unavailing. The German government has recently advised the commission that since its inventory of food supplies has been completed it will be able to take care of that part of Poland under its control. Similar proposals on the part of Austria followed the initiation of relief measures in southern Poland and Galicia. Only Turkey and Italy have not been investigated by the commission, but a representative will be sent to Turkey soon. The commission finds that the more highly organized communities are themselves finding it possible to alleviate the acute distress, and countries like Belgium are now able to help themselves to a degree impossible six months ago, though they are still dependent on outside food supplies. Russian Poland, Serbia and Montenegro, in the latter two of which typhus still rages, will be in need of relief for some time. The War Relief Commission has established headquarters in Switzerland and will be able to keep track of the requirements of the various war areas.

LONDON LETTER

LONDON, June 11, 1915.

The War

RISE IN INFANT MORTALITY AS A CONSEQUENCE OF THE WAR

The colossal war in which we are engaged affects the national life in many ways. One of the most important results is the effect on infant life, which is twofold. The birth rate is diminished, as shown by the figures for London in which the number of births every week is between 400 and 500 below the average in the corresponding weeks of the past five years, allowing for the growth of population. There is also an increase of infant mortality. Children have been dying in London at the rate of 200 a week for the past thirteen weeks in excess of the number dying during the corresponding weeks of last year. The returns for ninety-five other great towns in England and Wales showed that the increased mortality among children is general. Much of this is indirectly traceable to the war. In March there was a virulent outbreak of measles which has not yet run its course. This is a disease of the earlier years of childhood, but it is rare, though not unknown, in infants under 6 months old, and mortality is more common among babies of that age. A more probable cause is that infants are getting less care for reasons arising out of the war. There are fewer doctors and nurses in civil life, and they are very much overworked. Probably a more important cause is the increase in the industrial employment of married women, which is due to the shortage of male labor, produced by the creation of the new armies, and the lack of agencies for looking after young children during the absence of the mothers from home. Day nurseries have always been fewer in this country than in France in proportion to the population. Their number in London is now more inadequate than ever.

Mr. Long, president of the Local Government Board, received a deputation from the Women's Cooperative Guild, which urged the passing of immediate legislation dealing with the care of maternity and infancy. It was urged that the notification of births act should be made universal; that the powers of county councils should be extended so as to cover the establishment of maternity centers and maternity hospitals, and that sanitary authorities should have legal powers to provide antenatal advice and treatment, and carry on preventive health work among children. Mr. Long, in a sympathetic reply, said that anything that could be done to protect infant life ought to be done. At this moment of supreme national trial, the preservation of infant life and the lives of our women was of increased importance. In the few months that had passed since August, the population of a great town had been removed from among us—the best, the bravest, and the finest of our manhood. He would be glad, indeed, to introduce legislation making the notification of births act compulsory all over the country.

THE SHORTAGE OF PHYSICIANS

The great draft made on the profession for the supply of surgeons to the new armies has created a difficult problem in civil practice. Already the professional reserves have been drawn on to the full, and the question arises whether it may be possible by a rearrangement of work to meet the demands and to secure a certain margin of safety. The question is difficult because men carrying on practices have a vested interest which, indeed, represents their working capital. A practice is largely a personal matter, and its value always tends to deteriorate in the hands of any one other than the man who built it up. All methods of dividing up private medical work inflict injury on the doctors who are thereby set free. This consideration is important, for it is to the general practitioners of the country that we must look for further help. In districts of the poorer class the doctors are already fully occupied, and no rearrangement is possible

or desirable; but in the suburban areas of large towns a different state prevails. Here there are to be found young men with comparatively small practices who are engaged in the work of "building up." That is to say, they are investing time and sometimes money in districts in which they hope to be able to establish a large connection. Many of these physicians are serving the state by attending the wives and families of soldiers, by hospital work, or in some other capacity; but organized effort in these districts would probably set free a considerable number. Medical work might be centered in the hands of a few selected physicians whose whole energies would be required. In this way, loss of time which at present the nation cannot afford would be obviated. It would of course be necessary to insure that, at the end of the war, those who had been dispossessed should receive compensation, and this would not be an easy matter.

PARIS LETTER

Paris, June 10, 1915.

The War

USEFULNESS OF ROENTGENOSCOPY IN WAR EVEN FOR NONSURGICAL CONDITIONS

At one of the recent sessions of the Réunion médicale de la VI-e armée, Dr. H. Grenet called attention to the utility of Roentgen-ray examinations methodically employed near the army zone. The hospitals in this zone are constantly receiving emaciated patients who have lost their appetite and are often a little feverish, coughing and presenting an appearance suggesting tuberculosis. The question is whether the condition is really tuberculosis or merely one of exhaustion or light but somewhat protracted bronchitis. When the stethoscopic signs are uncertain or lacking and the bacteriologic examination of sputum is negative, it would be necessary, in order to establish the diagnosis by the usual clinical measures, to submit these numerous patients to a lengthier period of observation which would seriously encumber the hospitals. Rapid diagnosis is possible in these cases by means of roentgenoscopy. If, on the screen, the patients present an obscure apex or a mediastinal adenopathy in the course of evolution, they are either immediately removed to the interior of the country, where they are given a long leave of absence for convalescence, or else discharged. If, on the other hand, they present a normal roentgenoscopic picture, they are kept and after a course of rest and good food they are able to return to their corps. This mode of procedure also diminishes the risks of the spread of infection, since the tuberculous patients only pass through the hospital without undergoing any prolonged contact with the other patients.

TREATMENT OF WOUNDS WHICH COMMUNICATE WITH THE RECTUM OR THE URETHRA

The treatment of these wounds was the subject of an interesting discussion at the Société de chirurgie. Dr. Cadenat of Paris laid down the rule that in the presence of a wound communicating freely with the urethra or the rectum, the first condition for obtaining cicatrization is to permit the urine and fecal matter to be discharged without contact with the wound. He has seen death occur in the case of a patient who for more than a month had discharged all dejecta by a large sacral fistula. On the other hand, in two cases he had occasion in the first few days after the wound to make an iliac anus and an opening for the discharge of urine (suprapubic cystostomy) respectively in men whose wounds formed a perfect cloaca; the wounds became completely transformed and cicatrized without complication. Professor Quénu does not agree with Dr. Cadenat with regard to treatment of wounds of the rectum. He has observed three. In none of them has he made use of colostomy. The essential thing is to open up along the path of the projectile. Dr. Morestin, agrégé and surgeon of the hospitals of Paris, also prefers to lay open the region of the wound and to drain it directly, at least as the first measure adopted. The predominant feature in the four cases of wound of the rectum that he has had occasion to treat was serious infection of the cellular tissue of the pelvis. It was necessary only to incise freely, to drain and to disinfect. Of the four patients only one succumbed. Two others recovered completely under treatment by deep and extensive incisions. The fourth is still under treatment. Dr. Hartmann, professor of clinical surgery at the Faculté de médecine de Paris, has, since the beginning of the war, treated four cases of projectile wound of the rectum. In none of them has he performed a colostomy. He has merely opened up the wound freely and instituted drainage. Two of the patients died, one of secondary hemorrhage and one of embolism. In the two other cases he has seen the large rectal fistula close up and become healed very rapidly after resection of the sacrum and removal of a fragment of shell.

Measures Against Alcoholism

The Syndicat des travailleurs municipaux (section of asylums and hospitals of the department of the Seine) has just addressed to all the senators a petition that the senate pass the law limiting the number of places for the sale of drinks. There are in France, according to this letter, 483,000 declared drinking places (it is impossible to say how many clandestine ones) which amounts to one for every eighty inhabitants. These are disheartening figures. There is one liquor shop for every 246 Germans, one for every 380 Americans, one for every 430 English and one for each 3,000 Swedes. Paris has 33,300 liquor shops for 2,601,000 inhabitants. London has only 5,860 bars for 4,536,000 inhabitants, and New York has 10,821 saloons for 3,437,000 inhabitants.

Award of the Osiris Prize

The five academies which constitute the Institut de France have just held a secret session for the award of the Osiris prize. It was awarded, as recommended by the committee of award (The Journal, June 5, 1915, p. 1928), that is, half of it (50,000 francs or $10,000) to Drs. Chantemesse and Fernand Widal, professors at the Faculté de médecine de Paris, and the other half to Dr. Vincent, professor at the Ecole de médecine et de pharmacie militaires du Val-de-Grâce, for their work on antityphoid vaccination. When the reading of the report was finished, a discussion took place which lasted for almost an hour and a half. In order to enlighten their colleagues who are not informed on this side of the question, some members of the section of medicine spoke on the rôle of each in the discovery of the application of antityphoid vaccination. One member then proposed to have a part of the prize awarded to Wright, who in the Transvaal was the first to vaccinate troops in campaign against typhoid fever. The reader of the report explained that this proposition was against the intentions of the testator, who specified in his will that the prize should be reserved exclusively for Frenchmen.

A member of the Academie des sciences then remarked that the academy would prepare to award to Wright one of its highest recompenses for his admirable work on antityphoid vaccination. The senate then voted, seventy-three votes against six and two blank ballots to share the prize as previously explained. It was also decided that 60,000 francs ($12,000) out of the arrears of the last Osiris prize, which was not awarded three years ago, should be devoted to the military preparations patronized by the Institut de France.

BERLIN LETTER

Berlin, June 1, 1915.

Personal

DEATH OF PROFESSOR SONNENBURG

The surgeon in chief since 1890 of the Moabit public hospital, at Berlin, Professor Sonnenburg, died suddenly of heart disease, May 25, aged 66. He studied under Lücke and in 1880 became assistant to Langenbeck at Berlin and later on to his successor, von Bergmann. He received his degree at Strassburg in 1876, and was appointed professor extraordinary at Berlin in 1883. He contributed many articles and monographs to the "Manual of Practical Surgery," to the *Deutsche Zeitschrift für Chirurgie* and various compilations. He became best known by his clinical work and his publications on the pathology and therapy of appendicitis. Sonnenburg was a man of distinguished appearance, and was popular in the profession at home and abroad with his students and also with patients. His efforts contributed most to the founding and development of the International Surgical Congress, and he was deeply concerned in regard to consequences for science of the war. He had been prevented from taking any active part in the war by an attack of kidney-stone colic just as he had been summoned to serve as a generalarzt in the field. The attack wrought such damage that he never recovered from it, and died from the indirect consequences.

The War

WORK OF DENTISTS IN THE FIELD

Dentists were supplied to the German military hospitals from the beginning of the war, and their work was found so

useful that it was deemed wise to increase their number and call on the students of dentistry to practice dental work and summon them from the troops among whom they had been distributed. Besides this, the physicians were given a corresponding number of technicians skilled in making dental prostheses. This is the main part of the work on the firing line, as there are so many wounds of the jaws; but in the set camps and occupied towns, the care of the teeth and mouth is predominant. More frequently than in peace the officers and men break their artificial teeth. The constant moving about, the lack of any safe place to keep them and the demands on the teeth from the coarser food render repairs frequent and necessary. At first there was a deficiency in materials for artificial teeth; this was remedied to a slight extent by the supplies found in the dental offices in the enemy's country. Conditions are better now. On certain days some of the dentists from the base hospitals go to the front to undertake the necessary dental operations on the different bodies of troops. The drill and the set of instruments are carried on a motor truck and with the expert prosthesis maker, the dentist tours away. He generally has to cover from 12 to 20 kilometers before he reaches the part of the troop to which he has been directed.

WELFARE WORK IN BELGIUM

The German government of the part of Belgium occupied by our troops does not restrict its efforts to collecting taxes, bringing order into affairs, building up destroyed places and starting trade and industry to work again, but it is also engaged in applying to circumstances in Belgium, the social welfare work which in peace has realized such successes among our enemies. The difficulties of this work are not trifling as the populace, not only from lack of understanding but also from resistance to the benefits imposed on them, rebel against the introduction of these welfare measures. Already under way under the auspices of the Red Cross are arrangements to provide work for the unemployed, to combat tuberculosis and venereal diseases and welfare work for children. To disseminate knowledge on these subjects a periodical has been founded by Professor Pannwitz at the head of the organization. The periodical is called *Das belgische Rote Kreuz*. The welfare work for children is the youngest branch of this work. To aid in starting the various branches of the work, von Behr-Pinnow and Professor Langstein, the curator and director, respectively, of the Kaiserin Auguste Viktoria institution, the central headquarters for infant welfare work in Germany, were summoned to Brussels to discuss ways and means. There is much to be done. The death rate among infants in Belgium is comparatively low, averaging 14 per cent. But the number of stillborn is large. Besides this, the statistics in Belgium are not reliable because they are not compiled with sufficient accuracy. The central welfare station (*dispensaire social*) of the Belgian Red Cross has already installed a number of visiting nurses or welfare workers who sought out in more than 200 families the children requiring special measures; but unfortunately, the same difficulty was experienced here as in the other branches of the Belgian Red Cross: the Comité d'hygiène refuses to carry on its work because the comité directeur had been dismissed for political reasons. It is therefore impossible for the present to work in common with the Belgian institutions of the kind. According to Professor Langstein, attendance at Belgian infant consultations and *cantines maternelles* has increased considerably. Up to the present time only 2 per cent. of the Belgian infants are under charge of the welfare workers, a very low proportion in consideration with the 15 per cent. in Germany. In the mothers' cantines the nursing mothers are given an abundant midday meal, an arrangement similar to that in France and Germany. In Charlottenburg, for example, similar provisions are made for adequate nourishment of pregnant women before delivery. Professor Langstein obtained a very favorable impression of a day nursery at Antwerp. It had accommodations for from forty to fifty children, and there were six attendants. The mother pays only 5 centimes a day for her child. The rest is provided by benefactors whose names are inscribed over the different beds. In the day nursery there is also a school for girls of 14 or 15 to train them in the care of infants. There are no professionally trained infant nurses or welfare workers in Belgium as yet. The women who do such work do it from philanthropy. There do not seem to be any training schools for nurses in Belgium. There are also in this field rich opportunities for German uplift work (*für deutsche Kulturarbeit ein reiches Feld*).

Deaths

Alfred Mitchell, M.D. College of Physicians and Surgeons in the City of New York, 1865; a Fellow of the American Medical Association and president of the Maine Medical Association in 1892 and 1893; assistant surgeon of the Ninth Maine Volunteer Infantry during the Civil War; lecturer in pathology and successively professor of therapeutics, obstetrics, pediatrics, gynecology, practice of medicine and internal medicine and secretary and dean of the faculty of the Medical School of Maine, Brunswick; and since 1911 emeritus professor of internal medicine; who was given the degree of LL.D. by Bowdoin College in 1907; a member of the consulting staff of the Maine General Hospital and of the Central Maine General Hospital and a member of the board of overseers of Bowdoin College; died at his home in Brunswick, June 13, aged 78.

Francis Oswald Dorsey, M.D. College of Physicians and Surgeons in the City of New York, 1896; a Fellow of the American Medical Association; associate professor of medicine in the Indiana University School of Medicine, Indianapolis; consulting and attending physician at the Indianapolis City Hospital for fifteen years; assistant professor of the principles and practice of medicine in the Indiana Medical College from 1889 to 1900 and assistant demonstrator in pathology from 1900 to 1907; for four years consulting physician to the Indianapolis Dispensary and clinician to the Bobbs Free Dispensary; died in the Methodist Hospital, Indianapolis, June 17, nine days after a surgical operation, aged 45.

Robert William Long, M.D. Jefferson Medical College, 1866; Bellevue Hospital Medical College, 1869; for forty years a resident of Indianapolis and for the last twenty-five years interested largely in real estate; a veteran of the Civil War; who with his wife had donated $245,000 for the establishment of the Robert W. Long Hospital intended as a teaching hospital for the Indiana University School of Medicine; died at his home in Indianapolis, June 18, from disease of the liver, aged 71.

Charles A. Cooperrider, M.D. Medical College of Ohio, Cincinnati, 1890; a Fellow of the American Medical Association and American Academy of Medicine; for several years professor of physical diagnosis in the Ohio Medical University, Columbus, and professor of diseases of children for several years at Starling-Ohio Medical College, Columbus; a member of the medical staff of the Protestant Hospital; died in his office in Columbus, Ohio, June 15, from cerebral hemorrhage, aged 53.

Henry Gray, M.D. College of Physicians and Surgeons in the City of New York, 1867; a major in the Federal Service during the Civil War; for forty-five years a member of the Greenwich (N. Y.) Board of Education; once president of the Greenwich and Johnsonville Railroad; president of the Greenwich Union Waterworks Company since its organization, and president of the Consolidated Electric Company; died at his home in Greenwich, N. Y., June 20, aged 73.

John W. Coleman, M.D. Miami Medical College, Cincinnati, 1856; Medical College of Ohio, Cincinnati, 1858; assistant surgeon of the Forty-First Illinois Volunteer Infantry throughout the Civil War; for more than half a century a practitioner of Monticello, Ill., and first superintendent of schools of Piatt County; died at his home in Decatur, Ill., June 8, aged 84.

William L. Breyfogle, M.D. Hahnemann Medical College, Philadelphia, 1868; formerly a practitioner of New Albany, Ind., and later one of the builders and president of the Louisville, New Albany and Chicago Railway, now the Monon Route, and later a director in the New Albany Banking Company; died at his home in San Mateo, Cal., June 15, from pneumonia, aged 66.

Edward E. Hazlett, M.D. University of Pennsylvania, 1880; of Abilene, Kan.; a Fellow of the American Medical Association and a specialist on diseases of the eye, ear, nose and throat; while returning from Annapolis, Md., where he had just witnessed the graduating exercises of his son from the Naval Academy; died suddenly on a train at Brookfield, Mo., June 17, aged 63.

John Tillman Lamkin Boyd, M.D. Tulane University, New Orleans, 1909; formerly a Fellow of the American Medical Association; a member of the Mississippi State Medical Association; local surgeon for the Illinois Central Railroad at Summit, Miss., and president of the local board of health;

died at his home in Summit, June 11, from cerebral hemorrhage, aged 33.

Albert S. Core, M.D. Rush Medical College, 1879; a Fellow of the American Medical Association and a specialist on diseases of the eye, ear, nose and throat; formerly of Du Quoin, Ill., and Chicago, but for the last seven weeks a practitioner of Mendota, Ill.; died in his office in that city, June 16,. from cerebral hemorrhage, aged 65.

Frank Fithian, M.D. University of Pennsylvania, Philadelphia, 1884; a Fellow of the American Medical Association; of Paris, Ky.; for many years a member of the local school board; a member of the staff of the Massie Memorial Hospital; died in the Christian R. Holmes Hospital, Cincinnati, June 12, from pneumonia, aged 55.

Harold W. Blackburn, M.D. University of Texas, Galveston, 1896; of Normanna, Texas; aged 45; who had been under treatment in a hospital in Beeville, Texas, for several weeks, died at his home, June 17, from the effects of a gunshot wound of the head, believed to have been self-inflicted, with suicidal intent.

Reuben Willis Bower, M.D. Northwestern University Medical School, 1870; a member of the Illinois State Medical Society; a veteran of the Civil War, in which he served in the hospital corps; for more than forty years a practitioner of Sheridan, Ill.; died at his home, June 10, from cerebral hemorrhage, aged 76.

John Wesley Nickson, M.D. University of the South, Sewanee, Tenn., 1907; formerly a Fellow of the American Medical Association; a member of the Oklahoma State Medical Association; a physician and druggist of Loco, Okla.; aged 34; was drowned recently while attempting to cross a flooded creek.

George P. Hall, M.D. University of Louisville, 1877; Jefferson Medical College, 1878; a Fellow of the American Medical Association and one of the most prominent specialists on diseases of the eye, ear, nose and throat of the state; died at his home in Houston, Texas, June 9, aged 58.

James Edwin Cleaves, M.D. Harvard Medical School, 1879; a Fellow of the American Medical Association; aged 62; died at his home in Medford, Mass., June 20, from an incised wound of the heart, self-inflicted it is believed with suicidal intent, while suffering from melancholia.

Henry Mazyck Clarkson, M.D. University of Pennsylvania, Philadelphia, 1859; a member of the Medical Society of Virginia; surgeon in the Confederate Service during the Civil War; a well-known poet of the South; died at his home in Haymarket, Va., June 17, aged 78.

William Clinton Gibson, M.D. Jefferson Medical College, 1881; Missouri Medical College, St. Louis, 1891; a member of the Washington State Medical Association; for twenty-five years a practitioner of Seattle; died at his home in Port Angeles, Wash., June 8, aged 52.

Frank Havens Russell, M.D. University of Maryland, Baltimore, 1893; a Fellow of the American Medical Association; for several years a member of the Board of Health of Wilmington, N. C.; died at his home in that city, June 4, from cerebral disease, aged 43.

John Mason Hastings, M.D. Harvard Medical School, 1895; a member of the Massachusetts Medical Society; a practitioner of Dorchester, Boston; assistant gynecologist to the Carney Hospital, Boston; died at his summer home in Provincetown, Mass., June 11.

Joseph John Dallal, M.D. John A. Creighton Medical College, Omaha, 1901; a Fellow of the American Medical Association; a native of Syria and for several years a practitioner of Kansas, and coroner of Decatur County; died at his home in Omaha, June 13, aged 46.

Joel Hamlet Barham, M.D. University of Louisville, Ky., 1876; Tulane University, New Orleans, 1880; a Fellow of the American Medical Association and a practitioner of Nacogdoches County, Texas; died at his home in Nacogdoches, June 11, aged 68.

James Dermot Hayes, M.D. New York University, New York City, 1894; a member of the Connecticut State Medical Society; for nearly twenty years a practitioner of Torrington, Conn.; died in Dr. Peck's Sanitarium, Woodmont, Conn., June 14, aged 45.

Leon Leigh Friedrich, M.D. George Washington University, Washington, D. C., 1881; formerly resident physician at the Providence Hospital and assistant at the Central Dispensary, Washington; died at his home in that city, June 16, aged 57.

W. C. Cosby, M.D. University of Tennessee, Nashville, 1893; formerly a member of the Kentucky State Medical Association; a physician and druggist of Slaughterville, Ky.; died June 15, from cerebral hemorrhage, aged 50.

William C. Johnson, M.D. College of Physicians and Surgeons, Baltimore, 1887; a physician and druggist of Coleman, Fla.; was shot and killed by his son, June 6, aged 52.

Marriages

HUNTER W. SCARLETT, M.D., American Ambulance Hospital, Paris, France, to Miss Edith Townsend of Bryn Mawr, Pa., in Paris, June 10.

MELVILLE BENDHEIM FISCHER, M.D., Washington, D.C., to Miss Marguerite Greenhut of Escanaba, Mich., in Washington, June 22.

EDWARD DEWITT LEONARD, M.D., Boston and Newton, Mass., to Miss Grace Kyle Richardson of Newton Center, Mass., June 15.

THOMAS LEONARD RICHARDSON, M.D., Baltimore, to Mrs. Ruby Thompson Moore of Monroe, N. C., at Charlotte, N. C., June 16.

JACOB CASPER HUTZELMAN, M.D., Crestvue, near Sharonville, Ohio, to Miss Marie D. Glassmeyer of Cincinnati, June 16.

JAMES ALEXANDER THOM, JR., M.D., Zachary, La., to Miss Virginia Hulsart of Big Rapids, Mich., in New Orleans, June 15.

ALEXANDER YELVERTON PEYTON GARNETT, M.D., Washington, D. C., to Miss Mildred Poor of Easthampton, L. I., N. Y., June 12.

ACHILLE MURAT WILLIS, M.D., Richmond, Va., to Miss Emma Gold Hutcheson of Rockbridge Baths, Va., June 9.

W. REID PUTNAM, M.D., State Epileptic Colony, Va., to Miss Alice Aylett Callaway of Norwood, Va., June 3.

ELLIOTT HOLSWORTH HUTCHINS, M.D., Barstow, Md., to Miss Ernestine Stier Dulaney of Baltimore, June 15.

OSCAR GUSTAV NELSON, M.D., Huchow, China, to Miss Henrietta Sperry of East Nashville, Tenn., June 11.

BENJAMIN WALTER HAMILTON, M.D., to Miss Florence Sarles Durstine, both of New York City, June 9.

HOWARD CASPER MURRAY, M.D., to Miss Margaret Elizabeth Grosvenor, both of Herkimer, N. Y., June 15.

JOHN JAY MOORE, M.D., Soldiers' Home, Calif., to Miss Persis Hasselbach of Fremont, Ohio, June 17.

IRA ELMER HOFFMAN, M.D., Chicago, to Miss Florence Emilie Demaree of Madison, Ind., June 14.

FRANCIS PEYTON ROUS, M.D., to Miss Marion Eckford De Kay, both of New York City, June 15.

ERICH W. SCHWARTZE, M.D., New York City, to Miss Annie J. Andrews of San Antonio, Tex., June 5.

JOHN PUNNETT PETERS, M.D., to Miss Charlotte Morse Hodge, both of New York City, June 19.

HARRY MORTIMER RICHTER, M.D., to Miss Adelyn Ruth Windmuller, both of Chicago, June 23.

FERDINAND F. DOLLERT, M.D., Milwaukee, to Miss Jessie Baranowski of Oshkosh, Wis., June 8.

ROBERT EDWARD PLUNKETT, M.D., Whitehall, N. Y., to Miss Rose Wilson of Troy, N. Y., June 16.

FRANCIS A. MALONE, M.D., Waterford, Wis., to Miss Marie C. Scholl of Pewaukee, Wis., June 18.

JAY M. KOHNS, M.D., Honolulu, Hawaii, to Miss Lulu Urban of Louisiana, Mo., June 12.

JOHN WILLIAM GOGGIN, D.D.S., to Miss Margaret Helen Mann, both of Chicago, June 12.

LAZARUS KARP, M.D., to RACHEL L. LOVENSTEIN, M.D., both of Richmond, Va., June 2.

EVERETT BENSON WILLIAMS, M.D., to Miss Cecelia R. Daly, both of Chicago, May 3.

A. WILSON HALE, M.D., to Miss Elza Roe Atkinson, both of Nashville, Ark., June 17.

ARTHUR T. BETTS, M.D., Chicago, to Miss Florence Bras of Seattle, Wash., June 19.

SAMUEL T. LIPSITZ, M.D., to Miss Babette Kahn, both of St. Louis, June 15.

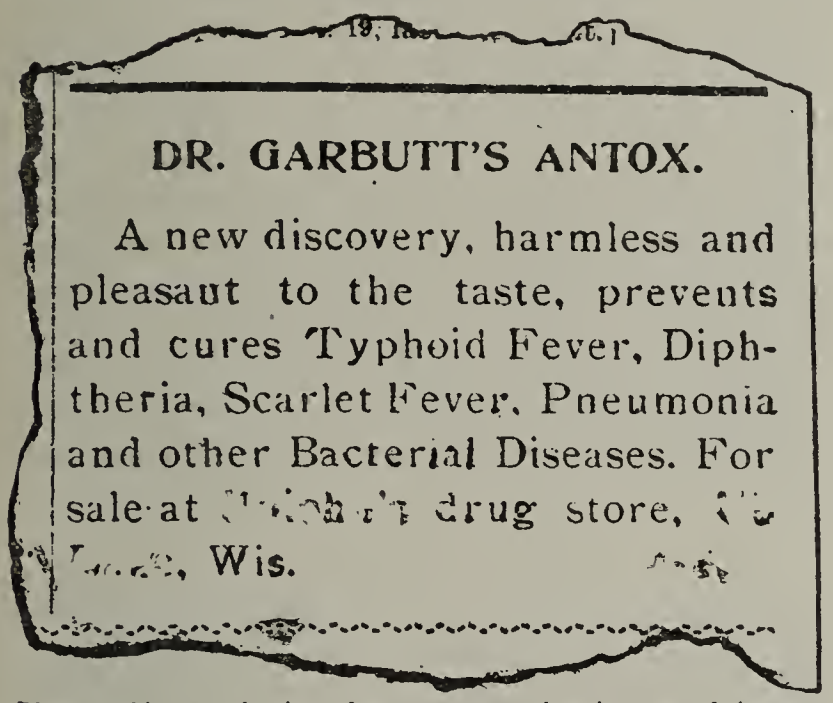
The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

ANTOX

"Dr." Garbutt's Panacea

Antox is put on the market by "Dr." W. J. Garbutt of Milwaukee. When Wisconsin granted Garbutt a license to practice medicine in 1900, the claim seems to have been made that he was a licenciate of the Royal College of Surgeons, England. As the "Medical Register for 1915" of the British Isles did not show any such man to be a licenciate of the Royal College of Surgeons, a letter was written to the secretary of the Examining Board of the Royal College of Surgeons, bringing this fact to his attention. The secretary replied that there was no member of the Royal College of Surgeons of the name of W. J. Garbutt, and apparently no such person had ever presented himself for examination.



Photographic reproduction of a newspaper advertisement of Antox.

Garbutt seems to put his nostrum on the market in various ways. One of them is by traveling over the state with a concern calling itself the "Quaker Doctors," a medicine-vaudeville show. In this connection the following extracts from a letter received some time ago from a small town in northern Wisconsin are to the point:

"A couple of months ago a patent medicine concern calling themselves 'Quaker Doctors' rented the Opera House in this town and for two weeks ran a nightly vaudeville show—and between acts sold their medicine and other sundries such as tooth powder, toilet soap, etc.

"With each dollar purchase the purchaser received a ticket entitling holder to a free consultation by Dr. Garbutt who travels with the show and conducts a temporary office in town while show lasts. . . . Among other remedies that they sold was one they call 'Antox.'

"Between the vaudeville acts Dr. Garbutt would get on the stage, sit down sideways, and let the people see his honest and benevolent countenance. There he would sit silent while the manager with a bottle of Antox in hand would relate the great wonders that this remedy can accomplish; that it would cure every contagious disease if taken at onset; that Dr. Garbutt had spent 35 years of his life to perfect this his gift to humanity. At only one dollar a bottle. Those are the words he used. My wife was present and of course she believed it, and when shortly after my child became sick instead of calling for a doctor my wife insisted that I go to the drug store and buy a bottle of Antox, which I did, and after using it for a couple days and the child getting worse we sent for a doctor, but too late. That night my child passed away.

"I was told that you analyze stuff of that nature. I am sending you part of the medicine left and would like to hear your report on it and if it is a rank fraud, as I suspect it is, I may be able to get our editor to publish it in his paper.

"Enclosed you will also find marked copy of our paper with Antox ad. in it. I would send you an original bottle, but have been out of work lately and cannot afford to buy it."

In addition to the "traveling doctors'" method of bringing Antox before the public, Garbutt also seems to have had the impudence to present the stuff to physicians. As is usually done in such cases, Garbutt issues two sets of advertising, one for physicians and the other for the public. There is little to choose between them. To the public Garbutt presents:

"My Gift, Antox, To Humanity."
"The Most Important Discovery ever made in Preventive Medicine."
"Dr. Garbutt's Antox Prevents Scarlet Fever, Diphtheria, Pneumonia, Measles, Typhoid Fever, Cholera and other Bacterial Diseases."

To the medical profession Garbutt presents his nostrum under the following claims:

"An Anti-Toxic treatment for bacterial diseases."
"The most important advance in medicine since the discovery of Antiseptics."
"Antox gives immediate results in Pneumonia, Typhoid Fever, Diphtheria, Scarlet Fever, Measles, Diarrhea and Cholera Infantum, reduces pulse and temperature in a few hours, and promotes rapid convalescence."
"Antox is a scientific preparation of Chlorine, Sulphur and Ammonia."

The last statement quoted is, apparently, the only intimation that Garbutt gives of the composition of his "patent medicine." The nostrum was examined in the Association's laboratory.

CHEMISTS' REPORT

"Several bottles of 'Dr. Garbutt's Antox No. 1,' prepared by Dr. W. J. Garbutt, Milwaukee, Wis., were submitted to the Chemical Laboratory for examination. Each bottle contained about 120 c.c. of a red syrupy liquid, having a sharp odor and an acid reaction. The specific gravity of the liquid at 15.6 C. was 1.0603. Qualitative tests demonstrated the presence of ammonium, chlorid, sulphite (sulphur dioxid), sulphate and invert sugar. Quantitive examination yielded the following:

Ammonia (NH_3)	0.279 per cent.
Chlorid (Cl)	0.694 per cent.
Sulphur dioxid (SO_2)	0.263 per cent.
Sulphur trioxid (SO_3)	0.018 per cent.
Invert sugar	17.47 per cent.

My Gift To Humanity

DR. GARBUTT'S ANTOX

PREVENTS Scarlet Fever, Diphtheria, Pneumonia Measles, Typhoid Fever, Cholera, and other Bacterial Diseases.

DIRECTIONS: Lose no time but the moment you notice indications of sickness in any member of the family; such as sore throat, headache, fever, coated tongue, cough, cold, pain in the chest, hard breathing, redness and running of eyes, skin eruption, rapid pulse, high temperature, etc. give ANTOX until all these symptoms have disappeared.

DOSE

Half a teaspoonful every half hour for three or four days.

Other members of the family should take a dose several times a day

PRICE ONE DOLLAR.

MANUFACTURED ONLY BY

DR. W. J. GARBUTT
701 32d ST., MILWAUKEE, WIS.

Detach this part of Label.

DR. GARBUTT'S
ANTOX No. 1
For Physicians

Gives immediate results in Pneumonia, Typhoid Fever, Diphtheria, Scarlet Fever, Measles, Diarrhea and Cholera Infantum. Reduces pulse and temperature in a few hours, and promotes rapid convalescence.

DOSE:

Half a teaspoonful or more without water every half an hour. See formula and further hints on enclosed folder

PREPARED ONLY BY

Dr. W. J. Garbutt
701-32nd St.
Phone Kilb. 4542L - MILWAUKEE, WIS.

On the left: Label of Antox as it goes to the public. On the right: Label on Antox put up for physicians.

"Essentially each 100 c.c. of the solution contains approximately 0.92 gm. of ammonium chlorid, 0.12 gm. of hydrogen chlorid (equivalent to 1.2 c.c. of diluted hydrochloric acid, U. S. P.), 0.35 gm. hydrogen sulphite (equivalent to 6 c.c. of sulphurous acid, U. S. P.), and 18.5 grams of invert sugar. The sulphuric acid present is probably due to the oxidation of some of the sulphurous acid, and the invert sugar to the influence of acid on the original "cane" sugar. The amount of sulphur dioxid (sulphurous acid) is variable in different bottles, as was attested by determinations on different specimens."

At about the same time the Association was investigating this preparation the chemists of the Health Department of the City of Milwaukee also analyzed it. The analytical data they obtained were sent to us by Dr. George C. Ruhland, Commissioner of Health of the City of Milwaukee, and they agree essentially with the findings of the Association's chemists.

In brief it may be said that Dr. Garbutt's "gift to humanity" is practically a mixture of sulphurous and dilute hydrochloric acids with small quantities of ammonium chlorid in water sweetened with syrup. The preparation is worthless and its method of exploitation is fraudulent.

Correspondence

William Withering and Digitalis—The Beginning of Syphilis

To the Editor:—It seems that few men look on medical history as of any importance, and a misstatement on that subject may be hardly worth correcting. Still, an editorial on it (THE JOURNAL, June 12, 1915, p. 1993) might as well be accurate, if accuracy makes just as good a story.

Withering did not wait ten years. He announced his observation of the properties of the foxglove immediately. Use of the foxglove became an instant fad, and Withering's book of 1786 is a protest against this. Listen to his preface: "Digitalis was in *1783* admitted to the Edinburgh Pharmacopeia, from which it will soon be dismissed if the *present* random *use* of it and the dosage that *is customary* in London shall continue." I am surprised that Cushny has never read the book. It is well worth while. It is a serious error to say, "Since the time of publication of Withering's book, its action in dropsy and on the heart has been generally recognized." It was given to cause diuresis. Dropsy was looked on as a primary disease for more than a generation following. Withering accounts for some of his failures on the ground that the dropsy was probably secondary, as there were evident signs of diseased viscera. Some of his most striking successes were in the dropsies that followed an epidemic of scarlatina. When digitalis was first used for its action on the heart, it was used as a cardiac sedative—in aneurysm and fevers, particularly the fever of consumptives.

Referring to the article by Dr. Pusey (THE JOURNAL, June 12, 1915, p. 1961), it might be well to mention the fact that recent careful study of all extant records of lazar houses and similar foundations fails to show any increase at the end of the fifteenth century of any sickness that could have been syphilis. It seems probable that the epidemic was not one of syphilis but of literary attention to that subject. Perhaps some of our modern epidemics are of this character. Meanwhile the doctrine of "epidemic influence" has been dismissed from medical thought as though there were no unknown factors in epidemiology calling for such a theory.

JOHN W. BOYCE, M.D., Pittsburgh.

A Pathognomonic Sign of Adherent Urinary Bladder in Inguinal Hernia

To the Editor:—In the last three cases of oblique inguinal hernia in which I have found the bladder attached closely to the sac of the hernia, I have found the arched muscular fibers of the internal oblique muscle, which ordinarily forms the floor of the canal (together with the conjoined tendon), closely attached to the sac. In the last case, on seeing this condition, I at once said to the assistants, "We have a portion of the bladder in this hernia."

My reason for calling attention to this is to ask the question, Is this a continuously positive evidence of an oblique inguinal hernia, with the bladder involved in it? Noting this condition in our dissection, we may save ourselves the chagrin of cutting into and through the bladder wall. These arched muscular fibers are very plain and closely adherent.

J. D. GRIFFITH, M.D., Kansas City, Mo.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ARTICLES ON EUTHANASIA

To the Editor:—I have been informed that there has been considerable discussion regarding the termination of the existence of the hopelessly insane, those suffering from painful, incurable diseases, and similar persons. Could you assist me in locating the literature?

D. R. LEWIS, M.D., New York.

ANSWER.—The following is a list of articles on euthanasia:

Tonic Effect of Sympathy with Others, Current Comment, THE JOURNAL, July 25, 1914, p. 237.
Supplicant for Euthanasia Recovers, Current Comment, THE JOURNAL, Feb. 28, 1914, p. 705.
The Problem of Euthanasia, Vienna Letter, THE JOURNAL, June 14, 1913, p. 1897.
Euthanasia as a Romantic Motive, editorial, THE JOURNAL, Nov. 9, 1907, p. 1609.
Physicians Do Not Approve of Chloroforming the Helpless, Minor Comments, THE JOURNAL, Feb. 24, 1906, p. 590.
Euthanasia for the Defective and Incurable, editorial, THE JOURNAL, Sept. 24, 1904, p. 896.
Euthanasia, Minor Comments, THE JOURNAL, Oct. 31, 1903, p. 1904.
Judicial Euthanasia, Minor Comments, THE JOURNAL, Feb. 2, 1901, p. 329.
Rosenberg, L. J., and Aronstam, N. E.: Euthanasia—A Medicolegal Study, THE JOURNAL, Jan. 12, 1901, p. 108.
Euphoria vs. Euthanasia, Minor Comments, THE JOURNAL, March 25, 1899, p. 674.
Euthanasia for Condemned Criminals, editorial, THE JOURNAL, July 23, 1898, p. 189.

WHAT IS A CALORY?

To the Editor:—In THE JOURNAL, May 22, 1915, p. 1719, Lusk says, "The calory is that quantity of heat required to raise 1 liter of water 1° C."

Alphonse Berget in his work, "The Earth: Its Life and Death," translated by Barlow, 1915, page 262, says, "A calorie is the amount of heat required to raise 1 gram of water 1° centigrade," and as this definition is repeated on page 323, it can hardly be a misprint.

The Standard Dictionary defines calory as the "amount of heat necessary to raise the temperature of one kilogram of water one degree centigrade," and the Century Dictionary gives about the same definition.

May I ask the explanation of the discrepancy noted above? H.

ANSWER.—The original calory was the quantity of heat required to raise 1 gram of water 1 degree centigrade. On account of the inconvenience of this measure, there came to be the differentiation between the small calory, based on the gram, and the large calory, based on the kilogram, just as there is a differentiation between grammeters of work and kilogrammeters of work. In the majority of textbooks, the difference between the large calory and the small calory is defined, but in most articles on nutrition the large calory has for a long time been the standard of computation, and a careful distinction between the two values is usually neglected.

LITERATURE ON URTICARIA

To the Editor:—Please give me a list of the recent articles on urticaria. M. S. DAVIE, M.D., Dothan, Ala.

ANSWER.—The following is a list of articles on this subject:

Jacob, F. H.: Care of Urticaria Pigmentosa Treated with Roentgen Ray, *Brit. Med. Jour.*, June 1, 1907.
Ravitch, M. L.: Thyroid as Factor in Chronic Urticaria, *Jour. Cutan. Dis.* November, 1907.
Vorner: Urticaria Solitaria, *Dermatol. Ztschr.*, January, 1913.
Ochs, B. F.: Urticaria Caused by the Sun's Rays, *Med. Rec.*, New York, July 30, 1910.
Wolff, W.: Quinin Effectual in Urticaria, *Deutsch. med. Wchnschr.*, Sept. 21, 1911.
Hardaway, W. A.: Notes, Chiefly Therapeutic, on Various Diseases of Skin, *Jour. Missouri State Med. Assn.*, May, 1912; abstr., THE JOURNAL, June 1, 1912, p. 1721.
Swann, A. W.: Urticaria Treated with Epinephrin, *Am. Jour. Med. Sc.*, March, 1913; abstr., THE JOURNAL, March 29, 1913, p. 1026.
Snow, I. M.: Purpura, Urticaria and Angioneurotic Edema of Hands and Feet in a Nursing Baby, THE JOURNAL, July 5, 1913, p. 18.
Calcium Lactate in Hay-Fever and Urticaria, Queries and Minor Notes, THE JOURNAL, Aug. 9, 1913, p. 428.
Salomon, H.: Dietetic Treatment of Urticaria, *Wien. klin. Wchnschr.*, Aug. 28, 1913; abstr., THE JOURNAL, Oct. 4, 1913, p. 1337.
Protein Poisoning — Anaphylaxis — Urticaria, Therapeutics, THE JOURNAL, Feb. 7, 1914, p. 456.
Amins and Urticaria, Current Comment, THE JOURNAL, Nov. 21, 1914, p. 1861.
Swann, A. W.: Human Serum in Urticaria, THE JOURNAL, Feb. 27, 1915, p. 737.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, July 6. Chairman, Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, July 6. Sec., Dr. Harry C. DeVighne, Juneau.

ARIZONA: Phoenix, July 6-7. Sec., Dr. John Wix Thomas, Phoenix.

COLORADO: Denver, July 6. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: New Haven, July 13. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven; Eclectic: New Haven, July 13. Sec., Dr. T. S. Hodge, 19 Main St., Torrington; Homeopathic: New Haven, July 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Washington, July 13. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

INDIANA: Indianapolis, July 13-15. Sec., Dr. W. T. Gott, 120 State House, Indianapolis.

MAINE: Augusta, July 6-7. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MASSACHUSETTS: Boston, July 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

NEW HAMPSHIRE: Concord, July 6-7. Regent, Mr. H. C. Morrison, Concord.

NEW MEXICO: Santa Fe, July 12. Sec., Dr. W. E. Kaser, East Las Vegas.

NORTH DAKOTA: Grand Forks, July 6-9. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, July 13. Sec., Dr. Ralph B. Smith, 502 Daniel Bldg., Tulsa.

OREGON: Portland, July 5. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

SOUTH DAKOTA: Pierre, July 12. Sec., Dr. Park B. Jenkins, Waubay.

UTAH: Salt Lake City, July 5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WASHINGTON: Seattle, July 6. Sec., Dr. G. N. Suttner, Baker Bldg., Walla Walla.

District of Columbia April Report

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, April 13-15, 1915. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 12, of whom 11 passed and 1 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Georgetown University	(1913)	81.2
Howard University	(1912) 78.7; (1913) 82.6; (1914) 75.5, 75.5, 78.7	
Johns Hopkins University	(1907) 82.6; (1913)	82.7
Fordham University	(1913)	77.1
University of Vermont	(1914)	81.6
University of Virginia	(1908)	77.1
FAILED		
Howard University	(1914)	71

Colorado January Report

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the oral and written examination held at Denver, Jan. 5, 1915. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. One candidate was examined and passed. Fourteen candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Royal College of Physicians, Ireland	(1910)	83

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Denver College of Medicine	(1886)	Wyoming
George Washington University	(1905)	Dist. Colum.
Hahnemann Med. Coll. and Hosp., Chicago	(1903)	Illinois; (1909) Connecticut.
Northwestern University	(1909)	Illinois
Rush Medical College	(1904)	Illinois
Kansas City Medical College	(1890)	Missouri
Marion-Sims College of Medicine	(1892)	Missouri
Coll. of Phys. and Surgs. in the City of N. Y.	(1863)	California
Columbia Univ., Coll. of Phys. and Surgs.	(1912)	New York
Cincinnati College of Med. and Surg.	(1874)	Iowa
Western Reserve University	(1909)	Ohio
Jefferson Medical College	(1912)	Nebraska
University of Tennessee	(1894)	Kentucky

West Virginia April Report

Dr. S. L. Jepson, secretary of the West Virginia State Board of Health, reports the oral, practical and written examination held at Charleston, April 13-15, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 80. The total number of candidates examined was 14, of whom 12 passed and 2 failed. Fifteen candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
George Washington University	(1913) 89.6; (1914)	87.7
Baltimore Medical College	(1911)	86.7
North Carolina Medical College	(1913)	88.9
Jefferson Medical College	(1914)	91.4
University of Pennsylvania	(1914)	90.6
Medical College of Virginia	(1913) 81.7; (1914) 81.4, 82.8, 83.8, 85, 86.4	
FAILED		
Bennett Medical College	(1915)	77.2
Maryland Medical College	(1912)	79

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Hospital College of Medicine, Louisville	(1907)	Tennessee
University of Louisville	(1910) (1913)	Kentucky
Tulane University of Louisiana	(1910)	S. Carolina
Baltimore Medical College	(1912)	Maryland
Maryland Medical College	(1912)	Tennessee
University of Maryland	(1904)	S. Carolina
Starling Medical College	(1906)	Ohio
Jefferson Medical College	(1874) (1911)	Penna.
Medico-Chirurgical College of Philadelphia	(1895)	Indiana
Tennessee Medical College	(1909)	Tennessee
Vanderbilt University	(1913)	Mississippi
Medical College of Virginia	(1908)	Virginia
Royal University of Palermo	(1903)	Georgia

Book Notices

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. Embracing the Entire Range of Scientific and Practical Medicine and Allied Sciences. By Various Authors. Third Edition. Edited by Thomas Lathrop Stedman, A.M., M.D. Volume 5. Cloth. Price, $7. Pp. 923, with 739 illustrations. New York: William Wood & Co., 1915.

This volume of a well-known series is distinguished by several topics of importance. Of particular interest are the various articles on hearing by Drs. Sewall and Voorhees. Naturally the heart is given a large amount of space, most of the articles being contributed by Dr. Warthin. The summary on heredity occupies about twenty-five pages, and gives, in brief, facts regarding many aspects of the subject as presented by Drs. Galton and Pearson. The statement of the mendelian law and its various aspects is sufficiently clear to form a good basis for a further study of the subject. The bibliographic references appended to the article form a useful list to those wishing to investigate the subject further. Hernia receives full attention, the various operative procedures being adequately illustrated. The article on histologic technic is modern and accurate, and contains numerous directions for the making of various preparations. The subject of hospital construction and equipment is well illustrated and seems thorough. It is regrettable, however, that most attention is devoted to the building and management of large hospitals, and but little given to the building and equipment of institutions for small towns where, in fact, most help is needed. The article on hospital ships, while of interest, occupies relatively too much space. The paper on "House Sanitation" by Dr. Kober is a very valuable one. It is profusely illustrated and practical. Among other subjects receiving attention are hydrotherapy, military hygiene and hysteria.

Immunity receives what might be called a mere mention. Other important headings under the letter "I" are infancy and infant feeding, influenza, inhibition, insects and their parasitic activities, and the various facts concerning intestinal medicine and surgery.

Two articles are by Dr. Fielding H. Garrison: one on medical journalism, the other on medical libraries; both of them are exceptionally interesting and complete. Several articles of practical importance concern the kidneys, labor, the larynx and leukemia.

The topics mentioned represent naturally only a few of the many items covered in the handbook. They have been mentioned because the space given to them indicates a special effort on the part of the writers of these portions of the book to do adequate work. In a volume of this nature it is, of course, impossible to ask that every section be up to the quality of the whole. In general, however, it may be stated again that the book is an achievement of importance.

COMMEMORATION VOLUME. Infection and Immunity, Vaughan; Syphilis as a Modern Problem, Pusey; Epidemic Poliomyelitis, Flexner; Yellow Fever, Gorgas; Municipal Sanitation, Jordan; Cancer: Prevention and Cure, Mayo; Statistics of Cancer Mortality, Hoffman; Malaria, Bass. Cloth. Price, $2.50. Pp. 349. Chicago: American Medical Association, 1915.

This book is issued as a tribute to the workers who made it possible to build the Panama Canal. The contents are: Victor C. Vaughan, Infection and Immunity, 169 pages; William A. Pusey, Syphilis as a Modern Problem, 82 pages; S. Flexner, The Mode of Infection and Etiology of Epidemic Poliomyelitis, 5 pages; W. C. Gorgas, Yellow Fever, 9 pages; E. O. Jordan, Municipal Sanitation, 10 pages; William J. Mayo, The Prevention and Cure of Cancer, 18 pages; Frederick L. Hoffman, Some Essential Statistics of Cancer Mortality Throughout the World, 14 pages; Charles C. Bass, Malaria, 17 pages.

The shorter articles are instructive. Of the two long articles, that by Vaughan is direct and forceful in the introductory and general sections; it also contains much interesting historical matter.

The contribution by Pusey on syphilis as a modern problem deserves particular mention because it is a successful attempt to present to the intelligent nonmedical reader the essential facts about syphilis as it affects the individual and society. The article is a substantial, interesting, and altogether sane presentation. It is an article which, just at this time, will prove of great service in interesting the public in syphilis as a sanitary problem. It should be widely studied by physicians as well as laymen, and physicians will further the cause by directing others outside the ranks to this book.

To quote from the foreward, the volume is "an incomplete and imperfect statement of what medicine has done, is doing, and an indication of what it may do for the common good." It is an expression of the interest the medical profession feels in the general welfare, and its effect will be to increase the cooperation of intelligent persons in the task of reducing preventable disease.

Society Proceedings

COMING MEETINGS

American Ophthalmological Society, New London, Conn., July 6-7.
Montana State Medical Association, Bozeman, July 14-15.
Washington State Medical Association, Tacoma, July 20-22.

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting Held June 2, 1915

The President, DR. JAMES C. WILSON, in the Chair

Syphilitic Affections of the Heart and Aorta

DR. J. M. ANDERS, Philadelphia: The advent of the Wassermann reaction has shown that the etiologic rôle of syphilis in diseases of the cardiovascular system has heretofore been underestimated. While I would not say that syphilis is the principal factor in the production of heart disease, it can be assumed that rheumatism and syphilis head the list as causes of organic injury to this organ. While the cardiac lesions caused by the *Spirochaeta pallida* are usually considered as belonging to the tertian stage of syphilis, Grassman, Brooks and other investigators have expressed the opinion that serious damage may occur as early as the forepart of the second stage. Aortic and cardiac syphilis may be the result of hereditary syphilis. The claim made by Landois, Citron, Hausmann, Sears and others that syphilis may affect the heart alone is interesting and important. In two infants who died, one at three months of inanition, the other at eight days of asphyxia, Warthin and Snyder found the *Spirochaeta pallida* in the heart muscle, while neither histologic lesions nor spirochetes were found elsewhere.

Among the commonest cardiovascular conditions due to syphilis are myocarditis, aortic regurgitation, angina pectoris and mesaortitis often resulting in aneurysm. Mesaortitis with or without coronary changes is commonly the primary complaint in cases in which, as frequently occurs, two or more of the above-named affections are found in association. That this condition is due in many cases to syphilis has been demonstrated both by postmortem evidence and the results of carefully conducted therapeutic observations. The intimate connection between syphilis and aneurysm, well known to the older writers, has been emphasized by those of modern times. With Hausmann, however, I would caution the medical profession against regarding every case of aneurysm, even in syphilitic subjects, as due to syphilis. Two differentiating etiologic factors are that the root of the aorta is the usual seat of syphilitic aneurysms, which aneurysms are frequently multiple. Syphilis is now generally regarded as an essential factor in the causation of aortic incompetency, more particularly in cases developing before the forty-fifth year of life. As in aneurysm, a positive Wassermann reaction alone, unsupported by clinical evidence, does not warrant an assured diagnosis of syphilis, although it renders highly probable the existence of syphilis. On the other hand, it must be remembered that aortic incompetency in a syphilitic subject may be due to other causes, especially if the lesion develop after middle life. Early involvement of the myocardium is not infrequent in the course of syphilis. Early recognition is difficult but important. The symptoms do not differ from those of myocarditis due to other infections, and it has been shown that they disappear promptly under energetic antisyphilitic treatment. Anginoid pains are occasionally present, and obliterative endarteritis implicating the coronaries and producing myocarditis may result in attacks of true angina pectoris. Although a positive or negative Wassermann test is not an absolute criterion, Brooks contends that it is better than the 70 per cent. of error based on the history or clinical findings alone. I have collected 270 cases of angina pectoris from the literature, of which only seventy-two, or 26.5 per cent., gave evidence of syphilis. This percentage is much too small, since in 250 of the cases no mention was made of a Wassermann test. The close association of syphilis and angina is amply confirmed by modern authorities.

Doubtless the incidence of cardiovascular disease would be much lessened by a more systematic and vigorous treatment of syphilitic infection in general. Physicians should feel the serious responsibility of the treatment of early syphilis in the wisest manner possible. This is further emphasized in the hazard of administering salvarsan or neosalvarsan in the severer forms of cardiovascular syphilis. It has been found that death, occurring suddenly or after several days from the use of these agents, is commonly due to myocardial degeneration secondary to coronary lesions.

DISCUSSION

DR. GEORGE W. NORRIS, Philadelphia: I agree with Dr. Anders that, since the discovery of the *Spirochaeta pallida* and our knowledge of the Wassermann test, we have learned to recognize a number of lesions definitely syphilitic which in the past we barely suspected. In the last year more attention has been given to syphilitic nephritis, and it is somewhat comforting to know that if we do give mercury or salvarsan to these patients we are apt rather to benefit their nephritis than to injure the kidneys. One point is the frequency with which sudden death may occur in syphilitic myocarditis. Among the symptoms which have struck me as having some guiding value are low blood pressure, mild

anginoid attacks associated with dilatation of the left ventricle, and, as Dr. Anders has emphasized, cardiac irregularity followed by auricular fibrillation. In such cases, salvarsan must not be administered without due consideration. I am particularly interested also in the question of aortitis in the young. In a considerable percentage of newborn infants dying shortly after birth, presence of the *Spirochaeta pallida* has been noted in the aorta. Syphilis is inadequately treated in our dispensaries. Hospitals which refuse to treat this disease in its early stages are perfectly willing to give aid when the patient returns at a practically incurable stage. A more efficient treatment of syphilis in dispensaries is one of the crying needs of today.

DR. JAMES TYSON, Philadelphia: In my experience as a young man in dispensary service, our method of treating cases which included rheumatoid affections was to give first potassium iodid. Failing with this, we added mercuric chlorid, and an astonishingly large number of patients were benefited. It would seem, therefore, that the new methods of treatment confirm the old ones. I have sometimes thought that although this was a rough and ready method of treating symptoms, we might, perhaps, adhere to it with advantage a little more frequently than we do in modern times.

DR. J. F. ANDERS, Philadelphia: I have seen several very remarkable results in nephritis due to syphilis from the alternate, and also from the separate use of salvarsan and mercury. We must, however, be very certain that the syphilis is the real cause of the cardiovascular and renal conditions. Mercury has its selective affinity for the kidneys, and there is no other variety of nephritis than the syphilitic in which its use is justified. While it is true that, since the discovery of the Wassermann reaction, the true importance of syphilis as a factor in many heart diseases has been in great part established, this cannot be said of this test in relation to angina pectoris. The close association of angina pectoris and syphilis remains to be established, according to my figures, at all events; but I believe it will be, once the profession is alive to the importance of making Wassermann tests in all cases of angina pectoris. Neglect to examine the heart in the early stages of syphilis systematically is attended with untoward results in many cases. In at least half of these cases, symptoms arise which should arouse suspicion of cardiac involvement and lead to the most vigorous antisyphilitic treatment. In regard to cardiac involvement in the course of syphilis, the words of John Locke truly apply: "Prevention is better than cure and far cheaper."

MISSOURI STATE MEDICAL ASSOCIATION

Fifty-Eighth Annual Meeting, held at St. Joseph, May 10-12, 1915

(*Concluded from page 2162*)

Preventive Medicine Obstetrics

DR. F. E. WILHELM, Kansas City: Deformed pelvis is usually a result of rickets in childhood. It is common in tenements, rare in the Middle West. Gonorrhea is the greatest enemy to pregnancy, a menace to the eyes of the unborn babe; 30 per cent. of all blindness is due to gonorrheal ophthalmia. Syphilis causes sterility. Few congenital syphilitics survive. Preparations for labor should be made three or four weeks in advance. Cleanliness is the great necessity. Presentation can easily be determined by abdominal examination—location of fetal heart sound. No vaginal examination should be made after labor begins. Sterile gloves should be used; anesthesia is essential and safe; placental delivery should not be rushed; one may wait twelve hours or more in the absence of bleeding. Manual delivery of the placenta is rarely necessary. A torn perineum should be repaired at once; the cervix is to be left alone, except for severe hemorrhage. The mother requires quiet, good food, a daily bath, good bowel flushing within thirty-six hours, and care of the nipples and breast. The infant should have boric acid applied to the eyes. Swabbing of the mouth should be avoided, as the toothless mouth needs no washing. Care of cord with alcohol should not be overlooked. Regular nursing should be given at intervals of from two to three hours.

DISCUSSION

DR. B. W. TOOTHAKER, St. Joseph: We have all had some cases of gonorrheal ophthalmia, but I believe we can prevent it by using 25 per cent. solution of argyrol. Silver nitrate is sometimes followed by inflammation of the eyelids. Of anesthetics I prefer ether, and although some patients do not first care for anything, they are very glad to take it after they receive a few whiffs. In delivering the head I always endeavor to do so between the pains, and I have very few tears. In the care of the bowels I have my patients take an enema, using plain warm water.

DR. E. A. BURKHARDT, Kansas City: The blood pressure should be taken at regular intervals, at least twice a month. The importance of using boiled gloves ought to be emphasized. We are realizing more and more the necessity of staying out of the uterus and making no manipulations, even in many cases which seem to present a clear indication for going into the uterus. The modern method of supporting the breasts should be emphasized. It is being realized that there is an engorgement of the breasts, and that pulling on the breasts causes a venous stasis which a support will very largely relieve.

DR. CARYL POTTER, St. Joseph: Surgeons see too much poor repair of the perineum following obstetric practice. The obstetrician should repair the deep perineum as well as the superficial perineum, and if he is not sure he can secure the correct position of the levator ani, he can call in a gynecologist. If you feel that a laceration of the perineum is imminent and you are not sure of your repair, you should do a pubiotomy.

Etiologic Factors in Vomiting of Pregnancy, and How to Overcome Them

DR. JOHN D. SEBA, Bland: The condition of the stomach is rather remote to the cause of the condition. Vomiting in pregnancy occurs mostly in young women who have never borne children. The habits of these young women are not so sanitary as they should be; as a rule they neglect their bowels; the colon bacillus very often gains entrance into the vagina, and the uterus and its appendages thus become infected. As a rule, vomiting in pregnancy should be regarded as an infection, which remedial agents should be employed to combat. This can best be accomplished by daily vaginal douches, high colonic enemas and by the use of suitable vaccines. The stomach is treated by giving it rest and by abstaining from giving drugs by the mouth. The most rebellious cases yield to a few days' treatment along this line.

Empyema

DR. B. A. POORMAN, Kansas City, described the kind of infection and the symptoms, diagnosis and treatment, after which he discussed the various methods, giving the technic which he has used in a few cases, and also the treatment in chronic cases by decortication as outlined by Fowler and Delorme, followed by a report of ten cases.

DISCUSSION

DR. F. H. SPENCER, St. Joseph: The mortality rate of 22 per cent. in operative cases is too high. I would emphasize the importance of drainage by removal of the ribs in operative cases. Kocher lays great stress on this in the old operation. In the decortication operation there is a question sometimes as to whether the Fowler or the Ransohoff operation is the better. Dr. Poorman says that Fowler decortication is the proper operation, but I believe the Ransohoff should be combined with it in many cases. Bismuth paste should be mentioned only to be condemned. While Beck lays stress on this method, it has not given good results.

DR. E. M. ROSEBERRY, Neosho: I have had three cases of empyema in the last three months. In one I inserted the needle three times before I found the pus. I resected a rib in each case, and the patients are all doing well at this time.

DR. L. J. DANDURANT, St. Joseph: It seems remarkable that a disease which was so well known and treated in the time of Hippocrates should be so often overlooked in these days of progress and fine methods of diagnosis. With the definite symptoms which follow pneumonia and indicate a developing empyema, and in the absence of securing pus with the needle, we should not hesitate to open the chest and make an exploration. I believe that in every case in the adult, operation can be performed under local anesthesia. In Europe I never saw any other kind of anesthetic used.

DR. J. M. HALE, Dearborn: In the pleuritic involvements following pneumonia, the internist should have the patient practice deep inspiration in the later stages of pneumonia. This can be done three or four times a day and would, I believe, reduce the number of cases of adhesions.

DR. C. B. FRANCISCO, Kansas City: A point seemingly overlooked by the general surgeon in resecting ribs in children is the fact that lateral curvature will follow this procedure. Orthopedists see these cases often and feel that the surgeon should practice some discrimination and give protection against curvature in children. My experience emboldens me to preach conservatism in dealing with this condition in children, because it is a deformity that often goes on to bony change.

ASSOCIATION OF AMERICAN PHYSICIANS

Thirtieth Annual Meeting, held at Washington, D. C., May 11-13, 1915

(*Continued from page 2164*)

Isolation of a Toxic Substance from the Blood of Uremic Patients

DR. NELLIS B. FOSTER, New York: Accepting the hypothesis that uremia is a toxemia, the attempt has been made to isolate the specific toxin from the blood of patients with epileptiform uremia. This endeavor has been successful in that a substance, which caused death when injected into small animals, was separated from the blood of the seven cases of uremia studied. Eleven control bloods representing various diseased states other than uremia were also studied, but none of these yielded a toxic body. The method of separation excludes, it is believed, errors due to manipulation of unstable protein complexes. The final product is recovered as a crystalline auric chlorid.

Long Fasting in Diabetes

DR. FREDERICK M. ALLEN, New York: Partial pancreatectomy with retention of the duct produces a satisfactory experimental diabetes, and animals prepared in this way can be studied advantageously. In mild experimental cases, dietetic management suffices to keep the diabetes in abeyance. More severe cases quickly pass into an uncontrollable condition. If, in controlled cases, glycosuria is allowed to reappear, the animals quickly go down with destruction of the islands of Langerhans. Those kept sugar free stay lively and show no injury of the islands. Patients at the Rockefeller Institute have been treated on the basis of these animal experiments. An initial fast of from one to eight days will completely stop glycosuria in most cases. Fasting can be undertaken in very severe, weak cases without injury, and with benefit. There are some unsuccessful cases due to infections or other complications, but these do not constitute contraindications to fasting. If undesirable symptoms arise in the course of fasting, after an interval of careful dieting, fasting can be resumed and carried to success. If, after fasting and becoming sugar free, the sugar and acidosis are allowed to return, the last state of that man is worse than the first; but cautious underfeeding, with occasional fast days, will suffice to keep these patients in good condition. Well established is the advantage of keeping the patients below weight and of maintaining a low fat content in the diet, thus reversing the doctrine of Naunyn and others. Dietetic restrictions are renewed on the detection of ketonuria or increase of blood sugar. To insure freedom from ketonuria and glycosuria, fat is necessarily withheld from diet.

Present-Day Treatment and Prognosis in Diabetes

DR. E. P. JOSLIN, Boston: Children do well under the fasting method; they obey readily and cooperate well. Complications disappear more rapidly than under any other management, especially carbuncles. A case of pregnancy with glycosuria to 6 per cent. was carried successfully to term and was delivered by cesarean section with recovery of mother and child. Operations of other sorts have been successfully carried out on diabetics. Cases of long duration and patients with severe acidosis do well under starvation management.

The following points are important in the technic of the fasting treatment: Patients must be educated just as they have been in tuberculosis; they must not gain weight too fast; they must rest; they must remain under observation.

Studies in Experimental Pancreatic Diabetes

DRS. A. A. EPSTEIN and S. BAEHR, New York: The studies were made on depancreatized cats. Because of excessive thirst and large water intake, it was necessary to estimate changes in blood volume, which was done by a method of comparing the proportion of cells to plasma. Corrections of the blood sugar findings were made for blood volume fluctuations. All the cats showed a progressive rise in blood sugar, quite marked just before death. (This is not due to tissue decomposition, because the rise begins while the animal is quite lively.) With the appearance of hyperglycemia there is a diminution of glycosuria. This is no doubt due to a renal insufficiency for sugar. For the reason that polyuria continues after the disappearance of sugar, failure of circulation is ruled out as a cause. Experiments with pancreatectomy and double nephrectomy resulted in the production of a rise in hyperglycemia, rapid in well-nourished animals; in starved cats, this rise was late in appearing, but when it appeared it was acute and reached the same level eventually as in the well-fed cats.

Intravenous Injection of Dextrose and Depancreatization

DRS. I. S. KLEINER and S. J. MELTZER, New York: When dextrose is injected intravenously into normal animals it disappears rapidly from the circulation, and the sugar content of the blood is, in a short time, quite normal again. In previous investigations we found that in depancreatized dogs there is a tendency for the circulation to retain for a longer period a part of the injected dextrose. In recent experiments it was further found that, when with the infusion of dextrose in depancreatized dogs, an emulsion of pancreas is simultaneously injected, the circulation seems to lose its power to retain the injected dextrose. Finally it was observed very recently that an injection of a pancreas emulsion in a depancreatized animal is apparently capable of reducing the hyperglycemia to normal. The evident theoretical importance of these facts shall not be discussed here.

Discussion on Diabetes

DR. FRANK BILLINGS, Chicago: The study of patients at rest in a hospital is only part of the problem; it is necessary to study them after exercise, after return to ordinary mode of life. For years, I have taught patients how to examine their own urine. While it may be harmful to give fats in general diabetes, butter fat is not harmful. Diabetics may take butter fat or bacon fat and may do so for years. Whatever may be said, it is impossible ever really to control diabetic patients; they will do as they please as soon as they get beyond the observation of the doctor.

DR. HENRY KOPLIK, New York: I regard diabetes in children as a very grave disease, and the prognosis as always bad. This is not inconsistent with the fact that these children may go along for years without symptoms; they finally relapse and therefore the prognosis should be cautious. It is surprising how easily children bear starvation, and how quickly sugar disappears under this form of treatment.

DR. HENRY A. CHRISTIAN, Boston: We usually find one or two days of starvation sufficient to get a diabetic patient sugar free; then one or two days are required to establish the standard of carbohydrate utilization; and then one or two more days to educate the patient, and at the end of six days of hospital care, such a patient is ready to go out. It is an ideal disease for the application of the class management in the outpatient department. We teach our patients to follow their carbohydrate intake and output, to cook their food and to examine their own urine. These patients are taught to use the Benedict method, which, by the way, is incorrectly given in many of the books; too little alkali is usually specified.

DR. L. F. BARKER, Baltimore: One of the good things which may come out of this meeting is the putting into the consciousness of practitioners all over the country the advantage of quickly starving diabetes patients until they are sugar free and acid free. But a sharp blow will be necessary to dislodge the idea that carbohydrate feeding is necessary in acidosis. As to the reduction of body weight, it is doubtful whether it is proper to insist on this in cases with good food tolerance, because of the harmful effect of underweight on the nervous system.

DR. R. T. WOODYATT, Chicago: For eight years, at the Presbyterian Hospital, I have used this method of starvation in diabetes, following the method of Muller of Vienna. There can be no doubt of the great value of it. I have seen three deaths from infections during a starvation period.

DR. FREDERICK M. ALLEN, New York: The blood sugar should be kept normal; it is tested regularly. This is necessary in young patients with acute cases; but it may not be necessary in old patients who will live to die of something else. I have not yet seen an infected patient harmed by fasting. I have seen cases of glycosuria coming on in the midst of an infection, and they may be cleared up by fasting with surprisingly good results.

DR. E. P. JOSLIN, Boston: I have records of ninety cases in people under 20; two thirds of these patients are now dead; the others are mostly in good condition. In any group of diabetic children who live long, there will be found evidence of hereditary influences.

DR. A. A. EPSTEIN, New York: I should like to emphasize the fact that it is necessary to consider the blood volume in estimating any ingredient of it.

Significance of Acro-Ataxia and Proximal Ataxia of Extremities in Differentiating Between Disease of Peripheral Nerves and of Spinal Cord

DR. C. F. HOOVER, Cleveland: In ataxic states of the extremities, two varieties may be differentiated: one in which the distal muscles are involved, called acro-ataxia; another in which the proximal muscles are involved, called proximal ataxia. In a case of primary anemia, stereognosis was preserved and no ataxia in the ordinary sense was observed; but extreme ataxia of the intrinsic muscles of the hands and feet was found. In fifty-two further cases of primary anemia, acro-ataxia has been noted, with proximal ataxia added as a late manifestation. In lead and alcoholic ataxia, however, the relation of the time of appearance of the two forms is reversed. In spinal cord disease, proximal ataxia appears much sooner than acro-ataxia: in the ataxia of the anemic type, on the other hand, no Romberg sign may be elicited because the ileofemoral muscles are not involved. In a case of diabetes with apparent diabetic neuritis the presence of proximal ataxia without acro-ataxia was noted; examination of the spinal fluid revealed tabes as the cause, and the ataxia improved under antisyphilitic treatment. I have been able to diagnose primary anemia in patients over 50 by the presence of acro-ataxia and loss of vibratory sense independent of blood examination. In a man with an obstructive prostate, there was a proximal ataxia without acro-ataxia. The spinal fluid being normal, the diagnosis of cancer of the prostate with metastasis in the cord was made and confirmed. In a case of apparent primary anemia, with a mass in the left hypochondrium, there were loss of reflexes and proximal ataxia without acro-ataxia; the diagnosis of hypernephroma with metastasis in the cord was made and confirmed.

Peculiarities in the Immunity Induced in Guinea-Pigs by the Instillation of Horse Serum Through the Nose

DRS. HENRY SEWALL and CUTHBERT POWELL, Denver: When a few drops of horse serum are instilled into the nose in guinea-pigs, and the dose is repeated from one to five times at intervals varying from one to twenty-four days, about half the animals survive an intravenous injection of horse serum given sixteen days after the last instillation. This survival is sometimes without symptoms, but cannot be due to previous desensitization, for a second intravenous injection is frequently well borne twenty-four days after the first. When, after several intravenous injections of 0.38 c.c. of horse serum, guinea-pigs fail to react, the dose may, in certain cases, be doubled or trebled with like result. Contrary to the usual experience, we have found in two groups of refractory animals that a large intravenous injection was better borne after a resting period of 101 and eighty days, respectively, than in controls after thirty-six and twenty-eight days. When the blood serum of these immune animals was injected intraperitoneally into normal guinea-pigs, the latter, when given 0.25 c.c. serum by the vein from twenty-three to forty-eight hours afterward, usually reacted very slightly. As is well known, the offspring of mothers sensitized by a single subcutaneous injection of serum are themselves highly sensitized to a small toxic dose of serum given within about six weeks. In our animals treated by instillation only, five out of seven of the offspring survived the toxic injection.

Present Status of Hygiene or Public Health and Its Future in America

DR. W. W. FORD, Baltimore: Pettenkofer founded the science of public hygiene, and in Germany and Austria his teachings received ready practical application, spreading thence largely all over Europe. As a result of his campaign, the mortality from zymotic diseases fell. The great fruits of this work ripened in the decade 1870-1880, but with the advent of bacteriology, Pettenkofer's work had a setback. Bacteriology became hygiene for a time, until lately, when Pettenkofer's plan has been revived, modified by bacteriology. In Great Britain, since the sanitary laws of 1848, public health matters have been on a sound basis, but the emphasis has been on public works, such as water supplies, drainage, sewage disposal, etc. Preventive medicine is the gift of France, but it has been twisted by the work of the Pasteur Institute. The subject is a major matter in the universities of Austria-Hungary, France, Germany and Great Britain. But it is still neglected in this country, and chaotic ideas prevail. The departments of health in states and cities have long recognized the needs of the situation, but the national government still lags behind, notwithstanding the great work done by the U. S. Public Health Service. The subject has gradually appeared in the curriculums of all medical schools, but at this time it is a major subject in only five universities. This tardy development is not due to the indifference of medical men, but to the failure of the universities to recognize the need. Future development needs: 1. Adequate instruction of medical and other university students. The facilities for this are not now available. 2. Facilities for special training of special health officers. 3. Institutions for public instruction of laymen for the proper utilization of present hygienic knowledge.

DISCUSSION

DR. M. J. ROSENAU, Boston: The development of the science of public medicine may be divided into three stages: (1) public hygiene under the teaching of Pettenkofer, this having to do with water supplies, disposal of sewage, wastes, etc. This took care of certain diseases, but failed to influence others, which led to (2) preventive medicine. This step grew out of work stimulated by the deficiency of the first, and depends on knowledge thus gained of the modes of transmission of disease. We are now in the midst of the era of (3) personal hygiene, which is marked by such problems as the prevention of syphilis, gonorrhea, etc. The needs of the situation must be met by the schools.

Dr. John F. Anderson, Washington, D. C.: One point of importance is that we can obtain good conditions if we can obtain the money. The crux of the situation is the efficient health officer. A health department requires a definite number of units to be effective; the personnel of the units need only be multiplied for larger communities. If cooperative training in the science of public health is undertaken by the universities, there should be some way to fix the necessary scope and direction of such training.

Dr. A. C. Abbott, Philadelphia: Hygiene has largely come to mean personal hygiene, and is now assiduously taught in physical culture gymnasiums, in the common schools and in periodical literature. At present, popular discussion covers so wide a range that few individuals are capable of holding all the information available. What is wanted is leadership in public health science: leadership in a broad way—men who realize its social aspects, its political limitations, its scientific possibilities. It is true that many teaching institutions have not the physical capacity to teach this subject; but in almost every state there are universities which can, and many of which do, train men to assume this leadership.

Uric Acid Metabolism in Gout

Dr. Joseph H. Pratt, Boston: On purin-free diet, the average uric acid content of the blood of gouty patients was 3.7 mg. per hundred gm. blood. In normal individuals on mixed diet, the uric acid average is 1.8 mg. per hundred gm. blood; 2.5 mg. is the upper level in normal persons. One cannot make the diagnosis of gout from a single examination of blood, because the uric acid in the blood may be normal at times in gout. A single high uric acid finding is not sufficient for the diagnosis of gout, because it may be high in other diseases, even as high as 5 mg. per hundred gm. blood. The blood of patients on rich purin diet has been studied; the sweet bread meal was used. One patient whose blood uric acid was 1.6 mg. (lowest in the literature) on the fourth day reached 4. mg. per hundred gm. blood. There was a variable behavior in different cases: after the sweet bread meal there may be a drop in uric acid for a day or two, with later a sharp rise. In healthy persons there is a distinct rise in four hours after the meal. It cannot be suggested that the method will have any diagnostic value.

(*Continued on page 133*)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

June, IX, No. 6, pp. 461-556

1 *Use of Bismuth Pills in Fluoroscopic Examination of Infant's Stomach. A. F. Hess, New York.
2 *Frequency of Infection with Tubercle Bacillus in Childhood. B. S. Veeder and M. R. Johnston, St. Louis.
3 Case of Bilateral Glioma of Retina. H. F. Hansell, Philadelphia.
4 *Clothing as Factor in Production of Heat Stasis. W. B. McClure and L. W. Sauer, Chicago.
5 *Tuberculous Tumors of Brain. E. B. Friedenwald and W. Greenfeld, Baltimore.
6 Ammonia and Urea Content of Infants' Stools. J. L. Gamble, Boston.
7 *Forms of Nitrogen in Stools of Infants. D. D. Van Slyke, A. M. Courtney and H. L. Fales, New York.

1. **Fluoroscopy.**—This study was carried out by Hess by means of keratin coated bismuth pills having definite circumferences corresponding to the size of the catheters which can readily be introduced past the pylorus in infants. The purpose was to furnish a simple means of gauging the size of the pylorus and judging whether this sphincter was normally patent or not. It was found that under normal conditions objects do not leave the stomach in direct ratio to their size; that, in fact, larger objects are apt to be propelled into the intestine more quickly than smaller ones. There was a marked difference in the emptying time of the stomach, according to the posture of the infant. The delay in the passage of the pills when the infant lay on its left side, and the hastening of their passage when the infant was placed on its right side, were almost constant phenomena. It would seem that this observation has clinical significance and is capable of practical adaptation. It may prove to be of advantage to place infants on the right side when there is an evident delay in gastric digestion. In cases of pylorospasm there was a retardation in the passage of the pills from the stomach into the intestine. The degree of this delay varied in accordance with the degree of obstruction. The test does not enable one, however, to make a differential diagnosis as to the functional or the organic nature of the obstruction. In cases characterized by pyloric obstruction it was found that the pills left the stomach according to their size. In mild cases of spasm papaverin was found to be effective in definitely shortening the time of exit of the pills; in severe cases it lessened vomiting but did not facilitate the passage from the stomach.

2. **Tuberculosis.**—A study by Veeder and Johnston of tuberculin tests in 1,321 hospital children in St. Louis shows that the percentage of positive reactions reaches a maximum of 44 per cent. at the age period of 10 to 14 years, including cases with clinical tuberculosis. If children with clinical tuberculosis are excluded the percentage giving positive reactions at the 10 to 14 age period is only 36. These figures are much lower than the usual "90 per cent." figure for the incidence of infection with the tubercle bacillus in children by their fourteenth year, which has gained such widespread publicity and which is based on the figures of Hamburger for Vienna. The intradermic tuberculin test has given but a slight increase in the percentage of positive reactions over the percentage of positive cutaneous reactions. The authors have found that positive tuberculin reactions are of much service in the diagnosis of tuberculosis in infancy and early childhood, and that both positive and negative reactions in conjunction with the physical signs and symptoms have been of diagnostic value in individual cases among older children, although as a whole they do not indicate whether the infection is active or latent.

4. **Clothing and Heat.**—In considering what steps may be taken to prevent or reduce the high summer death rate of infants, McClure and Sauer believe that a number of factors must be adjusted: 1. Decrease heat production by giving less food, more suitable food and more water. 2. Increase heat elimination by less and more permeable clothing, better circulation of air and frequent baths. 3. Guard against infection (through food and otherwise).

5. **Tuberculous Tumors of Brain.**—The most interesting observations in the case reported by Friedenwald and Greenfeld are the great masses of tubercle bacilli found in the vessel walls and within the caliber of the vessels in the tubercles in the brain and bronchial lymph nodes. The disintegration of the caseating thrombi would result in throwing great masses of tubercle bacilli into the circulation.

7. **Forms of Nitrogen in Stools of Infants.**—Of the total nitrogen of infants' feces, from 50 to 70 per cent. was found as proteins and amino acids, 2.4 to 24 per cent. as free amino acids, and from 3 to 37 per cent. as ammonia. Usually, though not invariably, the higher percentages of amino-acid nitrogen were found in the looser stools, quicker passage through the intestine resulting in somewhat less complete absorption of these protein digestion products. The results show no evidence of antagonism between the processes of acid and ammonia formation respectively in the intestine. Urea was certainly absent in three fourths of the stools examined, and in the other fourth formed only from 1 to 5.6 per cent. of the total nitrogen. Despite the care taken to keep the feces free from urine, the authors do not feel certain that at least a part of the few positive results may not have been due to the admixture of traces of urine. As some even of the watery stools contained no urea, it appears improbable that the intestine is capable of rendering significant assistance to the kidney, at least in the excretion of urea.

American Journal of Medical Sciences, Philadelphia

June, CXLIX, No. 6, pp. 781-936

8 Some Problems in Pathology of Syphilis. J. A. Fordyce, New York.
9 *Value of Certain Tests for Diagnosis and Prognosis in Chronic Nephritis. C. Frothingham, Jr., Boston.
10 Practical Importance of Examination of Stools in Infants. H. M. McClanahan and J. C. Moore, Omaha.
11 *Immunity in Tuberculosis; with Special Reference to Racial and Clinical Manifestations. E. R. Baldwin, New York.
12 Fever in Tuberculosis. H. A. Bray, Ray Brook, N. Y.
13 Exudates in Artificial Pneumothorax. E. S. Bullock and D. C. Twichell, Silver City, N. M.
14 Pellagra in Childhood; Report of Case. F. C. Knowles, Philadelphia.
15 Borderland Between Medicine and Surgery in Relation to Chronic Prostatitis. J. R. Wiseman, Syracuse, N. Y.
16 Practical Observations Drawn from One Hundred and Sixty-One Cases of Hysterectomy. W. E. Darnall, Atlantic City, N. J.
17 Cerebral Edema (Wet Brain) in Chronic Alcoholism. C. E. Sceleth and A. F. Beifeld, Chicago.
18 Study of Two Hundred and Fifty Stained Blood Films in Pyorrhea Alveolaris. F. Hecker, Kansas City, Mo.

9. **Value of Certain Tests in Chronic Nephritis.**—The blood pressure determination, repeated urinary examinations and a study of the ability of the kidney to excrete extra sodium chlorid, in Frothingham's opinion, are the most reliable tests for making an early diagnosis of chronic nephritis. For prognosis in chronic nephritis the determination of the non-protein nitrogen in the blood, the excretion of phenolsulphonephthalein in the urine, and the ability to excrete extra nitrogen in the urine are the most useful tests.

11. **Immunity in Tuberculosis.**—The following points are emphasized by Baldwin: There is no natural immunity to tuberculosis in warm-blooded animals to the types of bacilli found in the bovine or human race. There is a considerable variation in resistance in some species, probably due to the chemical effect of their secretions or physiologic differences in the animals, but chiefly to the fact that the bacillus has not become adapted to long-continued parasitic existence in them. In the human species no natural immunity is found in any race. All uncivilized races long removed from infection are very susceptible, but the white races, especially the European Jews, have acquired a certain degree of immunity by inheritance and almost universal infection. The rapid increase of intercourse between all lands and races facilitates the universal spread of tuberculosis, which is certain to occur through the medium of numerous bacillus "carriers."

The ultimate survival of those who acquire a relative immunity will tend to diminish the severity of the disease, but many generations may be required to accomplish this. The opportunities for infection, now universal in cities, will diminish gradually in civilized lands, by lessening the danger from advanced cases, also from bovine sources. For many years, however, the number of "carriers" will increase owing to improved care, longer life and higher standards of living among the people. The best degree of resistance against tuberculosis that has been attained by experiments on the lower animals involves inoculation with living bacilli. This is of little value because of the short duration of the protection and the danger of sequestered bacilli. The natural infection of human beings takes place largely in childhood and increases the resistance to subsequent disease in a large measure. Under improved care of the tuberculous and better hygiene the amount and frequency of severe infections should diminish, while the number of those with slight, relatively harmless infections should relatively increase.

Adults withstand exogenous reinfection under extreme exposure, partly on account of slight infections in earlier life and favorable occupations, environment and nutrition. The specific immunity acquired from natural infection is largely due to cellular reactions of bacteriolytic nature, which take place outside the blood stream for the most part. The interaction between the ferments of the body cells and those of the bacillus lead to heightened activity of the lytic power, both lipolysis and proteolysis. The tuberculin sensitiveness or "allergy" is the chief indication of specific resistance. In the patient most of the inflammatory symptoms are due to the actively working immunity functions. In the therapy of tuberculosis this principle should be applied: To avoid interference with Nature's powers of resistance when she is attempting, with apparent success, to localize the infection.

American Journal of Public Health, Boston

May, V, No. 5, pp. 387-492

19 Place of Mouth Hygiene in Public-Health Movement. W. G. Ebersole, Cleveland
20 Dental Clinics as Community Investment. E. F. Brown, New York.
21 Popular Education in Mouth Hygiene. M. J. Jones, Washington, D. C.
22 Importance of Mouth Hygiene to General Health. H. W. Wiley, Washington, D. C.
23 Smallpox Epidemic at Niagara Falls. L. R. Williams, New York.
24 Rural Sanitary Survey and What It Reveals. O. Dowling, New Orleans.
25 Statistics of Disease. J. W. Trask, U. S. P. H. Service.
26 Laboratory Methods in Diagnosis of Typhus. J. F. Anderson, Washington, D.C.
27 Sanitary Control of Shellfish Industries. C. Bates, Washington, D. C.

American Journal of Roentgenology, Detroit

February, II, No. 4, pp. 633-673

28 Modification of Occipitofrontal Position in Roentgenology of Accessory Nasal Sinuses. C. A. Waters and C. W. Waldron, Baltimore.
29 Detection of Pure Cholesterin Gallstones by Roentgen Rays. L. G. Cole, New York.
30 Case of Diverticulitis of Sigmoid, with Roentgenologic Findings. R. D. Carman, Rochester, Minn.
31 Roentgen Demonstration of Multiple Diverticula of Colon. J. T. Case, Battle Creek.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

May, II, No. 11, pp. 677-734

32 Craigiasis; Report of Cases. N. Barlow, Cuyamel, Honduras.
33 Examination of Arriving Aliens for Uncinariasis at Honolulu. C. M. Fauntleroy, Honolulu.
34 Methods of Investigating Biology of Spirochetes. H. B. Fantham.

Annals of Otology, Rhinology and Laryngology, St. Louis

March, XXIV, No. 1, pp. 1-192

35 Systemic Infection of Middle Ear in Exanthemata. C. R. C. Borden, Boston.
36 Aching Throat. G. H. Makuen, Philadelphia.
37 Vaccine Therapy in Diseases of Ear. W. Haughey, Battle Creek, Mich.
38 Meningitic Suppurative Extradural Abscess of Posterior Fossa of Skull After Purulent Tonsillitis. O. Beck, Vienna.
39 Double Mastoiditis; Pure Culture of Streptococcus Capsulatus Mucosus from Mastoid Cells of Both Ears. W. D. Jones, Dallas, Tex.
40 Modern Mastoid Operation. J. J. Kyle, Los Angeles.
41 Hemorrhage Following Removal of Faucial Tonsil. F. F. Agnew, Independence, Ia.
42 Two Cases of Foreign Body Imbedded in Wall of Pharynx. C. N. Cox, Brooklyn.
43 Twenty-Five Cases of Vincent's Angina Successfully Treated with Sodium Perborate. H. H. Stark, El Paso, Tex.
44 Operation of Choice in Maxillary Sinus Diseases. G. P. Marquis, Chicago.
45 Difficulties of Closing Perforation of Drum Membrane in Certain Cases of Acute Suppurative Otitis Media. G. Bacon, New York.
46 Operative Treatment of Cleft Palate. J. E. MacKenty, New York.
47 Diseases of Salivary Ducts. C. E. Munger, Waterbury, Conn.
48 Artificial Ear. S. H. Brown, Philadelphia.
49 Harmless Postoperative Temperature. G. F. Cott, Buffalo.

Archives of Diagnosis, New York

April, VIII, No. 2, pp. 101-200

50 *Pathology and Diagnosis of So-Called Diabetic Gangrene. L. Buerger, New York.
51 *Diagnosis of Abnormalities of Myocardial Function. T. S. Hart, New York.
52 *Simple Substitute for Wassermann Reaction. G. A. Stephens, Swansea, England.
53 Facts and Fallacies Connected with Clinical Pathology of Acetone Bodies. H. Stern, New York.
54 Ketones of Enterogenous Formation. H. Stern, New York.
55 Acidosis. W. D. Ludlum, Brooklyn.
56 Clinical Study of Case of Acidosis. G. F. Little, Brooklyn.
57 Essential Points in Diagnosis of Gastric Ulcer. F. Smithies, Chicago.
58 Diagnosis and Classification of Difficult Feeding Cases After First Year. G. R. Pisek, New York.
59 *Tubercle Bacilli in Stomach Contents. I. H. Levy and J. L. Kantor, Syracuse.
60 Auscultation at Acromion Process. R. Abrahams, New York.
61 Acromial Auscultation in Diagnosis of Incipient Apical Tuberculosis. N. Magida, New York.
62 Ear Complications in Influenza. H. Hays, New York.
63 Periodic Physical Examinations. J. M. Taylor, Philadelphia.

50. **Diagnosis of So-Called Diabetic Gangrene.**—For purposes of clinical diagnosis, prognosis and for a correct understanding of the pathology of the various conditions complicated with gangrene of the lower extremities, Buerger says, it is expedient to classify the cases into two large groups, those in which the trophic lesions depend on organic disease of arteries or veins, and those in which the nutrient vessels are intact. Pathologic studies have led us to the opinion that one large group of cases designated as thrombo-angeitis obliterans must be separated from a second large group atherosclerotic or arteriosclerotic disease, because the pathologic lesions are distinctive in each group. In the latter group belong the cases of so-called diabetic gangrene, as well as the "senile" and some of the presenile cases. From the clinical standpoint, a classification in which vasomotor cases, including Raynaud's disease, erythromelalgia, etc., are recognized as being independent of organic arterial disease, and in which thrombo-angeitis and arteriosclerotic gangrene are conceded to be distinct entities associated with characteristic and extensive vascular disease, will give the best opportunity for correct diagnosis.

51. **Abnormalities of Myocardial Function.**—The clinical significance and prognosis of the accelerated heart, Hart states, depend on the underlying condition, and to determine this, the responsibility of excessive outside demands, lack of balance between the elements of the nerve regulatory mechanism and defects of the myocardium, must be correctly apportioned. In general, one may say that excessive outside demands and unbalanced nerve control acting on a heart with its myocardium intact, are usually more readily corrected, and hence of less serious import to the patient, than when the heart acceleration depends on an intrinsic defect of the myocardium. But even a normal myocardium may be worn out by the excessive activity induced by extracardial conditions, and a defective myocardium properly handled may recover full functional efficiency.

52. **Substitute for Wassermann Reaction.**—The test is carried out by Stephens as follows: Clean the lobule of the ear with petrol, prick it and draw off a sufficiency of blood in a hemocytometer pipet, that is, up to the half mark and fill up to the remainder of the pipet with a 12 per cent. solution of pure ammonium chlorid in distilled water. The blood and solution should be thoroughly mixed, and at once examined under the microscope. Any delay is dangerous, for evaporation takes place, and the ammonium chlorid crystallizes out very readily and spoils the test. Examined in this way, the red corpuscles show a marked change, for in healthy blood the darker center tends to contract or crinkle up into an irregular mass, whereas in syphilitic blood the darker center tends to expand in some cases out toward the circumference of the corpuscle.

59. **Tubercle Bacilli in Stomach Contents.**—Tubercle bacilli have been demonstrated by Levy and Kantor in the stomach contents of three patients suffering from pulmonary tuberculosis. They believe that in cases in which expectorated sputum is unavailable a certain number of positive diagnoses of pulmonary tuberculosis can be made with the aid of the stomach tube, and that an early positive diagnosis of pulmonary tuberculosis can be made more frequently by the gastroenterologist, should he adopt the custom of searching the fasting contents for tubercle bacilli in all the patients suspected of suffering from the dyspepsia of phthisis.

Archives of Internal Medicine, Chicago

June, XV, No. 6, pp. 945-1084

64 Variations in Toxicity of Chloroform for Anesthesia. W. Hale, Boston.

65 *Relation of Purgative Action of Magnesium Sulphate to Peristalsis and General Law of Crossed Innervation. S. J. Meltzer, New York.

66 *Renal Function; Nonprotein Nitrogen and Sugar Concentration in Blood, Phenolsulphonephthalein Elimination and Blood Pressure. A. H. Hopkins and L. Jonas, Philadelphia.

67 *General and Localized Effects of Intravenous Injections of Colloidal Copper and Casein in Cases of Human Cancer. C. B. McClurg, W. O. Sweek, H. N. Lyon, M. S. Fleisher and L. Loeb, St. Louis.

68 Rat-Bite Fever. B. B. Crohn, New York.

69 Factors Involved in Cases of Pleural Fluid Associated with Normal or Increased Vocal Resonance. C. M. Montgomery and E. A. Eckhardt, Philadelphia.

70 *Relation of Uric Acid to Gouty Attacks. A. L. Daniels, Madison, Wis., and F. H. McCrudden, Boston.

71 Effect of Theobromin Sodium Salicylate in Acute Chromate Nephritis. J. P. O'Hare, Boston.

72 Certain Aspects of Biologic Oxidation. A. S. Loevenhart, Madison, Wis.

73 *Urobilin in Stool—Index to Blood Destruction. O. H. Robertson, Boston.

74 Effect of Repeated Injections of Foreign Protein on Heart Muscle. W. T. Longcope, New York.

65. Abstracted in The Journal, May 30, 1914, p. 1747.

66. **Studies in Renal Function.**—The authors summarize the results of their study as follows: 1. Protein feeding in nephritis has a direct influence on the retention of nitrogen in the blood. This is most pronounced in the pure chronic interstitial type with hypertension. 2. The estimation of retention by blood analysis is of definite clinical value from the point of view of therapy, and though this series is too limited to permit of definite conclusions with regard to its prognostic value, our findings so far confirm those of other workers who advocate its usefulness in this field. 3. Chronic passive congestion does not cause an increase of waste nitrogenous products in the blood. 4. In the presence of nitrogen retention, the phenolsulphonephthalein output is usually low and the blood pressure frequently high. 5. Chronic passive congestion may greatly impair the phenolsulphonephthalein output. Variation in the elimination of this dye may also be noted in different stages of nephritis, and in cases with "hypermeability." 6. To be of value, the nitrogen retention and phenolsulphonephthalein tests should be repeated at intervals, the value of the former being increased when combined with clinical observations of the patient, diet, etc. 7. A slight hyperglycemia occurs in many high-pressure nephritics and frequently in those with retention of nitrogen and impaired phenolsulphonephthalein elimination.

67. **Effects of Intravenous Injections of Colloidal Copper in Cancer.**—Briefly, the findings of the authors are the following: Intravenous injections of colloidal copper have a definite effect in a certain number of tumors, while in the case of others they are without any noticeable effect. While in some tumors the measurable reduction in size, the shrinking of the ulcerated area, leaves no doubt about the definite effect of the injections on the tumor, there are a number of cases in which a noticeable shrinking of the tumor takes place, but in which the character of the tumors and the rapid effect of the injections suggest that the diminution in size is mainly due to an effect on the circulatory conditions in the tumor. Microscopic examinations of pieces of tumor excised during different periods of the treatment do not indicate a direct destruction of the tumor. While intravenous injections of colloidal copper have a definite effect, causing a partial retrogression in a certain number of cases, ordinary injections of casein preparations were even without effect or were followed by so slight effects that the distinct efficacy which can to a limited extent be ascribed to colloidal copper cannot be attributed to casein. In case injections of casein have an unusually marked general effect, causing high fever extending over several days, combined with other severe symptoms, they may cause a partial destruction of the tumor within the next few days following the injection. This partial destruction may result in a localized process of healing. The local reactions around the tumor following the intravenous injections of various substances are in no way specific. Intravenous injections of colloidal copper and casein cause, in and around the tumors, changes which might be characterized as a localized experimentally produced inflammation called forth at a place distinct from the place of injection through substances introduced into the general circulation. Colloidal copper and casein produce essentially the same "inflammatory" reaction, only after casein the reactions are usually more severe.

Three periods can be distinguished in most cases so far as the character and intensity of the local reaction is concerned. In the first period all the inflammatory signs are most pronounced. The second period is characterized by a

marked decrease in inflammatory reactions. In cases in which the injections lead to an improvement in the conditions of the patients, the healing changes usually set in with the second period; the second period represents a reaction against the first period. The third period is the period of more or less marked immunity against the effects of the injections. Just as in the case of the general reactions, so also in the case of the local reactions, an immunity usually becomes established, which in this case likewise is usually not complete. In a similar manner as in the case of the general reactions, casein immunizes also against the local effects of colloidal copper, while, on the other hand, injections of colloidal copper do not immunize against the effects of casein. While a certain connection between the local reactions and the healing processes seems to exist, the parallelism is not a complete one, probably owing to the interference of other variable factors. The authors suggest that it is possible—and they regard this as entirely tentative—that the reaction against the acute inflammatory changes of the first period, a reaction which characterizes the second period and which leads to a diminution in the size of the tumor and its neighborhood mainly through the circulatory changes, constitute the essential effect of the injections of colloidal copper, and that in some special cases this change is followed by further healing processes, either by a more marked shrinking of the tumor or by a healing over of the carcinomatous ulcer. Whether an actual destruction of tumor tissue takes place directly or indirectly as the result of the injections, can neither be positively asserted nor denied at present.

70. **Relation of Uric Acid to Gouty Attacks.**—The work recorded in this paper is the result of an attempt to find if there is any relation between attacks of gout and the amount of uric acid in the blood, or between such attacks and the amount of uric acid excreted in twenty-four hours. The investigation was carried out by Daniels and McCrudden on two women, both of whom gave typical histories of gout, and on roentgenoscopy showed bony changes—Bruce's nodes—characteristic of gout. These were not cases of atrophic arthritis, hypertrophic arthritis or infectious arthritis, but cases of real gout. Throughout the investigation the patients were kept on an approximately constant, purin-free diet. The work showed that there was no more uric acid in the blood than in blood of normal individuals. The amount of uric acid in the blood was not altered during acute attacks of gout. Uric acid excretion was not altered during acute attacks of gout. Attacks of gout appeared during atophan administration, when, as shown by chemical analysis, the uric acid content of the blood had been greatly decreased.

73. **Urobilin in Stool.**—An increased quantity of urobilin in the stool was found constantly by Robertson in eleven cases of pernicious anemia (except during remission); also in congenital hemolytic jaundice, malaria, and in one case of secondary anemia with a regenerative type of blood. All these cases showed clinical evidence of increased blood destruction. Cases of leukemia, secondary anemia, chronic passive congestion, pneumonia with jaundice, and diseases of the liver, all showed a urobilin output within the limits found in normal individuals. Those patients in whom the evidence of blood destruction was most marked, gave the highest urobilin estimations. There was no case with a normal urobilin output which showed any evidence of abnormal hemolytic activity. In view of the consistency of the foregoing results, Robertson thinks, it seems fair to conclude, first, that the quantity of urobilin in the stool may be taken as an approximate measure of the degree of hemolysis occurring in the body, and second, that such estimation is of very definite clinical value in the diagnosis of conditions questionably hemolytic in character, particularly in anemias of uncertain type.

Archives of Pediatrics, New York

May, XXXII, No. 5, pp. 321-400

75 *Hypertrophy of Thymus and Thymus Death; Report of Cases. T. Le Boutillier, Philadelphia.

75. **Hypertrophy of Thymus and Thymus Death.**—Le Boutillier urges that no infant or young child should come under observation without a most thorough and careful examination of the chest in the region of the thymus gland, to determine if there is an enlargement of this gland. This is especially true in children who have slight or marked dyspnea or cyanosis which cannot be traced to any other condition. In any case in which the diagnosis is not absolute, the child should be roentgenographed. The author feels sure that in many instances there is a more or less sudden engorgement of the thymus gland due to some derangement in the general arterial system which may in some cases be great enough to cause death; that tracheostenosis is a positive condition and that death is caused by it in certain cases; that the importance of enlarged thymus in goiter must not be overlooked.

Boston Medical and Surgical Journal

June 3, CLXXII, No. 22, pp. 807-842

76 Late Results of Surgical Treatment for Flexed Scapulae. H. W. Marshall, Boston.
77 Program and Directions for Mental Examination of Asocial, Psychopathic and Doubtful Subjects. (To be Continued.) R. S. Hardwick, Boston.
78 Urethral Caruncle. E. L. Young, Jr., Boston.
79 Cutaneous Tuberculosis. Case of Folliclis and Erythema Induratum. J. H. Bufford and C. G. Lane, Boston.

June 10, No. 23, pp. 843-880

80 Some Perplexities in Modern Medicine. E. A. Bates, Springfield.
81 Relation of Bacteria to Etiology of Summer Diarrhea in Young Children. A. I. Kendall, Chicago.
82 *Clinical Use of Water Meal in Determining Secretory and Motile Powers of Stomach. A. E. Austin, Boston.
83 Posterior Gastro-Enterostomy by Exact Measure. M. P. Smithwick, Boston.
84 Program and Directions for Mental Examination of Asocial, Psychopathic and Doubtful Subjects. (To be Continued.) R. S. Hardwick, Boston.
85 Suggestion in Treatment of Hemorrhagic Disease of New-Born. J. C. Hubbard, Boston.

June 17, No. 24, pp. 881-924

86 Anatomic and Mechanistic Conception of Disease. J. E. Goldthwait, Boston.
87 Syphilis and Lung Disease. A. F. Downing, Cambridge.
88 Rabies in China. A. C. Reed, Changsha, China.
89 Tuberculous Infection as Disease Entity. G. T. Palmer, Springfield, Ill.
90 Program and Directions for Mental Examination of Asocial, Psychopathic and Doubtful Subjects. R. S. Hardwick, Boston.

82. **Use of Water Meal in Determining Secretory and Motile Powers of Stomach.**—Based on experimental considerations, the clinical use of the water meal as advocated by Carlson and others has been made by Austin in the men's medical clinic at the Boston Dispensary, and in the gastrointestinal clinic at Mt. Sinai Hospital. The custom was to ask a patient to take a meal, the evening before, of meat, potato, bread, butter, rice and raisins, and then come to the clinic the next morning fasting. There 350 c.c. of water were given the patient, the contents of the stomach being removed twenty minutes later, the extreme limit at which these authors claim that the water given has left the stomach. The superficial advantages of this method are readily recognized; bread is not always available for the test breakfast, but water, of course, is. One can never rely on the time, if the patients are allowed to take their bread at home and then come to the clinic; while, if taken in the clinic, a wait of forty-five to sixty minutes is too long in a busy forenoon. Water, too, as remarked by the before-mentioned authors, allows one to see readily whether there is any residue left from the Riegel meal. This method, also, avoids a second introduction of the tube, which is necessary if one first attempts to find food remnants in the fasting stomach and then give the ordinary test breakfast. Lactic acid, blood and bile are also much more readily detected in the absence of a mass of partly digested food.

Cleveland Medical Journal

May, XIV, No. 5, pp. 333-406

91 Visceroptosis as Part of Neurologic Syndrome. W. Timme, New York.
92 Skeletal Remains of Primitive Man. N. W. Ingalls, Cleveland.
93 Some Effects of Harrison Antinarcotic Law in Cleveland. H. H. Drysdale, Cleveland.
94 Historical Statistical Review of Tuberculosis in Cleveland. G. E. Harmon and M. Carey, Cleveland.

Colorado Medicine, Denver

May, XII, No. 5, pp. 135-166

95 Megaduodenum. R. W. Corwin, Pueblo.
96 Acute Intestinal Obstruction. C. E. Tennant, Denver.
97 Some Affections of Eye from Undue Exposure to Light. W. L. Hess, Denver.
98 Colloidal Theory of Pathology of Glaucoma. J. A. McCaw, Denver.
99 Congenital Cysts of Neck. W. Senger, Pueblo.
100 Modern Pseudomedical Cults. C. Powell, Denver.
101 Extraction of Coin from Child's Esophagus. F. B. Stephenson, Marble.

Florida Medical Association Journal, Jacksonville

May, I, No. 11, pp. 321-352

102 Misdiagnosed Cases of Compression of Spinal Cord. T. A. Williams, Washington, D. C.
103 Larva Migrans. H. C. Dozier, Ocala.
104 Trachoma. F. P. Hoover, Jacksonville.
105 Treatment of Tuberculosis. D. C. Thompson, Pensacola.
106 Preventive Medicine. G. H. Benton, Miami.

Georgia Medical Association Journal, Augusta

May, V, No. 1, pp. 1-23

107 Hydrophobia (Rabies). C. B. Greer, Atlanta.
108 Transmission of Disease. K. R. Collins, Atlanta.
109 Facts—How We Can Use Them. A. G. Fort, Atlanta.

Journal of Cutaneous Diseases, New York

June, XXXIII, No. 6, pp. 437-508

110 Lichen Planus Atrophicus. D. W. Montgomery, San Francisco.
111 *Epidermolysis Bullosa Beginning in Adult Life; Acquired Form of Disease. F. Wise and M. F. Lautman, New York.
112 Multiple Benign Cystic Epithelioma; with Report of Four Cases. J. W. Miller, Cincinnati.
113 Metabolic Influence of Chlorids on Certain Dermatoses. M. L. Ravitch and S. A. Steinberg, Louisville.

111. **Epidermolysis Bullosa Acquisita.**—The case reported by Wise and Lautman represents an instance of a bullous dermatosis possessing the features common to the dystrophic type of epidermolysis bullosa hereditaria, but differing from the latter in being neither congenital nor hereditary and in showing no morbid alterations of the nails; and, further, in making its initial appearance in adult life. Clinically, the eruption is characterized by occurring chiefly on the extremities; by the incidence of vesicular and bullous lesions evoked solely by trauma; by the presence of numerous epidermis cysts; by the formation of areas of atrophic and cicatricial tissue at the sites of bullous lesions which had ruptured and undergone involution; and by the occurrence of bullous lesions on the buccal mucosa. Histologically, the most interesting feature in this case is the paucity of pathologic changes in the affected tissue, especially in connection with the elastic fibers, which are practically unaffected; other noteworthy features are the absence of marked alterations in the blood vessels and, finally, the disposition of the bulla, situated between epidermis and corium. The unaffected regions of the skin showed no changes to the naked eye or microscopically.

Journal-Lancet, Minneapolis

May 15, XXXV, No. 10, pp. 249-280

114 Corneoscleral Trephining; New Operation for Relief of Glaucoma. H. A. Beaudoux, St. Paul.
115 Pellagra; Report of Cases. G. S. Adams and F. V. Willhite, Yankton, S. D.
116 Substitute Operations for More Radical Surgical Work Advised by Lane in Intestinal Stasis. (To be continued.) A. E. Benjamin, Minneapolis.
117 Conservative Use of Lane's Plates in Treatment of Fractures. E. K. Green, Minneapolis.
118 Caisson Disease on Cuyuna Iron Range. R. J. Sewall, Crosby.

June 1, No. 11, pp. 281-306

119 Health Officer's Daily Mail; What It Suggests. O. Dowling, New Orleans.
120 *Substitute Operations for More Radical Surgical Work Advised by Lane in Intestinal Stasis. A. E. Benjamin, Minneapolis.
121 Splenectomy for Pernicious Anemia. A. T. Mann, Minneapolis.
122 Relation of Focal Infection to Systemic Disease. S. M. White, Minneapolis.

120. **Operations for Radical Surgical Work in Intestinal Stasis.**—The radical methods advised by Lane, namely, the ileosigmoidostomy or colectomy, in Benjamin's opinion, seem seldom justified, as, in the former operation there results a loaded and filled up, redundant and useless colon; and in the latter operation, numerous pronounced adhesions which ultimately can lead to the recurrence of stasis. And, furthermore, these operations, especially the latter, are followed by an unwarranted mortality rate. The relief of constricting bands and the reduction of unnecessary enlarged pockets, such as a dilated cecum, by means of the plication operation and the replacement of the prolapsed colon and stomach by the mechanical elevation and suturing of the gastrocolic omentum to the lateral peritoneum and to the median incision, and possibly the shortening of the gastrohepatic omentum, and even the elevation of the stomach by means of the Rovsing operation, Benjamin says, are simple, free from danger, and prevent the recurrence of these kinks, and favor the normal flow of fecal contents.

This treatment, followed by dietetic, mechanical and hygienic methods in the majority of cases, brings satisfactory results. In other more pronounced and suitable, well-selected cases, the operation of cecum sigmoidostomy would seem rational and possibly satisfactory, but further investigation, research and experiments should be followed up to determine whether this will be satisfactory to the patient, as well as to the surgeon.

Kansas Medical Society Journal, Topeka

May XV, No. 5, pp. 139-170

123 Vaccine Therapy. H. M. Conner, Topeka.
124 Case of Tubal Pregnancy. L. A. Clary, Hutchinson.
125 Parenteral Digestion; Its Relation to Infectious Diseases. (To be continued.) S. A. Matthews, Lawrence.

Lancet-Clinic, Cincinnati

May 22, CXIII, No. 21, pp. 561-588

126 Mortality and Morbidity of Appendicitis. F. F. Lawrence, Columbus.
127 Shortening of Round Ligaments by Transverse Suprapubic Incision. S. Stark, Cincinnati.
128 Empyema of Antrum Maxillare Treated by Phylacogen. C. H. Castle, Cincinnati.
129 Points of Diagnosis. E. W. Stevenson, Pittsburgh.
130 Manic-Depressive Episode Presenting a Frank Wish-Realization Construction. R. Reed, Cincinnati.

May 29, No. 22, pp. 589-616

131 Ligation of Common Iliac Artery for Iliofemoral Aneurysm; Report of Case. F. Fee, Cincinnati.
132 Chronic Progressive Chorea. E. W. Mitchell, Cincinnati.
133 Unsuspected Tuberculosis. T. Frazer, Asheville, N. C.
134 Incompetency of Ileocecal Valve Most Common Cause of Ileal Stasis. J. H. Kellogg, Battle Creek, Mich.
135 A Dream. E. Fennel, Cincinnati.

Medical Record, New York

June 12, LXXXVII, No. 24, pp. 967-1008

136 Studies of Pancreatic Secretion. M. Einhorn, New York.
137 Giving of Nauheim Baths in This Country. S. Baruch, New York.
138 Physicians Marcquis and Boudewyns of Antwerp. J. B. Stein, New York.
139 New Gas-Oxygen-Ether Apparatus. H. C. Luke, New York.
140 Infected Colon and Its Surgery. J. M. Lynch and J. W. Draper, New York.
141 Rational and Successful Treatment for Pulmonary Tuberculosis (Calcium Sulphid). A. H. Henderson.

June 19, No. 25, pp. 1009-1050

142 *Chronic Progressive Polyarthritis or Arthritis Deformans; Report of One Hundred and Five Cases. S. W. Boorstein, New York.
143 Medical Literature and Its Preparation. E. Mayer, New York.
144 Thyroglossal Cysts; Report of Case. C. B. Burke, Atlantic, Iowa.
145 Double Clubfoot in Twins. L. W. Ely, San Francisco.
146 Radium Therapeutics Otherwise Than for Malignancy. J. B. Bissell, New York.
147 Successful Use of Pituitary Gland by Ionization in Gonorrheal Arthritis. M. S. Macy, New York.
148 Diagnosis and Conservative Treatment of Inflammation of Accessory Sinuses of Nose. J. L. Maybaum, New York.

142. **Chronic Progressive Polyarthritis or Arthritis Deformans.**—Boorstein is of the opinion that this disease has no relation at all to rheumatism and antirheumatics should be avoided. He says that the predominating cause is distinctly an infection either in the joint itself or at a distant point. The disease is not dangerous to life and is usually self-limiting, but it leads to marked deformities making the patient a cripple. Prophylaxis in preventing any systemic infection and keeping digestion and intestinal tract in good conditions is essential. Removal of chronic foci anywhere in the body is imperative as a prevention of progresssive ill-health. When the disease is present, the place of infection

should be sought for and the territory cleared, if possible. General treatment, such as good hygiene, good food, tonics and building up of the patient, is essential to success. Acute joints should be kept at rest. When the active symptoms subside, local treatment to the joints in the form of active and passive hyperemia, hydrotherapy, massage, active and passive exercises, should be administered regularly with great care and patience and kept up for a long time. The occurrence of deformities should be prevented by steadying the joints in proper position at the time of acute infection. When the deformities have already occurred they should be corrected.

Missouri State Medical Association Journal, St. Louis

June, XII, No. 6, pp. 249-298

149 Blood Pressure in Pregnancy and Labor. F. H. Raab, Kansas City.
150 Present Status of Color Blindness with Demonstration of New Test. J. E. Jennings, St. Louis.
151 Some Neuroretinal Conditions of Minor Gravity. D. C. Adcock, Warrensburg.
152 Blood Transfusion. F. Reder, St. Louis.
153 Otitic Sinus Thrombosis. C. F. Pfingsten, St. Louis.
154 Cases of Cerebrospinal Syphilis Treated with Salvarsanized Serum. L. Bartels, St. Louis.
155 Peptic Ulcer. O. L. Edwards, Roodhouse, Ill.
156 Laboratory Aid in Diagnosis of Gastric Ulcer. D. L. Penney, St. Louis.
157 Roentgen-Ray Aids in Diagnosis of Gastric Ulcer. F. B. Hall, St. Louis.
158 Surgical Treatment of Gastric Ulcer. H. S. McKay. St. Louis.
159 Summer Diarrheas of Children. A. C. Ames, Mountain Grove.
160 Operative Treatment of Chronic Daeryocystitis. C. W. Tocker, St. Louis.
161 Missouri State Hospital. R. H. Jesse, Columbia.

New Mexico Medical Journal, Las Cruces

May, XIV, No. 2, pp. 31-66

162 Pellagra in Rio Grande Valley. R. E. McBride, Las Cruces.
163 Pulmotor Demonstration. B. F. Stevens. El Paso, Tex.
164 Physician and Better Baby. M. G. Cartwright, Albuquerque.
165 Problems of Communicable Diseases in Southwest. T. C. Sexton, Las Cruces.
166 Bismuth Paste Poisoning; Report of Fatal Case. C. E. Yount, Prescott, Ariz.

New York Medical Journal

June 5, CI, No. 23, pp. 1141-1196

167 Cholelithiasis. B. Robinson, New York.
168 Intravenous Use of Antiseptics in Gonorrhea, W. F. Bernart, Chicago.
169 Prognostic Outlook in Mental Disease. M. J. Karpas, New York.
170 Secondary Carcinoma of Bone. Review of Literature and Report of Cases. A. A. Matthews, Spokane, Wash.
171 Roentgen-Therapy in Cancer. C. H. Archibald, New York.
172 Blindness of New-Born. H. P. de Forest, New York.
173 Treatment of Papilloma of Urinary Bladder. C. W. Shropshire and C. Watterston, Birmingham, Ala.
174 General Anesthetics. L. M. Jacobs, Philadelphia.
175 Future Lines of Progress in Child Hygiene Work. S. J. Baker, New York.

June 12, No. 24, pp. 1197-1248

176 Tuberculosis Problem and Section 1,142 of the Penal Code of State of New York. S. A. Knopf, New York.
177 Developmental Reconstruction of Colon. J. M. Lynch and J. W. Draper, New York.
178 Chronic Intestinal Stasis. G. R. Satterlee, New York.
179 Treatment of Erysipelas and Other Forms of Dermal and Epidermal Inflammation with Phenol and Alcohol. A. Judd, New York.
180 Pain. H. J. Hartz, Philadelphia.
181 Physiologic and Pathologic Changes in Endometrium. J. W. Warner, New York.
182 Persistent Cough Removed by Special Surgery. A. I. Schwartz, New York.
183 Scopolamin-Morphin-Cocain Anesthesia in Surgery. A. G. Brenizer, Charlotte, N. C.
184 Mucous Membrane in Fasting Stomach Content. E. A. Aronson, New York.
185 Hysteria as Constitutional Disorder. H. C. B. Alexander, Chicago.

June 19, No. 25, pp. 1249-1300

186 Alexia. S. P. Goodhart and H. Climenko, New York.
187 *Improved Method of Applying Bone Wedge Graft in Treatment of Clubfoot. R. E. Soule, New York.
188 Atrophy of Skin Associated with Cutaneous Syphilis; Report of Case. F. Wise, New York.
189 Treatment of Diarrhea. E. M. Sill, New York.
190 School Hygiene. J. B. Todd, Syracuse.
191 Disease of Esophagus. W. Lereche, St. Paul.
192 Mastoiditis. C. H. Smith, New York.
193 Lange's Colloidal Gold Test as Adjunct to Diagnosis of Cerebrospinal Affections. A. I. Rubenstone and M. Schwartz, Philadelphia.
194 Hemorrhagic Disease in Newly Born Treated by Horse Serum; Report of Four Cases. A. Hymanson, New York.
195 Hysteria as Constitutional Disorder. H. C. B. Alexander, Chicago.

187. Bone Wedge Graft in Treatment of Clubfoot.—The joint surfaces having been exposed from above, the articular cartilages on the astralagus and scaphoid are removed. Next triangular segments of bone are removed from the head of the astralagus and from the corresponding opposite surface of the scaphoid to admit a wedge-shaped segment of bone secured from the antero-internal surface of the tibia, and after forcing the foot into its corrected position the graft is slid into position from above downward. The fore foot then released fixes the graft securely in position without necessity of sutures.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

June, XII, No. 138, pp. 161-192

1 *Ovarian Sarcomata in Children; Report of Three Cases. T. T. Higgins.
2 Case of Atonic Form of Cerebral Diplegia. E. G. Fearnsides.
3 Case of Tuberculosis of Auditory Apparatus; Internal Hydrocephalus; Permanent Drainage of Lateral Ventricle. C. E. West.
4 Sex Distribution of Rickets. J. Priestley.

1. Ovarian Sarcomata in Children.—The three cases here recorded by Higgins illustrate certain aspects of the disease, namely, the insidious onset, with unexplained colicky pain, later the appearance of a mobile lump, with possibly some precocious menstruation, the steady enlargement of the abdomen, with pain and fever, the result of an adhesive peritonitis occurring on the surface of the growth, and finally the tendency to spread by direct extension along lines of adhesion rather than by metastases. The patients were 5, 10 and 7 years of age, respectively.

British Medical Journal, London

May 29, I, No. 2839, pp. 917-956

5 Care of Health of Married Women Missionaries. M. Scharlieb.
6 *Traumatism and Tuberculosis. T. Oliver.
7 Carrier of Yellow Fever. A. E. Shipley.
8 *Case of Banti's Disease With Enlarged Hemolymph Glands. J. R. Collins and G. W. Riddel.
9 Exophthalmic Goiter. H. M. Gurney.
10 *Cause of Appendicitis. B. Hughes.
11 Two Cases of Diaphragmatic Stab Wound. C. J. Smith.
12 Method for Bacteriologic Examination of Nasopharynx in Epidemic Cerebrospinal Meningitis Contacts. W. H. Fearis.

June 5, No. 2840, pp. 957-992

13 Irregular Action of Heart. C. Wilson.
14 Some Factors Concerning Amputations With Reference to Present War. P. Lockhart-Mummery.
15 Case of Acute Aneurysm of Superior Mesenteric Artery, With Rupture. J. M. Cotterill and J. Miller.
16 Suffocation by Poisonous Gases, Detailed Notes on One Fatal Case. A. W. Hendry and E. L. Horsburgh.
17 Aneurysmal Varix of Popliteal Vessels from Gunshot Wound. R. B. Wright.
18 Anglo-French Hospital, No. 2, Chateau Tourlaville, Cherbourg. M. L. Ramsay and F. A. Stoney.

6. Traumatism and Tuberculosis.—The relationship of traumatism and tuberculosis is expressed thus by Oliver: Tuberculosis develops in a person who, until the accident, was believed to be quite healthy; a latent tuberculosis is roused into activity by the accident; a tuberculous lesion becomes localized at the site of injury, the micro-organisms having been carried thither from a focus elsewhere in the body, or injury has simply aggravated a localized lesion which was previously present. Although there is no tuberculosis without the tubercle bacillus, the part played by the condition of the body, as exemplified in general and local resistance, cannot be ignored, and it is here that injury, by reducing resistance, comes in as a possible factor in the development of the disease. Oliver cites several cases to support these views.

8. Banti's Disease with Enlarged Hemolymph Glands.—In the case recorded by Collins and Riddel the lymphatic glands in the abdomen had undergone a hyperplasia of their

histologic elements similar to what occurred in the spleen. Blood was present in the lymph sinuses of these lymphatic glands to a variable extent, but the amount of blood present bore no relation to the hypertrophy of the endothelial cells or fibrous tissue of the gland. The hemorrhage into the mesentery and the blood in the ascitic fluid suggested that the blood corpuscles in the sinuses of the lymph glands had been transferred from thence via the ordinary lymph paths. It seemed, however, more probable to the authors that these hemolymph glands represent blood organs *sui generis* in which the same pathologic changes had occurred as in the other blood organ, the spleen, than that the great hyperplasia of the endothelial cells and fibrous tissue was simply the result of the presence of red corpuscles in the lymph paths of normal lymphatic glands. A small angioma was present on the anterior surface of the liver. Areas of fibrosis and collections of small round cells were present about the portal system and to a less extent in the intercellular tissue. A certain amount of fatty infiltration was present, more marked near the angioma. The capillaries were distended with blood. The pancreas appeared perfectly normal. The sections of the lungs showed the presence of emphysema. A section was made through the origin of the portal vein at the junction of the mesenteric and splenic veins, as the site most likely to be diseased. The walls of the vein were quite healthy. A portion of the splenic artery exhibited early atheroma. Sections of the suprarenal glands exhibited no abnormality. The kidneys exhibited the histologic changes of chronic interstitial nephritis, the left kidney being considerably more fibrosed than the right.

10. **Cause of Appendicitis.**—It is suggested by Hughes that all cases of appendicitis are in the first place due to a mechanical cause and this consists in a rotation of the organ about its meso-appendix. He considers the acute inflammatory process, whether it go on to abscess formation or not, to be purely secondary to this rotation. This is assumed for the following reasons: (*a*) The valve of Gerlach is by no means a reliable valve. (*b*) In almost all quiescent appendices, which have never given rise to any symptoms and which have been removed during pelvic operations, Hughes has always been able to culture intestinal organisms from their cavities—that is, the normal contents of the appendix are not sterile. The chief factors which bring this rotation about are: (*a*) a movable loaded cecum; (*b*) loss of tone in the abdominal muscles. The most important is the second of these two factors, for on it in some measure depends the first. He believes that if people took regular exercise and kept their abdominal muscles in good trim, if people in sedentary occupations would resort to physical exercises designed to keep up the tone of their abdominal muscles, and if there were less conveniences for those who can walk, there would be less appendicitis.

Journal of Pathology and Bacteriology, London

April, XIX, No. 4, pp. 455-554

19 *Neuroblastoma and Ganglioneuroma of Suprarenal Body. J. S. Dunn.
20 Lipoids of Ancient Egyptian Brains and Nature of Cholesteryl Esters. A. Lapworth and F. A. Royle.
21 Streptococcus Mucosus—Its Capsule and Its Pathogenic Properties. W. L. Holman.
22 Banana Débris in Feces Simulating Tapeworm Segments. E. Emrys-Roberts and J. W. W. Stephens.
23 Filterability of Bacillus Bronchisepticus; With Argument for Uniform Method of Filtration. N. S. Terry.
24 *Nucleus of Neutrophil Polymorphonuclear Leukocyte in Health and Disease. W. E. Cooke.
25 *Blood Platelets in Health and Disease. L. Dimond.
26 Composition of Tissue Fluid in Normal and Nephritic Animals. A. E. Boycott and J. S. C. Douglas.

19. **Ganglioneuroma of Suprarenal Body.**—The case from which the neuroblastoma was obtained by Dunn was that of a boy, aged 14, who died after an illness of three months' duration characterized by wasting, pain in the back, ascites and great enlargement of the liver. At the postmortem examination a large oval tumor measuring 15 cm. in length, 10 cm. in breadth and 7 cm. in thickness, was found occupying the site of the right suprarenal body. The tumor had a thin capsule; it had pressed down the kidney, and was lightly adherent to the capsule of that organ, but it showed no tendency to invade surrounding structures. On closer inspection, the outline of the anterior surface of the right suprarenal body could be traced on the anterior surface of the tumor; this organ had obviously been much stretched and flattened out by the growth behind, so that its lower margin measured 9 cm. in length and its height 7 cm. On section, the substance of the tumor was seen to be to a great extent hemorrhagic; the better preserved portions were of greyish-pink color. Two large pseudocysts measuring 7 cm. and 5 cm. in diameter and filled with hemorrhagic débris were present in the upper part. The liver was enormously enlarged, weighing 7,290 gm.; it had a smooth surface and broadly rounded margins, the general shape of the organ suggesting that the capsule had been greatly overdistended. On section the liver tissue appeared to have been almost entirely replaced by greyish tumor tissue; there was no appearance of separate nodules, but rather diffuse infiltration, and only small strands of liver tissue could be recognized here and there.

Extensive metastatic deposits were present in the retroperitoneal and posterior mediastinal lymphatic glands, and in the deep cervical groups on both sides, especially the left. No metastases were found in the lungs, heart, spleen, kidneys or other viscera, nor in any of the bones. The left suprarenal body presented normal appearances. Histologic examination of the well-preserved portions of the suprarenal tumor showed a peculiar and characteristic structure. The tissue was composed of very small round cells, rather larger than lymphocytes with darkly staining nuclei and almost no protoplasm; these were accompanied by varying amounts of fibrillar material. The patient who had the ganglioneuroma of the suprarenal was 4½ years of age, and was suffering from general symptoms, weakness, pallor and loss of weight, of a month's duration. Slight jaundice was present.

24. **Nucleus of Polymorphonuclear Leukocyte.**—The nucleus of the polymorph of normal blood Cooke found presents a sharply defined outline. It does not stain uniformly, but shows irregularities, due to the uneven distribution of the chromatin through the lining meshwork. Many of these depressions contain no chromatin at all. The nucleus in acute infections has a very different appearance. The outline is blurred or hazy, the mottled appearance of the normal nucleus is replaced by a densely and evenly staining mass of chromatin. In some, fine radiations of chromatin into the cytoplasm may be seen, or there may be coarser branches of nuclear material jutting out into the cell body. In many cases, too, there is a distinct increase in the size of the nucleus as compared with the normal. In the majority of cases of acute infection, there is a leukocytosis. This also means an increase in the chromatin content of the blood.

Cooke emphasizes the fact that nuclear activity must be looked on as being evidence of the performance of very definite functions, the nature of which is determined by the immediate necessities of the organ of which that nucleus forms a part, therefore, it is reasonable to suppose, considering the intimate connection that exists between the nuclear changes in the polymorph and the presence of bacterial toxins, that the polymorph plays an important part in the production of antibodies, necessary to successfully combat microbic invasion. The polymorph nucleus assumes, then, a prominent position in the production of active immunity. After many infections immunity remains long after antibodies have disappeared from the serum. Having seen the active part the polymorph takes in these diseases, it may be assumed that the continuance of the immunity depends on some faculty derived by previous education, existing in the polymorph or its parent cell.

25. **Blood Platelets in Health and Disease.**—The blood platelets are classified by Dimond in the following groups, and he suggests that differential counts in a variety of diseases promise to be of the greatest utility in diagnosis. 1. Platelet with central nuclear body, completely surrounded by protoplasm. The nucleus, which is round, oval, or irregular, may be eccentric. The protoplasmic mass is usually

round, and possesses no processes. 2. Platelet with central nuclear body surrounded by protoplasm, from which arise from one to seven or more flagella. 3. Fan platelets: (*a*) To the nuclear body there is loosely attached a circular or semicircular mass of protoplasm. (*b*) To the nuclear body are attached two fans. (*c*) To the nuclear body are attached three or more fans. 4. Ring platelets: (*a*) To the nuclear body is attached a single loop or ring of protoplasm. (*b*) To the nuclear body two rings or loops are attached. (*c*) to the nuclear body three or more rings are attached. 5. Combined fan and ring platelets: (*a*) To the nuclear body one fan and one ring are attached. (*b*) One fan and two rings are attached to nucleus. (*c*) Two fans and one ring are attached to nucleus. (*d*) Two rings or more and two fans or more, are attached to the nuclear body. 6. Platelets with nuclei body alone, no protoplasm and no flagella. It is common for this type of platelet to have one or more of its corpuscles attached to the nucleus by means of a short stem like a drum-stick. 7. Platelets with nuclear body and with one to seven or more flagella as the only representatives of the protoplasm. 8. Irregular and transitional forms of platelets. Differential counts of the azurophile corpuscles of the platelets give characteristic number in different diseases.

Lancet, London

May 29, I, No. 4787, pp. 1113-1166

27 Influence of Arboreal Habit in Evolution of Reproductive System. F. W. Jones.
28 *Pulsus Alternans in Some of Its Clinical Aspects. C. O. Hawthorne.
29 *Some Aspects of Ciliary Body in Health and Disease. H. P. Dunn.
30 Fracture of Pelvis with Extraperitoneal Rupture of Bladder. A. E. Blackburn and W. W. Cook.
31 Hypertrichosis in Insane. C. T. Ewart.
32 Use of Atropin in Treatment of Those Suffering from Effects of Irritant and Other Gases. D. V. Cow.

June 5, No. 4788, pp. 1167-1216

33 Arteriosclerosis. W. L. Blight.
34 Rheumatic Fever and Rheumatoid Arthritis. J. T. Clarke.
35 Case of Landry's Paralysis. J. S. B. Stopford.
36 Genesis of Constitutional Gastroptosis. J. J. Grace and W. Overend.
37 *Some Points in Circulatory System in Ankylostomiasis. A. E. A. Ismail.
38 Six Months With Bearer Division of Field Ambulance at Front. S. J. A. H. Walshe.

28. **Pulsus Alternans in Its Clinical Aspects.**—Hawthorne directs attention to the fact that a pulsus alternans which may escape the finger and the stethoscope, and perhaps also the pulse tracing may be rendered evident and even conspicuous by the combined use of the sphygmometer and the sphygmograph. If, while a radial tracing is being taken, more or less pressure is exercised on the brachial artery, the distinctive features of pulsus alternans come out very conspicuously. The difference between the height of the alternate waves is most decided when the sphygmometer pressure is at a moderate level, it is somewhat less decided as the pressure is increased, but it can still be appreciated even when the pressure is carried near to the obliterating point.

29. **Ciliary Body in Health and Disease.**—Dunn lays stress on hypothyroidism as a causative factor in cases of iridocyclitis and on the usefulness, clinically, of its recognition. That the ciliary body, so sensitive to toxemic influence, should readily respond to thyroid treatment is a natural sequence to the vascularity of its structure. Thus is placed in the hands of the ophthalmic surgeon a means of relief, yielding results which can be obtained in no other way. The dose of the extract employed by Dunn for children beyond 5 years of age and for adults is 3 grains twice daily, and from this dosage he has never seen any ill effects.

37. **Circulatory System in Ankylostomiasis.**—Ismail's hypothesis as to the origin of heart murmurs in these cases is this: The contraction of the papillary muscles, if continued further, will increase the convexity of the auricular surface of the flaps, which would be supported by the column of blood in the ventricle; further contraction would pull the valve edges into the ventricle, the latter at the same time separating. The chorda tendinea from each papillary muscle to both valves tend to prevent undue separation. The origin of the papillary muscles from the anterior and posterior walls, the two contractile walls of the left ventricle may be a means of regulating their action according to the degree of distention and integrity of the muscle. A chink would be created between the valves—some blood would regurgitate, the overtension in the ventricle released, and possibly a more efficient contraction continued, but a murmur systolic in time results.

Sei-I-Kwai Medical Journal, Tokyo

May, XXXIV, No. 5, pp. 27-31

39 Two Cases of Tubercular Bronchial Glands Breaking Into Trachea. I. Uyeda and Y. Takaki.
40 Case of Severe Abdominal Pain Cured by Vomiting of One Ascaris Lumbricoides. M. Nagahama.
41 *Intestinal Obstruction Caused by Ascaris Lumbricoides. Y. Takaki.
42 Eight Cases of Floating Kidney and Results of Abdominal Belt Treatment. U. Seo.

41. **Intestinal Obstruction Caused by Ascaris Lumbricoides.**—Takaki's patient was a child 3 years of age, which presented all the symptoms of an acute intestinal obstruction. Three days after the onset of the illness the patient vomited two ascarides, and in the course of the next six days 115 ascarides were vomited. The patient's appetite improved with the passing of the ascarides and he left the hospital on the eighth day of the disease completely cured.

Bulletin de l'Académie de Médecine, Paris

May 11, LXXIII, No. 19, pp. 559-586

43 *White Patch on Buccal Mucosa Sign of Syphilis. L. Landouzy.
44 *Conservative Secondary Amputations. A. Routier.
45 Electrovibration as Aid in Localizing and Extracting Foreign Bodies. J. Bergonié.
46 To Protect Against Inhalation of Gases and Dust. (Respirateur à ouate contre les gaz et les poussières.) H. Henrot.
47 Effect of Asphyxiating Gases in War; Necropsy in One Case. R. D. de la Rivière and J. Leclercq.
48 Hot Air in Treatment of Frost-Bite. A. Chenal and others.
49 Serotherapy of Wounds. (Résultats obtenus par l'emploi du sérum spécifique polyvalent de Leclainche et Vallée.) O. Pasteau.
50 Food Value of Organic Matter of the Bones. (Osséine, substance alimentaire.) E. Maurin.

43. Summarized June 26, Abstract 24, p. 2171.

44. **Secondary Amputations.**—Routier calls attention to the disastrous outcome of some cases in which he amputated in sound tissue, three weeks after the men had been wounded, and hospital gangrene developed, requiring most strenuous efforts for four months before recovery was complete. In some more recent cases with the same kind of injury, a bullet or shell wound of the knee, he decided to utilize the local reaction of the tissues to the suppuration as a means to ward off infection. Consequently, he made the incision through the soft parts in the focus of suppuration itself. The skin flaps thus obtained were turned back and the femur amputated as high up as it could be reached from below. The three skin flaps were thus lined with the granulations of the purulent focus, and this inner surface was sterilized with a strong hot solution of phenol, and all the surfaces were vigorously rubbed. By this means the layer of granulations thus served to protect against new infection, and the results surpassed all expectations.

Journal d'Urologie, Paris

August, 1914, VI, No. 2, pp. 153-296. Last indexed Aug. 29, p. 810

51 Urologic Instruments Invented in France. O. Pasteau.
52 Comparative Anatomy, Development and Histogenesis of External Genital Organs. E. Retterer. (To be Continued.)
53 *Serodiagnosis of Tuberculous Nature of Certain Cases of Acute Nephritis in Children, Supposed to be Primary. R. Debré and J. Paraf.
54 The Addresses at the International Urologic Congress, Berlin, June, 1914. F. Legueu, Casper, Verhoogen and others. Commenced in No. 1.

53. **Infectious Acute Nephritis.**—Debré and Paraf describe four cases of acute, apparently primary nephritis in children with sudden stormy onset, convulsions, amblyopia and coma in one case; acute pulmonary edema in the second, and hematuria and fever in the others. All had considerable edema, with retention of chlorids, but not of nitrogen. In all the symptoms subsided in less than two weeks and there

were no clinical toxic or infectious antecedents to explain the sudden kidney storm. The complement-deviation test, however, revealed that the trouble was the work of the tubercle bacillus, and its findings were confirmed by inoculation of guinea-pigs. Nothing else in any of the cases gave the clue to the bacillary nature of the acute kidney trouble. A positive response to this test is obtained with the urine only when there is a tuberculous focus somewhere in the urinary apparatus. In the above four cases the reaction became negative as recovery progressed in three cases or the nephritis settled into a chronic stage in the fourth.

Presse Médicale, Paris

May 20, XXIII, No. 22, pp. 169-176

55 Improvised Apparatus for Treating Compound Fractures of the Femur. (Fractures compliquées de cuisse.) J. L. Faure.
56 Gonorrheal Orchitis After Shell Wounds of Testicle; Two Cases, Three and Five Years After Gonorrheal Infection. Gaucher and others.
57 Localization of Foreign Bodies in the Tissues. L. C. Bailleul.
58 Surgical Anatomy of the Leg for Emergency Operations. A. Broca.
59 *Strong Odors Protect Against Lice. (Destruction des poux dans les épidémies de typhus exanthématique.) C. G. Delta.
60 Respirator to Protect Against Inhaling Gases, Dust, etc. (Masque contre les vapeurs asphyxiantes.) Devèze and Orsaud.

59. **Strong Odors Keep Off Lice.**—At least this was Delta's experience during a recent epidemic of typhus at Alexandria. After laboratory research had shown that lice try to escape from strong odors, he had the usual prophylactic measures supplemented by applying to the body from head to feet a strong cologne water. It was made inexpensively for the purpose with a particularly strong and lasting perfume. The odor seemed to repel vermin and the alcohol destroyed the eggs already deposited. In order to give the measure a thorough trial, the preliminary bathing and soaping were omitted. There were two distinct epidemics of typhus at the time, one outside the city limits and one in the heart of town, with ninety-six and fifty-two cases, and at each point the epidemic died out after the preventive use of the perfume.

Revue Médicale de la Suisse Romande, Geneva

May, XXXV, No. 5, pp. 241-296

61 *Purulent Pleurisy Complicating Artificial Pneumothorax. M. Jacot. Commenced in No. 3.
62 *Remote Results of Artificial Pneumothorax. (Résultats éloignés de la méthode de Forlanini.) R. Burnand.
63 *Advantages of Letting the Patients Sit up in Pneumonia. E. Cottin.

61. **Purulent Pleurisy Complicating Artificial Pneumothorax.**—Jacot here concludes his long study of this subject. It is based on five years' experience at Leysin, Hauteville and other Swiss sanatoriums, a total of twenty-five cases; the details of each are given. Eight of the patients are in good condition to date, the others have died from the progress of their pulmonary tuberculosis or from intercurrent disease, and, in a few cases, from the purulent pleurisy itself. The first instalment of the article was reviewed in these columns June 5, p. 1947.

62. **Ultimate Outcome of Artificial Pneumothorax.**—Burnand is the medical director of the public sanatorium at Leysin, and he here analyzes the results of artificial pneumothorax as he has induced it in about a hundred cases of pulmonary tuberculosis. He cites in full three case histories to show that this measure is not only liable to induce temporary improvement, but it may eventuate in a complete clinical cure. One of these patients was a young man with a febrile cheesy tuberculous process in one lung, rapidly progressing in spite of two months of sanatorium treatment. Then artificial pneumothorax was induced and in three weeks the temperature had dropped to normal and in ten months the clinical cure was complete. The pneumothorax was kept up for a total of two years, during which he resumed his office work. Eight months after all treatment had been suspended, he joined his regiment at the call to arms and has served through the campaign with nothing to suggest his former trouble, not even, he writes, after marching 15 kilometers in a pouring rain with his full load of equipment.

Analysis of all his material demonstrates that when artificial pneumothorax fails to induce a clinical cure this is owing to the independent evolution of preexisting lesions in the other lung or elsewhere or to adhesions in the pleura which prevent the compression from being complete. He does not apply the method unless he regards the case as incurable otherwise, comparing it to surgery in malignant disease. Even if there is already metastasis, yet this does not hinder us from giving the patient the benefit of removal of the primary focus. And the benefit is greater the earlier the treatment is applied. In short, he declares, "There is no measure that approaches artificial pneumothorax in the number of cases of clinical cures, half-cures and rescues from impending death."

63. **Letting Patients Sit Up in Pneumonia.**—Cottin has tried in twenty cases of pneumonia getting the patients out of bed for three or four hours in the afternoon, as Widmer advocates. (Mentioned in The Journal, June 20, 1914, p. 2001.) The youngest was 20, the oldest 80; all had rise of temperature up to 40 C. (104 F.), and they were merely moved to an arm chair beside the bed and well covered up. Each one declared that he felt better, could breathe and expectorate more easily, and they did not perspire so much. The temperature dropped in several, in some by a degree and a half Centigrade. There was less tendency to cyanosis, and the respiration grew slower and deeper. No indications of weakness, not even on the part of the heart, were evident. In pneumonia more than in any other disease, the physician must watch for and be guided by the clinical indications, without any preconceived ideas. In estimating the effect of his measures he should recall Magendie's retort: "And didn't you ever try the effect of doing nothing at all!" At the same time, Cottin is convinced that the modification of the circulation induced by sitting up may have a decidedly favorable influence when there is much congestion or dyspnea and the heart is close to exhaustion. The diaphragm drops lower, which relieves the heart, and the blood accumulates in the legs, affording further relief. In one case the circumference of the thigh increased 0.5 cm. after the change from the recumbent to the seated position; the circumference of the calf increased by 1.5 cm. This is equivalent to withdrawing 200 or 300 c.c. blood from the circulation. The effect of the change of position was always most marked with pneumonia of the lower lobes.

Deutsche medizinische Wochenschrift, Berlin

May 13, XLI, No. 20, pp. 577-604

64 Bread and Its Properties. III. M. Rubner.
65 *Seasonal Occurrence of Cholera, Dysentery, Typhoid and Typhus. (Das jahreszeitliche Auftreten der Kriegsseuchen.) K. Kisskalt.
66 *Abortive Treatment of Tetanus. (Tetanusinfektion und Abortivbehandlung des Wundstarrkrampfs.) O. Teutschlaender.
67 Early Differentiation of Gas Phlegmons with Roentgen Rays. L. Finckh.
68 *Diagnosis of Duodenal Ulcer. A. von Rothe and K. Pollack.
69 Treatment of Fractured Femur. (Oberschenkelfrakturen.) O. Witzenhausen.
70 Fenestrated Celluloid Dressings. (Zelluloidfensterverbände.) H. L. Heusner.
71 *Direct Inhalation of Mercury. (Neue Methode der Quecksilber-Inkorporation zur Behandlung der Syphilis.) J. Frankenstein (Berlin-Schöneberg).
72 Ecthyma. (Eine Kriegsdermatose.) E. Kromayer.

65. **Seasonal Occurrence of Epidemics.**—Kisskalt refers merely to cholera, dysentery and typhus. The mild catarrhal affections of the bowels which are so common in summer and fall afford a predisposition to cholera and dysentery, and rouse latent carriers to active distribution of their germs —all factors tending to explain the seasonal occurrence of these diseases in the summer and fall. Typhus, on the other hand, is a late fall and winter disease, and in wars it prevails most in settled camps and occupied towns. In the Crimean war it appeared first among the English, but the second year the English escaped, while the French had it both years. The cavalry seemed to escape. These facts all harmonize with the louse theory, as also the further fact that after the Crimean war typhus developed in a number of the larger cities. In the cities it showed no seasonal variation. Kisskalt explains this by the fact that the lower classes are so accustomed to vermin that they make no

effort to get rid of them even in the summer, while soldiers take advantage of the warmer weather to rid themselves of lice, and the epidemic then dies out. As a contribution to the question of vermin in the different seasons, he gives the statistics for 1914 from the municipal lodging house at Berlin in which there were 176,574 admissions nearly evenly distributed throughout the year. The applicants for a night's shelter here voluntarily give up their clothes to be disinfected when they feel vermin on them, and the number who did this was about the same for each month, the range being from 5.1 per cent. of 14,933 admissions to 8 per cent. of 14,459 per month. The highest percentage was in January and August.

66. **Abortive Treatment of Tetanus.**—In three wounded soldiers tetanus bacilli were cultivated from the wound, but there were no symptoms or signs of tetanus at any time except that one man had slight and transient painless contracture of the sole of the wounded foot. Each of the men had been given a small preventive injection of antitetanus serum and, on the warning of the spasm in the sole, another dose was given and there were then no further symptoms. In the three cases the wounds were shallow and, although extensive, were secreting freely, and the air was not shut out. Notwithstanding vigorous local disinfection, tetanus germs cultivated from the wound several weeks later were still virulent enough to kill a mouse. Teutschlaender recalls that even a small scratch that gets hermetically sealed by the blood clotting on it favors the proliferation of tetanus germs. He had a case of this kind in a man of 63 who succumbed in three days to tetanus developing three days after he had got scratched behind his ear with a straw in unloading hay. The linear scratch was scarcely 3 cm. long and not inflamed, but covered air tight with dried secretions.

68. **Diagnosis of Duodenal Ulcer.**—Rothe and Pollack report a case of disturbances in a woman of 25 which suggested a neurosis, ptosis or ulcer or combination of all three. The aggravation of the disturbances under emotional stress, and under cold applications, signs of vagotony and the variability in the times when the disturbances recurred, testified in favor of a purely nervous trouble, but the occasional subsidence of the pain on reclining, the aggravation after drinking considerable fluid, and the slight downward displacement of the stomach as shown in the roentgenogram spoke for ptosis. All the other symptoms pointed to an ulcer although there was no occult blood in the stool. The special symptoms were the tenacity of the disturbances and their localization in the upper part of the digestive tract, the regular appearance of the pain after heavy eating, a deep (direct) painful point in front and a shallow (projected) tender point at the rear, and the tendency to "hunger pain." Other features were the improvement in summer, the slight disturbances at night, the continuous loss of flesh during the year, and, finally, the long history of abdominal disturbances which had continued after removal of one ovary and the appendix to which the trouble had been imputed at the time. The "nervousness" had commenced three years before the stomach disturbances and these had been growing worse for three years. The operation revealed two duodenal ulcers with functional stenosis and enormous dilatation above. All the symptoms disappeared after the operation.

71. **Inhalation of Mercury.**—Frankenstein has devised a little inhalation apparatus for the administration of mercury vaporized by electric heat. The effect of the treatment and the proportion of the mercury recovered from the urine demonstrate that as much of the drug is utilized in this way as by injection and inunction. The method is so simple, safe and convenient that his patients much prefer it to other techniques.

Medizinische Klinik, Berlin

May 23, XI, No. 21, pp. 581-606

73 *Charcoal and Iodin Cures Typhoid Carriers. (Behandlung der Typhusbacillenträger.) F. Kalberlah.
74 Clinical and Serologic Study of Vaccination Against Typhoid. (Typhusschutzimpfung.) J. Basten.
75 *Typhus. (Umfrage über Uebertragung und Verhütung des Fleckfiebers.) F. Stoklosinski.
76 Trauma and Acute and Chronic Disease of Bones and Joints. (Knochen- und Gelenkentzündungen.) E. Schepelmann.
77 Case of Still's or Mikulicz' Disease or Both. H. Strauss.
78 *Acute Yellow Atrophy of the Liver Following Treatment for Primary Syphilis. Halbey.
79 Hydrogen Dioxid in Treatment of Gonorrhea. H. L. Heusner.
80 Meningitis Simulating Typhus. F. F. Reich.
81 *Arsenic and Potassium Iodid in Chronic Bronchitis. Wilcke.

73. **Charcoal-Iodin for Typhoid Carriers.**—Kalberlah remarks that it is comparatively easy to banish typhoid bacilli from the urine and consequently it is no drawback to the method he proposes that it frees the stools alone from typhoid bacilli. This it accomplished fully in the five cases in which it had been applied at date of writing. Charcoal alone proved inefficient, but when its action was supplemented by that of tincture of iodin, success was constant. The bacilli promptly disappeared from the stools and none have been found during the four months since with examinations at about five-day intervals. He gave from 7 to 15 drops tincture of iodin in a glass of water, half an hour after eating, three or five times a day. The blood charcoal was taken three or five times a day, dose one teaspoonful.

75. **Typhus.**—Stoklosinski states that during his twenty-one years of practice in Galicia he has encountered typhus constantly, averaging fully a hundred cases a year. Fifteen years ago he contracted it himself. There are certain places in Galicia, he says, where typhus seems to be endemic; all were marshy and there were no provisions for sanitation. It is his impression that during the summer flies and mosquitoes contribute in the spread of typhus, but he thinks that fleas have a share. This impression is based on the cases occurring in official inspectors and others merely glancing into a room where there were typhus patients.

78. **Acute Yellow Atrophy of the Liver in a Syphilitic.**—Halbey's patient was a robust young man who died soon after entering the hospital, and the necropsy confirmed the presumptive diagnosis of subacute yellow atrophy of the liver. It was learned later that three weeks previously he had finished a course of salvarsan and calomel for primary syphilis. The total of salvarsan incorporated during the three or four weeks was 2.33 gm. Halbey cites evidence from the literature which proves beyond question of doubt, he declares, that the liver is the chief storage organ for salvarsan. The symptoms presented by his patient indicated a severe toxic action. The primary syphilis had apparently completely subsided under the vigorous antisyphilis measures three weeks before the liver trouble became evident. Halbey refers to two or three similar cases in the literature, and warns that salvarsan should be given very cautiously if there is any evidence that the liver is already impaired or the heart functioning is not quite normal, thus throwing extra work on the liver.

81. **Arsenic and Potassium Iodid in Chronic Bronchitis.**—Wilcke has found this combination extremely effectual and thinks that improper dosage explains the lack of success reported by certain writers. His method is to give 2 drops of Fowler's solution three times a day on the first, third and fifth days, alternating it with a 5 per cent. solution of potassium iodid, of which a quarter of a teasponful is taken three times a day on the second, fourth and sixth days, and so on. Each of the drugs is taken in milk after meals. Larger doses are liable to derange the stomach.

Zentralblatt für Chirurgie, Leipzig

May 22, XLII, No. 21, pp. 369-384

82 Splints for Wounded Knee or Fracture Nearby. (Schiene für Schussverletzungen und Empyem des Kniegelenkes.) M. Grundler. (Schiene für Schussfrakturen in der Umgebung des Kniegelenkes.) Neuffer.

Zentralblatt für Gynäkologie, Leipzig

May 22, XXXIX, No. 21, pp. 353-368

83 Suture of Perineum. (Zur Dammnaht.) P. Strassmann.
84 *Prevention of Mastitis. (Zur Verhütung der Brustentzündung.) P. Strassmann.

84. **Prevention of Mastitis.**—Strassmann has found that women in trying to prepare the breasts for lactation are often advised to rub them with alcohol, "to toughen them," and that

this practice directly breeds mastitis later. The alcohol—often used in large amounts and repeatedly applied—makes the tissues hard and friable, so that the breast cracks readily. Another prevalent bad habit is that the breast is washed off frequently. If this is done before and after each nursing, this amounts to ten or fourteen times a day, and the skin becomes macerated and the epithelium peels off. A cloth smeared with salve should be applied after the child has nursed, until the nipple and breast have adapted themselves to the nursing process, striving thus to keep the tissues soft and pliable. A Peruvian balsam salve is good. It can be wiped off with cotton and a little boiled water just before the child is placed at the breast again. A third important measure is never to let any one but the infant touch the nipple. When it is offered to the child, the hand should grasp the breast around the nipple and thus force it up, never taking hold of the nipple itself.

Zentralblatt für innere Medizin, Leipzig

May 22, XXXVI, No. 21, pp. 325-340

85 Cholesterin Content of Human Blood Serum. H. Pribram.
86 *Heredity of Tendency to Diabetes. (Vererbung der diabetischen Konstitution.) H. Pribram.

86. **Heredity of Tendency to Diabetes.**—Pribram gives the family tree of a couple with gout in the husband and diabetes in the wife, each with one parent with the same disease. Of their nine children, the fate of three is unknown, but the oldest three of the other six have pronounced diabetes: one of the others has died of a heart defect. There are ten children in the third generation and none has shown any tendency as yet to diabetes or gout. Pribram is watching their development with interest.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

May 8, I, No. 19, pp. 1587-1662

87 *Premature Senile Dementia. (Praesenium en psychose.) A. M. Benders.
88 Research on Activation of Pancreas Lipase by Cholic Acid Salts. (Aktiveering van pancreaslipase door cholzure zouten.) J. A. De Jonge.
89 Importance of Combating Tuberculosis by Prophylaxis in Childhood. G. Scheltema and J. J. Pigeaud.

May 15, No. 20, pp. 1663-1746

90 *Loss of Memory. (Bijdrage tot de kennis der amnesie.) P. H. M. Travaglino.
91 Roentgenology of Chronic Appendicitis. C. Bles.
92 *General Iodin Treatment of Surgical Tuberculosis. E. H. B. Van Lier.

87. **Presenile Dementia.**—Benders has been able to find only two cases in the literature similar to four he has encountered in the course of a few years. Another case from the records of the Meerenberg asylum in his charge might be included in the group. This case was in a man, but his own four patients were women in the fifties. In all there was a rapidly progressive loss of memory and loss of the faculty of perception. The brain seemed to have lost the faculty of responding to impressions, especially optic impressions. They paid no attention to anybody or anything and stayed indefinitely wherever they were placed, never speaking, not even to themselves, when constrained to speak, merely repeating some single word or their own name. There never was anything to suggest the Korsakoff or analogous syndromes; the symptoms were only those of the dropping out of certain mental faculties, deficit phenomena. Necropsy in one case and in the two on record showed pronounced atrophy of the frontal convolutions. The remainder of the brain was macroscopically normal but the microscope showed in parts of the cortex that the cells had evidently suffered much. A significant feature of all the cases was that the mother in two cases and the father or a brother in the others had had apparently the same trouble in their day. Heredity as a factor in senile dementia has not been sufficiently emphasized hitherto, he remarks, citing Tay-Sachs' findings in amaurotic idiocy in analogy.

90. **Loss of Memory.**—Travaglino gives a survey of much literature on amnesia, including some articles published in The Journal, and then gives a detailed report of total loss of memory in a man of 46 whose mind otherwise seems absolutely unimpaired.

92. **General Treatment with Iodin in Surgical Tuberculosis.**—Van Lier reports the application, in twelve cases, of Hotz' iodin method for general, instead of local, treatment of tuberculous lesions in the bones, peritoneum or lymph glands. His impressions are most decidedly favorable. No signs of toxic action were apparent. Particularly striking benefit was realized in the case of a boy of 4, whose mother had died of tuberculosis. He had thirty-four open fistulas, rebellious to all measures. Two years after the first signs of trouble, Van Lier started the intramuscular injections of iodin, and in one year and eleven days from that date the last one of the fistulas had healed. The child is in good health at present, over two years later. Van Lier gives the details further of four cases in which the general iodin treatment was given to outpatients, who continued otherwise their ordinary life. The benefit realized by ambulant treatment in this way he regards as the strongest testimony to the beneficial general effect of the intramuscular injections of iodin. The solution used was a mixture of 9 parts iodoform, 10 parts of a 10 per cent. tincture of iodin, and 90 parts glycerin. The first intramuscular dose was 3 c.c. and the following 2 c.c. every two weeks to a total of 22 c.c. of the mixture. Hotz' announcement in regard to this general treatment with iodin was summarized in The Journal, Oct. 12, 1912, p. 1414. He explained the benefit from the iodin as a vital reaction; the first manifest sign of it is lymphocytosis. The ferment of the lymphocytes acts on fat, including the fat of bacteria. All of Van Lier's twelve patients were bedridden from their tuberculous affection and eleven left the hospital with their fistulas healed and all but two were in good condition. These two had concomitant severe pulmonary lesions and one has since died from these. The general iodin treatment therefore is not promising when the lungs are already involved, but for tuberculous bone and joint processes its favorable action is unmistakable, he reiterates in conclusion.

Hospitalstidende, Copenhagen

May 15, LVIII, No. 20, pp. 477-508

93 *Köhler's Disease of the Foot in Children. (Den Køhlerske Sygdom i os naviculare pedis hos Børn.) E. Meulengracht.
94 General and Comparative Pathology. C. J. Salomonsen.

93. **Köhler's Bone Disease of the Foot in Children.**—Meulengracht has five cases to add to the thirty he has found on record. Swelling, tenderness and pain are the symptoms of this affection which is known only in children, usually 5 or 6 years old. With or without treatment it completely subsides in from one and a half to two and a half years. Roentgenoscopy shows invariably an abnormally black shadow cast by the scaphoid bone. It seems to contain four times as much lime as its sound mate, and to have shrunken a little. The periosteum seems normal. It is still a problem whether trauma or some defect in ossification or both is the cause of the trouble. There was a history of slight trauma in two of his own five cases.

Ugeskrift for Læger, Copenhagen

May 13, LXXVII, No. 19, pp. 731-780

95 *Experiences with Congenital Dislocation of the Hip Joint. (Luxatio coxae congenita.) H. Scheuermann.

95. **Congenital Dislocation of the Hip Joint.**—Scheuermann reports 75 per cent. of anatomic cures in the fifty-five children with unilateral dislocation, and 57 per cent. in the forty-six bilateral cases. In three of the above cured patients the head of the femur is not exactly in the actual center of the acetabulum but the gait is quite normal. Lorenz' method was applied in nearly every case. After the dislocation has been reduced under general anesthesia and the cast applied, the child has to be brought back for Roentgen control one, four and eight months later, if all goes well. In this article a number of useful points are discussed which are not found in the textbooks, such as management of the case when the neck of the femur is fractured during the efforts at reduction. This occurred in two of the cases and in one operative measures became necessary. This was the only operative case.

PROCEEDINGS OF THE SAN FRANCISCO SESSION

MINUTES OF THE SIXTY-SIXTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, HELD AT SAN FRANCISCO, JUNE 21-24, 1915

HOUSE OF DELEGATES

First Meeting—Monday Morning, June 21

The House of Delegates met in the Exposition Memorial Auditorium, and was called to order at 10:30 a. m. by the President, Dr. Victor C. Vaughan, Ann Arbor, Mich.

The preliminary report of the Committee on Credentials was called.

Dr. E. J. McKnight, Connecticut, Chairman, reported that the Committee on Credentials had examined and approved the credentials of thirty-six delegates which conformed to the rules of the House.

It was moved that the report be received, and the accredited delegates be seated as members of the House of Delegates.

Seconded and carried.

The Secretary called the roll and announced a quorum present.

The next in order was the presentation, correction and adoption of minutes of the sixty-fifth annual session.

The Secretary stated that these minutes had been published and a copy of the same sent to each member of the House of Delegates, with a request that attention be called to any inaccuracies that may have appeared. No replies had been received.

Dr. Floyd M. Crandall, New York, moved that the minutes be accepted and approved as published.

Seconded and carried.

Remarks by the President, Dr. Victor C. Vaughan

I have no formal address to deliver to the House of Delegates. I have enjoyed my year as President, and if there be any politics in the American Medical Association, I, as President, have not discovered it.

There are two or three things to which I desire to call the attention of the House of Delegates in an informal way. In the first place, going up and down the country, visiting state and local societies, it has seemed to me that there are certain pressing needs of the American medical profession. Medicine is advancing so rapidly that men, even among the recent graduates of our best schools, are failing to keep up with the times. There are several excellent postgraduate schools which are doing good work, but the young doctor often feels he cannot be away from home, and I wish simply to offer this as a suggestion which, I suppose, will go to the Board of Trustees. It occurs to me that it would be possible for the American Medical Association to send to different states clinical teachers versed in the latest and best methods of diagnosis. We have been educating the public in preventable diseases, and we have accomplished a great work. It is getting to be true now that many of the more intelligent of the laity know much more about these preventable diseases than some of our doctors, and I wonder whether it would be possible to reach the doctors and give them the latest and best methods of clinical diagnosis.

Another thing I wish to mention is that I am afraid the profession at large is in danger of losing its prestige in the great advance that is being made in preventive medicine. I think that we are at a critical point. For instance, the legislature of Michigan recently made an appropriation of $100,000 for the study of tuberculosis in the state. This money is placed at the disposal of the Michigan State Board of Health. A member of the board wrote to the executive officer of the National Anti-Tuberculosis Association for a man to take charge of this work. Of the four recommended by the National Anti-Tuberculosis Association to take charge of this work, three are non-medical men. Has it come to pass that work of this kind must be undertaken by men who are not educated physicians? It seems to me that this is all wrong. I am aware of the fact that several schools are now offering courses in preventive medicine, but they are not furnishing enough men, and the sanitary engineer and the social worker are supplanting the doctor in this great work.

Reference Committees

The President then announced the following reference committees:

SECTIONS AND SECTION WORK

E. E. Montgomery, Chairman.....Philadelphia
J. Rilus Eastman.....Indianapolis
George Hare.....Fresno, Calif.
Leroy Southmayd.....Great Falls, Mont.
A. W. McAlester.....Kansas City, Mo.

RULES AND ORDER OF BUSINESS

G. W. Cook, Chairman.....Washington, D. C.
John O. Polak.....Brooklyn
J. H. J. Upham.....Columbus, Ohio
G. V. I. Brown.....Milwaukee, Wis.
W. L. Noble.....Chicago

MEDICAL EDUCATION

H. B. Ellis, Chairman.....Los Angeles
Miles F. Porter.....Fort Wayne, Ind.
Richard C. Cabot.....Boston
Perry Bromberg.....Nashville, Tenn.
A. H. Levings.....Milwaukee, Wis.

LEGISLATION AND POLITICAL ACTION

E. J. Goodwin, Chairman.....St. Louis
Wm. H. Seeman.....New Orleans
W. E. Anderson.....Farmville, Va.
M. R. Walker.....Reno, Nev.

HYGIENE AND PUBLIC HEALTH

J. W. Kerr, Chairman.....Washington, D. C.
L. W. Littig.....Davenport, Ia.
Wm. J. Laler.....Trenton, N. J.
C. B. Cooper.....Honolulu, H. I.
C. S. Crane.....Grand Forks, N. D.

AMENDMENTS TO CONSTITUTION AND BY-LAWS

Floyd M. Crandall, Chairman.....New York
C. E. Cantrell.....Greenville, Tex.
Sol. G. Kahn.....Salt Lake City
Dean Lewis.....Chicago
John H. Anderson.....Washington, D. C.

REPORTS OF OFFICERS

William H. Arthur, Chairman.....U. S. Army
A. R. Mitchell.....Nebraska
Walter T. Williamson.....Portland, Ore.
Frank E. McCullough,.....U. S. Navy
R. W. Runyon.....Ancon, C. Z.

CREDENTIALS

E. J. McKnight, Chairman.....Hartford, Conn.
E. C. Davis.....Atlanta, Ga.
M. F. Jarrett.....Fort Scott, Kan.
H. E. Randall.....Flint, Mich.
E. A. Hines.....Seneca, S. C.

MISCELLANEOUS BUSINESS

L. J. Hirschman, Chairman.....Detroit
G. S. Peterkin.....Seattle
J. C. MacEvitt.....Brooklyn
T. C. McCleave.....Berkeley, Calif.
Martin L. Graves.....Galveston, Tex.

Report of the Secretary

The Secretary presented his report as follows:

To the Members of the House of Delegates of the American Medical Association:

For the year 1914-15, I submit the following report:

MEMBERSHIP

The membership of the various constituent state associations, which constitutes the membership of the Association, according to the records in the Secretary's office, May 1, 1915, is shown in the table on page 64.

FELLOWSHIP

The Fellowship of the American Medical Association on May 1, 1914, was 41,029. During the past year, 343 Fellows have died, 2,204 have resigned, 390 have been dropped as not eligible, 577 have been dropped for nonpayment of dues and 6 have been removed from the rolls on account of being reported "not found," making a total of 3,520 names to be deducted from the Fellowship roll. There have been added 4,857 names to the Fellowship roll, of which 3,713 were transferred from the subscription list. The Fellowship of the American Medical Association on May 1, 1915, was 42,366, a net increase for the year of 1,337.

This gain in the number of Fellows is due largely, as in previous years, to circularizing subscribers to THE JOURNAL who were eligible, urging them to become Fellows.

TABLE—ORGANIZATION OF CONSTITUENT ASSOCIATIONS

Constituent Association of	No. Counties in State	No. Component Societies in State Assn.	Number Counties in State Not Organized		No. Physicians in State (4th Ed. Directory)	Number Members of State Association		No. A. M. A. Fellows in State	No. Subscribers to Journal in State*
			1914	1915		1914	1915		
Alabama	67	67	.....	.....	2,518	1,760	1,744	369	172
Arizona	14	11	3	3	291	169	165	117	64
Arkansas	75	67	5	7	2,652	1,255	1,169	363	178
California	59	37	22	20	5,353	2,463	2,523	1,883	798
Colorado	63	27	26	27	1,782	791	708	520	220
Connecticut	8	8	.....	.....	1,630	914	922	524	203
Delaware	3	3	.....	.....	263	99	107	72	40
Dist. Columbia	.....	.....	.....	.....	1,421	557	559	360	219
Florida	50	30	25	19	1,177	412	532	228	197
Georgia	152	84	62	56	3,255	1,314	1,757	633	553
Idaho	33	3	20	20	446	116	138	92	112
Illinois	102	99	1	.....	10,286	6,055	6,501	3,867	1,567
Indiana	92	87	3	3	5,001	2,420	2,441	1,154	443
Iowa	99	96	3	2	3,733	2,019	2,061	1,229	467
Kansas	105	59	24	39	2,840	1,240	1,323	669	318
Kentucky	120	115	4	4	3,621	2,132	1,813	634	362
Louisiana	64	41	25	22	2,030	962	803	401	263
Maine	16	14	1	.....	1,200	625	625	314	116
Maryland[1]	23	22	2	2	2,232	1,089	1,166	754	628
Massachusetts[2]	14	18	.....	.....	5,798	3,440	3,505	2,024	940
Michigan	83	59	2	2	4,180	2,390	2,506	1,546	491
Minnesota	86	38	3	3	2,381	1,380	1,569	1,153	357
Mississippi	79	48	3	1	2,047	1,090	979	253	138
Missouri[1]	114	96	14	13	6,224	3,160	3,053	1,550	577
Montana	42	14	20	25	578	260	275	190	110
Nebraska	93	61	25	23	1,867	996	1,047	536	264
Nevada	16	4	13	12	155	74	49	57	24
New Hampshire	10	10	.....	.....	705	503	495	231	44
New Jersey	21	21	.....	.....	3,012	1,575	1,607	956	369
New Mexico	26	9	17	15	447	196	154	112	91
New York	62	59	4	2	15,301	7,410	7,904	4,706	1,858
North Carolina	100	79	7	12	1,987	1,130	1,216	411	249
North Dakota	52	14	3	3	577	345	312	263	90
Ohio	88	86	3	2	7,912	3,650	3,987	2,059	936
Oklahoma	77	74	9	3	2,612	1,131	1,270	656	495
Oregon	35	10	4	1	1,150	442	520	260	238
Pennsylvania[3]	67	63	4	4	11,611	6,528	6,157	4,004	1,425
Rhode Island[2]	5	6	.....	.....	761	377	412	268	120
South Carolina	44	38	7	5	1,362	728	755	353	183
South Dakota	67	14	7	7	674	304	317	230	133
Tennessee	96	63	35	33	3,389	1,453	1,150	528	290
Texas	250	146	75	73	6,024	3,065	3,362	1,300	680
Utah	28	4	18	24	446	218	216	158	89
Vermont	14	11	.....	.....	685	353	391	174	77
Virginia[4]	100	46	.....	51	2,420	1,593	1,694	634	449
Washington	39	20	18	18	1,644	840	896	556	245
West Virginia	55	33	12	10	1,678	915	842	536	367
Wisconsin	71	53	1	1	2,737	1,760	1,821	1,088	423
Wyoming	22	5	17	17	237	120	119	64	47
Canal Zone	.....	.....	.....	.....	89	75	48	38	11
Hawaii	5	.....	.....	.....	146	73	109	28	27
Porto Rico	7	2	.....	.....	274	151	128	48	27
Philippine Is.	.....	.....	.....	.....	745	116	98	28	62
Totals	3,013	2,074	547	584	143,586	74,235	76,020	41,181	18,846
Honorary Fellows and Fellows listed at foreign addresses								53	.....
Fellows in government services								1,132	.....
Number on Fellowship roll, May 1, 1915								42,366	.....
Number on mailing list of THE JOURNAL May 1, 1915								.....	62,230

* Not including Fellows of American Medical Association.

Note.—The number of members of the different associations stated in this table is in accord with the membership of the several associations as they were reported to the Secretary on May 1, 1915.

The lack of an effective uniform system for reporting the membership of the state associations accounts for whatever discrepancies this table shows and detracts from the value of the statement.

Component societies are those societies which compose the state association. A component society may include one county or more.

1. The state of Maryland has 23 counties and the city of Baltimore; Missouri has 114 counties and the city of St. Louis.

2. These state associations are divided into district societies, and these are listed in the table as component societies. Some of these districts are smaller and some larger than the county, the county lines being ignored.

3. Provision is made for the physicians in each of these counties to join the component society in an adjoining county.

4. Virginia has recently adopted the plan of organization and is now establishing component county medical societies.

RESOLUTIONS FROM THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA

The corresponding secretary of the Medical Society of the District of Columbia writes that the following recommendation of its Executive Committee was concurred in by formal action of that constituent association.

Moved, That the Executive Committee recommends to the Medical Society of the District of Columbia the adoption of the following resolutions, with instructions and copies thereof be sent to the Delegates, Presidents and Secretaries of the various State Medical Associations; that it be printed in the Washington Medical Annals; and that a copy be sent to the Journal of the American Medical Association with request for its publication therein.

Whereas, Section 3, Chapter 8 of the By-laws of the American Medical Association provides as follows:

Effect on Membership of Removal to Another State.—A member who changes the location at which he practices medicine from the state through whose constituent association he holds membership in the American Medical Association to another state in which there is a constituent association, is eligible to membership in the component society of his new location upon the presentation of a transfer card and an official statement that his dues have been paid in full in the society in which he holds membership. He shall forfeit his membership in the American Medical Association one year after such change of location unless he becomes a member of the constituent association of the state to which he has moved. Provided, however, that if the component society into whose territory such member has moved shall refuse him membership, the member shall be privileged to appeal to the Judicial Council of the Association to determine whether or not he be guilty of any act that warrants the enforcement of the provisions of this section. Pending the decision of such appeal, he shall retain his membership in the American Medical Association through his original state association; and provided, further, that the term "practice of medicine" throughout these by-laws shall be held to mean the offering of service or counsel for the relief of those suffering from abnormal physical or mental conditions: Provided, that nothing in this section shall be construed as exempting any member of the American Medical Association from compliance with the requirements of the civil laws of the state or district into which he may have been removed.

[See By-Laws, Section 3, Chapter VIII, and the standing rule adopted June 18, 1913.]

Be it *Resolved*, That the Medical Society of the District of Columbia is opposed to the foregoing section for the following reasons:

The section is loosely and clumsily worded, and contains provisions of questionable relevancy or practicability. The proviso relating to appeal to the Judicial Council seems meaningless, as it does not appear what "the provisions of this section" are that are to be enforced, or how they are to be enforced. According to the apparent intent, the operation of the section, if enforceable, could have the effect of compelling local and constituent associations against their will to admit members by transfer from other jurisdictions. This method of admitting members by transfer is not contemplated by the procedure prescribed in the constitution of this Society, or doubtless in the constitutions of many other state associations; hence, the virtual effect of this section is autocratically to override and nullify in this respect these constitutions without the consent of the local associations, and even without consulting them. The adherence to the general plan of organization of the American Medical Association required of the constituent associations cannot be construed as granting unlimited control over local affairs. Absolute, complete and unrestricted control over admission to its own membership is a fundamental right vital to the autonomy of any organization. That three outsiders, however excellent, members of the Judicial Council, should have the appellate power to dictate to the hundreds of members of a constituent association as to the admission of new members is totally repugnant to the approved American principle of local self government. Their familiarity with local conditions and local spirit makes the members of a local association far better qualified to act in their own way on applicants for membership than any outside tribunal; their decision should be final, and it is not likely that material injustice will be done. Furthermore, if the right of the American Medical Association to encroach on local prerogatives and override local constitutions in one matter is conceded, there is not a limit to the autocratic interference with personal and local independence and privileges to which it or its managers might not attempt to lay claim.

For the foregoing reasons, the Medical Society of the District of Columbia is not disposed to recognize any authority, jurisdiction or power of interference whatever on the part of the American Medical Association or its Judicial Council with respect to the admission of members or any other purely local matter. Therefore, be it.

Resolved, That the delegate of this Society to the American Medical Association is instructed to offer and promote the adoption of some such substitute as the following for the foregoing Section 3, Chapter 8 of the By-laws, which should amply meet the requirements of the case.

Removal of Members.—A member of a constituent association removing from the jurisdiction thereof, may remain eligible for membership in the American Medical Association for a period of eighteen months

following such removal, after which such eligibility shall cease, unless or until it is re-established by his becoming a member of the constituent association of the jurisdiction in which he is located.

NOMINATIONS FOR HONORARY FELLOWSHIP

In addition to the amendment to the By-Laws concerning the appellate jurisdiction of the Judicial Council, the following nominations for honorary Fellowship were laid on the table at the meeting of the House of Delegates held in Atlantic City, June 25, 1914, for the consideration of the House at its annual session in 1915. The Section on Dermatology recommended for honorary Fellowship in the American Medical Association Prof. G. Arndt of Berlin, Germany. The Section on Nervous and Mental Diseases nominated Prof. Otfrid Foerster, Breslau, Germany, and Dr. Wilfrid Harris, London, England.

REAPPORTIONMENT

The attention of the House is called to By-Laws, Section 3, Chapter I, page 6. This is the year for reapportioning the delegates of the various state associations; the by-law requires that the House of Delegates shall appoint a committee of five on reapportionment of which the President and Secretary shall be members. I suggest that this appointment be made early in the session so that the Committee may report to the House as promptly as possible.

Respectfully submitted,

ALEXANDER R. CRAIG, Secretary.

It was moved that the report be referred to the Reference Committee on Reports of Officers.

Seconded and carried.

Report of the Board of Trustees

Dr. William T. Councilman, Massachusetts, Chairman, read the Report of the Board of Trustees, which was referred to the Reference Committee on Reports of Officers.

The report is as follows:

To the Members of the House of Delegates of the American Medical Association:

The activities of the Association in the interests of the medical profession and the public have been satisfactorily successful during the past fiscal year. The Judicial Council, the Council on Medical Education, and the Council on Health and Public Instruction each will present directly to you detailed reports of their activities. A report concerning the Council on Pharmacy and Chemistry will be presented for your consideration by a committee appointed by the board at its meeting in February last.

PUBLICATIONS

THE JOURNAL

The addenda to this report give details concerning the circulation of THE JOURNAL. It will be noted that the average weekly circulation for 1914 was over 63,000 copies. This is an actual increase in the regular mailing list of 3,177 over the year preceding. During the last fiscal year, 14,655 names were placed on the mailing list and 12,319 taken off. This latter figure includes physicians who have died, certain of those who were ineligible to continued Fellowship, those who voluntarily discontinued, and those who were dropped for nonpayment. The increase was due to continued effort made during the year to increase circulation. During 1914 there were transferred from the subscription list to the Fellowship roll 3,546 names. These transfers resulted from invitations issued to those subscribers who were eligible to become Fellows. It is merely repeating what we have said before to say that many of the Fellows originally took THE JOURNAL as subscribers and that these transfers are constantly being made. In the United States there are approximately 144,000 physicians. The average weekly issue of THE JOURNAL for 1914 was 63,887 copies, so that over 45 per cent. of the physicians in the United States receive THE JOURNAL directly. In addition to this number, those who read THE JOURNAL in the libraries and consult the files of their fellow practitioners increase the percentage of the physicians who avail themselves of THE JOURNAL to a much higher proportion. While a gratifying number of new subscriptions come without solicitation, the largest increase is the result of three methods employed to this end: (1) through circular letters and sample copies of THE JOURNAL; (2) through agents working on commission, and (3) through agents acting as organizers and working on a basis of salary, expenses and commission.

ARCHIVES OF INTERNAL MEDICINE

This journal may be regarded as a success, notwithstanding the fact that last year there was a financial loss amounting to $958.02. It must be noted, however, that the number of pages in each issue of THE ARCHIVES has been constantly increasing. In the two volumes for 1914 there were 1,926 pages, whereas in the two for the first year—1908—there were but 1,280—an increase of one-third. THE ARCHIVES has a secure place in the scientific medical literature of the world. During the past year, its circulation shows a gain of 102. The circulation at the close of the fiscal year was 2,077. The total number of copies printed during the year being 29,832.

AMERICAN JOURNAL OF DISEASES OF CHILDREN

This publication, too, has met with complete success. The last year showed a slight profit—$44.66. The circulation is slowly but steadily increasing; in 1914 it was 2,252—a gain of 186 over the year 1913. The total number of copies printed in 1914 was 27,846.

COOPERATIVE MEDICAL ADVERTISING BUREAU

The Bureau is proving to be a help and a stimulus to the State Journals in many ways. Twenty-four State Journals, the official publications of twenty-eight state associations, now cooperate in this organization. The Bureau was established Dec. 1, 1913, at which time twenty-two journals joined in this movement. Since that time, two of the remaining six State Journals have joined the Bureau. The original twenty-two journals were published in thirteen different sizes. They have now been standardized in the two generally accepted sizes for medical papers, and the quality of the printed paper has been very greatly improved. These mechanical improvements are marked; they have been commended by the readers as well as by the advertising patrons. In addition to these physical improvements, there has been a notable advance in the scientific character of the articles published in these journals. Advertising to the amount of $10,000 has been secured through the efforts of the Bureau, and it is a conservative estimate to state that at least 50 per cent. of this business would never have been directly obtained by these publications acting independently. It is quite evident that these journals are using their increased revenue for the betterment of their publications and that they are serving the state organizations more effectively than it was possible for them to do when they were conducted entirely independently one of the other.

FINANCIAL

Appended to this report will be found the Treasurer's report, as well as that of the Auditors. It is unnecessary to make more than a brief comment in regard to the finances, as the Auditors have given a rather full detailed statement concerning the various sources of income and expenditures.

As will be remembered, last year we called attention to the fact that on account of the extension of the various activities of the Association the profits had practically reached the vanishing point. This year it will be noticed that the profits are slightly better, but only $3,984.59. A reference to the Association Expenses, under Exhibit B, will show that these expenses—that is, such expenses as those of the propaganda work, the chemical laboratory, medical education, therapeutic research, organization, health and public instruction, distinguished from those connected with the publication of THE JOURNAL—amount to $82,286.15, the major portion of which must be regarded as being expended for purely altruistic work.

As will be noticed under Exhibit A, a reserve fund has been created, which now amounts to $118,832.50. The Board has adopted a resolution to the effect that this Reserve Fund is not to be drawn on except by an affirmative vote of seven members of the Board of Trustees, and that the fund shall be added to yearly.

It must be very evident to you that the expenses of the Association must not increase but should decrease.

HEALTH CONSERVATION DAY

In line with the suggestion contained in the report of the Committee to Consider the Mode of Commemorating the Completion of the Panama Canal, presented to the House of Delegates at its meeting in Atlantic City, and referred to the Board of Trustees, the board has set aside Wednesday, June 23, as Health Conservation Day, in recognition of the services of the men whose contributions to sanitary science and preventive medicine have made possible the construction of the Panama Canal, and in commemoration of the progress of medicine which has resulted in the betterment of conditions of human life. All the sections of the Scientific Assembly are cooperating in the observation of Health Conservation Day, and have arranged to hold no section meetings. The program for the day consists of a general meeting in the morning, held in the Exposition Memorial Auditorium, at which will be given formal addresses reviewing the work of the medical profession which has resulted in human betterment. In the afternoon there will be short talks by well-known experts, illustrated by lantern slides and motion pictures on malaria, dysentery, yellow fever, typhoid fever, plague, hookworm, leprosy, tuberculosis, syphilis, gonorrhea, pellagra, rabies, epidemic cerebrospinal meningitis, poliomyelitis, pyorrhea alveolaris and trypanosomiasis.

HEALTH CONSERVATION DAY AND THE SCIENTIFIC EXHIBIT

At the same time that these lectures are given in the convention halls, demonstrators will present exhibits in the corridors on the ground floor of the Auditorium, illustrating the subjects above enumerated. It is not expected that either of these programs will be exhaustive, but there will be shown enough of the historical and scientific, by means of lantern slides, charts, pictures and specimens, to prove to both physicians and the laity the achievement of medicine in the application of scientific knowledge for the prevention of disease.

In addition, the Board of Trustees has placed an exhibit in the Palace of Education of the Panama-Pacific International Exposition as an evidence of the activities of the Association. The exhibit displays placards showing the educational activities of the Propaganda for Reform Department of THE JOURNAL, the work of the Council on Medical Education, and of the Council on Health and Public Instruction. Some of the pamphlets and brochures published by the Association are also displayed. One of the effective features of the exhibit is that calling attention to certain facts relating to "patent medicines." This exhibit is for the purpose of presenting the truth to the public, rather than to the members of the profession.

PROPAGANDA DEPARTMENT

The activities of the Propaganda Department of THE JOURNAL have continued during 1914 along the lines outlined in previous reports. There has been a steadily increasing interest on the part of the general public in this educational work of the association relative to frauds in medicine. During the year the Propaganda Department received and answered nearly five thousand inquiries relative to "patent medicines" and allied subjects. The interest of the public in the subject is further evidenced by the activities of various organizations, such as state and municipal boards of health, civic organizations, women's clubs, newspapers and magazines. Many of such agencies have been active in disseminating to the public, during the past year, information on the subject of nostrums and quackery furnished by the Association. The Associated Advertising Clubs of the World have continued to call on the Propaganda Department for information relative to the claims made by various advertisers; individual newspapers and magazines have also cooperated. The former organization has purchased a number of lantern slides issued by the Propaganda Department, illustrating the various phases of the nostrum evil. We understand that these slides are used by the various vigilance committees of the Associated Advertising Clubs of the World in different parts of the country. There has been an increasing call for these slides for lecture purposes on the part of both state officials and organizations interested in public health. In collaboration with the Association's laboratory, the Propaganda Department more than two years ago prepared some educational posters for an exhibit which the Association made at the Fifteenth International Congress on Hygiene and Demography. Requests for copies of these cards were so numerous that it was not long before the supply printed at that time was exhausted. During the past year the Propaganda Department has prepared additional cards so that now there are some thirty different posters. The demand for these has been gratifying. Some of the organizations that have used, or are using, these cards are: Department of Health, New York City; Department of Health, State of Iowa; Kansas State Board of Health; Board of Food and Drugs Commission, State of Rhode Island; Louisiana State Board of Health; North Carolina State Board of Health; Michigan State Board of Health; University of Missouri, School of Journalism; State Normal School, Westfield, Mass.; DeWitt Clinton High School, New York City; Springfield (Ill.) Tuberculosis Association; Charities Commission, LaSalle, Ill.; National Women's Christian Temperance Union; Southwestern State Normal School, California, Pa.; Eastchester Health League, Bronxville, N. Y.; and the Public Health Exhibit, City Club, Chicago. The pamphlets issued by the Propaganda for Reform Department are still doing effective work. There are now listed twenty pamphlets on medical frauds, dealing with two hundred and eighty-eight preparations and individuals.

LAWSUITS

It is here proper that some reference be made to the various lawsuits to which the Association has been made a party through its altruistic activities in the interests of the public health.

In 1907 THE JOURNAL published an exposé, prepared by the Propaganda Department, of a fraudulent "consumption cure" operated by one O. E. Miller, a quack of international notoriety. As a result of this article a suit for $20,000 was entered against the American Medical Association and the editor of THE JOURNAL. It never came to trial and was finally stricken from the docket.

In 1909 the Council on Pharmacy and Chemistry published a report on "Certain Products of the Organic Chemical Manufacturing Company." Following this publication, two suits, each for $100,000, were entered against the American Medical Association and the editor of THE JOURNAL, one in the name of the Organic Chemical Manufacturing Company, and the other in the name of S. Lewis Summers, its president and chief owner. We have been thoroughly prepared to meet this case, but thus far it has never come to trial. Meanwhile, within the last few weeks, Summers has filed a new suit, under the "Antitrust Laws," in which the American Medical Association and the Chicago members of the Council on Pharmacy and Chemistry have been made co-defendants, and damages for $300,000 are asked. As the Association has been, for some time, thoroughly prepared to defend successfully the first two suits instituted by this concern, it is more than prepared to meet the last one.

In 1910, suit was entered against the editor of THE JOURNAL for $20,000 by the St. Louis College of Physicians. This has been removed from the docket.

In 1913 the Jenner Medical College, a fourth-grade school in Chicago, sued the American Medical Association, its secretary and some of the members of the Council on Medical Education for a half-million dollars. Nothing has been heard of this suit since it was filed.

The series of articles that THE JOURNAL published on the Friedmann Consumption Cure during 1913 resulted in five

suits being brought against the Association, each for $100,000. Nothing further has been heard from them.

On July 18, 1914, THE JOURNAL published in the "Propaganda for Reform" department an exposé of Wine of Cardui, a so-called "woman's tonic." This article was but one of scores of similar ones that have been published at different times for the purpose of giving the public the facts regarding fraudulent "patent medicines." Wine of Cardui is made by the Chattanooga Medicine Company, the chief owner of which, John A. Patten, was, at the time the article appeared, one of the most influential laymen in the Methodist Episcopal Church. Following the publication of the Wine of Cardui article, the Chattanooga Medicine Company and John A. Patten entered suit against the American Medical Association and the editor of THE JOURNAL for $300,000.

Last October the Louisiana State Health Train went from New Orleans to Richmond, Va., stopping on the way at various cities to give the public an opportunity to see the health exhibits. Among other places, the cars stopped for several hours at Chattanooga, Tenn. While there, Dr. Oscar Dowling, President and Executive Officer of the Louisiana State Board of Health, who was accompanying the train, was served with papers suing him for $25,000 damages for libel. The alleged offense was that, among other things, a card was displayed showing some facts regarding Wine of Cardui. The Louisiana State Board of Health officially endorsed its chief officer in the matter, and denounced Wine of Cardui as a fraud.

Since these suits were instituted, the enormous power wielded by the money obtained from the sale of this fraudulent nostrum has been evidenced in many ways. Though it is sold largely through the south and southwest to sickly women of the poorer and more ignorant class, those exploiting it have amassed fortunes and, apparently, are prepared to spend a fortune in defending the nefarious business. The owners of the Chattanooga Medicine Company loom large in the commercial life of Chattanooga. So great is the influence of the wealth of this concern that not only have business men of Chattanooga and vicinity apparently been afraid to express themselves regarding the discreditable business in their midst, but even some of the physicians of the locality seem to have come under the same blighting influence. In spite of the expense involved, the Association is prepared to demonstrate in court that Wine of Cardui is one of the most glaring frauds perpetrated on the sick women of the country. Moreover it will show in no uncertain way that the educational work of the Association in the interest of public health cannot be suppressed through the intimidation of "patent medicine" fakers whose fortunes have their foundations on the ignorance and credulity of ailing women.

Respectfully submitted,

W. T. COUNCILMAN, Chairman,
M. L. HARRIS, Secretary,
THOMAS MCDAVITT,
W. W. GRANT,
FRANK J. LUTZ,
OSCAR DOWLING,
PHILIP MARVEL,
PHILIP MILLS JONES,
W. T. SARLES.

SPECIAL REPORT ON THE WORK OF THE COUNCIL ON PHARMACY AND CHEMISTRY

INTRODUCTION

Ten years ago the Council on Pharmacy and Chemistry of the American Medical Association was created for the purpose of abating or eliminating the evils connected with the exploitation of proprietary medicines. At its regular meeting last February, the Board of Trustees discussed the work of the Council and the completion of the decade of its existence. While it was appreciated that vast good had been accomplished, at the same time it was felt that the material results of the work have been far below what they should have been, considering the effort that had been expended. The reason was evident: the Council had not received the active, hearty support of the profession, individually and collectively, that it should have received. Specifically, the fact that more has not been accomplished is due to the indifference of the medical profession.

Your Trustees concluded that the matter must be definitely brought before you, the representatives of the American Medical Association. The Council on Pharmacy and Chemistry is your Council; the work it has done without pay has been your work, which you authorized and approved. Through it, the efforts of some of the leading members of the profession have been brought to bear on problems that vitally affect public health, morals and well being. The character of the work done has been made known through THE JOURNAL of the American Medical Association. The physicians of the country should now be asked: Do you wish this work continued? If not, thank the Council for its labors and disband it. If you think it should be continued, then you must give the Council practical and strong support; the fruit of the tree which they have planted and tilled must be more manifest. The Trustees feel that the general body of the medical profession should see to it that this work does bear fruit.

In this belief, the Board passed a resolution to the effect that the Chairman of the Board of Trustees appoint a Committee of three to prepare a supplemental report in the form of an address to the medical profession, on the use of secret and proprietary drugs and on the work of the Council on Pharmacy and Chemistry. This report was to be presented at the next meeting of the House of Delegates for approval, and each member of the House of Delegates was to be requested to sign it if the House approved it. It was also understood that if approved a copy of this address should be sent officially to the presidents and secretaries of the various constituent state associations and component county societies. It is in accordance with this action that the following report has been prepared and is here submitted:

REPORT

THE IDEALS OF THE AMERICAN MEDICAL ASSOCIATION

Medicine exists for the relief of humanity from the suffering entailed by disease. Its votaries believe that by the relief of disease and suffering man will advance to higher levels physically, morally and intellectually. This view, though always held, has become increasingly prominent through the greater possibilities of successful action which the modern knowledge of disease has given. Formerly almost limited to the service of the individual, medicine now seeks by measures looking to the prevention of disease, through the greater extension of hospitals and dispensaries, and through the education of the public in the care of their bodies, to extend its services to the mass of the people. The individual members of the profession are entitled to a fair pecuniary support for the service they render, but no one who is acquainted with the facts can deny that the medical profession as a whole, whether its work be in private practice, in hospital or state service, or in the laboratory, feels its first duty to be that of service to mankind. The association of its members in a body is primarily for the purpose of making this service more effective. This view cannot be too strongly emphasized, for if such is not the basic nature of this Association, then not only the work of the Council on Pharmacy and Chemistry, but most of the other work the Association is doing, has no purpose.

This wider view of the service of medicine has made it necessary for the Association, as a body, to oppose certain evil conditions that have arisen, which could not be successfully resisted by the separate action of the individuals. The most important of these evils is the commercial exploitation of the sick for the sake of pecuniary gain—and the most evident and extended form of this exploitation is to be found in the proprietary medicine business. Here the physician is often made an unconscious dupe and accessory to the exploiter. The best efforts of our Association, costly in both time and money, have been directed to an attempt to correct such abuses. Undoubtedly much has been accomplished, but the practical results do not seem in proportion to the efforts put forth. A brief review of the manner in which the proprietary evil has arisen will be pertinent.

DEVELOPMENT OF THE PROPRIETARY EVIL

First, it is interesting to note how rapid has been the advance in knowledge of disease and how recent the full recognition and application of this knowledge to its prevention and cure. Forty years ago the conditions of medical practice were essentially the same as at the time of Sydenham. We possessed a few great therapeutic agents whose use had been learned empirically, and which were often skilfully employed. Shortly before this period ether and chloroform had been placed in our hands. The anatomic knowledge of disease, which has made possible a closer differentiation of types and a clearer recognition of the changes produced in the body, was relatively further advanced than either functional or etiological knowledge. There was little recognition, save in a few great minds in the profession, of the true nature of disease. Disease was generally regarded as a condition foreign to normal life, as a new action which had come into the individual, and natural course was not understood. Treatment was largely symptomatic and remedies were sought to combat the symptoms rather than to meet the underlying causes. There is a natural feeling in the human mind that some remedy must exist against every evil. We see this in the numerous laws which are quickly passed to remedy unusual and abnormal conditions in the body politic and we too often see how obscure are the underlying conditions and how inadequate the remedy. Owing to the lack of appreciation of the natural course of disease, faulty empirical methods of treatment had arisen, many of them merely useless, some undoubtedly harmful.

Meanwhile, slowly and by short steps, a mass of knowledge founded on accurate observation of disease and irreconcilable with blind and unreasoning therapy was being accumulated. Homeopathy, which was spreading enormously, also showed the futility of much of the empirical therapeutics, since the sick, save in the case of a few diseases, did about as well under its negative ministrations as under the prevailing methods. A great voice had arisen in America—that of Jacob Bigelow. In 1835 he gave an address of which Oliver Wendell Holmes says: "This remarkable essay has probably had more influence on medical practice in America than any similar brief treatise, we might say than any work ever published in this country." Bigelow saw that the course of disease cannot be quickly curtailed; that some diseases run a definite course and the patients recover spontaneously; others persist to the end and are not influenced by therapeutic measures; and underlying most diseases there is a natural tendency toward recovery. One of the greatest advances was the conception of disease formulated by Virchow, whose definition of disease as "life under altered conditions" may be placed among the greatest of epigrams.

THE NEW CONCEPTION OF DISEASE

The final blow to the old conceptions of disease and to the old empirical therapeutics was given by the discovery that most diseases are due to the entry into the body of living things which prey on it and produce disturbances in its normal action. The year 1880, which marks the firm establishment of this new conception, is to be regarded as the beginning of one of the great periods of medicine—probably the greatest. What was previously a hypothesis became knowledge. The period was fertile in the discovery of new methods; bacteriology became a new branch of medical science, and in all directions the new knowledge was enormously stimulating. By the necessary association of the experimental study of disease with the determination of the part which the infectious organisms play, experimental methods received a new impetus and were carried to new fields. With the knowledge of the causes, and their mode of action, it became evident that disease could be more easily prevented than cured. Preventive medicine was born.

What was probably most important, the new knowledge had an immense human interest; it became popularized by means of newspapers and magazines, and for the laity as well as for the medical profession disease, for the most part, lost its mystery and became a part of the natural order of things. Since it is evident that only by the intelligent cooperation of the laity, can measures necessary for the prevention of disease be successfully introduced, the medical education of the laity was actively promoted by this Association.

In no direction was the influence of the new knowledge more marked than in pharmacology. Therapeutics had been based on a faulty and uncritical empiricism. It is interesting to look over one of the best-known books on therapeutics at this period (Bartholow, edition of 1882, for instance) and compare it with a modern book. It is excellently written, interesting, and contains much that is profitable; but of the physiologic action of drugs, to say nothing of their action in disease, there is very little beyond what is evidently conjecture. It is instructive to see how rationality of treatment is combined with knowledge of any particular disease. There were legions of remedies for those diseases whose nature was unknown, particularly if they were chronic. For epilepsy, melancholia and nervous diseases generally, pretty much everything in the Pharmacopeia could with advantage be employed. Certain drugs, as iron, arsenic, mercury and iodin, seemed to be prime favorites in chronic disease. Iron was so great a favorite that thirty-nine preparations were given, each of which was believed to have certain special advantages. The action of iron in producing an increase in red corpuscles was described, and this explained its efficacy in anemic conditions. There was a brave attempt throughout the book to give a rational explanation of the action of drugs and the classification given was based on their supposed action. Where all possibilities of explanation failed, the remedies were classified as "alteratives." The book, of course, was a compend, but here and there the author gives his own observations and experiments; the most evident lack in the author is the critical spirit. There were, however, no patent and no proprietary medicines mentioned in the book.

Laboratories for the study of the physiologic action of drugs, which is the basis of scientific therapy, were practically limited to those on the continent of Europe. In some of the few physiologic laboratories in this country experimental studies of the action of drugs were made, but there was no development of pharmacology as a branch of medical science. Gradually the strongest medical schools in this country began to create departments of pharmacology with adequate laboratory facilities and teaching—and productive research began.

LACK OF DEVELOPMENT OF DRUG THERAPY

It would naturally be supposed that this period[1] of great possibilities and promise for the future should have led to a rapid utilization of the new knowledge for the development of

1. While in every age the sick have been directly exploited for gain, this greatly increased in the period we have been discussing. The lowest form of illicit gain in which advantage was taken of the individual stricken with disease, practically the robbing of the wounded on the battlefield, became a successful and favorite pursuit. It was easy to reap a rich harvest by proclaiming to the poor sufferer that a certain remedy, often of mysterious character, would relieve him from all ills. The power of suggestion was utilized to the fullest extent. Symptoms were described in vague terms; simple physiologic conditions were described as symptoms, and it was easy to persuade the sick and even the well that they had the disease which the remedy cured. The newly awakened medical interest of the public was cleverly utilized in the advertisements, sometimes by partially truthful statements of the nature of certain diseases in order to explain the manner in which the supposed remedies would act in alleviating them; often every statement was false. The public undoubtedly appreciated that there were great changes in the treatment of diseases and the large number of individuals who are always suspicious of change were catered to by remedies described as "old and well-tried." The fact that disease was caused by germs led to the advertisement of remedies which destroy germs instantly, whether within or without the body. The cleverness of some of these advertisements is appalling; they are constantly in sight, in the newspapers, on the billboards, in the daily mail and in every way they seek to pierce the armor of common sense.

Against such exploitation the Association has waged vigorous warfare. The fraudulent character both of the remedies and of those exploiting them has been repeatedly shown up in THE JOURNAL, which for a long time waged the conflict single-handed, but at last received the powerful support of the lay press, to the eternal credit of the latter be it said. It must be understood in giving the press credit for this, that such support involved large financial loss from advertisements and some of the trenchant articles exposing medicinal frauds involved them in suits for damages. Now it may be said that most of the great papers of the country have purged their columns of these fraudulent advertisements. The United States Government lent its aid by means of the pure food and drug laws and by refusing to allow its mails to be used for furthering fraud. What has been accomplished in this regard alone is stupendous; it is no longer so easy for the patent medicine vultures to prey directly on the sick.

scientific drug therapy, but instead of advance there was halting and even retrogression. For at this very period there developed the great curse to American medicine—the blight of the nostrum. The country doctor no longer took with him in his saddle-bags a few reliable drugs with whose actions and limitations he was familiar, but ready-made mixtures about the composition of which he knew little and about the therapeutic actions of which he knew less, for all he knew was what was told him by the manufacturer, who in most cases was a layman, without knowledge of medicine, pharmacy or chemistry.

What were the underlying causes for the development of the proprietary medicine evil in this country? The period of its beginning was that following the Civil War—a period that found the medical profession in this country at a low standard of training. Low-grade medical schools sprang up to meet what was said to be the demand for physicians in the growing western and southern states. In addition to the schools already existing, from 1865 to 1905, no less than 198 medical schools came into being. Many of these had no laboratory equipment, and no facilities for medical training, the instruction consisting in courses of lectures by men who, themselves, were often imperfectly trained. The full course for the M.D. degree took only two years of five, six or seven months each. The course consisted of lectures only and in most schools the lectures of the first year were repeated in the second. While there is no doubt that among the graduates of these schools were men of ability, the average was low. It was impossible that such graduates should fully appreciate the value of scientific knowledge, or possess, to any large degree, the critical judgment that would permit them to discriminate between the biased, but plausible, statements of manufacturers and the accurate knowledge obtained by scientific methods of study.

Nor were the medical journals of the country more adequate to their task of leadership than were the medical colleges. Like the medical schools, the number of medical journals multiplied greatly during the forty-two years following the war; no fewer than 944 new journals were started in this period. Many of these were short lived but many survived; there are in existence now approximately 325 medical journals. Most of these publications were owned by individuals with small capital, receiving small subscription fees and drew their main support from advertisements. The publisher relied on the advertisements of proprietary medicines to such an extent that almost of necessity he became the tool of the manufacturers of these medicines. The most dangerous form of advertising consisted in recommendations by members of the medical profession. These took various forms, one, the favorite, being an article which on the face of it was a scientific contribution to the knowledge of some disease, but which in reality was written to extol some proprietary preparation. Some of these endorsements were undoubtedly honestly given, the judgment of the writer being at fault; others were entirely a matter of barter and sale, some men seeming to make these endorsements a part of their business. At best, all of them were based on uncritical data, and as scientific contributions were valueless.

RESOLUTIONS ACCOMPLISHED LITTLE

Against the exploitation of the medical profession by proprietary interests the Association had long made vigorous protest. The thinking members of the profession recognized the evil, and year after year resolutions were passed by the American Medical Association, calling on the profession for an enlightened stand on the subject, but no practical results were obtained. Discussion was rife, and agitation continued; but neither discussion nor agitation made any impression. Another step was necessary, and that step consisted in creating a body or agency of the Association for the purpose of dealing systematically and intelligently with the evil.

The Council on Pharmacy and Chemistry was the body created. It was the expression of an organized effort on the part of the medical profession of this country to counteract these evil influences. The preliminary plan of the Council was to investigate the composition and claims of the various proprietaries and to determine whether or not the statements made regarding them were true. The results of these investigations were published from time to time and the remedies which conformed to the requirements of honesty—that is, of the fundamental principles as expressed in the rules of the Council—were accepted for inclusion in the book, New and Nonofficial Remedies, which is revised annually.

The Council publishes facts concerning preparations which investigation shows to be exploited under false claims as to either composition or therapeutic action, or both. Reliable information has also been given out respecting many of the newer remedies which are not in the Pharmacopeia and yet are nonproprietary. These also are included in New and Nonofficial Remedies, and this work has helped to fix the standards for several drugs whose extensive use has prompted their acceptance for the next Pharmacopeia.

By the creation of a Committee on Medical Education, the Council has done much to advance the teaching of pharmacology and therapeutics. A decade ago there were hardly a dozen medical schools that recognized pharmacology as a branch of medical teaching; today sixty-seven colleges have whole-time teachers on this practical and important subject. Incidentally, the demand for trained pharmacologists[2] far exceeds the supply.

A Committee on Therapeutic Research was created by the Council some three years ago. This Committee, by awards and otherwise, fosters investigations concerning the activity, stability and physiologic action of commonly used nonproprietary drugs. The results of this work have appeared in various published papers and form valuable contributions to medical knowledge. It has thus far resulted in giving our profession actual facts regarding the action of many drugs, proving in some instances that drugs that have been in common use were practically valueless as therapeutic agents.

The Council has also undertaken the simplification of the materia medica. One of the serious handicaps to the study of this branch of medicine is the number of official and semiofficial drugs, this number being so large that it is impossible for one individual to master even their names. A selection of a limited number of the better known and more valuable drugs has been made and these, with a brief exposition of their physiologic action and therapeutic uses, have been published in a book known as "Useful Drugs."

We call attention to these practiçal activities of the Council to emphasize the fact that this work is being done, and that the Council is not simply investigating and passing on proprietary medicines; its functions have broadened out from its earlier, almost wholly critical, work; it has become decidedly constructive in its efforts, and for this reason, if for no other, should have the hearty cooperation, assistance and support of the profession.

The influence of the Council in the ten years since its creation has been enormous and this influence has extended to Europe, particularly to England and to Germany. It has checked, if not stopped, the successful introduction of the fraudulent or unscientific proprietary mixtures that so long

2. One of the greatest needs in this field, however, is the establishment of institutes where pharmacologists would have real opportunities and real facilities for the prosecution of studies which might lead to the discovery of drugs of value; practically no work of this character has been undertaken in the United States and practically no facilities for such work, involving as it does the combined activities of well-trained chemists and pharmacologists, exist. In some European countries such opportunities have, in a measure, been secured by the cooperation of university or other laboratory workers with aniline dye and other chemical factories; occasionally the results have been in the main satisfactory as in the case of salvarsan. Too often, however, the result has been the exploitation of some semisecret or dangerous or otherwise questionable product with the name of some well-known man connected with it; for example, the pharmacologist Cloetta's name is connected with "Digalen," that of the surgeon Kocher with "Coagulen," and that of the internist Zuelzer with "Hormonal." Most of the attempts to discover new drugs will inevitably result in failure; the medical profession in its whole history has found only a score or so of really great drugs; Ehrlich seems to have had at least 605 failures before approaching his goal. One of the greatest objections to commercialism in this field is that so many of the failures are exploited and capitalized as well as the successes. How few of the almost innumerable drugs which have been introduced in the last two or three decades have survived more than two or three years! During this brief period, however, they were actively exploited and often accomplished their purpose; they were sources of great profit to their owners. It is only from laboratories free from any relation with manufacturers that real advances can be expected.

disgraced American medicine. It has diminished the hitherto vast number of valueless synthetics, simple mixtures masquerading as synthetics, and other worthless European products on the American market. As already stated, the importance of pharmacology has been recognized in our medical colleges, partially, at least, through the Council's efforts. As a result, the young men who now enter the medical profession are no longer the easy prey of the unscrupulous, as was formerly the case. The Council has fearlessly shown up the fraudulent and injurious character of many of the nostrums that have been advertised to physicians. It has placed at the service of the profession a vast amount of accurate and scientific information regarding the manufacture and exploitation of drugs, based on experimental evidence which can be repeated and verified. In a word, it is no longer necessary for the practitioner to accept the extravagant statements of a manufacturer or promoter of a drug; he can now know the actual facts.

THE COUNCIL THE PROFESSION'S CREATURE

This Council on Pharmacy and Chemistry you, the medical profession, have created; its work is yours, and you have, passively at least, given it your endorsement and approbation. The malicious libel of the manufacturing interests to the contrary notwithstanding, the Council does not represent, and never has represented, the efforts of a clique, a small portion of the American medical profession. The Council's work is but carrying out the ethical ideals of a united profession. For ten years this work has gone on and the Council has borne the odium, the abuse and the opposition which its activities have created. It has done this without pay, and at a sacrifice of time and energy which might have been used to great personal advantage to the individual members. And yet the results accomplished are far from what they should be. Even today our profession is tolerating, and thereby recognizing, so-called "ethical proprietaries" that are as fraudulent as many of the "patent medicines" we so frequently—and justly—condemn and criticize. The remote reason for this state of affairs is inertia of the medical profession; the immediate cause the subserviency of the medical press to the proprietary interest—instead of supporting the Council's work, a large proportion of the medical journals of the country opposes it either passively or actively.

As already stated, the two main factors responsible for the development of the conditions we are discussing have been (1) the large number of inefficient, inadequately equipped medical colleges; and (2) the superabundance of medical journals. The medical college problem has been practically solved; few of the low-grade, commercial institutions remain. The situation with regard to medical journals, however, is but slightly improved; the number is far beyond the legitimate needs of the profession and more than the profession can support, or should be asked to maintain. Not a few of these journals were actually started for the purpose of exploiting the products of certain concerns; a large proportion depended, and still depend, for the greater part of their income, on the receipts from advertising. And the major portion of the advertising space in many of these journals is devoted to promoting nostrums.

Today we have this anomalous condition: The medical profession, through its authorized agency (the Council), has shown certain medicinal preparations to be fraudulent; the same medical profession, however, is supporting medical journals that are promoting these very preparations and in some instances accepting advertisement which the lay press rejects as fraudulent. The condition is not only anomalous—It is ridiculous. The Council on Pharmacy and Chemistry has presented indisputable evidence, has submitted demonstrable facts, to prove that certain products are frauds on the medical profession and on the public; at the same time medical journals, through their advertising pages, are sharing in the profits that come from the continued exploitation of these very frauds. Let it be emphasized that the nostrum evil, whether we apply the term "nostrum" to "patent medicine" or to so-called "ethical" proprietaries, depends for its life on advertising; cut off its advertising and it will die. Medical journals that lend their pages to the exploitation of medicinal frauds are responsible for one of the greatest curses that afflict the medical profession, and through it the public.

The remedy is in the hands of the physician. The physicians who subscribe for or contribute to a medical journal are, to a certain degree, responsible for what appears in that journal, for without their support it could not exist. It must be remembered that some of our leading journals are owned and published by laymen. Naturally, the interest of these publishers in the medical profession and in scientific medicine is commercial and not professional. Naturally, too, their point of view is different from that of physicians. Having no knowledge of medicine, these laymen cannot judge of the character of the medicinal preparations they advertise. If their readers, who are supposed to have a knowledge of therapeutics, do not object to the advertising of certain products, it is hardly to be expected that the publishers will do so.

MEDICAL JOURNALS WILL LISTEN

We repeat: The remedy is in our own hands. If we protest often enough and strongly enough, medical journals will cease advertising these preparations—there is no doubt about this. You will be told that but for the money which these advertisements bring, it would be impossible to publish such and such journals. A poor argument! The medical or other journal which depends for its existence on money received for the promotion of a fraud does not deserve to exist. The elimination of the fraudulent proprietary will probably mean the elimination of a certain number of journals, as the introduction of a higher standard of medical education eliminated nearly one third of the medical colleges that existed ten years ago.

Possibly we have dwelt a little too much on the dark side of the picture. On the other side the Association has every right to be encouraged by what it has accomplished through the Council on Pharmacy and Chemistry. Among these we may mention the creation and stimulation of similar work in other countries. It has had great influence in the establishment of chairs of pharmacology with connected laboratories in the universities of this country. It has stimulated the teaching of scientific therapeutics. Directly and indirectly it has advanced medical science. It has exerted a wholesome influence on the medical journals, and has effected changes. As a matter of fact, a number of medical journals, aside from all but three of those published by state societies, have shown that it is possible to exist without depending on fraudulent advertisements. Among these might be mentioned the *Southern Medical Journal*, the *Cleveland Medical Journal*, the *Old Dominion Medical Monthly, Surgery, Gynecology and Obstetrics*, the *American Journal of Obstetrics*, the *Boston Medical and Surgical Journal* and the *American Journal of Medical Sciences*.

It must be fully understood that this work has for its primary purpose service to mankind; that against its continuance and extension powerful interests have been aroused; that combinations have been formed with almost unlimited funds to oppose it; that law supported by the arguments of the ablest legal talent in the country will be invoked to stop it; that it is not impossible the Association may meet great financial loss. On the other hand, the work in itself is right and we must advance in its prosecution supported by the courage which comes from well doing.

With this report the appended resolution is respectfully submitted.

Respectfully submitted for the Board of Trustees.

W. T. COUNCILMAN,
W. W. GRANT,
M. L. HARRIS,
Committee.

Resolved, We, Members of the House of Delegates of the American Medical Association, believe that every effort must be made to do away with the evils which result from the exploitation of the sick for the sake of gain. Earnestly believing that the continued toleration of secret, semisecret, unscientific or untruthfully advertised proprietary medicines is an evil that is inimical to medical progress and to the best interest of the public, we declare ourselves in sympathy with, endorse and by our best efforts will further the work which has been and is being done by the Council on Pharmacy and Chemistry of the American Medical Association in the attempt to eliminate this evil.

Addenda to Trustees' Report

SUBSCRIPTION DEPARTMENT

The regular weekly issue of THE JOURNAL of the American Medical Association, from Jan. 1, 1914, to Dec. 31, 1914, inclusive, was as follows:

January 3	62,254	July 4	62,545
January 10	62,157	July 11	62,554
January 17	61,910	July 18	62,721
January 24	61,418	July 25	62,811
January 31	60,731		
	308,470		250,631
February 7	65,130	August 1	62,695
February 14	60,193	August 8	62,772
February 21	60,835	August 15	63,027
February 28	60,224	August 22	65,196
		August 29	62,700
	246,382		316,390
March 7	60,874	September 5	62,519
March 14	60,735	September 12	62,400
March 21	61,018	September 19	62,479
March 28	60,882	September 26	62,516
	243,509		249,914
April 4	61,126	October 3	62,372
April 11	61,031	October 10	62,347
April 18	61,549	October 17	62,473
April 25	61,603	October 24	62,522
		October 31	67,619
	245,309		317,333
May 2	61,713	November 7	67,227
May 9	61,913	November 14	67,581
May 16	70,301	November 21	64,783
May 23	67,253	November 28	67,273
May 30	67,253		
	328,433		266,864
June 6	67,713	December 5	70,592
June 13	62,141	December 12	81,300
June 20	63,049	December 19	76,710
June 27	62,588	December 26	64,771
	255,491		293,373
Total			3,322,099
Weekly average			63,887

During the year 1914 there were 3,546 names transferred from the Subscription to the Fellowship Department.

The weekly average number of subscribers for 1913 was 19,137; the average for 1914 was 20,212. This shows an increase of 1,075.

PERCENTAGE OF PHYSICIANS RECEIVING THE JOURNAL

This table gives the number of physicians (based on the fourth edition of the American Medical Directory) in the United States, the number receiving THE JOURNAL and the approximate percentage in each state. Copies to physicians in the United States Army, United States Navy, Public Health Service, etc., omitted.

State	Number Receiving JOURNAL	Physicians in State 4th A. M. Dir.	Approx. per cent. 4th A. M. Dir.
Alabama	592	2,518	24
Arizona	179	291	60
Arkansas	589	2,652	22
California	2,665	5,353	50
Colorado	751	1,782	42
Connecticut	733	1,630	45
Delaware	114	263	43
District of Columbia	650	1,421	46
Florida	482	1,177	41
Georgia	1,268	3,255	40
Idaho	209	446	47
Illinois	5,550	10,286	55
Indiana	1,587	5,001	32
Iowa	1,719	3,733	46
Kansas	1,005	2,840	44
Kentucky	912	3,621	25
Louisiana	649	2,030	32
Maine	436	1,200	40
Maryland	1,383	2,232	62
Massachusetts	2,957	5,798	52
Michigan	2,162	4,180	52
Minnesota	1,550	2,381	65
Mississippi	456	2,047	22
Missouri	2,142	6,224	35
Montana	306	578	53
Nebraska	819	1,867	44
Nevada	84	155	54
New Hampshire	286	705	40
New Jersey	1,282	3,012	43
New Mexico	186	447	41
New York	6,634	15,301	43
North Carolina	699	1,987	35
North Dakota	357	577	62
Ohio	2,909	7,912	37
Oklahoma	1,059	2,612	40
Oregon	506	1,150	44
Pennsylvania	5,537	11,611	48
Rhode Island	387	761	51
South Carolina	618	1,362	45
South Dakota	355	674	53
Tennessee	862	3,389	25
Texas	1,616	6,024	27
Utah	237	446	53
Vermont	256	685	37
Virginia	1,081	2,420	45
Washington	801	1,644	49
West Virginia	895	1,678	53
Wisconsin	1,568	2,737	57
Wyoming	106	237	45

The following table shows the number of Fellows and Subscribers for each year commencing with 1900.

Year	Fellows	Subscribers
Jan. 1, 1900	8,445	4,633
Jan. 1, 1901	9,841	8,339
Jan. 1, 1902	11,107	10,795
Jan. 1, 1903	12,553	12,378
Jan. 1, 1904	13,899	14,674
Jan. 1, 1905	17,570	15,698
Jan. 1, 1906	20,826	17,669
Jan. 1, 1907	26,255	20,166
Jan. 1, 1908	29,382	20,880
Jan. 1, 1909	31,999	18,983
Jan. 1, 1910	33,032	19,832
Jan. 1, 1911	33,540	20,504
Jan. 1, 1912	33,250	21,620
Jan. 1, 1913	37,493	19,863
Jan. 1, 1914	41,203	19,751
Jan. 1, 1915	42,956	20,430

TREASURER'S REPORT

Report of the Treasurer of the American Medical Association for the year ending Dec. 31, 1914.

1914

Jan. 2—Balance—Bonds, par value	$64,750.00		
Less amount over cost	936.25		
			$ 63,813.75
Certificates of Deposit	70,000.00		
Checking Account	5,773.72		
			$ 75,773.72
			$139,587.47

RECEIPTS

April 1—By Cash	Interest Bonds	$ 400.00
May 1— " "	Editor and General Manager	20,000.00
July 1— " "	Interest Bonds	962.50
Oct. 1— " "	" "	400.00
Dec. 31— " "	" " and Reserve Fund	1,725.00
" "— " "	" Bank Balance	249.29
" "— " "	" Certificates	3,677.49
" "— " "	Association Reserve Fund	55,018.75
		$ 82,433.03
		$222,020.50

DISBURSEMENTS

Nov. 1—To Cash-Requisition Editor and General Manager	$20,000.00	
Dec. 31—To Cash Association Reserve Fund	55,018.75	
" "—To Cash Accrued Investment Interest	867.63	
		$ 75,886.38
		$146,134.12

SUMMARY OF BALANCE

Association Reserve Fund	$118,832.50
Certificate of Deposit	20,000.00
Checking Account	7,301.62
	$146,134.12

DAVIS MEMORIAL FUND

1914		
Jan. 2—Balance	$ 3,146.74	
July 1—By Interest	47.19	
Dec. 31— " "	47.89	
" "—Balance, Northern Trust Co. Savings Dept.		$ 3,241.82

WM. ALLEN PUSEY, Treasurer.

AUDITOR'S REPORT

MARWICK, MITCHELL, PEAT & CO., CHARTERED ACCOUNTANTS
105 SOUTH LA SALLE STREET

CHICAGO, ILL., Jan. 18, 1915.

To the Board of Trustees of the American Medical Association, Chicago, Ill.

Dear Sirs:

In accordance with your instructions, we have audited the accounts of the American Medical Association for the year ended Dec. 31, 1914, and now submit our report thereon, together with the following statements:

Exhibits
"A" Balance Sheet as at Dec. 31, 1914.
"B" Income and Profit and Loss Account for the year ended Dec. 31, 1914.

Schedules
"1" Journal Expenses for the year ended Dec. 31, 1914.
"2" Particulars of Provision for Depreciation during the year ended Dec. 31, 1914.

The balance sheet as submitted herewith, Exhibit "A," in our opinion, correctly reflects the financial position of the Association as at Dec. 31, 1914, subject to provision for accrued taxes and Journal subscriptions paid in advance, less subscriptions and memberships due and unpaid.

The following is a condensed comparative balance sheet as at Dec. 31, 1914 and 1913:

	DECEMBER 31			
ASSETS:	1914	1913	INCREASE	DECREASE
Property and Equipment	$328,656.60	$337,971.16	.....	$ 9,314.56
Investments	138,832.50	133,813.75	5,018.75	.....
Current and Working Assets	75,849.62	50,804.03	25,045.59	.....
Prepaid Accounts and Reserves	4,794.56	3,807.38	987.18	.....
Medical Directory—Fourth Edition (Labor and Material)	.....	28,436.28	.....	28,436.28
Biographical Expense	.....	2,614.41	.....	2,614.41
Total Assets	$548,133.28	$557,447.01	$ 31,051.52	$40,365.25
Liabilities	123,287.59	17,185.43	106,102.16	$.....
Surplus	$424,845.69	$540,261.58	$.....	$.....

Assets:	
Decrease	$ 40,365.25
Increase	31,051.52
Net Decrease	$ 9,313.73
Liability Increase	$106,102.16
Surplus Decrease	$115,415.89

The net income for the year ended Dec. 31, 1914, amounts to $3,984.59, particulars of which are shown in Exhibit "B."

The securities representing the investments of the Association were produced for our inspection and found in order.

We verified the cash on hand by actual count and the cash in bank by certificate obtained from the bankers, which we duly reconciled with the cash records.

The following is a summary of the cash on hand and in bank, exclusive of the insurance cash fund, which was verified by certificate obtained from the depository:

Cash on Hand	$ 1,939.17
Cash Fund	50.00
Continental and Commercial National Bank	5,899.81
First Trust and Savings Bank	7,301.62
Total	$15,190.60

EXHIBIT "A"

BALANCE SHEET AS AT DEC. 31, 1914

ASSETS

PROPERTY AND EQUIPMENT AT COST, LESS DEPRECIATION:		
Real Estate and Buildings		$253,786.34
Machinery		48,363.90
Type and Metals		9,041.04
Furniture and Fixtures		14,619.76
Laboratory		1,614.14
Library		1,231.42
Total Property and Equipment, less Depreciation		$328,656.60
INVESTMENTS:		
Association Reserve Fund	$118,832.50	
Certificates of Deposit	20,000.00	
		$138,832.50
CURRENT AND WORKING ASSETS:		
Inventory of Materials, Supplies and Work in Progress	$30,580.49	
Accounts Receivable:		
Advertising	$18,305.09	
Reprints	1,614.06	
Miscellaneous	2,866.57	
Cooperative Med. Advertising Bureau	1,666.24	
Directory—Fourth Edition	5,282.75	
	$29,734.71	
Notes Receivable	343.82	
Cash in Bank and on Hand	15,140.60	
Office Fund	50.00	
Total Current and Working Assets		$75,849.62
Liability Insurance Reserve—Cash in Bank		4,147.97
PREPAID ACCOUNTS AND ACCRUALS:		
Insurance	$ 460.61	
Session 1915	5.00	
Accrued Interest on Investments	180.98	
	$ 646.59	
Total		$548,133.28

LIABILITIES

ACCOUNTS PAYABLE:		
Sundry	$ 460.79	
Cooperative Medical Advertising Bureau	1,228.25	
	$ 1,689.04	
Advance Payments on Publications	2,766.05	
Association Reserve Fund	118,832.50	
SURPLUS:		
As at Dec. 31, 1913	$420,861.10	
Net Income for the year ended Dec. 31, 1914	3,984.59	
Total Surplus		$424,845.69
Total		$548,133.28

EXHIBIT "B"

INCOME AND PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED DEC. 31, 1914

JOURNAL:

INCOME:		
Membership Dues		$ 41,724.85
Subscriptions		248,088.55
Advertising		203,993.66
Jobbing		3,679.93
Books		6,033.94
Reprints		2,277.45
Buttons		291.97
Miscellaneous Sales		4,504.98
Interest		829.38
Children's Journal		44.66
Directory—Fourth Edition		287.53
Total Income		$511,756.90
EXPENSES:		
As per Schedule "1"	$408,062.09	
Provision for Depreciation—Schedule "2"	21,528.00	
Loss on Bad Debts	3,680.70	
Total Expenses		$433,270.79
Net Income—JOURNAL		$ 78,486.11

ASSOCIATION:

EXPENSES:		
Propaganda	$ 8,771.27	
Association	14,704.19	
Health and Public Instruction	22,107.43	
Chemical Laboratory and Pharmacy and Chemistry	13,583.03	
Medical Education	9,027.71	
Organization	10,215.92	
Therapeutic Research	1,519.04	
Session 1914	2,357.56	
	$ 82,286.15	
LESS:		
Interest on Bonds	$2,800.85	
Interest on Treasurer's Account	3,926.78	
Rentals	1,057.00	
	$ 7,784.63	
Net Association Expenses		$ 74,501.52
Net Income for the year		$ 3,984.59

SCHEDULE "1"

JOURNAL EXPENSES FOR THE YEAR ENDED DEC. 31, 1914

Wages and Salaries	$148,112.59
Editorials, News and Reporting	10,152.78
Paper—Journal Stock	120,837.20
Paper—Miscellaneous	4,175.76
Electrotypes	5,238.01
Binding	118.67
Ink	3,987.54
Postage—First Class	16,801.85
Postage—Second Class	26,559.92
Journal Commissions	11,323.57
Collection Commissions	3,701.85
Discounts	3,607.64
Express and Cartage	2,931.27
Exchange	1,714.40
Office Supplies	675.93
Telephone and Telegraph	828.07
Office Jobbing	2,881.11
Miscellaneous	5,291.36
Power	2,579.30
Light	905.28
Fuel	2,271.86
Factory Supplies	3,874.76
Insurance and Taxes	5,452.42
Legal	4,408.97
Repairs and Renewals—Machinery	5,170.62
Repairs and Renewals—Buildings	1,437.32
Archives	958.02
Biographical	9,446.41
Cooperative Medical Advertising Bureau	2,617.61
Total	$408,062.09

SCHEDULE "2"

PARTICULARS OF PROVISION FOR DEPRECIATION DURING THE YEAR ENDED DEC. 31, 1914

PROPERTY AND EQUIPMENT	RATE	AMOUNT
Building "A"—Old	5 per cent.	$ 859.54
Building "B"—New	2.5 per cent.	4,611.55
Machinery	20 per cent.	12,090.98
Furniture and Fixtures	10 per cent.	1,207.99
Type	15 per cent.	831.70
Metal	20 per cent.	1,082.00
Factory Fixtures	15 per cent.	664.90
Laboratory Equipment	10 per cent.	179.34
Total Depreciation		$21,528.00

We found proper vouchers on file for all disbursements and we made an exhaustive test of the various sources of income for the period.

The operations for the year have been charged with $3,680.70 in respect of bad debts.

We found the accounting records in good order and well and accurately maintained.

In conclusion, we desire to express our appreciation of the courtesies extended to our representatives during the course of the examination. Yours truly,

MARWICK, MITCHELL, PEAT & Co.,
Chartered Accountants.

Report of the Judicial Council

Dr. Alexander R. Lambert, New York, Chairman, read the report of the Judicial Council, as follows:

To the Members of the House of Delegates of the American Medical Association:

The Judicial Council desires first to call the attention of the House of Delegates to some necessary changes in the By-Laws:

HONORARY FELLOWSHIP

The wording of Section 8, Chapter XI of the By-Laws and of the second paragraph of Section 4, Chapter IV conflict. The first directs that "each section at each Scientific Assembly may at the time of the election of its officers nominate for honorary fellowship, etc." The By-Laws, Section 3, Chapter XI, fix the time for this election as the first order of business of the morning meeting of the section on the third day (Thursday) of each Scientific Assembly. In Section 4, Chapter IV, the By-Laws state that "nominations for honorary fellowship shall be made by the sections and must be submitted to the House of Delegates not later than the second day of the Scientific Assembly (Wednesday). It is evident, therefore, that if these By-Laws are strictly followed, it will be impossible to elect any Honorary Fellows. The Judicial Council would recommend that from Section 8, Chapter X, the words "at the time of the election of its officers" be deleted from the first section of the sentence and that there be added immediately after the first section of the sentence a new section as follows: "Provided, however, that nominations for honorary fellowship in the American Medical Association shall be acted on by the sections on or before the second day of each Assembly," so that the entire section shall read:

"Each section at each Scientific Assembly may nominate for Honorary Fellowship in the American Medical Association a physician of a foreign country who has risen to preeminence in the profession of medicine, provided, however, that nominations for Honorary Fellowship in the American Medical Association shall be acted on by the sections on or before the second day of each Scientific Assembly. The secretary of the section shall immediately notify the Secretary of the Association of such nomination."

MEMBERSHIP IN AN ADJOINING STATE

The attention of the Judicial Council has been called to the fact that in certain instances members of the organization who are located near the border of a state find it convenient to hold membership in the component society of the state adjacent to that in which they are located for the purpose of practicing medicine. It is a common practice among the constituent state associations to permit a man who resides near a county line to hold membership in the component society of the county adjacent to his place of residence, when the individual can more conveniently attend and take part in the meetings of the local society of the adjacent county than he can the meetings of the component society of his own county, provided it is agreeable to the organization in his own county for him to hold membership in the organization in the adjacent county. It has been suggested that this same privilege, under proper restrictions, might with propriety be accorded to members living near state boundaries. The Judicial Council, therefore, recommends to the House of Delegates that the following sentence be inserted immediately before the final sentence in Section 3, Chapter VIII, of the By-Laws:

"and provided further that members of a constituent state association who are located for the purpose of practicing medicine in a state adjacent to that through the association of which they hold membership in the American Medical Association, may be continued as members of the American Medical Association, provided the Council of the medical association of the state in which they are practicing medicine waives jurisdiction over the membership of the individual member who holds his connection with the organization through a neighboring constituent state medical association."

ORGANIZATION

In Section 5, Chapter VII, of the By-Laws, it is stated that the work of the Council on Health and Public Instruction shall embrace "(*b*) organization." The Judicial Council would recommend to the House of Delegates that the above-quoted phrase be stricken from the By-Laws assigning the work embraced by the Council on Health and Public Instruction and that the succeeding subjects be relettered. The present wording of the By-Law gives the work of the organization of the American Medical Association to the Council on Health and Public Instruction, although as a matter of fact the duties of the organization belong to the Secretary of the American Medical Association. The Judicial Council believes that the By-Laws should be made to agree with the existing organization of the American Medical Association, and therefore makes the foregoing recommendation.

PROCEDURE IN PREFERRING CHARGES

In the correspondence brought to the attention of the Judicial Council for its consideration, there have been an increasing number of charges of various offenses made against Members and Fellows of the Association. It is apparently accepted in the minds of many members of the Association that the Judicial Council can act both as policeman and court, and that if information is furnished to the Council of breach of ethics, of fee splitting, of gross advertising or other wrong doing, the Judicial Council will be able to accuse the individual complained of this same wrong doing, hail him before them, and act both as accuser and judge. This is manifestly impossible. No individual so far has been ready or willing to back up the accusations made by preferring charges or registering a formal complaint. The secretary of the Judicial Council must perforce, in accordance with his duty, present this correspondence to the Judicial Council. It can be readily understood that in any given community an individual cannot make charges as an individual without serious detriment to himself which a person in official position can make as an impersonal official. It would seem wise, therefore, that the House of Delegates should consider the passing of a standing rule by which it would designate a method of procedure by which the American Medical Association may protect its Fellowship through the Judicial Council when any Fellow is guilty of some overt act. In the present organization of the American Medical Association and its Judicial Council, the secretaryship of the Judicial Council is filled by the secretary of the American Medical Association, and while these two secretaryships are held by the same individual, the two official positions must be considered as much apart as if they were occupied by two separate human beings. The Judicial Council would suggest to the House of Delegates that in the opinion of the Judicial Council it would be wise for the House of Delegates to enact a standing rule directing the Secretary of the American Medical Association to file charges against Fellows of the Association when overt acts on the part of such Fellows, supported by reasonable evidence, are brought to the attention of the Secretary of the American Medical Association.

COMMISSIONS FROM MAKERS OF INSTRUMENTS

The Judicial Council desires to report the results of a special investigation made in regard to the demand by surgeons or physicians for commissions from makers of surgical appliances such as trusses, artificial limbs, belts, etc. This investigation has revealed a condition which is a disgrace to the medical profession. Some firms justify this procedure; other firms are chafing under it and indignantly protest against what they consider dishonest practice among the profession. They cannot cease to give the commissions when asked, because their competitors will not agree to refuse these same commissions to the same physicians. Each firm is, in their opinion, forced to continue this practice.

Opinions vary among the dealers as to the localities in which the practice is most prevalent: some claim it is more prevalent in the West than in the East, while others claim it is most prevalent in the big cities of the East; some firms

claim it is generally practiced throughout the entire country in all localities. One firm frankly admits that in the majority of sales, commissions are paid; another that these commissions are paid in 95.12 per cent. of all orders from physicians. The following quotations are from a letter of a well-known and reliable firm doing business over a wide area of the United States:

"The majority of physicians expect commissions to be paid them on sales to their patients. Some physicians do not expect it and generally condemn the dealer for giving commissions. This we believe to be an entirely wrong position to take in the matter, for the blame, if any, should not be placed upon him. . . . We do not pay commission except to physicians who request the same. As far as we have been able to learn, all of our competitors pay commissions. If a commission is asked for, we pay it on the first order only, counting on satisfying the customer so he will return for repeat orders on which no commission is paid. In this way it is no additional tax on the customer but comes out of our profit and in many cases represents our entire profit on the first order. Business ethics require the giving of commission to those who send trade. As long as the majority of physicians ask for commission, and among them are many of the best standing in the community, it is impossible for us to consider that medical ethics are against this custom. We approve of the position taken by physicians who do not accept commission, except that they seem to blame surgical appliance dealers for this condition, whereas we are looking forward to the time when it can be discontinued. The time has not yet arrived as it would drive us out of business. There would be no harm in physicians taking commissions under the conditions described above if it could be done openly. Our objection to the present custom and reason for wishing a discontinuance is, that the medical profession openly claim it is wrong, yet privately demand it. Another objection is that the accepting by some under fair conditions encourages others to seek unfair commissions."

Another firm says, "When we first started to make surgical supports, we never received requests for commissions in the small cities and towns, but the evil is growing there. Where we have no representative and the physician wishes to order our support, it is necessary for him to do some clerical work and to give some time, which we think should be paid for, as our representative should be paid for her time in handling the order. Where we have a representative, and the physician asks for a commission simply because he refers the patient to us, we regard it as graft pure and simple."

Another firm says, "We believe that the practice of paying or receiving commissions, either from a business or professional standpoint, is radically wrong and dishonest. The commission is paid indirectly by the purchaser and not by the manufacturer. In order to secure a legitimate profit the manufactured article must necessarily be cheapened in its construction to the amount of the commission. The practice cannot be maintained except by false pretenses and deception."

It is evident that the majority of dealers realize that it is a secret rebate unjustified by facts or morals. It is a dishonest endeavor on the part of the physician to obtain in an indirect manner more money from the patient who purchases the appliance. If a physician measures his patient for an appliance, thus rendering a service to that patient, he renders a service which is necessary for the perfect fit of that appliance to the patient, and the patient should pay him for time, knowledge and work done. To turn and to use the trade idea that all who bring business are justified in demanding a commission is to stoop to a secret and demeaning method of obtaining double fees. It is analogous to a man demanding commissions from both the buyer and the seller of a piece of property. This is not tolerated legally. Physicians cannot be partners in the business houses of instrument makers nor honorably act as their sale agents when dealing with their own individual patients, and cannot, therefore, ethically partake of the profits in the manufacture and sale of their goods. They cannot, therefore, honorably receive a secret rake-off from the instrument maker for goods sold to any patient. If it were an honorable thing to do, it would not be done in secret and unknown to the patient; it would then be a regularly recognized partnership and openly justified. It is the same as the dishonest secret division of fees and must so be considered. The remedy for this condition lies in the hands of the physicians or surgeons who order the appliances or instruments. They must demand recompense from the patients and not from the instrument makers for the time and knowledge necessary for the accurate measuring of patients for appliances. When the physician fails to charge the patient for this work and expects to obtain recompense from the instrument maker for so doing, he is demeaning himself and stooping to a dishonorable, because secret and dishonest, practice.

MEDICAL DEFENSE

It has been suggested to the Judicial Council that it recommend that the American Medical Association take up the defense of its members against malpractice and that the Association should undertake such insurance work. These functions, in the opinion of the Judicial Council, come under the head of benevolent functions and are in the same category as the suggestion last year that the American Medical Association should supply funds for the support of widows and orphans of physicians. The Judicial Council again reiterates its opinion that benevolent work should be confined to the constituent associations of the national body and should be done by the state and county associations. Benevolent functions of an association deal with the individual and each case must be judged individually. For this reason benevolent work should be left to the constituent bodies, as they have the most accurate knowledge and are best able to judge of the worthiness of each individual case. These benevolent functions should not be undertaken by the national body.

DISCIPLINE OF FELLOWS

The Judicial Council regrets to report that during the past year its duties included taking action in two cases. In the first case, charges were duly presented and sustained proving that the accused had persisted in grossly advertising in the public press. No defense was offered in person or by writing, notwithstanding formal notification of the charges preferred and the date of the meeting of the Judicial Council at which these would be considered had been forwarded to the defendant. The decision of the Judicial Council was that the charges were sustained and that the name of the offender should be dropped from the Fellowship roll of the American Medical Association. In the second case, charges were brought before the Council that the accused had caused or permitted to appear in a publication, with which his name was connected, photographs and an article which violated the Principles of Medical Ethics in that they were self-laudatory and defied the traditions and were contrary to the ideals of the medical profession. The Judicial Council condemned the publication in question as being offensive and in bad taste, but because it was evident from the testimony that the publication complained of was not, in this instance, intended by the accused to be self-exploiting advertising, the Council accepted the defendant's explanation and apology.

WORKMEN'S COMPENSATION LAWS

In pursuance of its functions to investigate general professional conditions, the Judicial Council considers it a duty to bring before the Fellowship of the American Medical Association a report of certain economic conditions that are arising in this country in connection with the various workmen's compensation laws that are being passed in the different states. Some form of workman's compensation law has been already passed in more than half the states in the Union, and there is small doubt that before long such laws will have been passed in the majority of the states if not in every state. The passing of these laws does not mean that some new or special law has been passed to compensate an injured workman under the old common law system, but it means an entirely new legal and social conception of compensation for injury and is, in fact, the beginning of a new social and economic condition in this country. These new economic conditions affect very materially the medical men in a community. It is certain to bring up the questions in new forms of contract and lodge practice, of health and accident

insurance, of state aid and state medicine. It will also affect the relationship between the boards of trustees and the attending physicians and surgeons in private and municipal hospitals. Economic changes such as these must be of concern to the general profession, and the Judicial Council feels that it is timely to describe in general what these workman compensation laws are and what are their social and philosophic foundations, and what the trend at present seems to be in their relation to the profession.

EFFECT ON THE MEDICAL PROFESSION IN EUROPE

To show this clearly it will be necessary to describe briefly similar laws and the effect of such laws in Germany, England and other countries of the Old World which have long since possessed them. The experiences gained by the medical profession under the economic changes which these laws have brought about in England and on the continent cannot fail to be of value to the profession in the United States, if the profession is alive to the changes which are coming about and are willing to learn from the experience of others and take advantage of the knowledge so gained.

Seventy-five years ago, when the industries were small in this country and when the relationship between employer and employee was very personal and the forces in use to run the industries of the country were relatively simple under the common law, the legal decisions regarding compensation of workmen injured and the possibility of recovery of damages began to be laid down by the courts following the old English customs. A workman could recover damages if he could prove that his employer had been negligent, but if the injury was due to his own fault, he could not recover. Moreover, by accepting employment, he assumed whatever risks were inherent in the pursuit of his calling. A decision was soon made in the courts that if the negligence of a fellow servant was the cause of the injury, the employer was not responsible and the injured employee could not recover. As industries became more complex, as the relation between employer and employee became more distant, as the interrelationship of various fellow-servant employees became more intricate, there grew up ever increasing possibilities of combinations of legal technicalities by which the employer could evade the responsibility of injury suffered by the workmen and an ever-increasing impossibility by which the employee could recover even when he well deserved compensation for injuries received. The verdicts from juries varied between refusal to give even just compensation and the lavish pouring out of sympathy by granting a huge verdict for a relatively minor injury. The slow process of legal action in the courts rendered the time between injury received and compensation given so long that destitution often overpowered the injured workman in the process of obtaining his rights. All this has engendered bitterness between employer and employee and at the same time has thrown on the workman more than his share of the burden of both the avoidable and unavoidable accidents which have resulted in temporary injury, permanent invalidism and death.

This is well illustrated by the following extract from the report of the Workmen's Compensation Commission of Missouri:

"Statistics show that in each industry every year there is bound to be a certain number of employees killed, a certain number will have their fingers, or their hands, arms or legs cut off, and a certain number will be otherwise injured. It is just as much an incident to the manufacture of a product that men will be killed and injured as it is that machines will be destroyed or damaged, or mules killed or injured, and the injuries of men go into the product as much as the injuries to plant and equipment. Yet, when a machine has to be repaired or sold for junk, the employer charges it as a cost item, and the consumer pays for it, and no one ever stops to ask whether the damage was caused by the negligence of the employer or the consumer, or whether the machine or the consumer was guilty of contributory negligence. The breakdown was treated as an accident and an incident to the business. If a team of mules runs away and breaks the driver's leg, smashes the wagon, kills one of the mules and badly bruises the other, the employer repairs the wagon, buys a new mule, gets a veterinary surgeon for the other and feeds him until he gets well, and adds all these charges as cost items in the price of the product and the consumer pays for them, not because the consumer or the mules or the wagon, or even the employer, were negligent or guilty of contributory negligence, but because the accident was an incident to the industry and a certain number of such accidents are sure to happen every year. It is just as inherent for accidents to happen in an industry as it is for mules to run away. But the driver, not being a wagon or a mule, pays his own doctor's bill and loses his wages until he gets well, because, in the case given, he can show no negligence on the part of his employer. His injury was just as much an incident to the industry as was the injury to the wagon and mules, but the employer and the consumer do not have to pay for the driver's injury. Perhaps on the theory that the mules were fellow servants of the driver and that his injury was caused by the negligence of the mules in running away."

NEW LAW BASED NOT ON FAULT BUT ON FACT

In recent years there has been an increasing tendency to break down the barriers protecting the employer and to throw more and more the responsibility for the injuries received in industry on him, until finally the European conception, years ago adopted in many countries, has been accepted in these workman's compensation laws, replacing the former common law system by a law based not on fault but on the fact of injury resulting from accident in the course of the employment, recognizing that injuries to workmen under existing conditions should be regarded as risks of the industry. That is, the human wastage of injury, invalidism and death should be classed in the same category as the wear and tear of other necessary means of production and should be paid for by the industry which produces the wastage. If paid for by the industry producing this human wear and tear, it is paid by those who use the products of the industry. Heretofore the injury has been produced, and besides the injured workman, society at large by charity and taxation for municipal care, has borne in great measure the expense of the element of human injury.

The trend of thought in the United States has always been strongly individualistic. This is but natural, for the eastern borders of the United States were settled by men who were willing for the sake of freedom of ideas to leave what was then civilization and comfort and strike out into an unknown wilderness to obtain freedom of thought, or else it was settled by those who, through spirit of adventure, eagerly sought in a new world a bettering of their fortunes. Such life as this appealed only to those of strong individual thought and action. The civilization thus formed crept westward across the Apalachian Mountains, down the Ohio River and on down the Mississippi, thence slowly westward across the great plains. When, in the last century, the lure of gold developed the settlement of the Pacific Coast, again this civilization pushed slowly eastward until the two frontiers of western and eastern civilization met. But this development and spread of civilization demanded rugged individual traits. It imbued into its men a sense that they must take their own individual risks and it did not quickly generate a communal sense which was necessary for the development of the social laws which have grown up and been adopted in Europe so many years ahead of their adoption in this country. It is for the foregoing reasons in a large measure that only recently in this country has capital as a whole felt responsibility toward labor, and only recently has the sense of interdependency one on the other developed fully until finally it has rapidly been recognized in the separate states that the economic loss produced by human injury, invalidism and death of the workmen of an industry, with its consequent production of poverty and destitution in the community, should be paid for by the industry and transferred by the employer to the purchasers of the manufactured product and not borne alone by the workman or by all members of a community.

INSURANCE PRINCIPLES APPLIED

In considering how best to accomplish these results, the ideas of insurance which have developed so enormously in the taking of risks on human existence and of risks against fire and other calamities are those which most readily occur to solve the problem of injury, death and calamity in the industrial fields. That is, many individuals are willing to put a relatively small amount in a common fund that the few individuals on whom calamity falls may have a relatively large sum to compensate them for the loss by the calamity, all realizing that in any one year it cannot be foreseen on which individual the calamity will fall and all forced to take a chance on whom it may fall.

EUROPEAN SOCIAL INSURANCE

Before considering the different methods of workman's compensation against accidents in the various states in the Union, it would be well to consider what has been accomplished in Europe under these social insurance laws. Not all countries have adopted similar laws or have reached the same complete scheme of social insurance. Most countries have developed it much further than has yet been done in the United States and, as we shall see, usually starting with the workman's compensation against accidents, there has been almost always the further development of sickness and funeral insurance, maternity insurance, old age pensions, the pensioning of widows and orphans, and even, as in England, a national unemployment insurance. Rubinow, in his book on "Social Insurance," gives the order in which the various countries have fallen into line as follows:

Germany, 1884; Austria, 1887; Hungary, 1891; Norway, 1894; Finland, 1895; Great Britain, 1897; Denmark, Italy and France, 1898; Spain, New Zealand and South Australia, 1900; Netherlands, Greece and Sweden, 1901; West Australia, Luxemburg and British Columbia, 1902; Russia and Belgium, 1903; Cape of Good Hope and Queensland, 1905; Nuevo Leon (Mexico), 1906; Transvaal, 1907; Alberta, Bulgaria and Newfoundland, 1908; United States, for federal employees only, 1908; Quebec, 1909; Serbia, Nova Scotia and Manitoba, 1910; Switzerland and Peru, 1911; Roumania, 1912; about twenty-six states of the American Union, 1911-1913.

It was not a sudden development in many of these countries, because for many years these compensation laws were under discussion before they were adopted. In France, Sweden, Norway and Russia the subject had been agitated and under discussion as early as 1881, although not adopted until years later. At present the situation seems, again according to Rubinow, best summed up by saying that accident compensation or accident insurance has been established practically throughout Europe and in many British colonies. Compulsory sickness insurance has been introduced in about one half of the large countries of Europe, namely, Germany, Austria, Hungary, Norway, Great Britain, Serbia and Russia, and voluntary subsidized sickness insurance in France, Denmark, Sweden and Switzerland. Compulsory old age insurance exists in Germany, Luxemburg and France, and old age pensions in Denmark, Iceland, Great Britain, France, Australia and New Zealand, and voluntary subsidized state systems of old age insurance in Italy, Belgium, Serbia and Spain. Unemployment insurance by means of subsidies to workmen's voluntary organizations is rapidly spreading in large European cities and exists by national law in Norway and Denmark; the first compulsory unemployment insurance system has been established in Great Britain, and the first beginning of a national system of widows' and orphans' pensions has been made in Germany.

ACCIDENT INSURANCE

There are several methods by which the accident insurance of the various countries is put into practical effect. In Germany there is compulsory insurance in which all employers of the same industry are forced into mutual insurance associations. This plan is also followed by Austria, Luxemburg, Italy and Hungary, although there are differences in important details from the German system. Norway and the Netherlands have a compulsory state insurance. Under this plan the employer must insure his employees through the State Insurance Department, which fixes the premiums and pays the indemnities prescribed by law to those entitled to them. In Sweden the plan of Norway is further modified in that the state insurance is not compulsory, but a State Insurance Department is provided in which the employer may insure his employees. In Denmark there is no insurance department, but a Workman's Insurance Council is provided to which all accidents must be reported and which fixes the indemnities which the employer or his agent, the insurance company, must pay. In Great Britain the workman must insure, but the employer may meet his obligation of compensation to the employee through state, mutual or private stock companies. If an employer does not insure, the English law makes his employees preferred creditors up to $500. In France there is a law imposing a special tax on employers who are liable to pay compensation, and the proceeds of this tax are used to indemnify the victims of accidents in those cases in which the employer becomes insolvent after the accident occurs.[1] The law secures protection to the worker, but leaves the employers free to choose their own way of meeting their obligations. The law is practically universally followed because employers are released from other liabilities on condition that they pay at least one third of the insurance premiums in an insurance organization which is approved by the government and which guarantees injured members medical relief and an indemnity of at least half wages. Belgium has both voluntary and compulsory accident insurance with a tendency to make all compulsory, as it is already for miners, and all accidents from whatever cause bring indemnity.

The Workman's Compensation Law of Switzerland has compulsory insurance against nonoccupational accidents. Instead of the employer meeting the whole cost, as in the case of industrial accidents, the premiums are borne jointly by the individual insured workman and the state, the latter paying 25 per cent.

The insurance against sickness differs from that against accident in that the workman contributes part of the funds, the employer contributing part and the state a varying amount. In the subsidized voluntary scheme as of Sweden, Denmark, Belgium, France and Switzerland, the government aid is given to various societies, and while the membership of these societies is voluntary on the part of the workman, each workman must have the opportunity to join some society, and the government will aid with its subsidy only those societies which will accept its regulations. The regulations vary in the different countries, and usually the amounts given by the government is in ratio to the membership of each society. In Denmark this voluntary method has been fairly successful, for not only does it give a protection to sickness of its members, but among its benefits it permits the wife of the workman also to be insured, thus giving her confinement insurance, and it also gives the medical care of children under 15, thus giving medical attendance to schoolchildren under that age. But even with these advantages, only about three fifths of the workmen of Denmark are said to hold membership in the sickness insurance societies. In Sweden these societies do not seem to contain more than half this number.

The Swiss law gives greater benefits, and being passed in 1912, has been framed from greater experience to meet better the real necessities than the laws of the other countries. But not all these voluntary systems of insurance are appreciated by the wage earners, or at least taken full advantage of, whether the men cannot make the sacrifice of the necessary investment to obtain the insurance, or at the wage on which they live they are not given enough even to set aside

1. Henderson, C. R.: Industrial Insurance in United States, Univ. of Chicago Press, 1909.

the small sum necessary for this; but whatever may be the reason, experience shows that the voluntary systems are slow in extending among the working classes.

COMPULSORY SICKNESS INSURANCE

Compulsory sick insurance has reached its greatest development in Germany, Great Britain and Russia. In putting into effect the compulsory insurance, the governments of Europe have moved in the line of least resistance to obtain this end. The sick insurance is done through well-recognized societies already existing, and, in fact, they vary from the old medieval guilds to the modern establishment fund where the employees of a single establishment are united in benevolent organization. This is equally true in the other countries in Europe with the voluntary subsidized insurance, and is also true in England, where the societies through which the insurance is obtained are the large, friendly societies which are similar to our fraternal societies. In Germany the employer pays one third and the employee two thirds of the premiums. In England the employer pays 33 per cent. for men and 37.5 per cent. for women; the employee, if a man, pays 44.5 per cent. and 37.5 per cent. if a woman, the state contributing in the case of women 25 per cent. and in the case of men 22.5 per cent. of the entire expense. In Hungary, employer and employees contribute equal amounts. In Russia the workman pays 66⅔ per cent. and the employer 33⅓ per cent., but the entire cost of the medical aid is placed, in Russia, on the employer.

This sickness insurance takes care in a great measure of the minor accidents, because in Germany the accident insurance does not begin in nonfatal cases until thirteen weeks after the accident occurs. In Austria the accident insurance begins after four weeks, and in Hungary after ten weeks. This compulsory sick insurance has the advantage that it covers all wage earners in the country who are earning a certain wage. In many countries, as Germany and England, there is voluntary insurance for those who are earning a little higher wage.

OLD AGE INSURANCE

In both France and Germany the old age systems differ widely in details of the methods employed, but arrive at about the same results in giving a definite pension to old age, Germany at the age of 70, France at the age of 60. Invalidity is included in both these schemes, but the conception of invalidity also differs widely: In France it is total and permanent disablement; in Germany it is when a person's working capacity is reduced to one third of the normal amount, so that under the invalidity heading it includes the heading of premature old age or the individual worn out before even the physiologic old age comes on. In Great Britain the old age pension is given at 70 years of age and according to a sliding scale of rates and conditioned on certain qualifications. Norway, Sweden and Holland do not have old age pensions. Belgium has a voluntary pension system for all citizens. The pensions begin at from 55 to 65 years, but an invalid pension is paid to those incapacitated before the pension year. New Zealand, New South Wales and Victoria have old age pensions at 65 years, following more the plan of England than of Germany.

WIDOWS AND ORPHANS

The insurance or pension for widows and orphans is equivalent to life insurance on the life of the bread winner of the family against his death through sickness or accident at any time. Death through accident, under the workman's compensation, is provided for as is also partial and permanent total disability; but death through accident not connected with his occupation or through sickness is not provided for, except in Switzerland, under the accident compensation laws. Societies not subsidized by the state which have undertaken sickness insurance have always found it difficult, and in the majority of cases absolutely impossible, to undertake also the workman's life insurance or his old age pension, because the members have been unwilling to pay premiums high enough to accumulate sufficient capital to pay pensions and remain solvent. For instance, many young men would form together in a group, forming a society in which they would be willing to give part of their earnings into an insurance fund to protect themselves against accident and ordinary sickness; and in their early years of youth and abundant productivity, and minimum days of sickness, the insurance fund so formed would be able to remain solvent and perform its functions, but as they grew older they could not without increase of premiums and with diminishing revenue carry the extra burden of increased sickness, early invalidity, death payments or the burdens of old age pension (although usually they carried burial insurance), especially as new younger men held aloof from joining the societies because of the higher premiums to be paid.

In considering the old age pensions, the same facts come out strongly as in sickness insurance. That is, the voluntary subsidized old age insurance attracts a very small proportion of workmen, and these are the better paid classes. Even among these, many accounts are started and are allowed to lapse, and usually only that amount is contributed necessary to obtain the minimum subsidy. The pensions thus acquired are small indeed. So far experience seems to show, as in other insurance, that there is an unwillingness or inability of the great mass of the working classes to keep up of their own free will a comprehensive system of voluntary insurance.

Included under the sickness benefits of almost all the countries of Europe is found a maternity benefit. This is usually included simply as a sickness benefit and is paid, in some instances, to the husband for a definite period as if his wife were disabled from sickness. In instances in which the woman herself is a member of the insurance society, she has the benefit in her own right. In England, if she be a married woman or a widow with a posthumous child, she has the ordinary sickness benefit plus the thirty shillings for the maternity benefit; if unmarried, she apparently has only the maternity benefit. The medical maternity benefit does not provide any medical treatment or attendance in respect to a confinement.

MATERNITY INSURANCE

In Italy there has been a compulsory maternity insurance since 1910 and in the absence of any national sick insurance in this country. It covers all working women in factories, etc., of an age from 15 to 50, married and unmarried alike, the employers and the employees contributing an equal amount. This total contribution is 1 lira (19 cents) for women from 15 to 20 years old and 38 cents for the ages from 20 to 25. The amount of benefit is 30 lire, or $5.79, to which the state adds 10 lire ($1.93). This, though small, means the cost of midwife and the bare necessities of existence. As a matter of fact, all countries having compulsory insurance laws include a compulsory maternity benefit in their various sick funds. In Germany, in addition to the medical aid, there is six weeks' regular sick benefit regardless of whether or not the mother is able to return to work. Hungary and Norway also give six weeks; Russia and Austria limit it to four weeks. It is further noticeable that the working woman is given this maternity benefit regardless of marriage. The urgency of the economic need justly controls the distribution of the fund.

BENEFITS OF INSURANCE

The benefits obtained from all these insurance schemes and pensions is not large to any one individual; in fact, it is not meant so to be. It is really an existing minimum which enables them to live without starvation, but cannot be placed in the category of what is understood in this country as a living wage, even when the rates of wages are not compared with the American standards. Henderson remarks of the German system, and it holds equally true for the other countries in Europe, that these systems do not make other forms of protection superfluous since

they simply provide for the necessities of existence. They do not remove the motive for forming trade unions and fraternal societies, nor for investing in extra insurance, nor for savings. All these organizations of thrift flourish in Germany.

From this brief summary of the various laws of social insurance in Europe, it is seen that there exists a tendency in these countries toward a complete group of laws which will protect the working community against industrial accidents, against sickness, will cover the loss of time and expenses of maternity, will grant funeral expenses and pensions for partial disability and for complete invalidity, and pensions to the widow and orphan when the bread winner is killed; gives a pension to early old age brought about by a life of toil and of physiologic old age when in natural course it brings the wage earner to a position of complete inability to work. The most comprehensive scheme is that of England, which has added to these insurances and pensions that of unemployment for a certain length of time, provided that this said unemployment does not come from strikes or lockouts. There does remain in England, still, an option under certain circumstances of suing under the old liability laws, but this is seldom taken advantage of. Germany approaches nearest to this complete insurance scheme of England.

INDUSTRIAL INSURANCE IN THE UNITED STATES

In the United States about twenty-six states have accepted some form of workman's compensation law, and compensation acts were adopted in the following twenty-one states in the order named: New York, Washington, Kansas, Nevada, New Jersey, California, Wisconsin, Ohio, Massachusetts, New Hampshire, Michigan, Maryland, Rhode Island, Arizona, West Virginia, Oregon, Texas, Iowa, Nebraska, Minnesota, Connecticut. In all these compensations the principals are elective, except those of New York and Washington, and the new acts of Ohio and California which went into operation Jan. 1, 1914. New York, California and Ohio amended their constitutions so as to admit the adoption of their compulsory acts. The first compensation act of New York State was rejected by its courts of appeals as unconstitutional, but since the constitutional amendment adopted in the state, a compensation law has been in full operation since July 1, 1914.

It is impossible in a report of this nature to go into the minute details of all the various compensation laws of the different states, nor can the Judicial Council at this time pretend to present a complete list of the states in which the laws have been passed or a complete digest of these laws. In general, however, the following differences are worthy of note and will be of interest:

New York, Washington, California and Ohio have adopted compulsory compensation acts; all the other states have adopted elective acts. The method of making the election varies in different states; in some states the employer is required to signify his acceptance of the law by an affirmative act, such as filing a written statement to that effect, with the specified board or official and by notifying his employees. In certain states the employer is presumed to have accepted the act unless he files a statement to the contrary. At first the latter method seemed to bring the greatest number under the working of the act; but it was soon found in states in which the employer elected or refused to accept the law by voluntary act on his part that in these states there was a more widespread interest and a corresponding stricter observance of the spirit of the law. Under the elective compensation act an employer may accept the act or operate under the old liability laws, but with the defenses of assumption of risk, the fellow servant rule, and contributory negligence abrogated. In Texas the doctrine of comparative negligence has been substituted for the defense of contributory negligence, and the negligence of the injured person is to be considered by the jury only as an element in estimating the reduction of the amount of damages. The federal law also requires the liability of railroad companies to interstate employees, and the doctrine of comparative negligence has been substituted for contributory negligence. Most of the states cover the employment of all wage earners except farm laborers, domestic servants and casual employees. Several states admit all workers in interstate employment on railroads. Several states include all employment except casual employees. The injuries covered include all personal or accidental injuries arising out of the course of employment, unless the injury is due to the serious or wilful misconduct of the employee, or, in other states it is expressed, "except those intentionally self-inflicted."

In the Maryland law there are included, besides the accidental personal injuries, such disease or infection as may naturally and unavoidably result therefrom. The Massachusetts courts in 1914 decided that "personal injury includes any injury or disease which arises out of and in the course of the employment which causes incapacity for work and thereby impairs the ability of the employee for earning wages." This has already included compensation for optic neuritis and lead poisoning and death from an already existing heart lesion. It is thus evident that occupational diseases are included under the Massachusetts law. These decisions will have far-reaching effect.

The injuries due to intoxication are not covered by these laws in California, Connecticut, Iowa, Kansas, Maryland, Minnesota, Nevada, New Hampshire, New Jersey, New York, Rhode Island and West Virginia. Washington and Oregon have no waiting period during which the injured workman must wait before compensation is paid, though during this period in many states he has full medical attendance. There is one week waiting period in Texas, West Virginia, Wisconsin and Ohio, and two weeks in Rhode Island, Nevada, New Hampshire, New Jersey, New York, Kansas, Massachusetts, Michigan, Nebraska, Arizona, California, Connecticut and Iowa. Several of the states which have the waiting period provide that if the disability lasts for more than a certain length of time, compensation is given from the day of the accident; thus if disability lasts for more than four weeks in Wisconsin, this rule goes into effect. In Michigan and Nebraska the same rule prevails after eight weeks. In Illinois, if the injury is permanent, compensation begins on the day after the injury.

In the report of the Commission of the American Federation of Labor and the National Civic Federation, from which these facts are drawn, it is stated that there seems to be an opinion among employers and employees in work which entails as a rule slight accidents that waiting periods are unfair; but among the workers and employers in hazardous employments waiting periods seem to be more a matter of indifference, provided, however, that for serious accidents and disability they are assured of a high ratio of compensation.

The amount of compensation varies in the different states from 40 per cent. to 66⅔ per cent. of the wages of the injured employee. In Washington the compensation averages about 40 per cent. of the wages; in California, 65 per cent.; in Nevada, 60 per cent.; in Ohio, 66⅔ per cent.; in Texas, 60 per cent.; in Wisconsin, 65 per cent.; in New York, 66⅔ per cent., and in all other states here named 50 per cent. There is a tendency in the states to a growing demand apparently that the compensation period for total permanent disability shall cover the lifetime of the victim. The latest Wisconsin statute provides that in the case of the employee who is over 55 years of age, compensation shall be reduced by 5 per cent.; if over 60 years of age, compensation shall be reduced by 10 per cent.; if over 65 years of age, by 15 per cent. The antithesis of this is in New York State where, if the injured employee was a minor when injured, and that under normal conditions his wages would be expected to increase, the fact may be considered in arriving at this average weekly wages. Under this provision, compensation would be increased.

California has apparently worked out the most scientific schedule for the means of determining the percentage of

disability, figuring it out on the nature of the physical injury or disfigurement, the occupation of the injured employee and his age at the time of such injury. Under such a statute a disability that interferes with the injured person carrying on his trade or occupation will be considered as involving a greater percentage of disability than a similar injury inflicted on a person engaged in an occupation not affected by the injury or affected to a less extent.

The method of administering the compensation acts is by some form of industrial accident board in Massachusetts, Connecticut, Ohio, California, Illinois, Michigan, Wisconsin, Iowa, Texas, Nevada, Oregon, West Virginia, New York and Washington. These boards are appointed by the governor of the state, and settlements between employer and employee are subject to the approval of the board to be effective. Some such board as this is a necessity, because otherwise fraud and imposition on the employees are possible, and in the present development of humanity are sure to occur. For instance, in the state of New Jersey there is no state record showing whether or not employees are being fairly treated under the act. By the law, settlements must be reported to the Commissioner of Labor, who places them on file and who has no power to investigate or supervise the settlements, and it seems that only a part of the settlements are reported. The Commissioner of Labor of that state, in a published address, states that the records show that approximately 19 per cent. of the cases reported were paid in a faulty or irregular manner, 7 per cent. did not receive any compensation, 14 per cent. did not receive medical aid. In Minnesota, where there is also no industrial board, the law requires that settlements shall be made according to the provisions of the act and approved by the judge of the district court. In Rhode Island, which also has no industrial accident board, settlements must be approved by a justice of the superior court. There is no provision of law requiring the approval of settlement agreements in Kansas, Nebraska, New Hampshire, New Jersey and Arizona; in fact, the various methods of supervising settlement agreements may be divided into groups as follows: Those states which, while permitting settlement agreements, provide no method whatever of supervising the agreement; those states requiring the filing of such agreement with a public official without giving that official power to approve or disapprove them; those states requiring the approval of such agreements by some official other than an industrial accident board; those states which, though having industrial accident boards, do not require the board or any other official to approve or disapprove the settlement agreements; those states having an industrial accident board and requiring the approval of settlement agreements by such board and the filing of receipts and vouchers with the board, showing the payments had been made pursuant to the settlement agreements; and those states not permitting settlement agreements, but requiring that all cases be submitted to the state board and that the amount of compensation as fixed by the board be collected from the employer or insurance company by the board and in turn paid out by the board to the injured workman or beneficiaries.

There are four methods of insuring the employers to protect the employees against insolvency. As most payments are to be made weekly, instead of a lump sum, it is necessary that, even though an employer should be solvent when an accident occurs, the employee should be protected against possible future insolvency of the employer. The four methods adopted, therefore, are that employers whose solvency is approved by the state board are permitted to carry their own risk, but others must take out the insurance in either a mutual insurance company or a stock company or in the state insurance fund, the latter being administered by the state insurance commissioner and maintained by assessment on the employers electing to contribute to a state fund.

Arizona, Rhode Island, New Jersey, Nebraska, California, Minnesota and Kansas under their compensation acts do not compel insurance on the part of the employer, although California, while it does not make insurance compulsory, provides that the employer may insure in a mutual company or stock company of the state insurance fund. Ohio, Washington, Oregon, Nevada and West Virginia have a state fund differing in detail in the matter of its use. In Massachusetts and Texas the employers must insure in a mutual company formed by law or in any other mutual company or liability company authorized by the laws of the state. Michigan and New York practically accept from the employers all four methods of insurance, except that in New York the commission may require of the employer a deposit of securities to insure his solvency. Connecticut and Iowa have no state fund, but also require security from the employer or permit insurance in a mutual or stock company.

The cost of compensation acts compared with the cost under the liability laws to the same employers either in form of insurance payment or payments direct to the employees, given by 526 employers in ten different states is, that under the compensation act a total of $1,215,690.50 has been paid as compared with a similar period under the liability laws of $730,857.24. At first, in the early years of the compensation laws, the cost is greater than under the old liability laws, and there is no question but that the injured workers receive more, and they receive it in more just and even amounts, than under the old liability law. In 1913 the Massachusetts Industrial Accident Board published a comparison between the amounts paid beneficiaries of employees who were not under the compensation acts and the amounts such beneficiaries would have received had the employees been under the compensation act. The board found that such beneficiaries received only $60,322.40, an average amount in each case of $701.42, whereas had the employees been under the compensation act the beneficiaries would have received $164,488.00, an average of $1,900.57 in each case. The compensation laws finally bring about a reduction in the number of accidents through an increase of preventive methods and a lessening in the number of severe accidents.

Table 1 gives an excellent description of how the compensation law compensates and is taken from the 1914 report of the Workmen's Compensation Commission of Missouri.

TABLE 1.—WORKING OF COMPENSATION LAW

Approximate loss of 50,000 injuries per year..		
Borne by employer:		
Approximate medical aid in all cases.....	$258,500.00	$2,800,000.00
Two thirds of the approximate wage loss for disabilities lasting over two weeks.....	916,006.67	
Approximately 200 deaths at an average of $4,000 each	800,000.00	
Total borne by employer.....		$1,974,506.67
Difference borne by employee.....		$ 825,493.33
Estimated as follows:		
Approximate wage loss of two weeks waiting period	$367,490.00	
One third of approximate wage loss for disabilities lasting over two weeks.....	458,003.33	
	$825,493.33	

A member of the Massachusetts Industrial Accident Board is quoted as saying: "By the reduction in the number of accidents and a lessening of their severity, hundreds of thousands of dollars in insurance premiums, now paid because of present conditions, will be saved; just as fire insurance premiums are most materially reduced for those who take steps to safeguard against fire. Nearly one half of the money now spent for workmen's compensation insurance can be saved to the employers, while the wage earners will save the loss of the half wages they now lose when under compensation, for they will not be injured and will therefore keep at work continuously instead of suffering pain personally and their families privation, if not actual want. Through this saving, other and material benefits will accrue to the employees. The present source of social waste runs into enormous figures. It is estimated by those who have made a study of industrial accidents that 50 per cent. or more of such accidents are preventable; 25 per cent., judging from experience in those great workshops

where this matter has been given most serious attention, can be prevented by the adoption of safety devices, and from 25 to 40 per cent. can be eliminated by educational work, instilling the safety idea into the minds of the workers and, in fact, of all the people in this commonwealth."

DIGEST OF PROVISIONS IN STATE LAWS

The following is a digest in detail of the various medical and surgical provisions of the state laws:

ARIZONA: No medical and surgical aid, except that personal representative is authorized in case of death to pay out of the compensation fund for reasonable medical attendance and burial of the decedent.

CALIFORNIA: Employer must furnish reasonable medical, surgical and hospital treatment for a period not exceeding ninety days. If the employer neglects or refuses reasonably so to do, he will be liable for the reasonable expenses incurred by the employee in providing the same.

CONNECTICUT: Employer must furnish reasonable medical and surgical aid during the thirty days immediately following the injury, but the injured employee may, at his option, refuse such aid and provide the same at his own expense; or if the employer fails to provide such aid promptly, the injured employee may do so at the expense of the employer. If injured employee refuses to accept or fails to provide such medical and surgical aid, all rights of compensation are suspended during such refusal and failure.

ILLINOIS: The employer shall provide necessary first aid, medical, surgical and hospital services for a period not longer than eight weeks, not to exceed, however, more than $200. The employee may elect to secure his own physician, surgical or hospital services at his own expense.

IOWA: At any time during the first two weeks of incapacity an employer that is requested by the workman or any one for him, or if so ordered by the Iowa industrial commission, shall furnish reasonable surgical, medical and hospital services, the amount not to exceed $100.

KANSAS: No medical and surgical aid, except that in case of death without dependents, the employer must pay reasonable expense for medical attendance and burial services, not to exceed in value $100.

MARYLAND: Such medical, surgical or other attendance or treatment, nurse and hospital services, medicines, crutches and apparatus as may be required by the commission in an amount not to exceed the sum of $150. If the employer fail to provide the same, the injured employee may do so at the expense of the employer. . . . In case death ensues from the injury within two years, reasonable funeral expenses shall be allowed not to exceed the sum of $75.

MASSACHUSETTS: Reasonable medical and hospital services, and medicines, when needed, during the first two weeks after injury.

MICHIGAN: During three weeks after injury, employer shall furnish or cause to be furnished reasonable medical and hospital services and medicines.

MINNESOTA: Employer must furnish such medical and surgical treatment and supplies, as may reasonably be required during a maximum period of ninety days. If employer is unable or refuses to furnish such services, he will be liable up to a maximum of $100. If necessary, court may require employer to furnish additional service after the ninety days' period, with a total maximum of $200.

MISSOURI: Practically makes the liability of the employer for medical aid unlimited, and in case he fails to furnish or tender the same, the employee or some one for him may make the employer liable therefor; allows medical aid in all cases and in addition to all other compensation; allows the employer in the first instance to select the physician; requires the employer to pay for hospital service rendered by a public institution; limits all charges for medical aid to such as are reasonable.

NEBRASKA: Employer must furnish reasonable medical aid during the first twenty-one days after disability, but not to exceed the amount of $200. Employer relieved from paying compensation for any aggravation of injury due to employee's refusal to accept medical aid.

NEVADA: No medical and surgical aid.

NEW HAMPSHIRE: No medical and surgical aid except that, in case of death without dependents, employer must pay for medical services and expenses of burial, the amount not to exceed $100.

NEW JERSEY: During the first two weeks after the injury, the employer shall furnish reasonable medical and hospital services and medicines, as and when needed, not to exceed $50 in value, unless the employee refuses to allow them to be furnished by the employer.

NEW YORK: The employer shall promptly provide for the injured employee such medical, surgical or other attendance, or nurse, hospital services, medicines, crutches and apparatus as may be required, or be requested by the employee within sixty days after the injury. If the employer fails to provide the same, the injured employee may do so at the expense of the employer. All fees and other charges for such treatments and services shall be subject to regulation by the commission.

OHIO: The state liability board of awards shall disburse and pay from the state insurance fund such amounts for medical, nurse and hospital services and medicines as it may deem proper, not to exceed the sum of $200. The board shall have full power to adopt rules and regulations with respect to furnishing medical, nurse and hospital services and medicines to injured employees entitled thereto.

OREGON: The commission shall have authority to provide, under uniform rules and regulations, first aid to workmen who are entitled to benefits hereunder, together with medical and surgical attendance and hospital accommodations, the amount not to exceed $250 in any one case.

RHODE ISLAND: During the first two weeks of injury, employer shall furnish reasonable medical and hospital services and medicines when they are needed; amount of the charges for such services to be fixed, in case of failure to agree, by the superior court.

TEXAS: During the first week of injury, the association shall furnish reasonable medical and surgical aid when needed, and if it does not furnish these immediately as and when needed, it shall repay all sums reasonably paid or incurred for same, provided that reasonable notice of injury be given to the association.

WASHINGTON: No medical aid.

WEST VIRGINIA: The commission shall pay for such medical and hospital services as it may deem proper, with a maximum of $150, except where injured employee is entitled to the same through some contract connected with his employment or otherwise.

WISCONSIN: Employer must furnish such medical aid, including crutches and apparatus, as required at time of injury and thereafter during a period of not to exceed ninety days; in case of employer's neglect or refusal, he shall be liable for reasonable expense therefor incurred by employee.

Table 2, from the second annual report of the Industrial Commission of Wisconsin, brings together in a comparative way the value of various compensations in the different states and the maximum amount of medical attendance.

RELATION OF ACCIDENTS TO THE INDUSTRIES

Before discussing the relation of the medical profession in Europe and the United States to these social laws, it is important that we should grasp in some measure the relation of industrial accidents to the industries, that we may appreciate what is the human wastage in industrial work. In the September, 1908, number of the *Bulletin of the Bureau of Labor* of the United States, Frederick L. Hoffman published some statistics on industrial accidents. Taking the total population of the United States at the present day as one hundred millions and figuring by the ratios given by Hoffman, there are about thirty millions occupied males of 15 years of age or over. Using still further the ratios of Hoffman, it is fair to conclude that there are somewhere between 35,000 and 40,000 fatal accidents a year, and Hoffman believes it is a safe estimate that half of the accidents are the immediate result of dangerous industries or trades. This is considered a very conservative estimate. Rubinow gives the statistics of eleven European countries with two million industrial accidents, and of these 22,000 were fatal.

In considering all statistics between different countries, one must always realize that comparisons cannot be too minutely followed, as, for instance, in the European countries the industries vary widely, the ratio of accidents in

different industries differ widely, and the statistics of Germany, in which country the greatest number of accidents in the foregoing statistics occurred, agricultural laborers are included and are not included in any other country. Moreover, the industrial accidents of the United States are calculated on the ratio of the registration area, which omits wide areas in the West where the industries with a high rate of accidents, as mining and lumbering, predominate. Industries presenting the greatest percentage of accidental danger are well known. Mining, metallurgy, metal work, building and construction, and transportation in France claimed about two thirds of all industrial accidents. These are exactly the industries which are especially developed in the United States. In France these industrial activities claimed about one and one-half millions out of a total of ten million wage earners, and in the United States these industries claimed about one fourth of the total male wage earners, or about seven and one-half millions.

In Minnesota a careful investigation ending July 31, 1910, recorded 10,463 accidents and 342 fatal ones, or 30 accidents to each fatality; in Massachusetts, from July 1, 1912, to June 30, 1913, there were 90,168 accidents, 474 of which were fatal, or one to every 190; in Wisconsin, out of 7,186 accidents reported in 1906, there were 401 fatal accidents, or 36 accidents for each fatality. It is evident that no accurate statement can be made, but there is no doubt from these figures that a very conservative estimate would be of about 20,000 fatal industrial accidents a year out of certainly two million accidents.

It is interesting to note that there are certain laws seeming to govern the causation of these accidents, that the increase in their number occurs in ratio to the fatigue of the worker, and most accidents occur between 10 and 11 in the morning and between 3 and 4 in the afternoon, there being a very marked fall at the noontide hour from 12 to 1. Of course, this fall is influenced by the diminished number working, but there is no question of the increased ratio of accidents occurring as fatigue increases. This is also shown and confirmed by the fact that women, who are physically weaker and have less endurance than men, show a higher rate of increase both toward the noon hour and the end of the day. There is also a marked increase of industrial accidents toward the end of the week, and this again is more pronounced among women than among men.

It is interesting to note, also, where statistics place the responsibility for accidents. The German statistics give Table 3.

TABLE 3.—RESPONSIBILITY FOR ACCIDENTS IN GERMANY

Cause	Percentage of all accidents due to cause specified		
	1887	1897	1907
Fault of employer	20.47	17.30	12.06
Fault of injured employee	26.56	29.74	41.26
Fault of both employer and employee	4.61	4.83	0.91
Fault of fellow employee	3.40	5.31	5.94
General hazard of industry	44.96	41.55	37.65
Other causes (chance, etc.)	.....	1.27	2.18

Continuing these still further, the accidents due to the employers were as given in Table 4.

TABLE 4.—CAUSES OF ACCIDENTS IN GERMANY

Accidents due to	1887 Per cent.	1897 Per cent.	1907 Per cent.
Defective apparatus	7.28	7.15	5.40
Absence of safety appliances	11.03	7.82	4.69
Absence of proper regulations	2.16	1.84	1.97
	20.47	16.81	12.06

Table 5 compares these with the fault of the employee.

TABLE 5.—ACCIDENTS IN GERMANY DUE TO FAULT OF EMPLOYEE

Accidents due to	1887 Per cent.	1897 Per cent.	1907 Per cent.
Lack of skill, inattention, etc.	17.09	20.85	28.96
Failure to use existing protective appliances	1.82	1.92	2.22
Actions contrary to existing regulations	5.35	5.44	9.48
Actions of horseplay, mischief, intoxication	2.05	1.10	0.55
Unsuitable clothing (aprons, neckties, etc.)	.25	.49	.05
	26.56	29.89	41.26

TABLE 2.—VALUE OF VARIOUS COMPENSATIONS IN DIFFERENT STATES

State	Death	Permanent Total Disability	Temporary Total Disability 12 Weeks	Medical Attendance, Maximum	
	Amount	*Amount*	*Amount* †	*No. days*	*Amount*
Wisconsin	$2,194	$3,250	$90	90	...
Arizona	2,400*	3,330	69	..	...
California	1,682	5,045	75	90	...
Connecticut	1,814	2,700	58	30	...
Illinois	2,137	4,745	63	56	...
Iowa	1,691	2,065	58	..	...
Kansas	1,714	2,700	66	14	...
Maryland	1,800*	4,579	63	..	$150
Massachusetts	1,591	2,511	58	14	...
Michigan	1,591	2,511	69	21	...
Minnesota	1,908	2,065	60	90	...
Nebraska	1,978	4,958	72	21	...
Nevada	2,339	2,214	72	..	...
New Hampshire	1,800*	1,644	60	..	...
New Jersey	1,820	2,137	60	14	...
New York	2,400*	2,210	60	..	...
Ohio	2,350	6,099	88	..	250
Oregon	7,672	6,760	74	..	250
Rhode Island	1,591	2,502	58	14	...
Texas	2,343	2,576	79	7	...
Washington	6,191	5,610	86	..	...
West Virginia	5,356	4,013	59	..	150
Average	$2,446	$3,373	$81	..	...

* Lump sum payments.
† Present worths of weekly or monthly payments. Where payments continue till death, present worths are based on expectancy of life. For total permanent disability two thirds of the normal life is assumed.

Comparing some American statistics with these, Table 6 is taken from Miss Eastman's investigation in Pittsburgh, which gives responsibility for 377 industrial accidents resulting in death.

TABLE 6.—CAUSES OF 377 FATAL INDUSTRIAL ACCIDENTS IN PITTSBURGH

Causes Attributed	Number of Accidents	Per cent. of Total
Cause attributed solely to employers or those who represent them in positions of authority	113	29.97
Causes attributed solely to those killed or their fellow workmen	105	27.85
Cause attributed to both the foregoing classes	60	15.91
Cause attributed to neither of the foregoing classes	99	26.27
	377	100.00

These statistics are interesting as showing the uncontrollable human elements of negligence, carelessness and inexperience on the part of employer and employee which, added to the ratio of physical fatigue on the part of the worker, produce a steady ratio of human wastage, the sum total of which in the United States reaches enormous figures.

TABLE 7.—AUSTRIAN STATISTICS

Result of Injury	No.	Per cent.
Loss of left arm	248	.26
Loss of right arm	360	.38
Fracture of arm	527	.55
Fracture of forearm	2,214	2.32
Other injuries to arm	3,539	3.72
All injuries to arm	6,888	7.23
Loss of left hand	186	.20
Loss of right hand	231	.24
Fractures of bone of hand	352	.37
Other injuries of hand	5,286	5.55
All injuries to hand	6,055	6.36
Loss of one finger, right hand	675	.71
Loss of one finger, left hand	593	.62
Loss of two or more fingers, right hand	947	.99
Loss of two or more fingers, left hand	922	.97
Loss of part of one finger, right hand	899	.94
Loss of part of one finger, left hand	859	.90
Stiffness of fingers	742	.78
Other injuries to fingers	25,721	27.00
Total injuries to fingers	31,358	32.91
Total injuries to upper extremity	44,301	46.50
Loss of one leg	537	.56
Loss of both legs	24	.03
Fracture of upper leg	857	.90
Fracture of lower leg	3,772	3.96
Injuries of arch of foot	1,808	1.90
Other injuries of leg or foot	15,170	15.92
All injuries to leg or foot	22,168	23.27
Loss of toes	210	.22
Injuries to toes	3,054	3.20
Total injuries to toes	3,264	3.42
Total injuries to lower extremity	25,432	26.69
Loss or injury to arm and leg	580	.61
Total injuries to upper or lower extremity	70,313	73.80
Loss of one eye	1,718	1.80
Loss of one eye and injury to the other	228	.24
Loss of both eyes	51	.05
Injury to eye	3,191	3.35
Injury to both eyes	224	.24
Total injuries to eyes	5,412	5.68
Injury to head	3,365	3.53
Injury to shoulder	1,514	1.59
Fracture of collar bone	742	.78
Fracture of ribs	1,415	1.49
Injuries to trunk	4,355	4.57
Ruptured	860	.90
Injuries to several parts of body	4,537	4.76
Internal injuries	1,155	1.21
Concussion of brain	502	.53
Miscellaneous	510	.55
Traumatic neurosis	204	.21
Suffocation	219	.23
Drowning	166	.17
Injuries to head and trunk	19,544	20.52
	95,269	100.00

SUMMARY OF SERIOUS ACCIDENTS

Loss of:	No.	Per cent.
Arm	608	.64
Hand	417	.44
Fingers	4,895	5.14
Leg	561	.59
Toes	210	.22
Eyes	1,997	2.10
Total loss of parts	8,688	9.13

Fractures:	No.	Per cent.
Arm and forearm	2,741	2.87
Hand	352	.37
Leg	4,629	4.86
Collar bone	742	.78
Ribs	1,415	1.49
Total fracture	9,879	10.37

From the medical point of view it is interesting to note what are the results of injuries in the nonfatal group. The statistics of Austria from 1897 to 1901 are the most accurately prepared statistics that are to be found (Table 7).

Looking at it from another point of view, as to the results of injuries, the disability caused and the proportion of accidents causing the disability, is interesting. Thus in 95,269 accidents, there were 3,071 fatal ones; there were 91,398 nonfatal ones and there were 8,688 accidents which produced the total loss of some part of the human body, that is, of arms, or hands, or fingers, or legs, or toes, or eyes. But there were 36,911 which resulted in permanent disability. Table 8 shows this in detail and shows the astonishing result that 34 per cent. of all injuries, without loss of parts, are permanent.

TABLE 8.—PERMANENT DISABILITIES ACCORDING TO AUSTRIAN STATISTICS

Injuries	Total Number of Cases	Cases Resulting in Permanent Disability	Per Cent.
Fracture of arm	527	290	55
Fracture of forearm	2,114	1,094	51
Other injuries of arm	3,539	1,189	34
Fracture of bones of hand	352	152	43
Other injuries of hands	5,286	1,306	24
Stiffness of fingers	742	709	96
Other injuries of fingers	25,721	7,143	28
Fracture of leg	4,629	2,910	63
Injury of arch of foot	1,808	792	44
Other injuries of leg or foot	15,170	3,384	22
Injury to eyes	3,415	2,174	64
Injuries to head	3,365	1,183	35
Injuries to shoulder	1,514	819	54
Fracture of collar bone	742	372	50
Fracture of ribs	1,415	460	33
Injuries to trunk	4,355	1,502	34
Ruptures, etc.	860	599	70
Injuries to several parts	4,537	1,507	33
Internal injuries	1,155	232	20
Concussion of brain	502	186	37
Miscellaneous	527	184	35
Traumatic neurosis	204	173	85
	82,479	28,360	34

These may seem astonishing figures, but from the report of the Industrial Insurance Department of the state of Washington, it is evident that while the fractures amounted to only 10 per cent. of the injuries, they caused 27 per cent. of the total compensation, and 20 per cent. of all fractures still suffered some permanent partial disability. It has been further proved by statistics in this country that after the age of 35 the wage earner who suffers from a fractured femur does not go back to the full vigor of his previous working ability.* We shall see that these statistics are useful in comparing and in judging of the fee schedules of insurance companies which are offered to medical men in this country to sign.

AMPUTATIONS AND FRACTURES

In all these fee schedules the amputation is made the main operation, compared to the fracture, and is paid a higher rate of compensation to the medical man, when in reality, while it produces an evident loss of part and an evident disability which is permanent, the fracture requires greater skill, greater care and greater responsibility in

* Walker, J. B.: Femur Fractures, Amer. Jour. Surg., December, 1914.

TABLE 9.—DISTRIBUTION OF ACCIDENTS; KIND AND DEGREE OF DISABILITY

Country and Year	Total Number of Accidents	Fatal Accidents		Permanent Disability				Temporary Disability	
				Total		Partial			
		Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
Austria, 1906*	26,639	885	3.32	403	1.51	9,793	36.76	15,558	58.41
Belgium, 1908	156,499	510	.33	†	†	2,523	1.61	153,466	98.06
France, 1908	404,318	1,997	.49	†	†	5,619	1.39	391,319	98.12
Germany, 1908*	142,965	9,856	6.26	1,160	.81	57,410	40.11	74,539	52.77
Italy, 1902	57,617	430	.70	32	.06	2,716	4.71	54,439	94.53
Russia, 1906	136,049	995	.73	114	.08	16,525	12.14	115,403	87.05
Spain, 1907	30,472	207	.68	19	.06	80	.27	30,164	98.25
Sweden, 1906	15,041	249	1.66	†	†	1,228	8.16	13,444	89.38

* Accidents compensated only. † Not separately stated: included with partial disability.

caring for it, and should be considered the injury possessing the greater responsibility and the greater chance of returning injured workmen to a greater degree of usefulness. Table 9 shows the distribution of accidents occurring and the kind and degree of disability.

DURATION OF DISABILITY

The statistics in Table 10 show the duration of injuries resulting in temporary disability in Italy.

TABLE 10.—DURATION OF INJURIES RESULTING IN TEMPORARY DISABILITY IN ITALY

Accidents and Disability	Number	Per Cent.
Total number of accidents	57,617	100.00
Accidents resulting in death	430	.75
Permanent disability	2,748	4.78
Temporary disability	54,439	94.43
Lasting 6 to 10 days	14,588	25.32
Lasting 11 to 15 days	13,078	22.70
Lasting 16 to 20 days	8,442	14.65
Lasting 21 to 30 days	8,707	15.11
Lasting 31 to 60 days	7,356	12.77
Over 60 days	2,268	3.93

It is noticeable that 48 per cent. of injuries do not last over fifteen days, after all injuries lasting less than five days have been omitted; another 30 per cent. do not extend beyond thirty days, and the remaining 20 per cent. present the serious economic problems.

Table 11, from Russia, is equally interesting. Again, 48 per cent. do not last over fifteen days and 18 per cent. more over twenty-eight days.

TABLE 11.—RUSSIAN STATISTICS

Accidents and Disability	Number	Per Cent.
Total number of accidents in industry	57,196	100.00
Accidents resulting in:		
Death	367	.64
Permanent disability	10,098	17.66
Temporary disability	46,731	82.70
Lasting 7 days and under	13,481	23.57
Lasting 8 to 14 days	14,127	24.70
Lasting 15 to 21 days	6,922	12.10
Lasting 21 to 28 days	3,919	6.85
Lasting 29 to 63 days	6,942	11.35
Lasting 64 to 91 days	1,060	1.85
Lasting over 91 days	730	1.28

In 90,168 accidents recorded for Massachusetts from July 1, 1912 to June 30, 1913, 474 were fatal. "Of the total number, 68,586, or 76 per cent., were for injuries which incapacitated the employee for two weeks or less, and of these, 36,901, or 41 per cent, of the total accidents reported, were for injuries which incapacitated the employee for one day only.

"There were 10,568, or 12 per cent., for injuries which incapacitated the employee from two to four weeks.

"There were 6,638, or 7 per cent., for injuries which incapacitated the employee from four to eight weeks.

"There were 2,355, or 3 per cent., for injuries which incapacitated the employee from eight to thirteen weeks.

"There were 1,275, or 1 per cent., for injuries which incapacitated the employee from thirteen weeks to six months.

"There were 272, or 0.3 per cent., for injuries which incapacitated the employee for over six months."

Rubinow sums up the accidents in the United States that on an estimate of two million accidents in a year, even if only 20 per cent. of the accidents are more or less serious, this would mean 400,000 serious cases. On the basis of that estimate, we may assume, until all statistics make such assumption unnecessary, that there occur in the United States annually about 30,000 fatal industrial accidents, about 200,000 accidents leading to permanent disability, of which nearly 60,000 are cases of actual loss of part of body, and about 100,000 resulting in disability of under 25 per cent. and another 50,000 in disability of from 25 to 50 per cent., and the remainder causing disability of over 50 per cent. In addition, about 170,000 accidents are serious in that the disability lasts over three months and eventually they result in complete recovery, especially if economic conditions favor it.

RISK OF ACCIDENT AND SICKNESS

Industrial accidents as an economic risk to the workman mean that from 5 to 6 per cent. of those engaged will suffer each year from some form of accident, slight or severe. On the other hand, sickness affects annually from 40 to 50 per cent. of the wage earners. These figures are certainly very striking. In only a few countries are we able to gather accurate ideas of the general morbidity of disease among the working classes and to ascertain from these statistics the occurrence of the disease at the different ages of life, the average liability of disease in each trade and the average length of illness with each person afflicted.

TABLE 12.—INFLUENCE OF AGE AND SEX

Age	Cases of Sickness Per 100 Persons Per Annum		Days of Disability (Per Person) Per Annum	
	Male	Female	Male	Female
15	42.9	42.2	5.5	6.4
20	43.8	38.0	6.1	6.4
25	44.0	38.0	6.3	6.9
30	45.6	41.3	6.8	7.9
35	47.4	44.3	7.6	9.0
40	49.2	46.3	8.4	9.7
45	52.9	49.5	9.6	10.7
50	56.2	50.7	11.0	11.5
55	58.0	51.6	12.3	12.0
60	63.6	52.6	15.1	13.9
65	67.7	56.3	19.4	16.3
70	70.8	61.6	23.9	21.5
75	77.7	65.3	31.8	24.5
80	75.3	67.6	37.7	44.7
All ages	47.4	41.9	7.8	7.9

TABLE 13.—INFLUENCE OF SEX AND OCCUPATION

Industries	Cases of Sickness per 100 Persons per Annum	Sick Days per 1 Person per Annum
Males		
Stone working	58.2	17.5
Cement and lime	65.8	13.6
Building trades	51.7	11.7
Metal working	49.6	11.1
Printing, publishing, etc.	32.4	11.1
Glass, porcelain and pottery	44.5	10.8
Paper	39.4	10.9
Chemical industry	49.4	10.7
Leather and similar products	37.7	10.7
Agriculture and forestry	46.9	10.2
Transportation	44.8	9.8
Food and drink	43.4	9.6
Wood and cut materials	38.8	9.2
Fats, oils, varnishes, etc.	41.5	9.1
Gas works	59.9	9.0
Textiles	40.5	8.9
Hotels and restaurants	32.5	8.8
Clothing and cleaning	32.2	8.6
Musical and scientific instruments	31.7	8.1
Hides, leather, etc.	36.0	7.7
Engineers and firemen	35.3	7.4
Office employees	21.6	5.8
Females		
Textiles	69.9	19.3
Paper	55.2	16.3
Printing and publishing	50.4	15.8
Agriculture and forestry	60.8	14.2
Clothing and cleaning	41.0	12.4
Hotels and restaurants	40.9	12.2
Office employees	21.4	7.0

Again, the statistics in Austria and Germany are the most accurate. In Austria, for instance, there were 3,044,129 persons included in the sick funds in 1907, and in the same year 53.3 per cent. of these became ill, showing seventeen days for each case of sickness. In Germany there were, in 1908, 5,206,148 cases of sickness among 12,324,094 persons insured, giving 103,894,299 days of illness and averaging twenty days per case of sickness. Tables 12 and 13 show clearly the influence of age and sex in the incidence of sickness in these sick funds, the first taken from the Austrian statistics and the second from the German statistics of Leipzig.

It is noticeable from Table 12 that fewer women are sick, but each woman averages longer, than the men at the same age, until the age of 50 years is reached; then after this age more men are sick and men average a longer time for each illness.

It is evident, therefore, that in considering any statistics regarding illness, one must consider the variation according to sex, age and occupation. But taking these factors into

account, it is evident that certain trades may be rightfully charged with an increased amount of sickness, outside of its accidents, among its wage earners.

In the "Memorial of Industrial Diseases" it is estimated that the total loss to the American working classes due to illness amounts to $366,000,000 of lost wages annually and $285,000,000 for medical aid, etc., making a total of $651,000,000 for the 33,500,000 wage earners. Against such an economic loss it is small wonder that under those governments in which universal compulsory system of insurance is possible, sickness should be treated as a national calamity to be guarded against by the economic expedient of insurance giving a relatively large return for the smallest outlay from that individual, thus protecting the workman against a genuine calamity. Unquestionably, serious illness among the working classes in this country is a real calamity, as it is the most frequent cause by which their poverty is changed into destitution.

MALINGERING

No state or national insurance against accident or sickness can be conceived in which the human element of malingering will not appear. Under the old common law of accidents, the amount of deliberate fraud to obtain large verdicts from the jury by simulating severe injuries is common knowledge. Under the compensation laws this is bound to increase unless a very firm stand is taken on the part of the authorities with the hearty cooperation of the medical men. If the dishonesty of the malingerer is assisted by the dishonest attestation of the medical attendant, this evil practice is bound to grow to the extent of becoming a widespread state or national scandal. Malingering has increased under the compensation acts of England and is being steadily fought in that country. According to Dr. Ferdinand Friedensburg, the retired president of the Imperial Insurance Office of Germany, the amount of malingering and the extent to which the German workman has been debauched by the lax application of the insurance laws have become an increasingly disgraceful spectacle. Malingering must be differentiated clearly from hysteria, for the first is the deliberate fraud of simulating disease for the sake of obtaining greater compensation by cheating, and the latter is but the expression of the loss of the normal mental or nervous equilibrium produced by intense mental or physical strain, which may, in itself, be sufficient cause for full compensation.

Malingering is a grave problem, for each successful case stimulates further increase of the evil. The mainstay against its growth is a fearless and honest antagonism of the medical profession, and if members of the medical profession should weakly yield to the temptation of furthering this evil practice, they would deserve more severe condemnation than the malingerer himself. The methods employed to prevent malingering have been, in many societies, to employ members of the societies themselves as inspectors who visit at unexpected, irregular times all patients sick or injured and report regularly to the inspecting department of that section. Another method is the transferrence for hospital observation of men suspected of malingering. But whatever methods are taken to circumvent this evil, the final responsibility for its detection and eradication must rest largely with the medical profession and this responsibility must be realized by the profession at large.

PROVISIONS FOR MEDICAL AID

In most countries in Europe, provision for medical aid seems to be fairly generous. In Germany, the minimum requirements are that the fund furnish medical and surgical attendance, free medicine for twenty-six weeks, and such therapeutic supplies as eye-glasses, trusses, bandages, etc. Whenever it is deemed necessary, in severe cases, the fund is to substitute hospital treatment for the home treatment. Many funds have extended their benefits far beyond what the law requires, it being realized that the best of medical aid and medical attention brings a tremendously increased return in rapidity of recovery and economy in compensation and further medical aid. One Bavarian Industries Employers' Association established to its own satisfaction that the expenditure of approximately $8,000 in prompt and expert medical attention to its injured workmen saved approximately $160,000 in compensation expenses.

Most of the countries in Europe, including Great Britain, are equally generous to the workmen in their provision for medical and surgical aid. Russia, however, differs materially from the other countries. Medical aid to the workmen had been in vogue in that country many years before workman's compensation; in fact, it had been established in 1866 for manufacturers and in 1886 for mining, and had always been considered there as a direct responsibility of the employer. The most recent laws in Russia on workman's compensation have not disturbed this old relationship. Hospitals, dispensaries and emergency wards, and even maternity wards and contagious disease wards, are supported entirely at the expense of the employer or by private agreements made between him and private or public hospitals. Moreover, the Zemstvos, the local self-governing boards in the rural districts of Russia, have established a socialized scheme of medicine which seems to be highly perfected and working in an equally satisfactory manner.

STRUGGLE OF THE EUROPEAN PROFESSION

In Europe, the struggle of physicians to obtain their economic rights in dealing with the various societies through which the practical application of the insurance laws took place has been evident from the beginning. In Germany the civil medical practitioners are officially grouped into local associations. These associations perform certain legal functions and exercise certain discipline through medical councils. The German physicians first tried, through these official organizations, to regulate their connections with the insurance societies. The government, however, forbade this as being outside the province of the councils. In Austria and France the government also forbade, for similar reasons, similar action in their official medical councils. In Germany, therefore, physicians organized themselves outside of the official councils, and a society, the *Aerztevereinsbund*, the physicians' confederation, corresponding roughly with the British Medical Association, was formed in 1873. In 1900 another society, commonly known as the *Leipziger Verband*, the Leipzig League, was formed for the special purpose of protection against the sickness insurance societies. In 1903 these two societies amalgamated and formed an aggressive organization to protect their interests. The value of medical organization is well shown in the struggle of the German physicians in these economic questions. Without these organizations the physicians would, as individuals, be entirely helpless against the strongly entrenched lay boards of the sickness societies. Table 14 is of interest as showing in figures these efforts and their results.

TABLE 14.—CONFLICTS BETWEEN PHYSICIANS AND SICKNESS SOCIETIES

Total number of conflicts	1,022
Decided in favor of the doctors	921
In favor of sickness societies (for the time being)	11
Still pending, May 1, 1911	90

When the struggle has reached a deadlock, the physicians have refused to treat members of the insurance societies as such and insisted on treating each individual patient as a private patient. This has caused the societies to import other physicians into the field in various cities; but this expedient has not always been successful because the type of physician brought in has not been so good as the local physician who had formerly done work for the societies, and frequently the societies have been unable to obtain sufficient physicians to do the work. Members of the society, therefore, complained to the authorities that the insurance societies were not giving adequate service; hence there has been interference by the authorities in the quarrel and they have frequently forced the societies to make peace with physicians and give the workmen the adequate service which the law provides.

FREE CHOICE OF PHYSICIAN

In general, the most intense struggle has occurred over the question of free choice of physician by the patient. This was granted in Leipzig and in some other cities; but in Dresden, where the societies seem to have the upper hand, the physicians are in direct contract to the insurance societies. It is claimed that the absolute free choice of physicians brings the amount of medical remuneration up to such proportion of the whole funds of the society that it becomes unbearable. In some localities the remuneration is a compromise between contract and absolute free choice, that is, it is done on the so-called capitation principle, the insurance societies paying a lump sum to some organized medical body for service of its members. The physicians, on the other hand, charge so much per service per patient and hand in their accounts to the medical society. Each physician is paid the percentage of the work due him which the funds allow, that is, if, for instance, $60,000 is paid to the medical society and the total sum of the work of all the physicians amounts to $100,000, each physician is paid six tenths of what he would receive if paid in full.

DEVELOPMENTS IN GERMANY

In 1903, when the new insurance law was passed in Germany, physicians endeavored to obtain in the law many of the rights for which they had struggled. They were but partially successful. Finally, ten years later, there was a general meeting of the profession in Berlin. The meeting was called by the president of the National Federation of Medical Societies, representing a membership of 21,207. It was agreed at this meeting that after Jan. 1, 1914, the insured population of Germany, except in Dresden, Hamburg and Berlin, should not receive any treatment from physicians through the insurance societies, unless these societies acceded to the demands of the physicians or unless the government saw fit to intervene. It was definitely stated that there was no intention on the part of the physicians to refuse medical services to the members of insurance societies as individual patients; the refusal was to treat them as members of the societies. The differences between the physicians and the societies had to do with the right of physicians to representation on the ministering boards of the insurance societies, the right of patients to choose physicians whom they prefer, the method of organization and administration of the medical boards, and other relations and contracts between physicians and insurance societies. The compensation asked for was a per capita fee of five marks per patient per year. This was not to include night visits, attendance on confinements or abortions, treatment of persons who have only a legal but no medical claim on sick benefits, or the treatment of families of insured persons. For all of these services, special arrangements were to be made.

The Federation of Insurance Societies in Germany refused to accede to the demands of the physicians, and refused to recognize the right of physicians to organize the profession for the protection of their individual rights. The organization of the physicians was so effective that only 150 physicians out of the 32,000 in the empire could be induced to accept positions under the insurance societies against the advice of the Leipzig League. Although in some instances the local governments endeavored to force the medical profession to accept the terms offered, it was without effect. Finally, at the last moment, the medical faculties of the German universities offered their services to bring about an understanding, and the so-called Berlin agreement was accepted. This provides for the formation of contract committees composed of representatives of the medical profession and of the insurance societies, free choice of physicians within the lists of the insurance societies, and arbitration courts composed of representatives of the physicians and insurance societies, leaving the remuneration as a local issue. The contracts under this agreement are to run for ten years.

ENGLAND'S PROBLEM

In England, previous to the passage of the national insurance act in 1912, private practice, lodge practice, contract practice and free dispensaries were all in existence. As insurance societies increased in number and power, they forced the physicians to treat large numbers of insured persons at absurdly small rates and refused to recognize the professional organizations in discussion of the conditions. The medical profession in England opposed bitterly the insurance act, and sacrified nearly one-half million dollars in so doing. They demanded as a minimum that the income limit of those insured should be $10 a week, that there should be free choice of doctor by patient, subject to consent of doctor to act administration of the medical and maternity benefits by local health committees and not by the friendly societies, adequate remuneration of the medical practitioners to be paid in the manner preferred by the majority of the medical profession in each district, and adequate representation of the medical profession on the administration bodies, central and local, set up for the working of the insurance scheme. The physicians did not obtain the limitation according to income which they sought. They did obtain freedom from control by the friendly societies, and they obtained, also, freedom of choice of the physician by the patient, this subject to the consent of the physician to act.

After about eighteen months, the effect of the insurance act in England has been that there were then on the panels or lists of physicians working under the act 20,000 of the 22,500 physicians in general practice in Great Britain. The government had distributed among them $20,500,000, an average of $1,150 for each physician. It is claimed that the insurance act has raised the level of the remuneration of the profession, that the average income of physicians has been increased by from $750 to $2,000 a year. It seems to be the general opinion that individual physicians may have suffered and received less remuneration under this act than they formerly received under some special form of contract work; but the general amount of moneys paid to the profession working among the industrial classes has greatly increased, and the average income of the physicians have evidently much increased. Conversely, this insurance act has been a good thing for the community, because previously there had been millions of people who had no medical attendance at all.

The act has shown one marked peculiarity in that it has entirely done away with the practicing pharmacist so called, the drug clerk who prescribes for customers, for the workmen can obtain a physician and drugs now for their insurance, which is cheaper than it is to go and buy drugs from the pharmacist on his recommendation. It is asserted, however, that in some large industrial communities, now that patients obtain their medical attendance under this law, there is vastly more running to the doctor for minor complaints than formerly, and many physicians on the lists are so overworked by the undue number of patients that they cannot give proper attention to those who deserve it. On the figures here given, it would seem that 4 s. 1 d., or $1.02, is the average for each visit, and that the average medical cost to the insurance fund per patient per year has been 7s. 6d., or $1.87.

THE PLAN IN DENMARK

In Denmark the sickness societies often, as in Copenhagen, employ district medical officers, the insured having no choice of doctor unless there be a supplementary physician employed to assist in the work. The number of patients which each district medical officer may have under his care varies greatly, and in some instances it would seems as if the evil of too many patients for such a physician occurred under these circumstances.

There is one marked difference in Denmark insurance laws from those of Germany. In Germany, drugs are given as part of the medical and surgical benefit; in Denmark the societies pay only part of the cost of the ordinary medical and surgical requirements. Experience has shown, according to Gibbon, that when a member himself has to pay a part of the cost of requirements, the total expenditures on him, including that met by the member himself, is much less than when the society pays the whole cost. When the member has to pay part of the cost out of his own pocket,

he is not likely to obtain medicine unless he needs it, and when he gets it he will be careful to be economical in the use of it. A further advantage of requiring a member himself to pay some part of the cost of medical and surgical requirements is that this practice is a useful check on the unnecessary resort to the doctor. A member may have to pay out of his own pocket for part of the results of the visit and for part of the cost of the transaction, and he is therefore encouraged to think before he makes a call on the doctor's services. The Danes are stated not to be addicted to the use of "patent medicines," and in this they seem to be in advance of the Germans. The prevailing insurance scheme is thought to have played a part in promoting this healthy skepticism against quack medicines. In Germany, on the contrary, the expense for drugs has nearly doubled since 1888. In fact, there is no evidence that the insurance scheme of Germany has had any effect in reducing the credulity of human nature on the efficacy of drugs. It is said that in ordinary practice in Germany the sensible and educated patient is contented with a remedy that can be supplied in the household or with a temporary special diet, but the society patient wants more—above all he wants a prescription. He pays his contribution and will not rest satisfied if a doctor contents himself with simple remedies which do not have to be obtained from the pharmacies.

THE EFFECT IN THE UNITED STATES

The economic effect of these laws in the United States on the profession in general has been that the total income of the average surgeon doing work in industrial centers has been raised. Other surgeons who have had unusually good contract positions with certain large firms have suffered greatly in the reduction of their income, because in many instances they have previously received fees which under the compensation laws no commission or insurance company will pay per day or office visit for services to most workmen. Some laws contain the clause that charges for medical and surgical services shall be reasonable, others that they shall be limited to such charges as prevail in the same community for injured persons of a like standard of living. The term "reasonable fee" for such services would also be included under this last definition.

Let us consider first what is the standard of living of the industrial classes. What, therefore, are wages in the United States and how do they differ in one section from another? Is it possible to formulate any statement concerning the variation of wages in the different states of the Union? Scott Nearing[2] has endeavored to answer these questions and concludes as follows:

"The assertion that wages vary widely from section to section of the United States is commonly accepted and is frequently made an axiom of wage theories. In pursuance of this theory, wages in the South are much lower and wages in the West much higher than wages in any other part of the United States, yet a careful analysis of wage statistics shows that neither of these assumptions is wholly correct because there is no great wage variation from one section of the United States to another. Wages are not markedly lower in the South than in the North, though in the Far West they appear to be somewhat higher than in the eastern parts of the country."

After going over a mass of statistics he further states:

"There is no considerable wage variation per hour or per day between the different sections of the United States." This statement he thinks should be modified by accepting a slightly higher wage in most trades in the Western States. "Considering the wages in various cities, the mass of statistics brought together show that the material in this section justifies the conclusion that while a slight variation may occur from city to city, it is not reducible to any formulated rule but appears to depend upon the individual establishments rather than upon the size or location of the cities or towns. That there is a variation in wages from rural to urban centers of population is undoubtedly true, but this variation is probably due to the varying character of rural and urban industries as it does not appear in all the industries studied."

His final conclusion is as follows:

"Here, then, in brief, is an answer to that vital question, 'What are wages?' for the available sources of statistics, and by inference for neighboring localities, the annual earnings (unemployment of 20 per cent. deducted) of adult males and females employed east of the Rockies and north of the Mason and Dixon Line, are distributed over the wage scale thus:

Annual Earnings	Adult Males	Adult Females
Under $200	.....	1 to 5
Under 325	1 to 10	3 to 5
Under 500	1 to 2	9 to 10
Under 600	3 to 4	19 to 20
Under 800	9 to 10	.....

"Three quarters of the adult males and nineteen twentieths of the adult females actually earn less than $600 a year.

"It is evident that a study of classified wage statistics shows that half of the adult males working in the industrial sections of the United States receive less than 600 per year; three quarters are paid less than $750 annually; and less than one tenth earn $1,000 a year. . . . These figures are not accurate, however, since they are all gross figures, including unemployment. They should be reduced by, perhaps, 20 per cent., varying with the year, the location and the industry."

Such figures as these tend to explain the accuracy of the statement that voluntary contributions toward insurance and pensions on the part of the working classes occur only with a great minority of the individuals in these classes. This is evident in whatever countries voluntary insurance or pensions are in vogue. Mere living expenses of a man with a family on such wages must be such that unemployment soon changes his poverty into destitution. It explains further the well-known fact that previously in industrial accidents, when the physician has depended on the patient for his payment, the proportion of the fees obtained have been small indeed compared to the amount of work done for which he could justly claim recompense. Unless there was some agreement with the employer for the care of the industrial workers, physicians in the United States heretofore have given yearly in charity services that have aggregated millions of dollars. The compensation laws have brought this out very clearly, because even with the small fees paid for industrial work, the sum total of moneys paid for medical services is sufficient to cause comment in the various annual reports of the industrial boards and commissions. On a conservative estimate, one is justified in believing that fully one half of the work formerly done has been without remuneration.

In Massachusetts it has been found that after two weeks, when the Industrial Accident Board ceased to pay hospital fees for the injured workman, it was impossible to collect from patient or friends any further moneys for hospital services in from 50 to 99 per cent. of the patients. It is doubtful if the experience of physicians has varied much from this experience of the hospitals.

There is in this country a tendency to criticize the cost of medical service under the compensation laws in the various states. The following statistics show the cost abroad over a number of years and the relation of medical fees to other expenses and to total expenditure. In Germany, according to Gibbon, where for the first thirteen weeks the sickness societies care for both accidents and sickness, the Leipzig District Society shows that in 1888 the payment for medical services was 19 per cent. of the whole; in 1893, 20 per cent.; 1898, 21 per cent.; 1903, 21 per cent.; 1908, 22 per cent.; 1910, 21 per cent. It is interesting to note further that the average cost per member of medical services in all the German societies in 1888 was 58 cents; in 1893, 75 cents; in 1898, 83 cents; in 1903, $1; in 1908, $1.37; in 1910, $1.45. Gibbon mentions that the increase has been due partly to the extension of insurance to more and more members of the community. The doctor has had to press more strenuously for a living wage from his insurance patients, at the same time he has organized himself sufficiently well to press with a fair degree of success. Some part of the rise is remuneration has been nominal rather than real.

2. Nearing: Wages in the United States, New York, The Macmillan Company, 1908-1910.

In Denmark, the Table 15, quoted from Gibbon, gives the increased proportion of the total expenditure of sickness societies spent on medical services:

TABLE 15.—INCREASE OF EXPENDITURE OF SICKNESS SOCIETIES FOR MEDICAL SERVICE

	1893 %	1901-1906 %
Payments to doctors and for conveyance	27.7	35.4
Medical and surgical requirements	12.7	12.1
Hospital treatment	5.3	8.7
Money benefit	45.6	36.5
Administration	8.7	7.3
	100.	100.

The increase is due in a large measure to the increased number of persons insured, especially women and persons of small means. The percentage of total expenditure paid to doctors for treatment in 1909 by the societies in Copenhagen and Frederiksberg was 22 per cent.; by the societies in provincial towns, 33 per cent.; by the societies in the island rural districts, 48 per cent.; by the societies in the Jutland rural districts, 57 per cent.; average by all societies, 37 per cent. These statistics of Denmark are particularly interesting as they give the percentage of expenditure for medical service by societies located in cities, in provincial towns, and in country districts, made up of mainland and islands. Often in these districts there are large areas of land with very few physicians in which mileage estimates come in to a very large extent.

Tables 16 and 17, from Austria and Germany, from the twenty-fourth annual report of the Commissioner of Labor, are interesting.

TABLE 16.—RATIO OF VARIOUS BENEFITS TO TOTAL BENEFITS IN SICKNESS INSURANCE SOCIETIES, AUSTRIA, 1906

Societies	Per Cent.
Sick benefits	58.0
Medical assistance	18.3
Medicines	13.5
Hospital treatment	7.6
Funeral benefits	2.6
Total	100.

TABLE 17.—PERCENTAGE OF VARIOUS KINDS OF BENEFITS PAID, SICKNESS INSURANCE SOCIETIES, GERMANY, 1907

	Per Cent.
Physicians	23.11
Medicines	14.66
Sick benefit	44.33
Lying-in benefit	2.01
Death benefit	2.60
Hospital cost	13.21
Care of convalescents	.08
Total	100.

It is evident from these statistics that the percentage of medical expenses in any compensation scheme must be considered as a certain percentage of the total expenditures for such insurance. It is not just to claim that medical fees are too high and therefore must be reduced, because the fee of the doctor is overloaded with various charges and lumped under the name medical.

In an interesting discussion of medical fees in the report of the American Federation of Labor and National Civic Federation, various state commissions are quoted and the general tendency is to compare the cost of medical compensation with the cost of compensation amounts paid to the workman, as, for instance, in the second annual report of the Industrial Commission of Wisconsin it is stated that the cost of medical attendance, including hospital and nurse hire, is in excess of 50 per cent. of the indemnity. That is, for each dollar paid to the injured workman in compensation, an additional fifty cents is paid to the doctor for medical attendance, but it is also definitely stated that medical attendance includes hospital and nurse hire.

This report goes on further to say:

"According to statements made to us by different insurance companies, the amount paid by them for medical services as compared with the amount paid for compensation varies greatly, though the experience in some states has not been large enough to give a true average. For Massachusetts, one company reports that on a wide experience the amount for medical expense is 43.8 per cent. of the amount paid to workmen; another company gives 29 per cent. and still another 40 per cent. . . . In considering the medical cost and the variations between the different percentages here given, it must be borne in mind that it is possible that in some of the reports given this commission there have not been fully considered to be paid as compensation in the future for accidents extending beyond the year covered. If this be true, the proportion of medical cost during the first year may be greater than it will be in succeeding years. One company reported to this commission that the amount paid for medical services in Massachusetts was 29 per cent., in Illinois 38 per cent., and in New Jersey 20 per cent., and in discussing the question further said:

"'Although Massachusetts shows a percentage slightly larger than the figures of Illinois, the figures do not show that the medical expenses have been greater in Massachusetts—they are simply greater in relation to the scale of compensation paid to the workmen.'"

Attention is further drawn to the fact that many accidents under the laws with waiting periods must have medical attendance without other compensation. For instance, in Massachusetts, in 41,256 accidents, 26,609 required medical services without compensation, 10,827 required both medical services and compensation, and 3,820 received compensation without medical services. The average cost for medical attention per case, or average amount received per case treated, is, in Ohio, $9; Michigan, $2.11; New Jersey, $2.79; Illinois, $5.90; Massachusetts, $4.47. The usual method of comparing the cost of medical services as a ratio to the compensation of workmen is an unjust method of computation. It is perfectly true as a ratio between compensation to workmen and compensation to physician under the law, but it is a false basis of computing medical expenses. The only true ratio of medical expenses is the ratio of such expenses to the total expenditure under the compensation acts. It is difficult at present to obtain these figures for the various states, but in Massachusetts it seems to be 22 per cent. and in New York 28 per cent. of the total. All these discussions are careful to leave out all management expenses, all hospitals and nursing or medical and surgical requirements, and charge all the latter expenses to the surgeons' fees. There is a wide difference between medical fees and hospital fees in some states, as, for instance, in the municipal hospitals of New York City the authorities are permitted to charge for the hospital services and nurses to workmen under the compensation act of New York, but the surgeons serving in the municipal hospitals are forbidden to receive any fees for the care of these patients. Here, under this usual rating of medical services, the amount paid on the ratio of compensation to workmen may be considerable, but the actual fees of the medical profession are zero. In how many other states this peculiar situation exists is unknown. Table 18 shows a just method of dividing the various items in estimating the fees paid to surgeons.

The published fees for industrial work under which the surgeons are working are not higher than they are justified in charging and do charge in similar communities for like services. Because the surgeon now receives 100 per cent. for work done when paid by the state, the total amount received by him seems strikingly large. The same commission declares that in spite of many statements that doctors are not making excessive charges, an opinion prevails that cost of medical services is excessively high and that physicians knowing that bills are to be paid either by employees or insurance companies charge higher rates than they would if their services were to be paid for by the employees for whose benefit the services are rendered. This, of course, is the expression of an opinion by men who were employers and leaders in the labor movements.

JUST FEES FOR PROFESSIONAL SERVICE

That there is a general endeavor among surgeons working under the compensation laws to overcharge is absolutely false. That a few members of the profession have greedily

endeavored to obtain more than they deserved is undoubtedly true, and any referee board of physicians or surgeons to which these claims have been referred has been the first to condemn the excessive amounts claimed. There is no question that public opinion among the medical profession condemns overcharging the state or overcharging for this industrial work as severely as it condemns any other dishonest practice perpetrated by the members of the profession.

There is naturally a general desire on the part of employers to reduce medical and all other expenses and thus to obtain a lower rate for their insurance, to have the medical services rendered to them under a definite salary or some form of specified contract. It is hard for the lay mind to grasp the reasons why the medical profession resent any general contract practice. The state sanctions the practice of medicine as an individual privilege and demands that all acts of a physician shall be individual, individual in his charges, individual in his services. It is a personal relation which the state demands shall be given in a personal manner. Under contract practice this relationship ceases or is so modified that it loses the best elements of personal service. Moreover, the physician or surgeon realizes that under contract he is liable to be pushed to the commercial limit irrespective of services given, that he is soon required, because of excess of number of patients and excess of work, to give in infections among injured workmen causing permanent, partial or total disability. The already quoted experience of one firm in Bavaria is pertinent at this point; $8,000 was spent in the highest priced medical fees and $160,000 was saved in compensation expenses.

STATE MEDICAL ASSOCIATIONS

In an endeavor to obtain information concerning the working of the compensation acts in the various states and to obtain an opinion on the amount of fees paid for services to workmen earning $1,000 a year or less, the Judicial Council wrote to the state secretaries of all the component associations of the American Medical Association. Thirty answers were returned to these inquiries. As a criterion for judgment, the fee bill which was in vogue in New York State during the year July 1, 1914, to July 1, 1915, was taken and sent with each letter. It is evident from the replies received that California, Massachusetts, Michigan, New York and Ohio took steps before the law went into effect, through their state societies, to endeavor to obtain some understanding as to what was a just fee to be charged in these communities for industrial work and to improve the relations between the medical board and the industrial board or compensation commission in these states. In New York the insurance societies presented the fee bill in question.

TABLE 18.—A JUST METHOD OF DIVIDING THE VARIOUS ITEMS IN ESTIMATING SURGEONS' FEES

	District	Factory	Building Trades	Trade Guild	Private Friendly	All Societies
Percentage of Total Expenditures						
Sick benefits	45.5	53.0	34.9	49.0	55.7	50.0
Medical assistance	17.1	15.0	21.0	14.8	15.0	15.7
Medicines	11.3	14.1	9.2	10.7	9.6	11.7
Cost of hospital service	8.2	4.4	26.9	8.1	5.0	6.6
Funeral expenses and benefits	1.9	2.1	1.3	2.4	3.0	2.2
Total benefits	84.0	88.6	93.3	85.0	88.3	86.3
Management expenses	12.4	0.5	3.2	12.7	10.2	8.7
Other expenditure	3.6	10.9	3.5	2.3	1.5	5.0
Percentage of Total Income						
Sick benefits	45.4	55.6	39.4	47.6	52.6	49.9
Medical assistance	17.1	15.7	23.7	14.4	14.1	15.9
Medicines	11.3	14.8	10.4	10.4	9.0	11.6
Cost of hospital service	8.1	4.6	30.4	7.9	4.8	6.6
Funeral expenses and benefits	1.8	2.3	1.4	2.3	2.8	2.2
Total benefits	83.7	93.0	105.3	82.6	83.3	86.0
Management expenses	12.4	0.5	3.6	12.3	9.7	8.7
Other expenditures	3.6	11.5	4.0	2.2	1.4	5.0

This tables shows the rates of various items of expenditure to total in sickness insurance societies in Austria, 1906 (Frankel and Dawson).

return a deteriorated service, for he cannot give the proper attention, the length of time and hence the excellence of service that should be given by doctor to patient. This is a noticeable evil in lodge practice in this country. It is an occasional evil in the services under the sick insurance societies of Germany and Denmark, and has already become a noticeable feature under the present insurance act in some localities of Great Britain. Any contract, such as often given by railroad surgeons, has never been considered unethical because a surgeon has been able to retain the excellence of work done in relation to the amount given him to do. But in any large service, which is contract service, the evils here mentioned are so excessive and the pay for such overworked services so unjustly small that they stand in the minds of the profession as so objectionable as to be universally condemned. They are condemned not because they are contracts but because of the method in which the lay boards demand that they shall be fulfilled. It is well for employers and industrial boards to remember that there are laws of diminishing returns for professional services as in other economic conditions—there is often much economy in a high-priced surgeon. It is often noticeable that pus and politics go together; and he who shaves the medical fee piles up compensation expenses. A stingy man hires a poor surgeon and begets many infections and much disability. Commissioner Darlington of New York has recently drawn attention to the large amount of avoidable

It was signed by the compensation committee of the medical society as an endeavor to obtain a fair standard of fees for such work. It was accepted by the state compensation commission as a medical expression of what was a fair fee for such work, and it could not bind any physician who did not sign it as a personal agreement between himself and the insurance societies. It was agreed that this fee bill should stand as a fair standard in New York State for the year. After six months' trial it became evident that it was highly objectionable to the majority of the profession because of flat rates for services, because of interpretation on the part of the insurance societies that it was a maximum fee bill, not a minimum fee bill, and because of its inflexibility it seemed to work injustice to the individual member of the profession. It was therefore repudiated at the annual meeting of the Medical Society of the State of New York, and after July 1, 1915, there will be no fee bill in force in New York State. It is interesting to note, however, that sixteen of the thirty replies, over 50 per cent., considered the rates as expressed in this fee bill as very fairly representing the rates for similar services in their community. Among these sixteen replies are New England States, Middle Atlantic States, Gulf States, Central Western States, Northwestern States and States on the Pacific Coast. This is interesting as proving the statements of Scott Nearing that wages range fairly evenly over the United States and that remuneration to physicians for work among these industrial

classes averages in a correspondingly even manner. The criticism from six other states was that these rates were altogether too low. This criticism comes from the Middle West and Far Western States. Among the eight remaining there were several who disapproved highly of fee bills for several reasons.

In considering fee bills in general, the opinion is frequently expressed that a fee bill for a special kind of work in any community, such as work under the compensation acts and expressed as a minimum fee bill for such work, soon becomes a maximum fee bill for other members of the community. Patients will demand to be treated for the same schedule of fees whether these patients are under the compensation act or not, and if there be two fee bills, the low one for special work tends to replace the higher bill in general work. This, of course, can hold only among people with small incomes; but this means the great majority of the people. The flat rate element of any fee bill, as expressed especially in the New York fee bill, works an injustice in many instances. Such a rate is made by the insurance company on the basis of averages for a given injury. This is fair for the insurance company dealing with large numbers of cases, but is not fair to the individual surgeon who deals with few cases, as any single case judged by averages may be overpaid or greatly underpaid for the surgical service rendered. Inflexibility, therefore, in a fee bill tends manifestly to unfairness in the treatment of the individual surgeon, and is naturally resented by many individuals throughout the state. If rates in the fee bill can vary between certain stated amounts, as in the West Virginia fee bill, it will give greater flexibility and render justice to the individual surgeon, or if, as under the industrial commission of Ohio, it is specifically stated that the fee bill is used as a guide and is not a hard and fast agreement between any individual and the insurance companies.

The multiplicity of terms and possibilities of accident and stated fees for each possibility as given in the New York State fee bill does not compensate in the minds of the profession for the injustice of the flat rate and the general inflexibility of this fee bill. The accompanying comparison of fee bills of the different states is inserted here for purposes of reference for any members of the profession, if an occasion should arise when the consideraton of a fee bill may be required under any new compensation act that may be passed.

In considering the formation of any new fee bill, it is worthy of consideration to remember that three quarters of all accidents require less than two weeks' care and that the daily visit to the house and the daily office and dispensary visit will form a large item in the total amounts of surgical compensation. Further, as has already been referred to, in considering the end-results of fractures, all fee bills give the major fees to the amputation which, in ordinary cases, requires vastly less skill from a surgical point of view than the fracture. Moreover, as far as the economic results to the patient are concerned, the fracture offers some hope of permanent rehabilitation, whereas the amputation must remain as a partial or total disability. The work on fractures in future will stimulate the medical profession to the employment of their greatest ingenuity and skill in obtaining their best results. It will in the future require a greater exhibition of judgment and skill than any other form of injury to obtain the minimum total or partial disability. Under these circumstances, it should be paid the highest rate of compensation to the medical man. This is contrary to our present fee bills.

HOSPITAL SERVICE

The relation between hospitals and the compensation acts is one which opens up many possibilities for disagreement between the profession, the boards of trustees of hospitals, and the workmen's compensation commissions. As is well known, in the majority of municipal hospitals in this country, physicians and surgeons are not permitted to charge fees to the charity patients who come under their care. This has heretofore been generally accepted as just and the experience gained has been the remuneration to the physician or surgeon for time spent and trouble taken. As was referred to above, the present situation in New York City is anomalous. The corporation counsel of New York City has decided that the authorities in the municipal hospitals may charge for the board and lodging of patients under the compensation act, but surgeons in the hospital shall not be permitted to charge for their services. This unquestionably prevents the situation arising of a patient who is not under compensation feeling aggrieved for attention given to a patient who is under compensation and accusing the surgeons of undue favoritism. There is no question that surgeons in municipal hospitals must treat all patients equally well, and if a surgeon is paid for one patient and not for another, there will continually arise these accusations of favoritism brought by the envious and the dissatisfied which, however unjust, will cause unceasing trouble.

The hospital question in regard to compensation acts has further brought out the fact that most hospitals have been charging for patients in their general ward less than it has cost the hospital per week per patient to care for them. This is best expressed by the joint committee recommendations in the first annual report of the Board of Compensation Commissions of Connecticut:

> "If the spirit underlying this act is to make each industry carry the expense of the casualties that occur in the conduct of that business, it fails of doing so when the hospitals and physicians are forced to care for them at a loss or as charity cases. It costs the hospitals from $10 to $15 per week to care for cases. If compensation cases are placed in public wards at $7 per week, the balance has to be made up by contributions that are made for charity, and physicians should not be asked to treat these cases for nothing in hospitals any more than they are asked to treat them outside for nothing."

The other hospital questions under the compensation act open up other relations which must be left for the future to settle, such as the relation of the outside surgeons to the hospital in caring for patients in the hospital when these surgeons are not attending surgeons to the hospital. These compensation laws bid fair to raise new standards in surgery and to change the judgments of results of many injuries, such as fractures, from the point of view of mere recovery to the basis of the percentage of human efficiency regained and the lack of permanent or partial disability left in the workman. This is equally certain to bring new standards of hospital efficiency both in the rapidity of recovery of the patient and the retention of his economic value.

NEW SOCIAL CONDITIONS

The Judicial Council in presenting this voluminous report to the House of Delegates has done it from the educational point of view. The Council has realized that on the subject of workmen's compensation there is no easily accessible collection of facts and opinions to which the average medical man can refer. The Council further realizes that in the near future the majority of medical men in this country must face a new social condition in connection with the laws of workmen's compensation in accident and probably in sickness. In whatever country the social equilibrium has been upset by new laws on compensation, there have followed in the wake of the compensation for accidents other insurances tending toward the complete insurance systems of England and Germany. Laws for workmen's compensations exist in more than half of the states of the Union to-day, and already pensions for widows and orphans have followed in a number of states. Illinois passed the first mothers' pension in 1911, California and Colorado in 1912, and similar laws have followed in Washington, Utah, South Dakota, Idaho, Minnesota, Iowa, Nebraska, Ohio, New Jersey, Pennsylvania, Massachusetts, Michigan, Wisconsin, Oregon and New York. Milwaukee and St. Louis have established similar systems independently of state action. In a recent article[3] in THE JOURNAL of the American

3. Rubinow, I. M.: Social Insurance and the Medical Profession, THE JOURNAL A. M. A., Jan. 30, 1915, p. 381.

TABLE 19.—MEDICAL AND SURGICAL SCHEDULE OF RATES

SPECIFIC INJURIES

Treatment or Injury	New York † A Flat rate including first aid, operation and full treatment	New York † B Operation only	New York † C Total limit for full subsequent treatment	California	Oregon	Ohio	West Virginia
Amputations:							
Hip	$75.00	$50 00	$25.00	$75.00	$75.00	$75.00	$30.00 to $50.00
Thigh	50.00	35.00	15.00	40.00	50.00	50.00	15.00 to 25.00
Foot	50.00	35.00	15.00	25.00	40.00	30.00	.....
Leg	40.00	25.00	15.00	25.00	40.00	25.00	15.00 to 25.00
Shoulder joint	55.00	40.00	15.00	40.00	50.00	50.00	15.00 to 25.00
Arm, forearm or hand	40.00	25.00	15.00	25.00	40.00	25.00	15.00 to 25.00
Metatarsal or metacarpal—one	20.00	10.00	10.00	.....	.....	10.00	15.00
Metatarsal or metacarpal—two or more	25.00	15.00	10.00	.....	.....	15.00	.....
Finger or toe	15.00	5.00	10.00	5.00	.....	5.00	2.50 to 5.00
Fingers or toes—two or more	20.00	10.00	10.00	10.00	10.00	10.00	2.00 each
Ankle joint	40.00	25.00	15.00	25.00	40.00	25.00	.....
Knee joint	50.00	35.00	15.00	40.00	40.00	35.00	15.00 to 25.00
Elbow joint	40.00	25.00	15.00	.....	40.00	25.00	15.00 to 25.00
Wrist joint	40.00	25.00	15.00	25.00	40.00	25.00	15.00 to 25.00
Fractures:							
Upper arm	$20.00	$15.00	$ 5.00	$25.00	$30.00	$15.00	$10.00 to $20.00
Forearm—one bone (shaft)	15.00	10.00	5.00	10.00	25.00	12.50	10.00 to 20.00
Forearm—both bones (shaft)	20.00	10.00	10.00	25.00	35.00	12.50	10.00 to 20.00
Forearm—Colles'	25.00	15.00	10.00	.....	.....	15.00	.....
Femur	30.00	20.00	10.00	25.00	50.00	25.00	15.00 to 30.00
Lower leg—one bone	20.00	10.00	10.00	10.00	20.00 F. to 30.00 T.	12.50	10.00 to 25.00
Lower leg—both bones	25.00	15.00	10.00	25.00	40.00	15.00	10.00 to 25.00
Jaw	20.00	10.00	10.00	10.00	20.00	10.00	7.50 to 15.00
Ribs—one or more	10.00	5.00	5.00	5.00	10.00	5.00	5.00
Patella	30.00	20.00	10.00	15.00	40.00	20.00	10.00 to 50.00
Pubic bone } or Pelvis	15.00	2.00	13.00	10.00	.....	.....	.....
Acetabulum } or Pelvis	50.00	30.00	20.00	.....	50.00	30.00	.....
Metatarsal or metacarpal	5.00	2.00	3.00	5.00	10.00	5.00	2.00 to 5.00
Fingers—one or more	5.00	2.00	3.00	.....	10.00	5.00	2.00 to 5.00
Toes—one or more	10.00	5.00	5.00	.....	10.00	5.00	2.00 to 5.00
Coccyx	15.00	2.00	13.00	.....	.....	10.00	.....
Sacrum	15.00	2.00	13.00	.....	.....	10.00	.....
Sternum	10.00	5.00	5.00	.....	.....	10.00	.....
Spine	30.00	10.00	20.00	.....	.....	.....	.....
Lacrimal bone	10.00	5.00	5.00	.....	.....	.....	.....
Malar bone	10.00	5.00	5.00	.....	.....	5.00	.....
Scapula	20.00	10.00	10.00	15.00	25.00	12.50	5.00
Clavicle	15.00	5.00	10.00	15.00	20.00	12.50	5.00 to 7.50
Nasal bones	10.00	5.00	5.00	10.00	10.00	5.00	3.00
Compound fracture	25% extra			50%	.....	25%	.....
Operation for wiring of bones or plating	50% extra			.....	.....	100%	.....
Dislocations:							
Shoulder	$15.00	$ 5.00	$10.00	.....	$20.00	$10.00	$10.00
Elbow	10.00	5.00	5.00	.....	20.00	8.00	10.00
Wrist	10.00	5.00	5.00	.....	10.00	8.00	5.00
Hip	25.00	10.00	15.00	$10.00	40.00	15.00	15.00
Knee	20.00	5.00	15.00		.....	10.00	.....
Patella	10.00	5.00	5.00		.....	5.00	.....
Ankle	20.00	5.00	15.00		10.00	8.00	5.00
Clavicle	15.00	5.00	10.00		.....	8.00	.....
Fingers—one or more	3.50	1.50	2.00		5.00	2.50	2.00
Toes—one or more	5.00	2.00	3.00		5.00	2.50	.....
Jaw	5.00	3.00	2.00		10.00	5.00	5.00
Ribs—one or more	5.00	3.00	2.00		.....	.....	.....
Spine	25.00	15.00	10.00		.....	.....	.....
Sternum	5.00	3.00	2.00		.....	.....	.....
Coccyx	10.00	5.00	5.00		.....	.....	.....
Metacarpal—one or more	5.00	3.00	2.00		.....	5.00	.....
Metatarsal—one or more	10.00	5.00	5.00		.....	5.00	.....
Carpal—one or more	5.00	3.00	2.00		.....	5.00	.....
Tarsal—one or more	10.00	5.00	5.00		.....	5.00	.....
Scapula	15.00	5.00	10.00		.....	.....	.....
Pelvis	10.00	5.00	5.00		.....	.....	.....
Special Operations:							
Trephining of skull	$50.00	$40.00	$10.00	$50.00	.....	$50.00	$25.00 to $50.00
Laparotomy for traumatic peritonitis	50.00	40.00	10.00	.....	.....	50.00 to 75.00	.....
Fixation or suturing of kidney	75.00	50.00	25.00	.....	.....	.....	.....
Laparotomy for rupture or wound of bladder	50.00	40.00	10.00	.....	.....	.....	.....
Laparotomy for rupture or wound of liver	50.00	40.00	10.00	.....	.....	.....	.....
Laparotomy for rupture or wound of spleen	50.00	40.00	10.00	.....	.....	.....	.....
Laparotomy for rupture or wound of stomach	50.00	40.00	10.00	.....	.....	.....	.....
Laparotomy for circumscribed aneurysm	50.00	40.00	10.00	.....	.....	.....	.....
Trephining bone abscess	10.00	5.00	5.00	.....	.....	.....	.....
Caries or necrosis—removal of	15.00	10.00	5.00	.....	.....	.....	.....
Tracheotomy	40.00	25.00	15.00	.....	.....	.....	.....
Intubation	10.00	5.00	5.00	.....	.....	.....	.....
Rupture of abdominal wall	25.00	10.00	15.00	.....	.....	.....	.....
Nerve—section or suturing of	10.00	5.00	5.00	.....	.....	.....	.....
Injection of antitoxin for tetanus or hydrophobia				Easy reductions without anesthesia or assistants, $5.00.			
Special Operations:							
Anthrax—cauterization or excision	25.00	10.00	15.00	.....	.....	.....	.....
Ligating important arteries (separate operation)	10.00	5.00	5.00	.....	.....	.....	5.00 to 10.00
Ligating small arteries (separate operation)	5.00	3.00	2.00	.....	.....	.....	.....
Hernia—reduction by taxis and applying truss (subsequent treatment none)	5.00	.....	.....	5.00	.....	.....	.....
Herniotomy	50.00	35.00	15.00	30.00	$50.00	.....	25.00
Enucleation of eyeball	40.00	25.00	15.00	30.00	.....	25.00 to 35.00	.....

Each treatment $5.00, total not to exceed $25.00.

TABLE 19.—MEDICAL AND SURGICAL SCHEDULE OF RATES (Continued)

SPECIFIC INJURIES

Treatment or Injury	New York † A Flat rate, including first aid, operation and full treatment	New York † B Operation only	New York † C Total limit for full subsequent treatment	California	Oregon	Ohio	West Virginia
Sprains:							
Shoulder	$5.00	$2.00	$3.00	$5.00	*	.....	**
Elbow	5.00	2.00	3.00	5.00	*	.....	**
Wrist	5.00	2.00	3.00	5.00	*	.....	**
Hip	5.00	2.00	3.00	5.00	*	.....	**
Knee	5.00	2.00	3.00	5.00	*	.....	**
Ankle	5.00	2.00	3.00	5.00	*	.....	**
All other joints	3.00	1.00	2.00	2.00	*	.....	**
Special Items:							
Minor operations—repair of small wounds, including suturing and dressing	$5.00	$2.00	$ 3.00	$2.50	.....	$1.00 to $2.00	.....
Repair of large wounds requiring extensive suturing and dressing	7.50	3.00	4.50	5.00	.....	2.00 to 5.00	.....
Abscess—incision	4.00	2.00	2.00	2.50	.....	.....	.....
Laminectomy (special operation)	75.00	50.00	25.00	75.00	.....	75.00	.....
Paracentesis, thoracicis or pericardii (special operation)	15.00	10.00	5.00	5.00	.....	.....	.....
Rupture of tendon—large	10.00	5.00	5.00	25.00	.....	.....	.....
Rupture of tendon—small	5.00	2.50	2.50	.....	.....	.....	.....
General Items:							
Assisting at operation—major	$10.00	.....	.....	$10.00	$10.00	.....	$5.00
Assisting at operation—minor	2.00 to 5.00	.....	.....	5.00	5.00	$5.00	.....
Mileage beyond city limits—per mile one-way only	.50	.....	.....	.50 day .75 night	.75 day 1.00 night	Extra if possible	.....
Examination in lunacy—including written report and one days' attendance in court or before commission	50.00	.....	.....	.....	.....	.....	.....
Subsequent court or commission attendance, per day	25.00	.....	.....	.....	.....	.....	.....
Urinalysis, when specially requested	2.00	.....	.....	.....	.....	.....	.....
Complete physical examination and report by other than attending physician	3.00	.....	.....	.....	.....	.....	.....
Necropsy, complete, with written report	50.00	.....	.....	.....	.....	.....	.....
Necropsy, attending but not performing	10.00	.....	.....	.....	.....	.....	.....
Microscopic and chemical analysis of organs	25.00 extra	.....	.....	.....	.....	.....	.....
Testimony in court or before commission as to simple fact of injury	10.00	.....	.....	10.00	10.00	.....	.....
Testimony at coroner's inquest	5.00	.....	.....	.....	.....	.....	.....
Expert testimony, per day	15.00 to 25.00	.....	.....	.....	.....	.....	.....
Introducing catheter	2.00	.....	.....	2.50	.....	.....	.....
Roentgenogram, including plate	5.00	.....	.....	.....	5.00 to 10.00	.....	7.50 to 15.00
Subsequent roentgenograms, including plates	3.00 each	.....	.....	.....	.....	.....	.....
General anesthetic, administration of	5.00	.....	.....	5.00	5.00	5.00	5.00

Ordinary Items:	First Aid	Subsequent Treatment, Office	California	Oregon	Ohio	West Virginia
Ordinary day visit at house, including antiseptic dressing when necessary	$2.00	$1.00	.....	$2.00	$2.00	.....
Ordinary day visit at hospital, including antiseptic dressing when necessary	1.00	1.00	.....	1.50	2.00	.....
Ordinary office treatment, including antiseptic dressing when necessary	1.00	1.00	.....	1.00	1.00	.50 to 1.50 Ordinary
Visit, including antiseptic dressing and necessary operative procedures in ordinary cases of incisions, punctures, lacerations or contusions	2.00	1.00	$2.00	2.00	.....	.50 to 2.00 Extraordinary
Night visit, 9 p. m. to 7 a. m.	3.00	.....	.....	3.50	.....	2.00 to 4.00
First attention at office, including operative procedure and dressing of ordinary wounds	1.50	1.00	.....	2.00	.....	.....
Removal of ordinary foreign body from conjunctiva, at office	1.00	.....	2.00	2.00	.....	1.00
Removal of foreign body from cornea	1.50	1.00	3.00	2.00	.....	.....

California fee in fractures includes reduction and first dressing.
Oregon fee in fractures includes reduction and subsequent treatment.
Ohio. All fees are only a guide after attention made "Miscellaneous."
West Virginia. Fracture reducing and first dressing. The fewer the after-dressings the larger the initial fee. The same rule in amputations for after-treatment.

* Sprains included under treatment and first dressing of wounds of soft parts, burns, strains, contusions, bruises, arresting hemorrhage, removing foreign body from eye, $2.00.

** Treatment and dressing of lacerated wounds of the soft parts, burns, sprains, strains, bruises, arresting hemorrhage, etc., ordinary case, 50c to $2.00; extraordinary case, $2.00 to $4.00.

† July, 1914, to July, 1915.

Medical Association, Rubinow states definitely that for two years there has been under consideration a state sickness insurance law to be presented to the various state legislatures in the near future. It is evident, therefore, that once the old social and legal equilibrium has been upset, society tends to follow to the logical conclusion until it reaches a new equilibrium under a new social system. We have in this country a disjointed mass of insurance schemes and pensions represented by life insurance, fraternal societies, so-called industrial insurance, which is in this country but funeral insurance, and health and casualty insurance. There is the huge pension fund of the United States which has finally become the old age pension of those who fought on the Northern side in the Civil War. There are various industrial pensions for invalidity and old age, as in certain railroads or in certain large industrial establishments. In several large cities in the Union there is a rapidly growing expansion and extension of activities of the health board which constitute state medicine. All these, at present, form an unrelated mass, all tending to give social aid in time of varying needs to different members of the community. In several countries abroad the same various social elements have been combined into some form of workable adaptability by which various accident and sickness insurance, invalidity and old age pensions have been brought together to form social forces which have tended to reduce the destitution of

large masses of human beings. These forces unquestionably tend to improve the social condition in any given community, and for the carrying out of any scheme tending to human betterment, the medical profession must necessarily be included, whether it be to judge of sickness or health insurance, whether it be for the prevention of the intensity of injury in the individual from accident or for the prevention of the spread of disease in a community at large. The medical profession will accept its responsibility in these new social conditions as it has always accepted its responsibilities in the past. The Judicial Council therefore presents this abstract of existing social insurance in this country and abroad.

Respectfully submitted,

ALEXANDER LAMBERT, Chairman.
JAMES E. MOORE,
HUBERT WORK,
GEORGE W. GUTHRIE,
A. B. COOKE,
ALEXANDER R. CRAIG, Secretary.

The following bibliography has been used in preparation of the foregoing report, and has at times been freely quoted without special acknowledgment:

Senate Document No. 338, Sixty-Second Congress, second session. Message of the president transmitting report of Workman's Compensation Commission.
Senate Document No. 419, Sixty-Third Congress, second session. Workmen's Compensation Investigation by commission of the American Federation of Labor and the National Civic Federation.
Twenty-Fourth Annual Report of the Commissioner of Labor, 1909. Workmen's Insurance and Compensation Systems in Europe, Vols. I and II.
Rubinow: Social Insurance.
Henderson: Industrial Insurance in the United States.
Schwedtman and Emery: Accident Prevention and Relief.
Seager: Social Insurance.
Nearing: Wages in the United States.
Gibbon: Medical Benefit in Germany and Denmark.
Frankel and Dawson: Workman's Insurance in Europe.
Eastman: Work, Accidents and Law.
Squier: Old Age Dependency in the United States.
Lewis: State Insurance.
Freidensburg: The Practical Results of Workingmen's Insurance in Germany.
First Annual Report of the Industrial Board of Massachusetts.
Second and Third Annual Reports of the Industrial Commission of Wisconsin.
First Annual Report of the Board of Compensation Commissioners of Connecticut.
First Annual Report of the Workmen's Compensation Commission of Missouri.

During the presentation of this report Dr. Lambert moved that the House of Delegates go into executive session in order to receive certain sections of the report.

Seconded and carried.

The House then went into executive session.

The House then adjourned its executive session and continued in open session.

Dr. Perry Bromberg, Tennessee, moved that the report of the Judicial Council be referred to the Reference Committee on Reports of Officers.

Seconded and carried.

Report of Council on Health and Public Instruction

Dr. Henry B. Favill, Illinois, Chairman, read the report of the Council on Health and Public Instruction, which was referred to the Reference Committee on Legislation and Political Action. The report is as follows:

To the Members of the House of Delegates of the American Medical Association:

The Council on Health and Public Instruction has, during the past year, further developed the program outlined in its report for 1914. This program includes:

1. A thorough investigation of present public health conditions in the United States with a view to securing more accurate information on all phases of the public health program than is now available.

2. Education of the public by every possible means in order that the people may understand the enormous advances in scientific medical knowledge during the last generation and the possibility of utilizing such knowledge in the prevention of disease, the reduction of the death rate and the prolongation of human life.

3. The crystallizing of such educated public sentiment in necessary public health laws, regulations and ordinances which will render possible a conservation of human life, commensurate with our advancing knowledge and which will render such laws more effective through an educated and enlightened public opinion.

The entire energies and resources of the Council have been devoted during the past year to the development of this program. The reduced appropriation, because of financial conditions, has rendered it impossible for the Council to attempt to develop any new lines of work. Its activities have therefore been confined to carrying on work already inaugurated.

INVESTIGATION OF PRESENT PUBLIC HEALTH CONDITIONS

As stated in last year's report, this subject naturally divides itself into four parts; namely, investigation of federal health activities, state health activities, municipal health activities and voluntary public health acticities carried on by independent organizations.

1. The study of federal public health activities and the consideration of advance plans for an adequate survey of the efforts of the federal government in the public health field have been under discussion during the year, but no practical plan within the means of the Council has as yet been devised. The consideration of this subject will be continued during the coming year.

2. As stated in the report for 1914, the Council commissioned Dr. Charles V. Chapin, Commissioner of Health of Providence, Rhode Island, as special representative of the Council and directed him to make a comparative study of the activities, equipment and accomplishments of the various state boards of health. During 1914, Dr. Chapin visited each state board of health except one, securing data in the form of reports, bulletins, records of personal observations, etc., from which he has compiled a report on state public health work which is now in course of publication. This report marks the completion of the first effort which has been made to collect comprehensive data on state board activities, with a view to the ultimate standardization and classification of all state boards of health. Its publication marks the completion of the first one of the four comparative studies which the Council hopes to carry on. The distribution of this report among state health officers and others interested in public health will be of marked value and will afford an opportunity for a comparative study of the entire state public health situation such as has not heretofore been possible.

3. Practical considerations have prevented a similar study of municipal public health conditions, although a tentative list of cities having public health departments or bureaus of sufficient importance to warrant consideration has been compiled. Probably some different plan for the study of this field will be necessary. This subject will also be considered by the Council during the coming year.

4. In the fourth field of investigation, that of voluntary public health organizations, a distinct advance has been made during the past year, largely owing to the efforts of the Council. As stated in the report for 1914, the Central Committee on Public Health Organization instructed the secretary, Prof. Selskar M. Gunn, secretary of the American Public Health Association, to institute a survey of existing organizations by means of a voluntary questionnaire. In the fall of 1914, Professor Gunn sent out letters to every organization coming within the scope of the committee's inquiry. At a meeting of the committee held at the office of the Russell Sage Foundation, New York City, March 13, 1915, Professor Gunn presented a report in the form of a tabulation of the replies received to the questionnaire. The committee directed that the report be printed and distributed, and appointed a subcommittee consisting of the chairman of the committee, Mr. John M. Glenn, the secretary, Prof. Selskar M. Gunn, and the secretary of the Council as a committee to prepare, publish and distribute this report. It is now in process of publication and will shortly be distributed to the officers of the organizations

interested. The important facts brought out by the report will also be given publicity through THE JOURNAL of the American Medical Association, the *Press Bulletin* and the newspapers and magazines of the country. Without anticipating the details of the report, it is sufficient to say that the original contentions of the Council in inaugurating this movement have been fully sustained. The voluntary public health organizations of the country are in a most chaotic condition, resulting in much duplication of effort, waste of money and labor and interference of function. The publication and distribution of this report will make clear these facts in a way that would have been otherwise impossible, and will furnish the necessary data for the formulation of a plan for better organization and conduct of this work.

In addition to the influence exercised by the Council through the Central Committee, the Council has also been able to exercise a strong influence through the American Public Health Association. At its annual meeting in Jacksonville in December, 1914, the retiring president of the association, Dr. William C. Woodward, of Washington, one of the members of the Council, took as the subject of his presidential address, "A Plea for Efficiency and Economy and the Maintenance and Operation of Private Agencies Working for the Conservation and Promotion of Public Health." On invitation, the secretary of the Council presented a paper at the general session of the Association on "Coordination and Cooperation of Voluntary Public Health Organizations." Apparently the presentation of this subject was timely, as shown by the fact that it aroused more discussion and interest than any other matter presented to the Public Health Association. As a result, on motion of Dr. Hatfield, secretary of the National Association for the Study and Prevention of Tuberculosis, the association voted to ask all the other national voluntary public health organizations to join with it in a joint meeting in 1916 for the purpose of considering better methods of organization and management. This action was endorsed by the Central Committee at its meeting in March, and the secretary was instructed to write the executive officer of all voluntary organizations asking them to unite in arranging for such a meeting. It is highly probable that such a joint meeting will be held during the coming year and that some practical plan of coordination will be developed, with the possibility of the entire movement taking the form of a single great public health league or union by which the mass of the people can be organized for better health conditions.

PUBLIC EDUCATION

The second function of the Council, that of public education, has been conducted during the past year along the lines formerly mapped out.

Press Bulletin.—The *Press Bulletin* has been sent out to the newspapers of the country during the last year in the same manner and with the same results as heretofore. The newspapers of the country are showing an increasing tendency to utilize this material and to credit the Association and the medical profession with sincerity and disinterestedness in its educational efforts. In January, the secretary at the direction of the general manager sent to each of the 4,912 names on the mailing list of the *Bulletin* a return postal card asking them to indicate whether they desired the *Bulletin* sent to them for the coming year; 2,302 replies were received, of which 102 asked to have the *Bulletin* stopped and 2,200 asked to have it continued. As this is the first time that any expression of opinion has been asked for, this evidence of a desire on the part of 45 per cent. of the newspapers on the list to have the *Bulletin* continued is ample evidence of its value. Many editors, in addition to returning the card, expressed their appreciation of the work of the Council. One editor writes, "I do not think a newspaper, weekly or daily, could do better than to publish your editorials." Another, the editor of a labor journal, says, "I publish matter from your *Bulletins* at every issue. I find them very instructive and value them highly. You are doing a splendid work in the interest of public health and of human happiness." Another editor writes, "I have filled out the card and mailed it to you, but I feel that this does not carry with it my full appreciation of this service. You are doing a splendid work." Another editor writes, "Editors, as a rule, are almost buried every morning with press bulletins clamoring for attention, but I am frank in saying that yours is one of the few that is read from end to end every issue." Evidences of appreciation and approval in the form of comments were received from several hundred newspaper editors.

The *Bulletin* is now sent to a limited mailing list consisting of approximately 2,200 newspapers, the editor of which in each case has expressed his interest in the *Bulletin* and his willingness to use the material furnished. This mailing list can be still further increased by the addition of other publications interested in public health.

In addition to the direct work of the Council, there has been a marked increase in the interest shown by newspapers and magazines in public health matters. The most striking instance of this is the establishment by the Scripps-McRae Syndicate, of a special department on health as a part of their syndicate service. In the fall of 1914, the secretary of the Council was asked by the editorial management of the syndicate to advise with them regarding the best plan to follow in establishing such a department. Material in the form of pamphlets, bulletins, reprints, etc., prepared by the Council, was furnished the editorial department of the Press Association and advice, suggestions and criticisms have been given freely. This new departure was eagerly taken up by the newspapers of the United Press Association, practically all of them using the material furnished. The following extract from a letter from the editor of the Newspaper Enterprise Association, the feature bureau of the Scripps-McRae Syndicate, will best show the degree of understanding and cooperation that has been established between the American Medical Association and the press association.

Dear Dr. Green:

As editor of the Newspaper Enterprise Association (the special feature bureau of the Scripps newspapers) serving daily over ninety daily newspapers in as many American cities, I have felt for a long time that the press associations ought to cooperate with the medical profession in the education of the public on the prevention of disease.

Last fall, after discussing this question with you at length, I felt encouraged to formulate definite plans for this purpose. Jan. 1, 1915, I started a department in our press service called the "Keep Well" column. The newspapers which we serve at once adopted this department as one of their regular features. It has been from the start an unqualified success, all of the Scripps papers and a majority of the other papers which we serve using this material daily. Each instalment which we send out carries a "Keep Well" label, specially designed for this purpose, which serves to attract the attention of the reader to it. These articles do not in any case attempt to prescribe or to advise treatment. Preventive medicine, hygiene, sanitation and accepted principles of better living constitute the chief aim of all the matter printed in this department.

I feel that one of the strongest factors in making our "Keep Well" column a success has been the hearty cooperation which I have received from the American Medical Association. For this I owe you grateful acknowledgment for encouragement in starting this department and assistance in continuing it. The success which has attended our efforts is ample proof that newspapermen and physicians can work together effectively if they approach the task with a mutual desire to cooperate and to recognize the professional obligations and limitations of both the newspapers and physicians. Our "Keep Well" department is a pronounced success and will, I hope, be the beginning of a better understanding of preventive medicine on the part of the newspaper-reading public.

Very truly yours,

S. T. HUGHES.

Speakers' Bureau.—Owing to the limited appropriation this year, the work of the Speakers' Bureau was necessarily confined to furnishing speakers for a limited number of appointments. In September, 1914, the usual announcement in the form of an attractive printed pamphlet was sent to approximately 20,000 persons, including the secretaries of medical societies; women's clubs; educational institutions, including universities, colleges, state normals, teachers' institutes, state superintendents of schools and others; secretaries of local boards of trade and chambers of commerce; farmers' alliances and granges, etc. The number of applications received soon proved more than the Council could possibly finance. Speakers were furnished as far as there were funds available. After the $1,000 appropriated for this purpose had been exhausted, the secretary was compelled to inform all other

applicants that the Council had spent its entire appropriation for speakers' expenses and could cooperate in securing speakers only on condition that the local committees would defray their expenses. This was done in a large number of cases. The following tabulation will show the appointments filled by speakers of the Bureau, the attendance and the results, and the requests received for speakers after the funds were exhausted:

TABLE 1

1914	Speaker	Place	Attendance
June 11	Pearse, H. E.	Nevada, Mo.	....
June 18	Dodson, J. M.	St. Charles, Ill.	....
June 18	Freeman, A. W.	Morgantown, W. Va.	....
July 8	Sumner, G. H.	Ames, Iowa	225
July 21	Goodwin, E. J.	Warrensburg, Mo.	250
July 23	Lutz, F. J.	Shelbyville, Ill.	....
July 28	Knox, J. H. M.	Chestertown, Md.	100
Aug. 4	Eycleshymer, A. C.	Grandview, Ind.	300
Aug. 8	Pettit, J. W.	Eureka, Ill.	300
Aug. 11	Pearse, H. E.	Odessa, Mo.	175
Aug. 14	Pettit, J. W.	Geneseo, Ill.	800
Aug. 16	Sumner, G. H.	Ida Grove, Iowa	1,100
Aug. 19	Sloan, M. F.	Terra Alta, W. Va.	275
Aug. 20	Fiegenbaum, E. W.	Godfrey, Ill.	350
Aug. 24	Heizer, W. L.	Jacksonville, Ill.	....
Aug. 28	Fiegenbaum, E. W.	Jacksonville, Ill.	575
Sept. 8	Wright, J. B.	Lancaster, Mo.	200
Sept. 22	Vaughan, V. C.	Newport, Ky.	450
Sept. 24	Vaughan, V. C.	Lafayette, Ind.	400
Sept. 30	Carrick, M. M.	Amarilla, Texas	....
Oct. 2	Bacon, C. S.	Elkhart, Ind.	....
Oct. 2	Porter, M. F.	Huntington, Ind.	500
Oct. 2	Sharp, H. C.	Shoals, Ind.	225
Oct. 2	Simonds, J. P.	Logansport, Ind.	*675
Oct. 4	Dodson, J. M.	East Chicago, Ind.	160
Oct. 7	Vaughan, V. C.	St. Paul	50
Oct. 8	Cannon, W. B.	Rutland, Vt.	150
Oct. 8	Litchfield, L.	Pittsburgh	150
Oct. 8	Vaughan, V. C.	Oshkosh, Wis.	300
Oct. 13	Babcock, R. H.	Polo, Ill.	375
Oct. 13	Carrick, M. M.	Texarkana, Texas	500
Oct. 22	Newton, R. C.	New Brunswick, N. J.	....
Oct. 28	McBrayer, L. B.	Jackson, Miss.	175
Nov. 9	Littig, L. W.	Des Moines, Iowa	19
Nov. 12	Harrington, T. F.	Northampton, Mass.	150
Nov. 19	Hornsby, J. A.	Chicago	125
Nov. 20	Rodman, W. L.	Sanford, N. C.	1,000
Nov. 24	Bangs, C. H.	Fall River, Mass.	70
Nov. 27	Hoxie, G. H.	Warrensburgh, Mo.	750
Nov. 29	Dodson, J. M.	Winona, Minn.	125
Dec. 2	Towne, S. R.	Emmetsburg, Iowa	110
Dec. 4	Littig, L. W.	Manchester, Iowa	175
Dec. 4	Simonds, J. P.	Murphysboro, Ill.	250
Dec. 5	Miller, E. H.	Everton. Mo.	150
Dec. 8	Bullock, E. S.	Silver City, N. M.	150
Dec. 8	Rodman, W. L.	Goldsboro, N. C.	1,200
Dec. 8	Young, A. D.	Altus, Okla.	115
Dec. 8	Sumner, G. H.	Tullahoma, Tenn.	200
Dec. 11	Vaughan, V. C.	St. Louis.	*600
Dec. 12	Rindlaub, J. H.	Mott, N. D.	200
Dec. 13	Sampson, F. E.	Creston, Iowa	670
Dec. 15	Rosser, C. M.	Athens, Texas	....
Dec. 15	Vaughan, V. C.	Columbus, Ohio	150
Dec. 17	Churchill, F. S.	Chicago	70
Dec. 17	Litchfield, L. W.	Pittsburgh	125
Dec. 17	Schoor, W. F.	Concordia, Kan.	100
Dec. 18	Rosser, C. M.	Anson, Texas	300
Dec. 19	Folkes, H. M.	Meadville, Miss.	28
Dec. 22	Moore, J. T.	LaGrange, Texas	....
Dec. 29	Parsons, J. G.	Ellsworth, Minn.	225
1915			
Jan. 4	Banister, J. M.	Omaha	110
Jan. 4	Simonds, J. P.	Minonk, Ill.	250
Jan. 9	Kerr, R. B.	New Market, N. H.	125
Jan. 11	Johnston, C. H.	Greenville, Mich.	300
Jan. 11	Kane, E.	Jackson, Tenn.	75
Jan. 12	Young, A. D.	Elk City, Okla.	200
Jan. 13	Arnold. H. D.	Concord, N. H.	....
Jan. 14	Paddock, C. E.	Chicago	70
Jan. 14	Simonds, J. P.	Elgin, Ill.	35
Jan. 15	Bullitt, J. M.	Princeton, N. C.	85
Jan. 15	Cook, C. H.	Templeton, Mass.	50
Jan. 15	McLester, J. S.	Mobile, Ala.	175
Jan. 15	Montgomery, E. E.	Greenville, Pa.	150
Jan. 16	Montgomery, E. E.	Washington, Pa.	150
Jan. 16	Vinton, M. M.	Millersville, Pa.	250
Jan. 19	Hurty, J. N.	Normal, Ill.	375
Jan. 20	Hurty, J. N.	Normal, Ill.	625
Jan. 21	Ravenel, M. P.	Manchester, Iowa	1,400
Jan. 22	Arms, B. L.	Belton, Texas.	500
Jan. 25	Bracken, H. M.	Osakis, Minn.	150
Jan. 26	Sumner, G. H.	Audubon, Iowa.	275
Jan. 27	Emerson, C. P.	North Vernon, Ind.	....
Jan. 28	Hill, H. W.	Thief River Falls, Minn.	500
Jan. 28	Parkinson, J. H.	Woodland, Calif.	60
Jan. 28	Ravenel, M. P.	Moberly, Mo.	150
Jan. 29	Lamont, J. G.	Cooperstown, N. D.	250
Feb. 2	Maxey, E. E.	Ontario, Ore.	200
Feb. 4	Cramp, A. J.	DeKalb, Ill.	75
Feb. 5	Harris, S.	Greenville, Ala.	300
Feb. 5	Miles, G. W.	Binghamton, N. Y.	72
Feb. 5	Pearse, H. E.	Greenfield, Mo.	325
Feb. 5	Risser, A. S.	Cordell, Okla.	300
Feb. 9	Rodman, W. L.	Baltimore	950
Feb. 9	Wood, N. P.	Odessa, Mo.	150
Feb. 10	Bangs, C. H.	Lynn, Mass.	300
Feb. 10	Cramp, A. J.	Baltimore	550

TABLE 1—*Continued*

1914	Speaker	Place	Attendance
Feb. 10	Emerson, C. P.	Richmond, Ind.	150
Feb. 11	Guilford, P.	Chicago	51
Feb. 11	Swope, S. D.	Albuquerque, N. M.	200
Feb. 12	Goodwin, E. J.	Springfield, Mo.	150
Feb. 12	Lockwood, T. F.	Sarcoxie, Mo.	300
Feb. 13	McLester, J. S.	New Albany, Miss.	*125
Feb. 14	Dodson, J. M.	Champaign, Ill.	75
Feb. 23	Barker, L. F.	Frederick, Md.	500
Feb. 23	Linthicum, G. M.	Dover, Del.	275
Feb. 23	Montgomery, E. E.	Millville, N. J.	200
Feb. 24	Ives, G.	Harrisburg, Ill.	700
Feb. 25	Risser, A. S.	Perry, Okla.	550
March 1	Montgomery, E. E.	Danville, Pa.	65
March 4	Floyd, J. C. M.	Washington, Pa.	75
March 9	Harris, S.	Auburn, Ala.	675
March 10	Harris, S.	Auburn, Ala.	150
March 11	Harris, S.	Marion, Ala.	750
March 11	Harris, S.	Selma, Ala.	300
March 12	Banister, J. M.	Neligh, Neb.	110
March 12	Cramp, A. J.	Whitewater, Wis.	250
March 12	Harris, S.	Montevallo, Ala.	425
March 16	Litchfield, L.	Washington, Pa.	200
March 16	Simonds, J. M.	Freeport, Ill.	425
March 18	Hill, H. W.	Fergus Falls, Minn.	350
March 20	Grant, W. W.	Leadville, Colo.	300
March 21	Young, J. E.	Champaign, Ill.	100
March 22	Allport, F.	Joliet, Ill.	500
March 24	Simonds, J. P.	Lincoln, Ill.	250
March 27	Kane, E. C.	Tupelo, Miss.	50
March 28	Grant, W. W.	Del Norte, Colo.	110
March 28	Hurty, J. N.	Champaign, Ill.	107
April 1	Tuttle, T. D.	Port Angeles, Wash.	175
April 6	Carroll, A. H.	Millersville, Md.	50
April 7	Freeman, A. W.	Bluefield. W. Va.	700
April 8	Allport, F.	Galena, Ill.	225
April 9	Freeman, A. W.	Keyesville, Va.	150
April 9	Tinkham, H. C.	Whitefield, N. H.	335
April 9	Yarros, R.	Mt. Vernon, Iowa	†1,400
April 10	Hayne, J. A.	Florence, S. C.	50
April 14	Litchfield, L.	Clearfield, Pa	275
April 20	Coleman, T. D.	Thomaston, Ga.	....
April 20	Funkhouser, R. M.	Greenville, Ill.	175
April 22	Montgomery, E. E.	Pottstown, Pa.	500
April 24	Spaulding, E.	Greenville, N. H.	50
April 26	Montgomery, E. E.	Indiana, Pa.	275
May 4	Allport, F. A.	Grand Haven, Mich.	....
May 4	Bullitt, J. B.	Burlington, N. C.	....
May 5	Snow, W. F.	Catskill, N. Y.	....
May 7	Witherspoon, T. C.	Stevensville, Mont.	....
May 12	Banister, J. M.	Bethany, Neb.	275

Number of meetings held, 151.
Expenses June 1, 1914, to June 1, 1915, $1,480.01.
Average expense per meeting, $9.80.
* Two meetings.
† Three meetings.

The following are some of the replies received in reply to a request for a statement of the definite results following these meetings:

1914

October 2.....Simonds, J. P.....Logansport, Ind.
Helped in securing better garbage disposal and better sewage.

November 19.....Hornsby, J. A.....Chicago.
Dispelled idea of the horrors of hospitals.

November 29.....Dodson, J. M.....Winona, Minn.
Helpful in securing school nurse.

December 2.....Towne, S. R.....Emmetsburg, Iowa.
The streets are being paved and the alleys cleaned.

December 11.....Vaughan, V. C.....St. Louis.
Stimulated higher ideals.

December 17.....Schoor, W. F.....Concordia, Kan.
Led to examination of eyes on the part of one.

1915

January 4.....Banister, J. M.....Omaha.
Led to two other requests for this address.

January 15.....McLester, J. S.....Mobile, Ala.
Has practically brought school commissioners to the point of employing a school nurse.

January 22.....Arms, B. L.....Belton, Texas.
A better babies' exhibit.

January 26.....Sumner, G. H.....Audubon, Iowa.
Social survey by Women's Club.

February 4.....Cramp, A. J.....Dekalb, Ill.
One druggist discontinued selling the fake cures mentioned by Dr. Cramp.

February 5.....Pearse, H. E.....Greenville, Mo.
Antifly campaign—City Sanitation Committee.

February 5.....Risser, A. S.....Cordell, Okla.
Teachers have put some of the suggestions into practice.

February 12.....Lockwood, T. F.....Sarcoxie, Mo.
Helped in local campaign for better sanitation.

1915

February 13.....McLester, J. S.....New Albany, Miss.
An increased interest in medical inspection of schools. The Teachers' Association voted afterward to raise $500 to get two sanitarians from the State Board of Health in this county, and a committee is consulting the local physicians *re* Medical Inspection of Schools.

February 23.....Linthicum, G. M.....Dover, Del.
Has had some influence in cleaning up the town.

February 24.....Ives, G.....Harrisburg, Ill.
Household science clubs are studying home sanitation, emergencies, water supply, etc.

March 11.....Harris, S.....Marion, Ala.
Health campaign.

March 22.....Allport, F.....Joliet, Ill.
Aided in adoption by School Board of Medical Inspection in Joliet public schools.

March 24.....Simonds, J. P.....Lincoln, Ill.
This talk may have been one of the "last straws" because, since then a much-needed sewer has been decided on and certain steps toward sewage disposal definitely begun.

April 1.....Tuttle, T. D.....Port Angeles, Wash.
Stirred up interest in making a clean town.

April 8.....Allport, F.....Galena, Ill.
Possibly the school board may put in medical inspection of schools.

TABLE 2.—REQUESTS FOR SPEAKERS AFTER FUNDS WERE EXHAUSTED

	Town	Speaker Asked For
ALABAMA:		
	Mobile	Harris, S.
	Pine Hill	Harper, W. W.
CALIFORNIA:		
	Ukiah	Hoag, E. B.
FLORIDA:		
	Bartow	Byrd, H.
	Clearwater	Arms, B. L.
ILLINOIS:		
	Carthage	Favill, H. B.
	DeLand	Cramp, A. J.
	Kewanee	Dodson, J. M.
	Tuscola	Allport, F.
	Villa Grove	Yarros, R.
	Yorkville.	
INDIANA:		
	Huntington.	
	LaPorte.	
IOWA:		
	Charles City	Sherbon, F. B.
	Clarence	Sumner, G. H.
	Clinton	Sherbon, F. B.
	Creston	Ravenel, M. P.
	New Hampton	Ravenel, M. P.
	Perry	Sumner, G. H.
	Sioux City	Sherbon, F. E.
KANSAS:		
	Chanute	Axtell, J. T.
	Meade	Schoor, W. F.
	Phillipsburg	Grant, W. W.
KENTUCKY:		
	Cloverport	King, W. F.
LOUISIANA:		
	Ruston.	
MAINE:		
	Bangor.	
MARYLAND:		
	Lonaconing.	
MICHIGAN:		
	Marquette.	
	Three Rivers.	
MINNESOTA:		
	Mankato	Hill, H. W.
	New Ulm	Hill, H. W.
MISSISSIPPI:		
	Sardis	Kane, E.
	Vicksburg.	
MISSOURI:		
	Aurora	Hoxie, G. H.
	Bethany	Morton, D.
	Charleston	Ravenel, M. P.
NORTH CAROLINA:		
	Winston-Salem	Harris, S.
OHIO:		
	Jeffersonville	Sampson, F. E.
	Newcomerstown	McCampbell, E. F.
	Sandusky	McClellan, B. R.
	Springfield	Hurty, J. N.
OKLAHOMA:		
	Mangum	Risser, A. S.
	Watonga	Young, A. D.
SOUTH DAKOTA:		
	Mitchell	Hill, H. W.
TENNESSEE:		
	Milan	Kane, E. C.
TEXAS:		
	Bowie	Carrick, M. M.
	Lampasas	McReynolds, J. O.
VERMONT:		
	St. Johnsbury.	
WASHINGTON:		
	Sultan	Kelly, E. R.

Bureau of Literature.—A large amount of attention has been given during the last year to the preparation of suitable literature for distribution to the public. The Public Health series outlined in last year's report has been developed, the following pamphlets having been prepared and printed: "Tuberculosis," by Dr. Edward R. Baldwin; "Smallpox and Vaccination," by Dr. Jay F. Schamberg; "Typhoid Fever," by Prof. E. O. Jordan; "The House-Fly," by Dr. L. O. Howard; "Hookworm," by Dr. John A. Ferrell; "Pure Water," by Prof. George C. Whipple; "Measles," by Dr. H. W. Hill; "Baby Welfare," by Dr. J. H. M. Knox; "Scarlet Fever," by Dr. Ludvig Hektoen. Pamphlets on diphtheria, malaria and medical school supervision are in preparation. These pamphlets have been printed in an advance edition, copies sent to the secretaries of the various state boards of health for criticism, and special editions printed for the different state boards to order. During the coming year, these pamphlets will be rewritten condensed as to bulk and prepared in a manner attractive to the lay reader. Other pamphlets of the same series will probably be prepared.

The pamphlets on special subjects, namely, conservation of vision, cancer, sex hygiene, medicolegal, defense of medical research, etc., have been published and distributed during the year. Table 3 shows the number and character of pamphlets printed and distributed since June 1, 1914.

TABLE 3.—NUMBER AND CHARACTER OF PAMPHLETS PRINTED AND DISTRIBUTED JUNE 1, 1914, TO MAY 15, 1915

Defense of Research, Pamphlet XXVII. "Animal Experimentation in the Diagnosis, Treatment and Prevention of Diseases of Children"	1,000
Conservation of Vision, Pamphlet I. "Schoolchildren's Eyes"	1,000
Conservation of Vision, Pamphlet II. "Industrial and Household Accidents to the Eye"	1,000
Conservation of Vision, Pamphlet IV. "The Relation of Illumination to Visual Efficiency."	1,000
Conservation of Vision, Pamphlet V. "Trachoma in Eastern Kentucky"	1,000
Conservation of Vision, Pamphlet VI. "Auto-Intoxication and the Eye"	1,000
Conservation of Vision, Pamphlet VII. "Eyestrain."	500
Conservation of Vision, Pamphlet VIII. "Lenses and Refraction"	1,000
Conservation of Vision, Pamphlet IX. "The Eye and Its Functions"	1,000
Conservation of Vision, Pamphlet X. "Care of the Eyes"	1,000
Conservation of Vision, Pamphlet XI. "Infant Blindness or Ophthalmia Neonatorum"	1,000
Conservation of Vision, Pamphlet XII. "Ordinary Eye Diseases"	500
Conservation of Vision, Pamphlet XIII. "Usual and Unusual Eye Accidents"	1,000
Conservation of Vision, Pamphlet XIV. "The Eyes of Transportation Employees"	500
Conservation of Vision, Pamphlet XV. "Ocular Hygiene in Schools"	1,000
Conservation of Vision, Pamphlet XVI. "Whisky, Tobacco and Drugs and the Eye"	1,500
Conservation of Vision, Pamphlet XVII. "The Oculist and the Optician"	1,000
Conservation of Vision, Pamphlet XVIII. "Preparation for Blindness"	1,000
Conservation of Vision, Pamphlet XX. "Blindness from Wood Alcohol"	1,500
"Plan of Campaign"	300
"Announcement for Speakers' Bureau"	20,000
"Speakers' Handbook"	500
"Control of Cancer"	3,000
"What Everyone Should Know about Cancer"	4,000
"Cancer of the Skin"	2,000
"Cancer of the Womb"	2,000
"Cancer of the Genito-Urinary Organs"	2,000
"Cancer of the Breast"	1,000
"Baby Welfare"	3,300
"Hookworm"	5,300
"House Fly"	6,300
"Measles"	100
"Pure Water"	1,100
"Scarlet Fever"	100
"Small-Pox"	10,300
"Tuberculosis"	4,300
"Typhoid Fever"	3,300
"Minimum Sanitary Requirements for Rural Schools"	55,000
"Save the Babies"	119,000
"Life's Problems"	1,000
"Catalog of Cartoons"	1,000
"Text of Proposed Bills for Conference"	500
"Regulation of the Practice of Medicine"	1,000
"Report of the Council on Health and Public Instruction for 1914"	500
"Why Should Births and Deaths Be Registered?"	16,000
"Cooperation and Coordination of Voluntary Public Health Organizations"	1,000
"Modern Medicine and Its Social Responsibilities"	1,000
"Medical Inspection of Schools"	1,000
"Sterilization of Criminals"	1,000
Total	285,400

Several items in this list deserve special mention. The Council has printed and furnished for different departments of the federal government during the past year the following pamphlets: 10,000 "Save the Babies" pamphlets for the federal Bureau of Education; 16,000 pamphlets, "Why Should Births and Deaths Be Registered," for the federal Bureau of the Census; 40,000 pamphlets, "Minimum Sanitary Requirements for Rural Schools," for the federal Bureau of Education.

The pamphlet on registration of births and deaths has been in print for a number of years. It is a development, containing material on this subject which has gradually accumulated; also the text of the model bill for the registration of births and deaths which the Council and, before its establishment, the Committee on Medical Legislation, has been instrumental in having passed in many states. At the request of Hon. W. J. Harris, Commissioner of the Census, 16,000 copies of this pamphlet were sent him for distribution in states in which this bill had been introduced.

The pamphlet entitled "Save the Babies," written by Dr. L. Emmett Holt of New York and Henry L. B. Shaw of Albany, is a twenty-page pamphlet containing in concise, popular and attractive form instructions to the mother as to preparations for motherhood, care of the unborn babe, advice to nurses and mothers, directions for artificial feeding, etc. This pamphlet has been widely distributed by the Committee on Women's and Children's Welfare, and at the request of the federal Commissioner of Education, Hon. P. P. Claxton, 10,000 copies were sent him for distribution through the Bureau of Education.

The widespread and general distribution of this pamphlet would be of the greatest value to the public. Unfortunately, the means of the Association are limited, and the few thousand copies which we can print and distribute are far too few to make any impression. We must therefore look to other interests to furnish the means for distribution in such quantities as are needed. Plans are now on foot for the printing and distributing of a large number of copies of this pamphlet, probably amounting during the next year to several hundred thousand copies through the cooperation of a manufacturing house interested in promoting child welfare in connection with its products. An initial order for 100,000 copies to be paid for and distributed by the manufacturing firm interested has recently been received. The possibilities of such cooperation are almost unlimited and as yet entirely undeveloped. Business organizations would naturally prefer to secure their literature through a responsible body like the American Medical Association, rather than to prepare their own material or to have it prepared for them by individuals. The commercial value of the public health propaganda is daily becoming more apparent. Material suitable for public education, properly edited and authoritatively vouched for, can be prepared by the Council better than by any other body. There is no reason why the expense of furnishing this material to the public should be borne by the organization or by the profession. The work is for the public good, and the general public should pay the bills. In this as in other fields of the Council's work, every effort should be made to place the work of the Council as far as possible on a self-supporting basis and to use the funds which the Board of Trustees appropriated for the Council work for development rather than for the distribution of material.

The preparation of a large edition of the pamphlet on "Minimum Sanitary Requirements for Rural Schools" will be discussed under the activities of the Committee on Cooperation with the National Educational Association.

Legislation.—The third principal function of the Council, that of formulating suitable legislation for the advancement of the public health interests, naturally divides itself into three heads:

1. Medicolegal Bureau. During the past year, the book on "The Digest of Supreme Court Decisions on Medical Practice Acts" has been completed and printed. The material in the Medicolegal Bureau has been classified and indexed and largely added to. A digest of Supreme Court decisions on powers and duties of state boards of health is now being prepared similar to the digest of Supreme Court decisions on medical practice acts. We now have listed 752 court decisions on this subject, 396 of which have been abstracted and indexed.

The collection of public health laws is practically complete to date. The general files of the bureau on public health matters, that is, the material in pamphlet form or the like, has been materially enlarged by clippings and pamphlets from the many health publications which come to the Association.

During the current year sixty-one inquiries on Medicolegal subjects have been received and answered. These inquiries may be grouped as follows:

Eighteen inquiries have come in as to the construction of various health laws, such as the laws touching on ophthalmia neonatorum, the English medical practice act, the educational requirements in the medical practice acts in the several states, as to the coroner under the Alaska law, the interpretation of the Missouri optometry law, of the workmen's compensation acts generally, as to the Kansas and Minnesota osteopathy laws and as to several of the habit forming drug laws and the like.

Fifteen inquiries for material to assist in drafting bills for introduction in the legislature.

Four requests for material to assist in drafting municipal ordinances.

Four inquiries as to the status of legislation on specific subjects, such as whether a nurse is permitted to use anesthetics, what states require the examination of the eyes, ears, nose and throats of schoolchildren, the consensus of opinion on marriage and sterilization legislation.

Five requests for a brief of court decisions on specific subjects. One on the liability of a physician for malpractice burns, others being on the enforcement of the sterilization laws, the liability of chiropractors under the medical practice acts if unlicensed and the like.

Five requests for opinions as to the liability of physicians in alleged cases of malpractice, such as whether or not a surgeon is liable for the negligence of his assistants, as to whether a hospital is liable for a typhoid fever patient who jumps from a window, and generally as to the liability of physicians for treatment rendered.

Two requests for opinions as to the right of a physician to recover for services rendered.

Four requests for opinions as to physician's rights when acting as witnesses, that is, as to when he may decline to testify on the ground that his information is privileged and as to whether he may demand fees for his services as an expert.

Four inquiries as to the general reputation, moral, economic or otherwise, of specific institutions or persons.

Because of the completeness of our files as to the public health laws and the cases thereunder, as well as the general material of a public health nature, the bureau is amply fitted to answer inquiries of this nature. Briefs and opinions may be readily gotten out, as well as resumés of the legislation on any specific subject.

Large amounts of material of all kinds, including pamphlets, reprints, newspaper and magazine articles and clippings, Supreme Court decisions, briefs, etc., have been received and filed. The bureau has a rapidly increasing amount of material on all subjects relating to the legal side of medicine.

One of the most important activities of many of our state organizations is the defense of its members from malpractice suits. Twenty-three out of the forty-eight state associations have now provided for such defense. The law of professional malpractice is not statutory law, but is to be found in court decisions or, as it is called in legal circles, case law. A lawyer in order to become proficient in this subject must devote a large amount of time and energy to the study of decisions of courts of last resort. The fact that the average lawyer is not proficient on this subject accounts for the fact that many cases have been decided not according to the merits of the case but according to the qualifications or lack of qualifications of the council.

The principal advantage to be gained by the system of medical defense inaugurated by the different state associations is that it enables the state society to place in the hands of one attorney or firm of attorneys in the state practically all of the malpractice business of the state, thus enabling the attorneys chosen for this work to become expert on this subject. This means that each state association which has already adopted this plan and those which may in the future do so will find it necessary to have collected either by the committee of the state society or the attorneys for the state society, all of the Supreme Court decisions bearing on this subject. There is no reason why this work should be thus duplicated in each state. At a comparatively slight expense, with the facilities which we now have, it would be possible to collect in the Medicolegal Bureau at the headquarters of the Association all of the Supreme Court decisions which have been rendered on this subject, to have them properly classified and indexed and to keep them up to date by the addition from time to time of the occasional new decisions on this subject, thus forming a central bureau of reference from which any of the committees on medical defense could secure information, references and assistance in preparing briefs. This is essentially a work which should be done by the national organization and in which the Council through its Medicolegal Bureau can cooperate effectively with the medical defense committee in each state which has adopted this plan. The Council urges that this suggestion be given careful consideration and that as soon as it is possible for the necessary appropriation to be made by the Board of Trustees, this work be added to the functions of the Medicolegal Bureau.

Midwinter Conference.—The usual Midwinter Conference was held in Chicago on Monday, February 15. Four subjects for discussion were presented, two of them being incidental and two being fundamental. The incidental subjects were medical expert testimony, covered by the report of the special committee on this subject appointed two years ago, and the prevention of ophthalmia neonatorum. The two fundamental subjects were the state regulation of the practice of medicine and state public health organization. The Committee on Medical Expert Testimony presented its report in the form of a model bill which has been approved by the American Institute of Criminal Law and Criminology and which was drafted by a committee of that organization which included two members of the special committee appointed by the Council. This committee has since been brought into close cooperation with a similar committee on expert testimony appointed by the American Association for the Advancement of Science, and there is every indication that during the coming year a definite plan for the better regulation of expert testimony will be involved. The bill presented by the committee, which covered only a limited phase of this question, was endorsed by the conference.

The afternoon session of the conference was given entirely to the discussion of state regulation of public health and state regulation of the practice of medicine. Tentative drafts of bills were presented as a basis for discussion. The views expressed show clearly that much study and discussion are necessary before anything definite can be developed in the way of model legislation on either of these subjects. The report of Dr. Chapin with its tendency to standardize state public health work will be of great assistance in crystallizing views on state health organization. It is the intention at present to devote the midwinter conference in February, 1916, entirely to the discussion of these two fundamental questions.

The plan for the development of model laws on fundamental subjects has progressed considerably during the past year. To the model law on vital statistics now recognized as a standard throughout the country can now be added the bills on medical expert testimony and the prevention of blindness endorsed at the last conference, while the bills drafted on state regulation of the practice of medicine and state regulation of public health will serve for the concentration of discussion until something more definite can be worked out.

Federal Legislation. — The most important legislation directly affecting the medical profession, enacted during the past year, is the last one of the series of federal antinarcotic laws, commonly referred to as the Harrison act.* This act, it will be remembered, requires every physician who in his practice uses morphin, cocain, and certain other drugs to register with a collector of internal revenue, paying an annual tax of one dollar, and to keep certain records to show the quantity and quality of all such drugs received and, with certain limitations, to show how he disposes of them.

The enactment of this legislation was imperatively demanded by international obligations that this government had assumed with a view to the limitation, and ultimately, so far as may be practicable, the elimination, of drug habits as one of the factors of ill health, inefficiency, and unhappiness. Recognizing the necessity for this legislation, the Council endeavored to have it framed in such a way as to impose on the medical profession the least possible burden compatible with the accomplishment of the ends for which it was designed. As is usually the case, there were many conflicting interests at work shaping it, and in the end the act took a form representing, it is believed, an extremely fair compromise.

The efforts that have been made to enforce this act have led in some cases to misunderstandings on the part of physicians not fully acquainted with its scope and purposes, which were not decreased or mitigated by the fact that some collectors of internal revenue have apparently misunderstood their functions in the matter and have seemingly acted more or less independently of the office of the commissioner of internal revenue at Washington. Some of the rulings of the commissioner's office have, too, it much be admitted, not been such as tend to lighten the burden the medical profession so willingly assumed. Such conditions are almost inevitable under the early administration of legislation so radical and novel as this, and the Council urges the utmost patience on the part of the medical profession with respect to the situation. Certain necessary burdens must be borne in this connection by physicians, for the public good; and these the profession may be confidently relied on to bear without complaint. The unnecessary burdens—those that the profession may justly complain of—time may be expected to cure, and only after it has failed to do so should thought be given to recourse to the courts and to Congress for relief.

SUBCOMMITTEES

Some of the most effective work of the Council is now being carried on through subcommittees. In addition to the reports of these committees submitted as a supplement to this report, some comments are advisable on special features of the committee's work.

Committee on Women's and Children's Welfare.—At the fall meeting of the Council, held October, 1914, the name of the Committee on Public Health Education Among Women was changed to the Committee on Women's and Children's Welfare. This was considered advisable on account of the increasing concentration of the committee on this field and the fact that the old title led to more or less misunderstanding regarding the scope of the committee's work. It is a pleasure to commend the work of this committee under the chairmanship of Dr. Lenna L. Meanes of Des Moines, Iowa. One of the most valuable of its accomplishments during the last year has been the securing of the pamphlet on infant welfare written by Drs. Holt and Shaw, which, it is hoped, will be given wide distribution during the coming year.

The Committee on Conservation of Vision.—This committee has carried on its program of popular instruction largely through pamphlets and lectures. The report of the committee will present this work in detail.

The Committee on Cancer.—This committee has been instrumental in the preparation and publication of a series

* An Act to provide for the registration of, with collectors of internal revenue, and to impose a special tax upon all persons who produce, import, manufacture, compound, deal in, dispense, sell, distribute or give away opium or coca leaves, their salts, derivatives or preparations, and for other purposes.

of pamphlets on this subject. Other pamphlets are in process of preparation. The committee has also been of great value in coordinating the work of the Council with that of the Cancer Committee of the Clinical Congress of Surgeons of North America and the American Society for the Control of Cancer.

The Committee on Cooperation with the National Educational Association.—This committee has developed into an important factor in the Council's work. Appointed originally in response to a general movement for closer cooperation between the organized medical profession and the organized teaching profession of the country, its function was at first somewhat vague. As a result of the meeting of the committee held in Chicago in July, 1912, and of subsequent conferences, it was decided that the first subject for this committee to take up was the sanitary condition of rural schools and the health of rural schoolchildren, the committee feeling that this part of the field had been neglected, more attention having been paid to school conditions in the cities than in the country. It was soon found, however, that no amount of information was in existence regarding rural school conditions. Fortunately, the federal Bureau of Education authorized a fairly comprehensive study of rural school conditions in different parts of the country by Prof. F. B. Dresslar of Peabody University, Nashville, Tenn., a special representative of the federal Bureau of Education, who prepared a report on rural school conditions, which was printed and distributed by the federal Bureau of Education. This report, however, was too bulky and expensive for widespread distribution. It was accordingly used by the committee as a basis for the preparation of a small eight-page pamphlet entitled "Minimum Sanitary Requirements for Rural Schools," embracing all of the essentials found in Professor Dresslar's report and giving in concise simple form the minimum sanitary requirements which should be tolerated in any rural school. This pamphlet was printed by the Association and distributed at the 1914 meeting of the National Educational Association. Its value was at once recognized, and increasing calls for it began to come in from all parts of the country to such an extent that neither the Council nor the joint committee was able to supply the demand. An edition of 50,000 copies was printed, 40,000 of which were sent to Hon. P. P. Claxton, the federal Commissioner of Education, for distribution through his bureau, and 10,000 to Dr. Wood, the chairman of the joint committee. The 40,000 pamphlets were sent to Dr. Claxton in January, and early in March he reported that his supply was entirely exhausted and that he had already received requests for over 12,000 copies in addition. The funds of the committee and of the Council available for this purpose having been already exhausted, it was not possible to furnish any more copies of these pamphlets at that time. However, at the winter meeting of the National Council of the National Educational Association, held in Cincinnati, February 23, a joint conference of the officers of the National Educational Association, the members of the joint committee and the chairman and secretary of the Council was held at which the principal question discussed was the possibility of securing a large edition of this pamphlet for widespread distribution. Commissioner Claxton on being asked how many copies he wanted, replied that he could use 750,000 copies, sending them to rural schoolteachers, members of country school boards, etc. It was estimated that this quantity printed at the lowest possible cost by the Association Press would involve an expense of approximately $3,000. As the funds of the Council had all been appropriated for the year and as the appropriation of the National Educational Association was decidedly limited, it was necessary to look elsewhere for means to distribute this pamphlet. Fortunately the interest of the Elizabeth McCormick Memorial Fund of Chicago was attracted, and the proposition of financing the publication of an edition of three-fourths of a million copies of this pamphlet for Commissioner Claxton's use was placed before the Trustees of the Fund at their meeting in Chicago on May 10. It is a gratifying evidence of the increasing tendency toward cooperation in public health work that the funds necessary for printing 750,000 copies of this pamphlet for the Federal Bureau of Education were unanimously voted and the work is now under way. The wholesale distribution of this pamphlet to those interested and responsible for rural school conditions marks the completion of the first task undertaken by the joint committee representing the American Medical Association and the National Educational Association.

Uniform Regulation of Membership.—This committee has not held a meeting during the year, considering it advisable to give the state associations ample time in which to consider and adopt the recommendations of the State Secretaries' Conference held in Chicago, Oct. 23, 1912.

The Committee on Medical Expert Testimony.—At the midwinter conference, this committee presented a report in the form of a model bill on a single phase of the medical expert testimony problem. Further work by the committee will be conducted during the year.

SPECIAL ACTIVITIES

Public Health Sunday.—Following the custom established at Minneapolis and St. Paul in 1913, and in Philadelphia in 1914, the secretary of the Council, with the cooperation of the local committee, took up the work of furnishing each church in San Francisco, which so desired, a speaker on a public health topic for Sunday, June 20. In this work, we are following the same plan as in previous years, and the indications are at the time this report is drafted that Public Health Sunday in San Francisco will be as successful as Public Health Sunday in the other cities.

OFFICE WORK

During the past year, the secretary has received 5,943 letters and has written 6,247. Requests for information from the following sources have been received and answered:

Attorneys	5
Boards of Education	6
Boards of Health	65
Boards of Medical Examiners	1
Clubs	8
Federal Departments	13
Hospitals	16
Legislative Reference Bureaus	1
Libraries	31
Medical Societies	19
Ministers	9
Nurses	3
Physicians	587
Publications	15
Public Health Associations	2
Railroads	14
State Senators	1
Universities, Colleges, High Schools, etc.	74
Y. M. C. Associations	3
Miscellaneous	338
Total	1,211

CONCLUSIONS

It has become increasingly evident as the work of the Council develops, that the chairman was eminently correct in the statement which he made during the first year of the Council's activity, that its greatest usefulness would be found to lie in acting as a center around which other organizations and activities could group rather than in the independent work which it might itself accomplish. This fact is each year becoming more apparent. Probably the most valuable work which the Council has done is that of coordinating and harmonizing different groups of organizations and bringing into close relations and conditions of mutual understanding the American Medical Association and organizations in other fields. The list of organizations and bodies with which we are now in close cooperation and growing accord is constantly increasing. It includes such organizations as the General Federation of

Women's Clubs, the National Educational Association, the various departments and bureaus of the federal government, most of the state boards of health, many special organizations such as the American Public Health Association, the Conference of State and Provincial Boards of Health, the Conference of State Medical Examining Boards, the American Society for the Control of Cancer, the American Posture League, the National Association for the Study and Prevention of Tuberculosis, the American Association for the Advancement of Science and many others, as well as press associations, newspaper publishers, business men's organizations and many other similar bodies throughout the country. The effect of this work on the standing and influence of the Association and the profession can hardly be overestimated. The Council has endeavored in all of its work to observe the great principle that the highest function which any individual or organization can perform is that of service, and that in developing our influence, we must ever keep in mind the scriptural injunction, "A man who would have friends must show himself friendly." It is of little value for us to parade our good will to the public unless we manifest it by actual deeds and by a friendly spirit.

Respectfully submitted.

HENRY B. FAVILL, *Chairman,*
HENRY M. BRACKEN,
WATSON S. RANKIN,
WALTER B. CANNON,
WILLIAM C. WOODWARD,
FREDERICK R. GREEN, *Secretary.*

REPORTS OF SUBCOMMITTEES OF THE COUNCIL ON HEALTH AND PUBLIC INSTRUCTION

COMMITTEE ON WOMEN'S AND CHILDREN'S WELFARE

To the Council on Health and Public Instruction:

At the November meeting of the Council on Public Health and Instruction, the name of our committee was changed from "Public Health Among Women" to "Women's and Children's Welfare Committee," thus broadening very materially the scope of our work. We trust that the history of the past year will in a measure justify the encouragement thus given us. It has been the policy of our committee during the past two years to organize and develop to the extent of our ability one line of action rather than to dissipate our efforts by numerous lines; also to keep that line well within the function of our committee, although encouraging individual members to work along any legitimate line of public health.

In the first year of my chairmanship the committee gave its efforts almost entirely to formulating the plans for carrying on the work of measuring and scoring babies. At the time of the last annual report the A. M. A. score card, which was prepared by our subcommittee with Dr. Henry L. K. Shaw as chairman, had just reached us. With this in our hands we were in a position to begin our work for this second year.

From the beginning, our committee has emphasized the measuring and scoring of babies rather as a basis for the development of the frail child, than for the detrmination of the score of the already healthy strong child. In our report of last year we find the following statement: "Our ultimate hope in connection with the conferences is that it will pave the way for creating permanent stations where babies can be examined from time to time. If this hope is realized we feel that the baby health movement will be placed on such a solidly scientific basis that the present marvelous interest will continue permanently." That this hope is being realized is proved by the fact that in very nearly every instance in which communities have held contests, conferences have followed, while in many places the conferences have begun the work and developed into permanent welfare stations or improvement clubs. Perhaps the most active factors in this development have been the extension departments of colleges, milk stations, state and county fairs, farmers' institutes, women's clubs, summer chautauquas and state boards of health. The state fairs have been most persistent, perhaps, in their encouragement of conferences. One state, Iowa, has even gone so far as to revise its classification list completely, changing the name of the department from "Baby Health Contest" to "Babies' Health Division." Throughout the classification the word "contest" is nowhere used, and an entirely new division has been added for improvement class, which table is given below.

BABIES' HEALTH DIVISION

DIVISION NO. 1 (BABIES FROM RURAL DISTRICTS)

Boy 12 months and under 24 months old.
Boy 24 months and under 36 months old.
Girl 12 months and under 24 months old.
Girl 24 months and under 36 months old.

DIVISION NO. 2 (BABIES FROM CITIES AND TOWNS LESS THAN 10,000)

Boy 12 months and under 24 months old.
Boy 24 months and under 36 months old.
Girl 12 months and under 24 months old.
Girl 24 months and under 36 months old.

DIVISION NO. 3 (BABIES FROM CITIES OVER 10,000)

Boy 12 months and under 24 months old.
Boy 24 months and under 36 months old.
Girl 12 months and under 24 months old.
Girl 24 months and under 36 months old.

CHAMPIONSHIPS (ONLY FIRST-PRIZE WINNERS IN PRECEDING SECTIONS ARE ELIGIBLE TO COMPETE FOR CHAMPIONSHIP HONORS)

Most perfect boy 12 to 36 months.
Most perfect girl 12 to 36 months.

Whenever we have been asked concerning the advisability of cash prizes or medals, we have invariably advised medals, the prize of course to be given for the greatest improvement. We quote from the same state fair classification list, to show how this idea is also gaining recognition:

DIVISION NO. 4 (BABIES WHO HAVE MADE THE BEST IMPROVEMENT SINCE LAST YEAR'S EXAMINATION)

(From Rural Districts)
Boy 24 months and under 36 months old.
Girl 24 months and under 36 months old.

(Babies from Cities and Towns Less Than 10,000)
Boy 24 months and under 36 months old.
Girl 24 months and under 36 months old.

(Babies from Cities and Towns over 10,000)
Boy 24 months and under 36 months old.
Girl 24 months and under 36 months old.

One phase of our work which we feel has materially aided in swinging the public from contests to conferences is that of having some well-known specialist present at these contests or conferences whose business it has been to give each mother a private consultation of from five to fifteen minutes. This one feature is invaluable, and has already had a marked influence toward steadying the movement.

This increasing steadiness of the work has been one of the most significant aspects of it to us. Much state legislation concerning establishment of permanent children's bureaus has gone on throughout the country, showing a desire to support the movement in a unified way. New York and Kansas have progressed to the extent of establishing child welfare divisions under the supervision of the State Board of Health, and other states are studying the possibilities of such departments. In New York the work has been put under the direct supervision of Dr. Lydia Allen De Vilbiss, who is given the title of Consulting Expert on Motherhood of the New York Department of Health. Dr. De Vilbiss has been most closely connected with the work of our committee throughout the history of the baby health movement.

It is also gratifying to know that the federal government through the Children's Bureau is in hearty sympathy with the work of our committee, and has cooperated with us throughout the year, referring inquiries to us for score cards and other literature concerning measuring and scoring of babies. In fact, the interest of the bureau has been so keen in the development of this work that Miss Julia Lathrop attended the conference held in the new building for women and children at the state fair, Des Moines, Iowa last September, in order to study in detail the methods used there for

conducting the conference. Dr. Frances Sage Bradley, who is conducting the children's conference of the federal bureau at the Panama Exposition, has most generously offered our committee their equipment for measuring and scoring babies according to the A. M. A. score card, for any time during the exposition.

As the movement has developed, the score card committee has been tireless in its efforts to simplify and make exact the original score card. Pamphlet No. 5 is now being revised, and an anthropometric table has been prepared for male and female children from 6 to 42 months old, based on the measurements of 3,448 normal babies in twenty-three states. This was compiled by Mr. F. S. Crum, assistant statistician, Prudential Insurance Company of America, Newark, N. J., and published by the Council on Health and Public Instruction of the A. M. A. for the Committee on Public Health Education among Women. At the end of this year it is the intention of this committee to submit to Mr. Crum the duplicate score cards of all contests and conferences, in order that he may secure and tabulate more scientific data.

As a summary and general survey of our work in the baby health movement of the past year, we submit the following report of material issued and a few letters, showing something of the variety and extent of the distribution.

LIST OF LITERATURE SENT OUT DURING THE PAST YEAR

Score cards	16,050
Duplicates	15,600
Anthropometric tables	541
Pamphlet No. 5	4,227
Pamphlet No. 6	2,325
Pamphlet No. 7	18,514
Book slips	8,500

"Jan. 9, 1914.

"To the Committee on Women's and Children's Welfare:— Kindly send twenty-five score cards used in the babies' contest, also information as to the contest methods used in conducting these contests.

"I am requesting this material for the introduction of American child welfare work in Italy.

"E. BURBY, New York."
"March 30, 1915.

"To the Committee on Women's and Children's Welfare:— The afternoon conferences are progressing very nicely. We have had from eight to twelve babies each time. We need more score cards as soon as possible. Could they be sent in larger quantities? Also the pamphlet 'Save the Babies'?

"MAUDE C. CLARK, President Child Welfare Association, Sioux City, Iowa." "Aug. 14, 1914.

"To the Committee on Women's and Children's Welfare:— For use in the conduct of the baby health conference to be held in Buffalo in the near future, preparations for which are being made, will you please forward to the undersigned the following: 1,000 score cards in duplicate; 25 Instructions to Examiners; 1,000 'Save the Babies' pamphlets.

"ARTHUR SCHAEFER, Assistant Health Commissioner and Chief of Bureau of Child Hygiene, Buffalo."
"April 6, 1915.

"To the Committee on Women's and Children's Welfare:— Will you send us 250 score cards; 10 Instructions to Examiners; 300 'Save the Babies,' by Dr. Holt, pamphlet, and any other material which you think will make our conference effective.

"We will hold contests at six places during the spring. We could hold them at many more but it does not seem advisable unless the work can be made effective by conferences and some follow-up work. We have calls all the while from mothers and social workers. We thank you for past help and that which you will send.

"It would do your heart good to see the earnest spirit which pervades these conferences. In a recent letter from B——, two babies are reported as sound and healthy who were pitiful specimens in October. One of them was the most emaciated baby I ever saw not to be acutely ill.

"MARY E. FRAYSER, Winthrop Normal and Industrial College, Rock Hill, S. C."

Dr. Jackson of Honolulu, H. I., writes:

"My occasion for writing now is that Mrs. James A. Ratt of the Palama Settlement here is laying plans to have a baby contest and health exhibit; will you please send me all your literature. . . . Such a contest here is calculated to do good, and we could have some very unique features, as we have every race under the sun here and could have sections according to races, etc. Literature in different languages could be well used here, especially in Japanese, Chinese, Russian, Spanish, Portuguese, Korean, as well as English."

In conclusion we quote from a letter received from Dr. Rosa Gantt of Spartanburg, South Carolina:

"I am very much pleased with the fact that our State Board of Health included in its budget $100 to meet the expense of holding another better baby conference during our next state fair. I believe that if we stick to infant welfare work for a while we can make better progress than in trying to do too much as I believe in concentration. Our conference here in Spartanburg was a wonderful success; the year previous sixty-five babies were examined, and this fall we had to extend the period two days and 145 babies were examined, and others had to be turned away for lack of time. Infant welfare work seems to have taken a great hold on all classes of people everywhere. I shall endeavor to interest club women throughout the South in holding exhibits in connection with or separate (as they see fit) from the baby conferences, and also try and interest the state medical associations of the South in giving aid to the clubs."

With contests giving way to conferences; with the gradual elimination of cash prizes; with the steady increase in the number of permanent stations, and with increased legislation establishing bureaus and child hygiene departments, we feel that the baby health movement is sufficiently developed to be taken care of with ease, and to pass into a minor work of the committee.

With this in mind, a course of study for use in women's clubs is being prepared by Dr. Crumbine, a member of our central committee who is also secretary of the State Board of Health of Kansas. We will present it at the open meeting of our committee, in San Francisco. We shall print and distribute this course as soon as it is ready and interest the women's clubs in its use, thus continuing to develop what we consider the most distinct function of our work—an intelligent cooperation between our committee and the women's clubs in the welfare of women and children.

In conclusion, we wish to say that our year's work has been made possible by the hearty cooperation of our Council and various subcommittees, and by the many individuals who have given us thorough and efficient support.

Respectfully submitted.

LENNA L. MEANES, Chairman.
MARTHA WELPTON, Secretary.

COMMITTEE ON CANCER

To the Council on Health and Public Instruction:

Your committee has devoted its energies chiefly to the publication of pamphlets dealing with the subject of cancer in general and with those bearing on the various forms of cancer.

The following pamphlets have been published:

Control of Cancer, Dr. Joseph C. Bloodgood.

What Every One Should Know About Cancer, Dr. Joseph C. Bloodgood.

Cancer of the Skin, Dr. Henry H. Hazen.

Cancer of the Breast, Dr. W. L. Rodman.

Cancer of the Womb, Dr. Franklin H. Martin.

Cancer of the Genito-Urinary Organs, Dr. Hugh H. Young.

Many inquiries have come to the committee from the laity asking for knowledge on cancer of certain organs, and the committee has promptly mailed to the inquirer the desired pamphlet through Dr. Frederick R. Green, secretary of the Council on Health and Public Instruction.

We find that the campaigns thus far waged have yielded excellent results as evidenced by the number of early cases of cancer presenting themselves for operation. This early recognition of cancer we have found due to two main factors:

1. The physicians of the United States now fully realize that many early cases of cancer can be cured.

2. The public has already become so alive to the subject that if cancer be suspected they at once seek medical aid.

Your committee, which is also the committee of the Clinical Congress of Surgeons, wishes to express once more its hearty appreciation of the splendid work being done by the American Society for the Control of Cancer. Its funds have been contributed chiefly by the laity, and we would strongly urge the members of the American Medical Association to advise their patients to become members of this association, which has been and is doing so much to disseminate useful knowledge concerning cancer and is pointing out what may be accomplished by early operation. The secretary of this committee is Mr. Curtis E. Lakeman, 289 Fourth Avenue, New York. The success of that society is due in large measure to the careful and conscientious work of Mr. Lakeman and to Mrs. Robert G. Mead, chairman of the Finance Committee, New York, who has been indefatigable in raising the necessary funds. The great interest taken by the laity in the subject of cancer is the most helpful sign that could be wished for.

Your committee would draw attention to the fact that the Council on Health and Public Instruction of the American Medical Association has encouraged the endeavors of the American Society for the Control of Cancer in every way, and further, that it has gladly published articles for this society.

Your committee is greatly pleased with the progress that has already been accomplished in the campaign of education on the subject of cancer and feels sure that within the next five years every person in the United States will fully realize that cancer, if taken in time, can in many instances be permanently cured. They will also be familiar with the various precancerous lesions which, if promptly treated, will yield practically 100 per cent. cure.

Respectfully submitted.

THOMAS S. CULLEN, Chairman.
HOWARD C. TAYLOR,
C. JEFF MILLER,
F. F. SIMPSON,
J. C. BLOODGOOD.

COMMITTEE ON EXPERT TESTIMONY

Your committee have had under discussion the advisability of drafting a bill for the regulation of expert testimony for the past three years. The bill which is now submitted is a joint product of committees appointed by the American Bar Association, the American Institute of Criminal Law and Criminology, and the American Medical Association. The personnel of these committees includes jurists and physicians. It has been the endeavor of the various committees to include in this bill certain general principles which may be modified to suit local conditions.

At first thought it may appear that this bill, limited as it is to expert testimony in criminal cases in which the plea of insanity is raised, is only a limited application of the scope of what such a reform should be. It leaves untouched the bulk of cases in which medical men testify. While this criticism is a valid one, it seemed to your committee a wise provision that the first step in the proposed changes should be short. If the provisions of this bill were made to apply to all cases, both civil and criminal, and then some of its clauses were found obnoxious to the constitution in a given state, it would complicate the record in a large number of cases and cause unnecessary hardship. It was also thought that narrowing the application of the bill would in part lessen the hesitation of the several legislatures in placing it on the statute books. The restriction to criminal cases brings under its provisions those cases that are most in the public eye and in which the defects in present methods are most glaring. If after its enactment it proves satisfactory, it can be extended from time to time to other classes of litigation.

Section 1. *Summoning of Witnesses by Court.*—Be it enacted by the people of the state represented in the general assembly, that whenever in the trial of a criminal case the issue of insanity on the part of the defendant is raised, the judge of the trial court may summon one or more disinterested, qualified experts, not exceeding three, to testify at the trial. In case the judge shall issue the summons before the trial is begun, he shall notify counsel for the prosecution and defense of the witnesses so summoned. Upon the trial of the case the witnesses summoned by the court may be cross-examined by counsel for the prosecution and defense. Such summoning of witnesses by the court shall not preclude the prosecution or defense from using other expert witnesses at the trial. The witnesses summoned by the judge shall be allowed such fees as in the discretion of the judge seem just and reasonable, having regard to the services performed by the witnesses. The fees so allowed shall be paid by the county where the indictment was found.

In effect this section creates two classes of experts, those summoned by the court and those which may be called by either the prosecution or defense. This provision is essential to make the bill constitutional, as no defendant can be prevented from introducing testimony which is competent to prove the issue in his case. It will be noted that this section is not mandatory; it is left wholly to the discretion of the court.

Sec. 2. *Examination of Accused by State's Witnesses.*—In criminal cases no testimony regarding the insanity of the defendant shall be received from witnesses summoned by the defendant until the expert witnesses summoned by the prosecution have been given an opportunity to examine the defendant.

This section would be constitutional in some states but doubtfully so in others.

Sec. 3. *Commitment to Hospital for Observation.*—If in a criminal case the issue is raised that the defendant is insane so that he ought not to be tried, the judge of the trial court shall commit the defendant to a state hospital for the insane, preferably the one nearest the place of trial, to be detained there for purposes of observation until further order of court, provided that the duration of such detention shall not exceed three months. The court shall direct the superintendent of the hospital to permit all the expert witnesses summoned in the case to have free access to the defendant for purposes of observation. The court may also direct the chief physician of the hospital to prepare a report regarding the mental condition of the defendant. This report may be read at the trial of the issue of insanity by the said chief physician after he has been properly sworn as a witness. After reading the report the witness may be cross-examined by counsel for the prosecution and defense.

This provision is already a part of the law in five states, where it has proven practical and useful. It is a simple provision by which the state can avail itself of machinery already in operation. If it shall appear to the judge that the accused is in such a mental condition that he ought not be tried, he can be sent to a state hospital and there remain under observation until his mental condition can be ascertained. This provision would enable the judges to exercise greater discrimination in administering the criminal law. If in doubt of the person's sanity or if the suspected feigning, all that is needed is a summary commitment to a state hospital for observation. This provision would lessen the number of insane and feeble-minded now in the state penitentiaries.

Sec. 4. *Written Report by Witnesses.*—When the issue of insanity has been raised in a criminal case each expert witness, who has examined or observed the defendant, may prepare a written report, based upon his examination or observation, regarding the mental condition of the defendant, and such report may be read by the witness at the trial. If the witness presenting the report was called by the prosecution or defense, he may be cross-examined regarding his report by counsel for the other party. If the witness was summoned by the court, he may be cross-examined regarding his report by counsel for the prosecution and defense.

If no other provision became part of the law than Sec. 4, it would be a distinct advance in the admission of expert testimony. It enables a physician testifying as an expert to bring into court a concise statement of his findings and the reasons for his conclusions. Under such a rule the half truths and defective presentations now introduced would be lessened. At least there could be no excuse for them on the part of the expert.

Sec. 5. *Joint Report by Witnesses.*—Wherever in a criminal case expert witnesses have examined or observed the defendant, on whose behalf the issue of insanity has been raised, they may consult before testifying, and may prepare a joint report regarding the mental condition of the defendant. This report may be read at the trial by one of the experts who joined in the report, after all the experts who joined in the report have been duly sworn as witnesses. All the experts who joined in the report shall be subject to cross-examination by counsel for the prosecution and defense.

This is an extension of the Leeds system. It, like the preceding section, is not mandatory, but it permits expert witnesses to consult and if they agree they may submit a joint report. Possibly it will be found that under this provision there will be less disagreement among experts than has heretofore been believed. Trials as at present conducted usually magnify differences, which in many instances are only verbal definitions.

An especial merit of the bill is that each of the sections are independent. One can hardly conceive of the entire bill being pronounced unconstitutional. Should it be placed on the statute book and one or more of its provisions become inoperative, there would still be some advance toward placing this subject on a higher forensic and scientific plane.

Harold N. Moyer, Chairman.
E. R. Keedy,
Gilbert Seaman.

Committee on Cooperation with the National Educational Association

To the Council on Health and Public Instruction:

The investigation of rural schools made last year under the direction of the joint committees, show the need of better architectural and sanitary standards, better education in the principles and practice of school hygiene and sanitation, popular education from public press, and lectures on health topics. The committees had already secured the passage of a resolution at the meeting of the N. E. A. in 1913, asking that more information be obtained regarding the hygienic and sanitary conditions of the rural schools, and especially to ascertain what instruction is being given by schools upon the subjects of hygiene, sanitation and health sciences.

Neither chairman was able to attend the meeting of the N. E. A. in 1914, but the procuring of appropriations for carrying on this work was left with Professor Keyes, who succeeded in securing $500. The A. M. A. had already arranged to appropriate an amount equal to that appropriated by the N. E. A.

On Feb. 19, 1915, Doctors Favill, Dodson, Green and Corwin met at the University Club, Chicago, and arranged to meet at Cincinnati, Feb. 21, 1915, and to attend the session of the Department of Superintendents, N. E. A.

On the morning of Feb. 23, 1915, the committees had a joint session in Cincinnati. There were presen Drs. Favill, Green, Corwin and Wood, and Messrs. Claxton, Winship, Keating, Dresslar, Shawan and Keyes.

The principal subject for discussion at the joint meeting was the best method by which the large edition of the pamphlet on "Minimum Sanitary Requirements for Rural Schools" could be supplied to the United States Commissioner of Education for distribution to rural school teachers and school boards. Commissioner Claxton stated that he could use 750,000 copies of this pamphlet distributing them under government frank. Dr. Green estimated that this would involve an expense of approximately $3,000. It was recognized that this sum was beyond the resources of either of the committees and that arrangements must be made for financing this plan from private contributions. Dr. Wood submitted a comprehensive report covering a system of exhibit charts which he had devised for presenting the important features of the committees' work. Plans for securing a large number of copies of these charts for use in educational and sanitary exhibits were discussed. Dr. Wood stated that the distribution of the pamphlet on "Minimum Sanitary Requirements for Rural Schools" should in his judgment be followed by the development of some kind of prize system by which prizes could be offered to the rural school districts showing the greatest improvement during a given period of time. Plans for financing this suggestion were considered.

In the afternoon of February 23, the joint committee had charge of the program before the general session of the Department of Superintendence at Music Hall, the general subject being health problems in the public schools. Dr. Wood introduced the subject before a large audience and the discussion of the different phases of it was conducted by Dr. Favill, President Snyder and Drs. Dodson, Green and Corwin.

The committee had a booth in the exhibit hall in which were displayed the charts prepared by Dr. Wood. Copies of the report of the committee and the "Minimum Sanitary Requirements for Rural Schools," were distributed to those interested.

It is a great gratification to the committee to be able to report that since the Cincinnati conference, through the generosity of the Elizabeth McCormick Memorial Fund, an appropriation has been made sufficient to print 750,000 copies of the "Minimum Sanitary Requirements for Rural Schools" for Dr. Claxton's use. The preparation of this large edition marks the completion of the first stage of the committee's work; namely, that of investigating the physical condition of rural schools, formulating a statement of the minimum sanitary requirements which should be accepted by any school district and distributing this information to those responsible for such conditions. The two recommendations of Dr. Wood which were discussed at Cincinnati, namely, the offering of prizes for the school district which should show the greatest progress during a given period of time, and the preparation of sets of exhibit cards suitable for educational and sanitary exhibit are still under discussion. It is earnestly hoped that during the coming year, the committee may be able to secure sufficient support from outside sources to finance these two important educational plans.

The work of this committee in co-ordinating the educational and the medical professions has been of the utmost value and the distribution of the pamphlet prepared by the committee cannot fail to exercise a marked and permanent influence for the betterment of rural school conditions through the country.

Respectfully submitted,

R. W. Corwin, Chairman.
R. M. Dodson,
M. J. Rosenau.

Committee on Uniform Regulation of Membership

To the Council on Health and Public Instruction:

In the report of the committee last year, the recommendations adopted by the Conference of State Secretaries at the meeting in Chicago, Oct. 23, 1912, were stated; also the report of progress in adopting these recommendations as shown by the statements of the secretaries at the Conference of State Secretaries held in Chicago, Feb. 25, 1914. These reports from the various state secretaries showed that practical uniformity in membership regulation is gradually becoming prevalent throughout the organization. This change is taking place through a recognition on the part of the executive officers of the various state societies of the need of simple, uniform methods, both for the management of the state society itself and for co-ordinating the work of each state secretary with that of other state secretaries and with that of the

American Medical Association. As such action must necessarily result from the voluntary cooperation of the various state societies, this committee has deemed it advisable during the past year to allow this change to take place voluntarily rather than to attempt to bring it about more rapidly through any further conferences. The meeting of the state secretaries at the time of the annual meeting affords an ample opportunity for the discussion of these topics without the expense involved in a midwinter conference of state secretaries. The committee feels that it is of value in bringing about better co-ordination through the stimulation of a mutual feeling of cooperation rather than through the adoption or pressure of any hard and fast rules or regulations. We therefore recommend that the committee be continued with instructions to carry on further efforts for securing uniformity in such ways as it may deem advisable and that whenever possible in connection with the annual sessions of the Association this subject in some of its phases be made a topic of discussion for meetings of state secretaries.

Respectfully submitted,

THOMAS MCDAVITT, Chairman.
E. J. GOODWIN,
CLAUDE THOMPSON,
CHAS. N. COMBS,
E. F. HOWARD,
FREDERICK R. GREEN, Secretary.

COMMITTEE ON CONSERVATION OF VISION

To the Council on Health and Public Instruction:

Owing to the general financial depression, the appropriation of this committee has been reduced to $600 per annum, a sum which is manifestly inadequate to carry on its work in anything like a proper manner. The chairman of this committee and several of its members have been compelled to contribute money from their own pockets, in order to help the work. This is a distinctly unfair procedure, especially when it is remembered that this work is being carried on by busy physicians, of limited means, as a pure labor of duty and interest. These men receive no compensation for their labor or time, and practically all of the traveling and other expenses incident to the lectures delivered during the last two years, under the auspices of this committee, have been met by the medical profession, and usually by the men or women delivering these lectures.

In reviewing the work of the first year, the success of the state lecture bureaus becomes manifest. A brief tabulation of the lectures delivered is here given.

From this it will be seen that lectures have been given in thirty-eight states, and that 490 lectures have been delivered to audiences aggregating 113,898 people.

This is a distinct gain on the work accomplished last year, when 339 lectures were delivered in thirty states to audiences aggregating 69,425 people. It will thus be seen that in the last two years this committee has been able to report 829 lectures delivered to audiences aggregating 183,323 people. It is difficult to estimate the widespread influence of this campaign, and this committee begs to thank these state managers and these lecturers for their work, interest and money.

Enthusiastic letters and reports from most of the states have been received, concerning the interest created by these lectures, and the beneficial results following. The lectures should, by all means, be continued, for, while thousands have heard them, millions have not heard them, who should hear them. Let not the state managers think, therefore, that enough lecturing has been accomplished during the past two seasons. Good work has, it is true, been done, but much remains to be done. Therefore, let the lectures go on, in other towns and cities, or in the same towns and cities, for that matter. The chairman's mail is burdened with encouraging reports received by the various state managers. It is not possible in a short report to attempt, in any degree, a literal reproduction of these letters as to *actual results* which have followed in the wake of our campaign. The chairman will therefore venture to enumerate a few random reports, just as they come to hand in looking over his correspondence, leaving it to your imagination to conceive the remainder.

For instance, in Butte, Mont., successful results were obtained in the following diseases noticed in schoolchildren, whose eyes, ears, etc., had been tested: 42 tonsils and adenoids; 20 refraction; 3 conjunctivitis; 1 discharging ear; 1 catarrhal deafness. In Seattle, Wash., a nearly perfect system of medical school inspection has been placed in operation. In nine months, 3,886 cases have been treated among the children, and 243 operations have been performed; 42,000 schoolchildren have been examined, 1,600 homes have been visited and school nurses have been inaugurated. In South Dakota, a Society of School Hygiene has been formed in Deadwood, and several cities have adopted medical school inspection. Operations have been performed in many cases of tonsils and adenoids, and many pairs of glasses have been fitted in the various towns and cities. In Pennsylvania, 400,000 schoolchildren were examined last year. In Philadelphia, there are three school clinics for eyes—one where services and glasses are given free. The attending eye surgeons are paid by the city. Two hundred thousand slips have been pasted in schoolbooks, giving advice as to the care of the eyes. In Portland and La Grande, Ore., the eyes, ears, noses and throats of the schoolchildren are annually and systematically examined by schoolteachers. In Alabama, Walker County has a full-time health officer; Tuscaloosa and New Decatur have regular medical school inspectors. In Utah, each schoolroom in Salt Lake City is supplied with charts for testing eyes, ears, etc., and there are seven school nurses in that city. In New Hampshire, twenty-nine towns and cities have medical school inspection. In Ohio, Germantown has just adopted medical school inspection. One lecture was the means of establishing another field worker. Many cases of tonsils, adenoids, cataracts, strabismus, etc., have been operated on, and many glasses have been fitted. Many small pamphlets and leaflets have been issued and much newspaper publicity has been obtained. Several epidemics of trachoma have been

LECTURES DELIVERED

State Manager	State	No. of Lectures	Estimated Size of Audiences
1. C. W. Banner	North Carolina	5	1,000
2. W. B. Lancaster	Massachusetts	8	1,475
3. H. A. Beaudoux	Minneapolis	6	2,800
4. C. Loeb	Missouri	6	500
5. C. W. Kollock	South Carolina	6	600
6. N. M. Black	Wisconsin	9	1,700
7. J. La Rue Robinson	Nevada	2	550
8. E. C. Ellett	Tennessee	9	2,700
9. D. Roy	Georgia	5	1,575
10. E. F. Davis	Oklahoma	7	1,400
11. R. W. Perry	Washington	1	175
12. F. P. Lewis, E. M. Alger	New York*	61	16,921
13. L. A. Bize	Florida	10	1,925
14. C. F. Adams	New Jersey	6	185
15. D. M. Lindsay	Utah	23	3,240
16. S. L. Ledbetter	Alabama	9	1,140
17. J. A. Spalding	Maine	37	6,584
18. T. A. Grigg	Montana	5	400
19. J. G. Parsons	South Dakota	11	1,750
20. G. C. Schaeffer	Ohio*	78	19,285
21. C. H. Babbitt	New Hampshire	2	300
22. R. L. Nourse	Idaho	11	2,700
23. L. W. Dean	Iowa	2	300
24. W. R. Parker	Michigan	13	5,500
25. J. A. White	Virginia	7	600
26. J. O. McReynolds	Texas	56	11,108
27. J. A. Stucky	Kentucky	13	3,900
28. B. F. Matheny	West Virginia	2	1,000
29. P. Guilford	Illinois	18	6,350
30. J. L. McCool	Oregon	2	200
31. J. J. Carroll	Maryland	8	825
32. G. L. Strader	Wyoming	1	200
33. J. H. Rindlaub	North Dakota	24	3,975
34. G. H. Warren	Connecticut	3	700
35. W. Reber	Pennsylvania	6	450
36. J. A. Ellegood	Delaware	1	600
37. J. M. Patton	Nebraska	2	285
38. A. E. Bulson	Indiana	15	6,000
		490	113,898

* Most of the work accomplished in Ohio and New York has been done under the auspices of the State Organization for Visual Conservation.

discovered and stopped. In Iowa, systematic and annual eye, ear, nose and throat tests are made, and school nurses are in attendance in Marshalltown, Fort Madison, etc. In North Dakota, annual and systematic eye, ear, nose and throat tests are made in LaMoure, Grand Forks, Fargo, etc., and in Wells, McHenry and Ransom counties; in these places they also have school nurses. In Wyoming, Cheyenne enjoys medical school inspection. In Kentucky, they are making a strong effort to pass a law for the annual and systematic examination of schoolchildren's eyes, ears, noses and throats by schoolteachers. Our committee is materially helping the movement to stamp out trachoma. A recently enacted law in Kentucky compels the State Board of Health to conduct schools in each county, on which attendance is made compulsory, for the instruction of physicians and midwives concerning the prevention of blindness, with particular reference to trachoma and ophthalmia neonatorum. In Maryland, Miss M. V. Kelly, a field agent, visited the schools and hospitals in Salisbury, Euston and Cambridge and interviewed the doctors and found many cases of bad eyes, and saw that many were relieved.

It is interesting to relate that one optician alone in Chicago, sold about 5,000 vision charts for schools, with teachers' instructions attached, during the past year. This will be something of an indication as to the interest awakened in this matter.

These few state reports refer to fragmentary work performed quite recently, and do not at all indicate the total amount of state work accomplished. The chairman merely wishes to convey by these scattering and fragmentary items the impression that our work is creating interest all over the United States. Our lecturers have not confined themselves to lectures purely devoted to the eyes, but have included ears, noses and throats in their talks, and have dwelt a great deal on the general subject of medical school inspection, and their labors have borne fruit all along these lines. The chairman does not wish to convey the idea that all eye work in the several states has been the result of the work of this committee; this would not be true, especially in such states as Ohio, New York, Pennsylvania, etc., where they have most efficient state organizations. The chairman merely wishes to declare that this committee is one of the factors working for good in the United States, and that its work is surely helping along the movement for visual conservation, and that many of the good results can be directly traced to the influence of this committee. A work which, for instance (in most instances), can be fairly attributed to the influence of this committee and usually to its *direct* personal influence, is the passage of laws in some states for the annual and systematic examination of schoolchildren's eyes, ears, noses and throats. Eighteen states have laws of this character. The names of these states is here given with the dates of the enactment: (1) Connecticut, 1899; (2) Massachusetts, 1906; (3) Colorado, 1909; (4) Maine, 1909; (5) Pennsylvania, 1911; (6) Indiana, 1911; (7) Utah, 1911; (8) Vermont, 1912; (9) North Dakota, 1913; (10) West Virginia, 1913; (11) New Hampshire, 1913; (12) New Jersey, 1913; (13) New York, 1913; (14) Maryland, 1914; (15) Wyoming, 1915; (16) South Carolina, 1915; (17) Oklahoma, 1915; (18) Delaware, 1915. It would be desirable to give these various laws in detail, but space forbids; suffice it to say that they vary considerably in their language and requirements—some merely advise that this work be done, that the state endorses it and will pay the expenses of furnishing printed material for the tests up to a certain limit. Others make the procedure obligatory, while one state (Delaware) has not state law, but the tests are ordered by the Board of Education.

While a publication, at this time, of all these laws is impracticable, it has been deemed advisable to publish one of the best laws, to guide those interested in the passage of such laws in other states, concerning a reasonably good law to present to the legislatures. A copy of the Wyoming law is here given. It is particularly praiseworthy on account of its brevity, plainness and unambiguous language.

THE WYOMING LAW

Section 1. It shall be the duty of every teacher engaged in teaching in the public schools of incorporated cities and towns of the state separately and carefully to test and examine every child under his jurisdiction to ascertain if such child is suffering from defective sight or hearing or disease of nose and throat.

Section 2. In making the tests required by Section 1 of this act the teacher shall employ eye testing charts of a standard character approved and supplied by the State Superintendent of Public Instruction and shall conform to the rules of the State Superintendent in methods of applying such tests, especial attention being given to defects that may be disclosed by the following questions:

1. Does the pupil habitually suffer from inflamed lids or eyes.

2. Does the pupil fail to read a majority of the letters in the number 20 line of the standard vision chart with either eye.

3. Do the eyes and head habitually grow weary and painful after study?

4. Does the pupil appear to be "cross-eyed?"

5. Does the pupil complain of earache in either ear?

6. Does matter (pus) or a foul odor proceed from either ear?

7. Does the pupil fail to hear an ordinary voice at twenty feet in a quiet room?

8. Is the pupil frequently subject to "colds in the head" and discharges from the nose and throat?

9. Is the pupil an habitual "mouth breather?"

If an affirmative answer is found to any of these questions the teacher shall give such pupil a report to his parent or guardian made on a report blank prepared and furnished by the State Superintendent of Public Instruction, such report to be made in form prescribed by the State Superintendent.

It shall be the further duty of the teacher to record the results of the examinations required by Section 1 of this Act in such a manner as may be described by the State Superintendent of Public Instruction.

Section 3. It shall be the duty of the State Superintendent of Public Instruction to prescribe rules for making such tests as are required by this Act and to prepare copies thereof, together with all blanks, charts and printed forms deemed necessary by the State Superintendent for carrying into effect the provisions of this Act, and to distribute them to all the public school teachers in incorporated cities and towns of the state, such distribution to be made through the district boards or, if there be such, through the executive officers thereof, the expenses of such printing and distribution to be borne out of the State Superintendent's contingent; provided that, the annual expense for such purpose shall not exceed one hundred and fifty dollars.

Section 4. During the first month of each school year, after the opening of school, teachers must make the tests required of this act upon the children then in attendance at school; and thereafter, as children enter school during the year, such tests must be made immediately upon their entrance.

Section 5. It shall be the duty of the Boards of Trustees of the several school districts of the State to enforce the provisions of this Act.

Section 6. This Act shall take effect and be in force from and after July 1, 1915.

It will be observed that the last ten states to pass eye and ear laws date the laws from 1913. It was in 1913 that this committee began its work, and it is only fair to presume that the passage of those laws in 1913, 1914 and 1915 was more or less inspired by the existence of this committee. Indeed, in some of the states like Wyoming, South Carolina, Oklahoma and Delaware it can be safely said that the laws were passed through the direct influence of our managers and lecturers in those states. The Wyoming law owes its existence, for instance, to Dr. George L. Strader, our state lecture bureau manager, who is also a member of the state legislature; and the Delaware law would never have been passed had it not been for the work of the state manager, Dr. J. A. Ellegood.

Many of our state organizations are helping greatly in the passage of laws concerning ophthalmia neonatorum, trachoma and in fighting optometry laws; and it can be truthfully said that the influence of this committee can hardly be overestimated in promulgating the doctrine of good eyes, along all of its channels.

One embarrassment in our work has been the changing of state managers. This occurs usually through lack of results and indisposition or inability to put the necessary work into the undertaking. Some men have accepted these positions and have then practically done nothing, except perhaps write a few letters. This will, of course, utterly defeat the intention of this committee. The chairman works hard and constantly in this cause but he cannot do it all. It is necessary for us to have representatives in each state, to manage state affairs, who are deeply interested in the cause and are willing to really work for its success. A man who accepts the position of state manager on this committee should be able to show excellent state progress at the end of the season. Most of the managers have done this, but some have not, and it is hoped they will appreciate the importance of their positions from now on, and be able to show good results next season. The success of this work depends largely on them.

It has greatly facilitated our work to have our state managers appointed by the various state medical societies as chairmen of the various conservation of vision committees. This has been done by thirty-four of the states, and it is hoped that the other states will help us in this work immediately. Those states that have made such appointments are:

Alabama	Indiana
Arkansas	Iowa
California	Kansas
Delaware	Kentucky
District of Columbia	Maryland
Florida	Massachusetts
Illinois	Michigan
Missouri	Ohio
Nebraska	Oklahoma
Nevada	Oregon
New Hampshire	Pennsylvania
New Jersey	South Carolina
New Mexico	South Dakota
New York	Tennessee
North Carolina	Texas
Utah	Virginia
Wisconsin	Wyoming

The committee has not published any new pamphlets this year, feeling that, inasmuch as it has now in active circulation twenty pamphlets on ocular subjects for laity reading, it was perhaps enough for the past season. Several new pamphlets, however, have been written and are ready for printing, and will shortly be published. Our conservation of vision pamphlets have been a great success, and about 34,000 are in circulation—either by free distribution or sale. They have been a great factor for good.

The committee intends, the next season, to print and distribute a large number of little leaflets on various practical ocular subjects, written in a few plain words with short sentences and one or two significant pictures. One has already been written and will shortly be published, and others will quickly follow.

Our lecturers are greatly in need of new stereopticon pictures, to encourage them in their work, and to enable them to deliver more interesting lectures. We have now twenty-eight pictures for each state, and this number should be increased to fifty. We are especially in need of pictures showing the various kinds of shop accidents, and how they can be avoided. The expense would not be great, and it is hoped that the money may be provided. It is of great importance to keep up the interest of our state managers, and this can be best done with supplying them with what material they actually need—for the prosecution of their work. Most of them are working hard and need encouragement.

To recapitulate, then, what has this committee accomplished during the last two years, to justify its existence in the past, and to warrant its continuance and liberal support in the future?

1. It has provided 829 lectures to audiences aggregating 183,223 people.

2. It has caused to be written twenty pamphlets on eye subjects, with a distribution of 34,000.

3. It has supplied the *Press Bulletin* of the American Medical Association with short, practical articles on eye subjects that have reached hundreds of thousands of people.

4. It has distinctly aided in producing a sentiment over this entire country on the subject of visual conservation.

5. It has been the means of greatly assisting in the enactment of laws, concerning the examination of schoolchildren's eyes, ears, noses and throats, and laws concerning trachoma and ophthalmia neonatorum. It has also greatly assisted in defeating laws concerning the practice of optometry.

6. It has had much to do with regard to stimulating interest in general medical school inspection, school nurses, etc., and in the establishment of these much needed conditions in many cities.

7. It has been the means of relieving thousands of schoolchildren of adenoids, enlarged tonsils, discharging ears, deafness, inflamed eyes, crossed eyes, headaches, nearsightedness, etc., and thus has not only improved their educational possibilities and general physical and sociologic conditions, but also at the same time has greatly benefited the physical, mental and nervous condition of their teachers.

8. It has signally aided the campaign against "shop accidents" by its pamphlets, lectures, etc., warning the public against such accidents, and how they can be best prevented.

These are perhaps sufficient reasons for the continued existence of this committee, although others might be given. It is to be hoped that the committee, the state managers, the lecturers, and others, will be sufficiently encouraged from the work of the past year to go on with the campaign the coming year, with renewed enthusiasm and industry.

FRANK ALLPORT, Chairman.

Report of the Council on Medical Education

In the absence of the Chairman of the Council on Medical Education, Dr. Arthur D. Bevan, Illinois, the report was read by the Secretary of the Council, Dr. N. P. Colwell.

The report is as follows:

To the Members of the House of Delegates of the American Medical Association:

In the Council's report in 1905, just ten years ago, two educational standards were presented, one which was recommended for immediate adoption and the other, referred to as the "ideal standard," for adoption at some future time. The first called for a graded medical course consisting of four years of seven months each, based on the completion of the usual four-year high school education. The "ideal standard," in brief, called for a standard four-year high school education, a year devoted to college courses in physics, chemistry and biology, the four-year medical course, and a year's practical training as an intern in a hospital.

The college session just closed marks an important epoch in the history of medical education. With the exception of the hospital intern year, the standard which in 1905 was referred to as "ideal," in 1914 became the essential standard. Last fall thirty-seven medical colleges began for the first time the enforcement of the entrance requirement of a college year in physics, chemistry and biology, joining the forty-seven which had already gone to that or higher entrance requirements, making altogether eight-four medical colleges out of the one hundred now existing which are operating under the higher standard.

MEDICAL COLLEGES

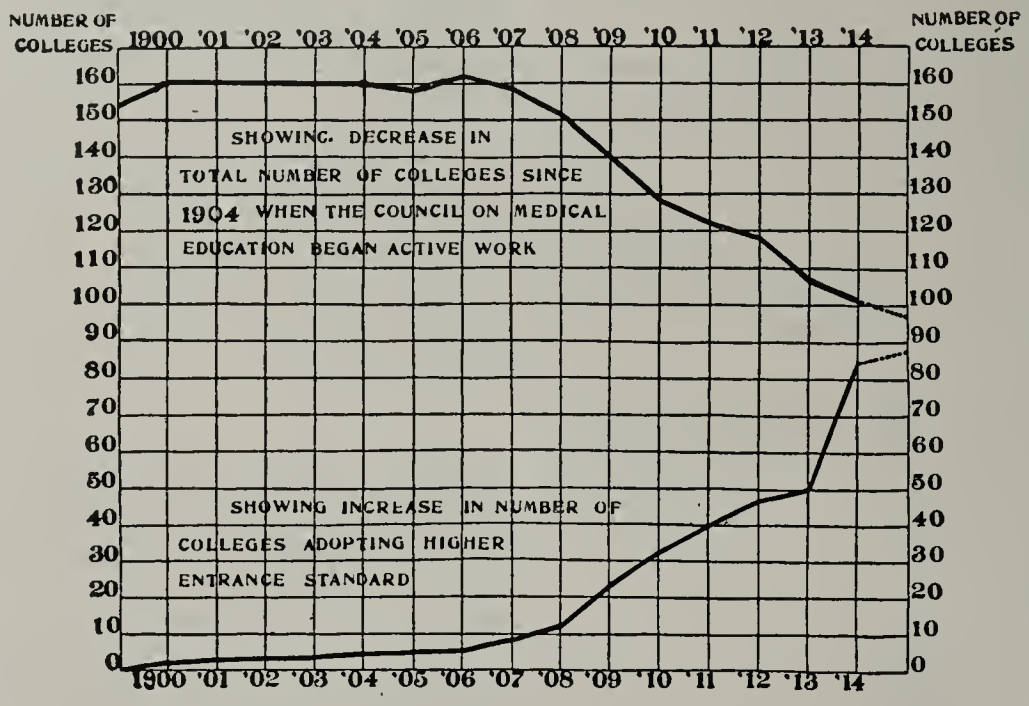
The progress among the colleges during the last eleven years toward the general adoption of higher entrance standards is graphically shown in Chart 1, which resembles somewhat a temperature chart. The comparison is really a good one. The country's supply of medical schools in 1904 was far above normal, but has been reduced, as indicated by the upper line, to an even hundred medical colleges. Note that the marked reduction began with the session of 1906-1907, when the Council completed its first inspection of medical colleges.

The lower line in the chart shows the progress among the colleges in the adoption of higher entrance standards. The Council's campaign for higher entrance standards was begun in 1906, and Jan. 1, 1910, was suggested as the date when the requirement was to become effective. Several of the better situated colleges, however, put the requirement into effect at an earlier date. Other colleges fixed on later dates, and the rise between 1908 and 1913 shows a steady and rapid increase. The exceptionally rapid rise in 1914 was due to the resolution adopted by the House of Delegates of the American Medical Association in 1912 instructing the Council to include in Class A, after Jan. 1, 1914, only such colleges as were requiring the higher standard.

This chart allows of a forecast of the outcome of the campaign for higher standards. According to this chart, when all the colleges shall have adopted the higher entrance requirement, the number will be somewhere between seventy-five and ninety.

CHART 1.—FEWER BUT BETTER MEDICAL COLLEGES

A LARGE OVERSUPPLY REDUCED TO A MORE NORMAL QUANTITY OF HIGHER GRADE INSTITUTIONS.



CARE IN ADMINISTERING ENTRANCE REQUIREMENTS

In the thirty-seven medical schools which began the higher requirement in 1914, the percentage of decrease varied considerably, depending on the thoroughness with which the requirement was enforced. Some colleges were found to have used considerable liberality in administering the higher standard, but even these colleges largely reduced their freshman classes and greatly improved the quality of students admitted. In justice to many colleges, it is believed that for a year or two certain conditions, hereinafter set forth, should be allowed.

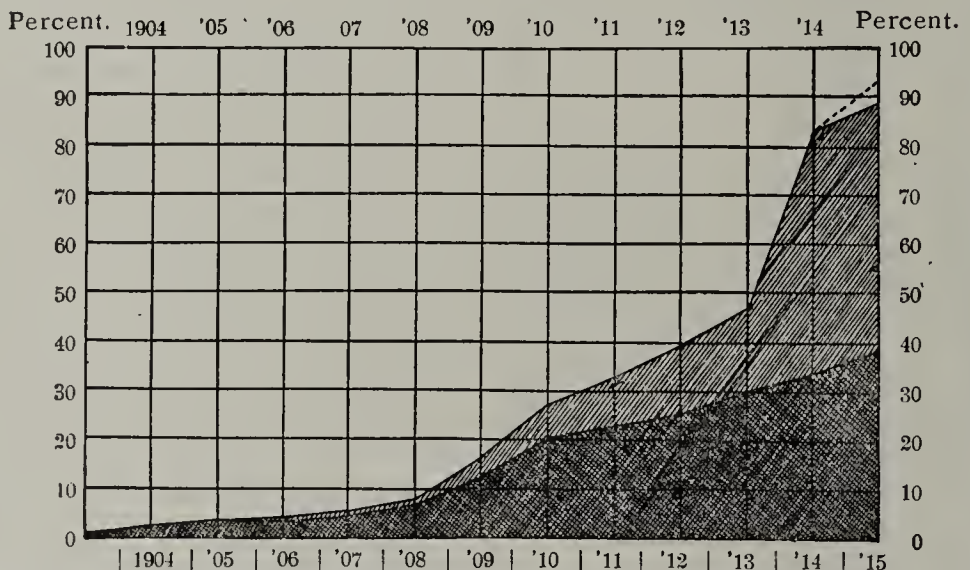
In order to appreciate how marvelous the improvement in the entrance requirements to medical schools has been during the last ten years, it must be remembered that in 1904 a very small proportion (not more than 15 or 20 per cent.) of all medical colleges were really requiring a four-year high school education for admission, whereas at the present time at least 85 to 90 per cent. of all colleges are on that or higher standards. In 1904 only four medical colleges (less than 3 per cent. of the total number) required for admission one or more years of collegiate work, in addition to the high school education; now eighty-six (86 per cent. of all colleges) are on that standard, and of these, thirty-nine are requiring two or more years of collegiate work. In ment. The accompanying table shows, however, that after a year or two has been allowed for readjustment, the enrolments will return more nearly to normal.

Of the 100 medical colleges still existing, eighty-four have put into effect the requirement for admission of one or more years of collegiate work, in addition to a high school education. In thirty-seven colleges the higher requirement began in 1914—at the beginning of the present college session—and, with one exception, these colleges had decreased enrolments. A few of the colleges have limited their enrolments, so show neither increase nor decrease. In forty-seven colleges, however, the higher requirement became effective in 1913 or earlier, and from forty-two of these, reports have been received showing this year's enrolments of students, and all but four report either increased enrolments or larger freshman classes. The figures are shown in the accompanying table.

CHART 2.—IMPROVED ENTRANCE REQUIREMENTS TO MEDICAL COLLEGES

SHOWING PERCENTAGE INCREASE BY YEARS IN THE NUMBER OF COLLEGES REQUIRING (LIGHT SHADING) ONE YEAR, AND (HEAVY SHADING) TWO OR MORE YEARS OF COLLEGIATE WORK FOR ADMISSION. UNSHADED PORTION OF CHART SHOWS PROPORTION REQUIRING A HIGH SCHOOL COURSE, OR LESS, FOR ENTRANCE.

EACH VERTICAL LINE REPRESENTS A YEAR AS INDICATED



Percent.	1904	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15
High Sch. Ed.	97.5	96.8	96.3	94.4	92.1	83.6	71.8	67.2	60.2	53.3	16.8	11.0
1 yr. College	....	....	0.6	0.6	1.3	4.3	7.6	9.8	14 4	16.8	49.5	51.0
2 yrs. College	2.5	3.2	3.1	5.0	6.6	12.1	20.6	23.0	25.4	29.9	33.7	38.0

COLLEGE ADMISSION REQUIREMENTS BY PERCENTAGES

The adoption by medical colleges of higher entrance standards is shown by percentages in Chart 2. The lighter shading shows the increase in the percentage requiring one or more years of collegiate work, and the heavier shading shows those requiring two years of collegiate work. The white portion of the chart shows the corresponding reduction in the percentage of medical colleges requiring a high school education *or less.*

EFFECT OF HIGHER STANDARD ON STUDENT ENROLMENTS

As expected, this general adoption of the higher entrance requirement has caused a decrease in the total student enrol-

1904 very little was known about the practice of colleges, and such standards as were advocated were largely on paper; at that time no systematic check was kept on the methods used by the medical schools in administering entrance requirements; now, through the Students' Register, the standards actually enforced by each college are known, faulty methods or "paper standards" are discovered and corrected or exposed, and instead of being an unknown quantity, preliminary requirements are now known with fair accuracy. Of course, there is still room for improvement in methods of administration as well as in the securing of better standards. It is believed, however, that the following revised standard of preliminary education is practicable and can be fairly well enforced.

TABLE—VARIATIONS IN MEDICAL COLLEGE ENROLMENTS

Figures showing numbers of colleges having enrolments in the session of 1914-15, respectively, larger, equal or smaller than in the session of 1913-14.

Total Registration This Year	Medical Colleges Requiring for Admission					Total Colleges
	Two Years of College Work, Effective in		One Year of College Work, Effective in		High School Course	
	1913 or Previous	In 1914	1913 or Previous	In 1914		
Increased.....	23	..	7	1	3	34
Equal.....	3	..	1	..	..	4
Decreased.....	4 (3)	3 (1)	4 (2)	29 (2)	5	45 (8)
Totals.....	30	3	12	30	8	83

Figures in parenthesis show number of colleges which, although the total enrolment was diminished, had larger freshman classes than a year ago.

REVISED REQUIREMENTS FOR ADMISSION TO MEDICAL SCHOOLS

These were published in THE JOURNAL, April 24, 1915, p. 1421.

CLASSIFICATIONS OF MEDICAL COLLEGES

A brief statement in regard to the various classifications presented by the Council will be interesting. Meanwhile, the Council regards all these classifications as temporary expedients, and hopes the time will soon come when there will be no need of them.

The first classification presented was in 1905, when the 158 medical schools then existing were divided into three groups based on the failures of their graduates at the examinations of state licensing boards. Group 1 contained forty-seven colleges which had less than 10 per cent. of failures; Group 2 contained twenty-seven colleges which had between 10 and 20 per cent. of failures, and Group 3 contained thirty-eight colleges which had over 20 per cent. of failures. There were ten colleges which did not give the complete medical course, and thirty-six others in regard to which the data were insufficient to permit of their classification.

The second classification was presented in 1907, and followed the first complete tour of inspection. The 162 colleges then existing were graded on a civil service basis and were divided into three groups. Group 1 contained eighty-three colleges whose grades were 70 per cent. or above; Group 2 contained forty-seven colleges whose grades were between 50 and 70 per cent., and Group 3 contained thirty-two colleges graded below 50 per cent. This classification was presented at the Council's annual conference and at the meeting of the House of Delegates in 1907. It was not published, but each college was notified of the rating given to it.

The third classification was made in 1910, following the second complete tour of inspection. In this classification the 135 medical colleges were divided into Classes A, B and C. The Class A group included seventy-four colleges which were considered "acceptable," the Class B group included thirty colleges which "needed certain improvements to make them acceptable," and the Class C group included thirty-one colleges in regard to which "a complete reorganization" would be required to make them acceptable.

The Council's fourth complete classification of the medical colleges in the United States was prepared and presented to this body in 1912. That classification included 118 medical colleges, as follows:

FOURTH CLASSIFICATION OF MEDICAL COLLEGES

	Class A+	A	B	C	Total
Giving complete course.....	22	35	23	29	109
Giving two years only.....	2	6	1	..	9
Total.....	24	41	24	29	118

The A+ group was introduced to designate the very acceptable schools which, in addition to having the necessary equipment, courses, etc., required a premedical science training for admission. The adoption of this premedical science requirement by eighty-nine of the 100 medical schools now remaining has automatically eliminated the A+ classification.

A REVISED GROUPING

A fifth grouping of the colleges is now presented, which has a definite purpose. It divides the schools of the country into three groups, an acceptable group which the Council believes are worthy of recognition by the state licensing boards; a Class C group, now including a very limited number of schools, which the Council believes are unworthy of recognition by the state boards; and a Class B group of schools, consisting of those colleges the future of which is uncertain, and the recognition of which should be carefully determined by the state boards themselves. This revised classification contains just 100 medical colleges as follows:

CLASS A—ACCEPTABLE MEDICAL COLLEGES

ALABAMA
University of Alabama, School of Medicine.....Mobile

CALIFORNIA
Leland Stanford Junior University, School of Medicine..San Francisco
University of California, Medical School.....San Francisco

COLORADO
University of Colorado, School of Medicine.....Boulder-Denver

CONNECTICUT
Yale Medical School.....New Haven

DISTRICT OF COLUMBIA
Georgetown University, School of Medicine.....Washington
George Washington University, Medical School.....Washington
Howard University School of Medicine.....Washington

GEORGIA
Atlanta Medical College.....Atlanta
University of Georgia Medical Department.....Augusta

ILLINOIS
Northwestern University Medical School.....Chicago
Rush Medical College (University of Chicago).....Chicago
University of Illinois, College of Medicine.....Chicago

INDIANA
Indiana University, School of Medicine.....Bloomington-Indianapolis

IOWA
State University of Iowa, College of Medicine.....Iowa City
State University of Iowa, College of Homeopathic Medicine..Iowa City

KANSAS
University of Kansas, School of Medicine.....Lawrence-Rosedale

KENTUCKY
University of Louisville, Medical Department.....Louisville

LOUISIANA
Tulane University of Louisiana, School of Medicine.....New Orleans

MAINE
Medical School of Maine.....Brunswick-Portland

MARYLAND
College of Physicians and Surgeons.....Baltimore
Johns Hopkins University, Medical Department.....Baltimore
University of Maryland, School of Medicine.....Baltimore

MASSACHUSETTS
Boston University, School of Medicine.....Boston
Medical School of Harvard University.....Boston
Tufts College Medical School.....Boston

MICHIGAN
Detroit College of Medicine and Surgery.....Detroit
University of Michigan, Dept. of Medicine and Surgery....Ann Arbor
University of Michigan, Homeopathic Medical College.....Ann Arbor

MINNESOTA
University of Minnesota Medical School.....Minneapolis

MISSISSIPPI
University of Mississippi, Department of Medicine*.....Oxford

MISSOURI

St. Louis University, School of Medicine.....St. Louis
University of Missouri, School of Medicine*.....Columbia
Washington University Medical School.....St. Louis

NEBRASKA

University of Nebraska, College of Medicine.....Omaha

NEW HAMPSHIRE

Dartmouth Medical School*.....Hanover

NEW YORK

Albany Medical College.....Albany
Columbia University, Coll. of Physicians and Surgeons...New York City
Cornell University Medical College.....New York City
Fordham University, School of Medicine.....New York City
Long Island College Hospital.....New York City
Syracuse University, College of Medicine.....Syracuse
University and Bellevue Hospital Medical College.....New York City
University of Buffalo, Medical Department.....Buffalo

NORTH CAROLINA

University of North Carolina, School of Medicine*.....Chapel Hill
Wake Forest College School of Medicine*.....Wake Forest

NORTH DAKOTA

University of North Dakota, School of Medicine*.....University

OHIO

Western Reserve University, School of Medicine.....Cleveland
Medical College of the University of Cincinnati.....Cincinnati
Ohio State University, College of Medicine.....Columbus

OREGON

University of Oregon, Department of Medicine.....Portland

PENNSYLVANIA

Hahnemann Medical College and Hospital.....Philadelphia
Jefferson Medical College.....Philadelphia
Medico-Chirurgical College of Philadelphia.....Philadelphia
University of Pennsylvania, School of Medicine.....Philadelphia
University of Pittsburgh, School of Medicine.....Pittsburgh
Woman's Medical College of Pennsylvania.....Philadelphia

SOUTH DAKOTA

University of South Dakota, College of Medicine*.....Vermilion

TENNESSEE

Vanderbilt University, Medical Department.....Nashville
University of Tennessee, College of Medicine.....Memphis

TEXAS

University of Texas, Department of Medicine.....Galveston

UTAH

University of Utah, School of Medicine*.....Salt Lake City

VERMONT

University of Vermont, College of Medicine.....Burlington

VIRGINIA

Medical College of Virginia.....Richmond
University of Virginia, Department of Medicine.....Charlottesville

WISCONSIN

Marquette University, School of Medicine.....Milwaukee
University of Wisconsin Medical School*.....Madison
Total, 67.

CLASS B—COLLEGES NEEDING GENERAL IMPROVEMENTS TO BE MADE ACCEPTABLE

ARKANSAS

University of Arkansas, Medical Department.....Little Rock

CALIFORNIA

College of Physicians and Surgeons.....Los Angeles
Hahnemann Medical College of the Pacific.....San Francisco
Oakland College of Medicine and Surgery.....Oakland

ILLINOIS

Bennett Medical College.....Chicago
Chicago College of Medicine and Surgery.....Chicago
Hahnemann Medical College and Hospital.....Chicago

NEBRASKA

John A. Creighton Medical College.....Omaha

NEW YORK

New York Homeopathic Med. Coll. and Flower Hosp.[1]..New York City

NORTH CAROLINA

Leonard Medical School*.....Raleigh

OHIO

Eclectic Medical College.....Cincinnati

OKLAHOMA

University of Oklahoma, School of Med.....Norman-Oklahoma City

PENNSYLVANIA

Temple University, Department of Medicine.....Philadelphia

SOUTH CAROLINA

Medical College of the State of South Carolina.....Charleston

TENNESSEE

Meharry Medical College.....Nashville

TEXAS

Baylor University, College of Medicine.....Dallas
Southern Methodist University, Medical Department.....Dallas
Texas Christian University, School of Medicine.....Fort Worth

WEST VIRGINIA

West Virginia University, School of Medicine*.....Morgantown
Total, 19.

CLASS C—COLLEGES REQUIRING A COMPLETE REORGANIZATION TO MAKE THEM ACCEPTABLE

CALIFORNIA

California Eclectic Medical College.....Los Angeles
College of Physicians and Surgeons.....San Francisco
College of Medical Evangelists.....Loma Linda

GEORGIA

Georgia College of Eclectic Medicine and Surgery.....Atlanta

ILLINOIS

Chicago Hospital College of Medicine.....Chicago
Jenner Medical College.....Chicago

MASSACHUSETTS

College of Physicians and Surgeons[2].....Boston

MISSOURI

American Medical College[3].....St. Louis
Eclectic Medical University[4].....Kansas City
Kansas City Hahnemann Medical College.....Kansas City
St. Louis College of Physicians and Surgeons.....St. Louis

NEBRASKA

Cotner University Medical College[5].....Lincoln

NEW YORK

New York Med. Coll. and Hosp. for Women.....New York City

TENNESSEE

University of West Tenn. Coll. of Med. and Surg.....Memphis
Total, 14.

---

* These colleges give only the first two years of the medical course. Leonard Medical College discontinued clinical teaching in June, 1914.

1. Rating dropped to Class B, Feb. 15, 1915.
2. Reported not recognized by the Massachusetts Medical Society.
3. Also known as the Medical Department of the National University of Arts and Sciences.
4. Reported not recognized by the Missouri State Board of Health.
5. Formerly known as the Lincoln Medical College.

PROGRESS TOWARD THE HOSPITAL INTERN YEAR

A preliminary investigation of the hospital situation made early in 1913 showed that there were enough hospitals in the United States having over twenty-five beds each to provide an ample number of internships for all students graduating in medicine. But not all these hospitals were using interns, so that only about three fifths of the number of internships needed were being provided. The situation called for a campaign to induce other good hospitals to provide for the use and training of interns.

A more careful investigation was made during the last year, which resulted in the preparation of a list of hospitals provisionally approved from the standpoint of the internships furnished. The reports from the state committees are of particular value, since they indicate what hospitals are worthy of further investigation, should an actual inspection be deemed advisable.

A RECOMMENDATION

The Council has gone ahead with the investigation of hospitals far enough to see that to do the work properly will be an enormous task, and that it is a very important and proper work for the American Medical Association to take up. To do the work right will necessitate securing the services of some specially qualified individual to do the inspecting under and with the assistance of the present forces of the Council on Medical Education. We therefore respectfully ask that the Trustees set aside sufficient funds to carry on this work properly.

There are six medical colleges which have adopted the requirement of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the sessions when the requirement became effective are as follows:

University of Minnesota, Medical School.....1910-11
Leland Stanford Jr. University, School of Medicine.....1914-15
Rush Medical College (University of Chicago).....1914-15
University of California, College of Medicine.....1914-15
Northwestern University, Medical School.....1915-16
University of Vermont, College of Medicine.....1915-16

Two state licensing boards, those of Pennsylvania and New Jersey, now require that every candidate to be eligible for license to practice medicine in those states must have served at least one year as an intern in an approved hospital. The requirement became effective in Pennsylvania in 1914, and will become effective in New Jersey in 1916.

EDUCATION STATISTICS

One of the most important functions of the Council is the conducting of a clearing house of information regarding medical education and medical licensure. Besides the numerous reports and pamphlets issued, this information is published principally in two special numbers of THE JOURNAL of the American Medical Association each year, namely, the State Board Number, which appears in April or May, and the Educational Number, which appears in August. Attention is particularly called to the state board statistics published April 24 this year, bound pages of which have been distributed. It needs but a glance at one table published with these statistics (Table D[1]) to show how exceedingly important these statistics are. Without the information in this table, prospective medical students could not know that the diplomas granted by certain medical colleges do not constitute an acceptable qualification for the license to practice in from nine to thirty-three states. A brief review of the facts published shows several points of particular interest:

(*a*) Most of the graduates of each medical college, as a rule, go into practice in the state in which the college is located. States harboring low standard colleges, therefore, are themselves the recipients of most of the ill-trained output of such schools.

(*b*) The total registration in all states in 1914 was 5,797, a reduction of 2,068 below that of 1906, when 7,865 physicians were registered in this country. The number, however, is still nearly three times the number removed annually by deaths.

(*c*) Official reports show that the diplomas of thirty-five medical colleges are not recognized for the license to practice medicine in from ten to thirty-two states.

(*d*) Tennessee has obtained a new medical practice act requiring that all applicants for license hereafter must be graduates of reputable medical colleges. A similar requirement now holds in Oregon, through an amendment to the practice act. This leaves only Colorado and Massachusetts which still register nongraduates, whose medical training is known to be incomplete. Colorado, however, has registered only two nongraduates in nine years, while in the same period Massachusetts has registered seventy-six.

IMPROVEMENTS IN STATE LICENSURE

Marked improvements in state licensure have taken place during the last year. Improved medical practice acts have recently been secured in California, New Hampshire, New Jersey, Ohio, Oregon and Tennessee.

The requirements of preliminary education by state licensing boards during the years between 1904 and 1915 are shown by percentages in Chart 3. The percentages of states requiring one or two years of college work as a minimum qualification of preliminary education are shown by the light shading; the percentage requiring two years of college work as the minimum are shown by the heavier shading. The white portion of the chart shows the percentage of states holding to a high school education *or less*. The serious lack, in 1904, of legal protection of the public against incompetent doctors cannot be appreciated unless it is remembered that at that time only a few states, in their practice acts, had made any provision for preliminary education. There are still several states which have no such provision.

A very interesting fact, brought out by comparing this chart with Chart 2, is that action by state boards did not proceed, but followed the adoption of higher standards by medical colleges. The progress in this respect, therefore, has been largely voluntary, which is the best assurance that the improvement will be permanent.

Chart 4 shows the standards of preliminary education required in the various states. Nine states require two years of college work, in addition to a four-year high school education. These are:

Alabama	Iowa	New Jersey
Colorado	Minnesota	North Dakota
Indiana	New Hampshire	South Dakota

There are eighteen states which require one year of collegiate work in addition to the high school education or an equivalent five-year medical course. These states are:

Arkansas (Reg.)
California
Connecticut
Illinois
Kansas
Kentucky
Louisiana (Reg.)
Michigan
Mississippi
Oklahoma
Pennsylvania
Rhode Island
Tennessee
Texas
Utah
Vermont
Virginia
Washington

There are thirteen states which require a four-year high school education as the minimum standard of preliminary education. These are:

Delaware
Georgia
Maine
Maryland
Missouri
Nebraska
Nevada
New Mexico
New York
North Carolina
Ohio
West Virginia
Wisconsin

In one state, Montana, the board apparently has the authority to fix the standard of preliminary education, but as yet has not done so.

In four states the authority given the board is limited or divided so that the minimum preliminary standard in each state is less than a four-year high school education. These states are:

Arizona	Florida	South Carolina
Arkansas	Idaho	

In Arkansas, although the regular board has adopted the higher preliminary standard, it is apparent that similar action has not been taken by the homeopathic and eclectic boards.

In three states the practice acts still make no provision for preliminary education. These are:

District of Columbia	Massachusetts	Wyoming

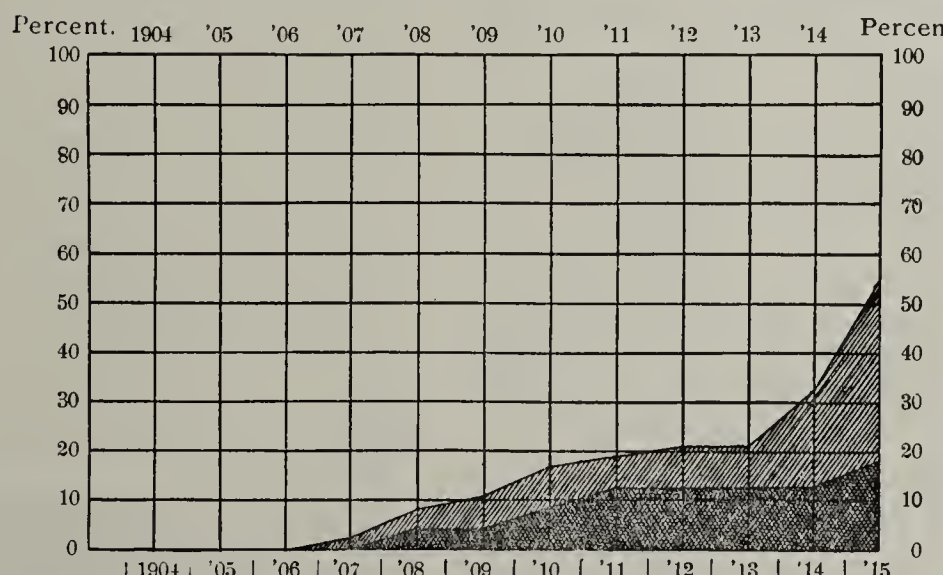
PENALIZING POWER OF THE LICENSING BOARD

Some state laws provide for standards of preliminary education, but fail to empower the board to refuse to license graduates of such colleges as do not conform to them. Such

CHART 3.—STATE BOARD REQUIREMENTS OF PRELIMINARY EDUCATION

SHOWING THE PERCENTAGE INCREASE BY YEARS IN THE NUMBER OF STATES IN WHICH (LIGHT SHADING) ONE YEAR, AND (HEAVY SHADING) TWO YEARS OF COLLEGIATE WORK HAVE BEEN ADOPTED AS THE MINIMUM STANDARD OF PRELIMINARY EDUCATION. UNSHADED PORTION SHOWS PROPORTION IN WHICH A HIGH SCHOOL EDUCATION OR LESS IS REQUIRED.

EACH VERTICAL LINE REPRESENTS A YEAR AS INDICATED



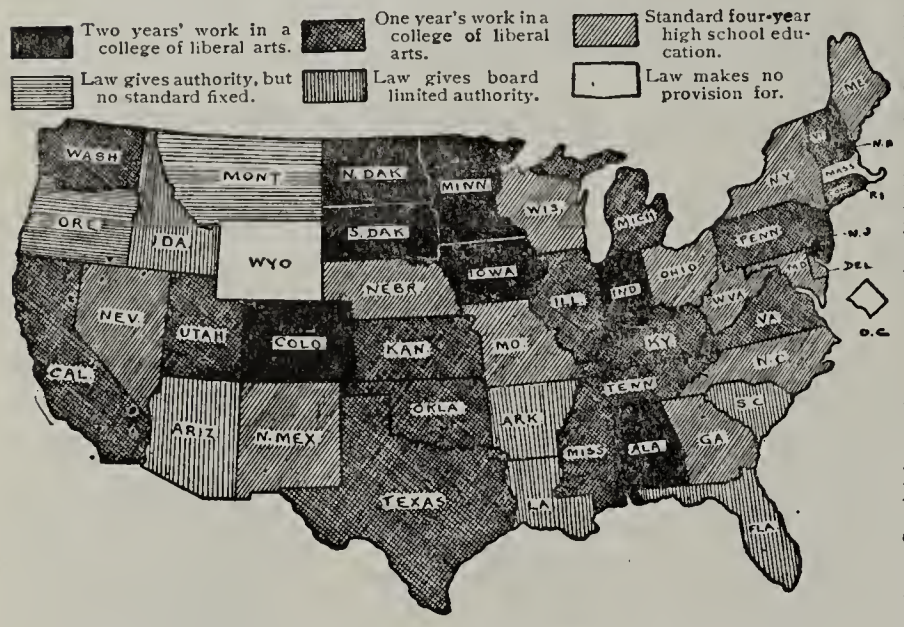
Percent.	1904	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15
High Sch. Ed.	100	100	100	98 0	91.8	89 8	83.6	81.7	79.6	79.6	67.4	44.9
1 yr College	....	....	....	2.0	4.1	6.1	8 1	6.1	8.2	8.2	20.4	36.7
2 yrs. College	....	....	....	....	4.1	4.1	8.2	12.2	12.2	12.2	12.2	18.4

1. J. A. M. A., Apr. 24, 1915, p. 1412.

provisions are also ineffective if the board fails to make use of the authority given them. Chart 5 shows to what extent the various states protect the public against ill-trained and incompetent doctors.

As shown in Chart 5, there are thirty states in which the boards have been given full authority to refuse to examine

CHART 4.—STATE REQUIREMENTS OF PRELIMINARY EDUCATION FOR PHYSICIANS



or to license graduates of inferior medical colleges, and in which the boards are making some use of that authority. These states are:

Alabama	Maryland	Oklahoma
Colorado	Michigan	Pennsylvania
Connecticut	Minnesota	Rhode Island
Delaware	Mississippi	South Carolina
Georgia	New Hampshire	South Dakota
Illinois	New Jersey	Texas
Indiana	New Mexico	Vermont
Iowa	New York	Virginia
Kentucky	North Dakota	West Virginia
Louisiana (Reg.)	Ohio	Wisconsin

There are eleven other states in which the boards appear to have ample authority to refuse recognition to low standard colleges, but thus far have made little use of that authority. These states are:

California	Montana	Oregon
Kansas	Nebraska	Tennessee
Maine	Nevada	Washington
Missouri*	North Carolina	

*In Missouri the licensing board reports one medical college, the Eclectic Medical University of Kansas City, as "not in good standing." Nevertheless the graduates of this college are regularly admitted to the examination of the Eclectic Board of Medical Examiners of Arkansas.

There are nine states in which the boards are apparently without the needed authority to enforce their requirements, or else the authority is divided between two or three boards. These states are:

Arizona	Florida	Massachusetts
Arkansas	Idaho	Utah
District of Columbia	Louisiana	Wyoming

In Arkansas and Florida the laws provide for three separate and independent boards. The regular boards are refusing to license the graduates of low-grade colleges, but evidently similar action has not been taken by the homeopathic and eclectic boards.

There are now only two states, Colorado and Massachusetts, which do not give the licensing boards the authority to insist on graduation from a reputable medical college.

It is clear that the great need in medical licensure in each state is for a single and less complex control of the licensing of practitioners of the healing art by which all practitioners, regardless of the "method" or "system" of treatment employed, will be measured by the same educational standard and be given an equally square deal. If a high standard is fixed for one group of practitioners, it is not right that another group should be admitted to practice under a lower standard. That the public may be properly safeguarded against incompetency, ample authority should be placed in a single board of well-qualified examiners.

Seven states still remain in which there are two or three boards, instead of one, which have to do with the licensing of physicians. These states and the number of boards in each are:

Arkansas, 3		Louisiana, 2
Connecticut, 3	District of Columbia, 3	Maryland, 2
Delaware, 2	Florida, 2	

The authority of the two boards in Delaware is centralized in a medical council, and that of the three boards of the District of Columbia is centralized in a board of medical supervisors. In the other five states, however, instead of a single authority in each to safeguard the public against incompetent practitioners, the entire machinery for examining and licensing physicians is duplicated or triplicated and placed in the hands of two or three separate and independent boards. Such confusion has repeatedly resulted in a practical annulment of educational standards.

Reorganization of Clinical Teaching

Perhaps the most important work of the Council during the past year, and one which will be of inestimable service in the future development of medical education, is the preparation of a report on the reorganization of clinical teaching. (This report was published in full in THE JOURNAL of March 6, 1915, p. 785.)

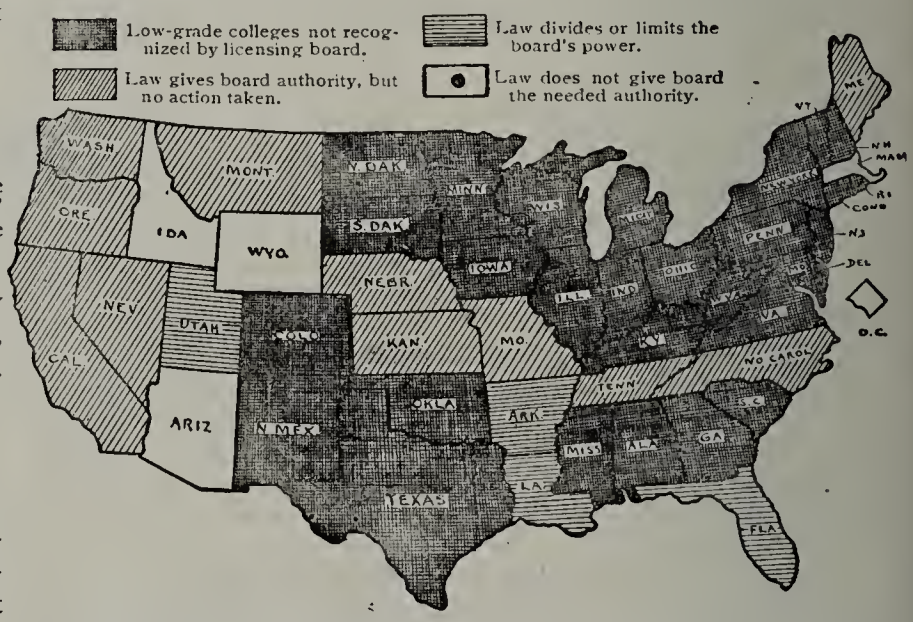
In the efforts to better the methods of clinical teaching in the last few years, a problem has arisen to which particular attention should be drawn.

FEES FOR SERVICES RENDERED

In the reorganization of clinical teaching, we must consider, first, the interests of scientific medicine; second, the interests of the medical profession, and third, the interests of the public. It is clear that the medical profession is entitled

CHART 5.—LEGAL PROTECTION AGAINST INCOMPETENT DOCTORS

SHOWING STATES IN WHICH LICENSING BOARDS HAVE AUTHORITY AND ARE REFUSING TO LICENSE THE GRADUATES OF LOW-GRADE MEDICAL COLLEGES.



Arkansas and Florida each has three separate boards, only one of which (the Regular Board) has refused to license graduates of low-grade medical colleges. Missouri has refused recognition to one medical college.

to proper compensation for its services, and that such compensation should be as large as that received by men in any other profession. No profession requires a more laboroius and thorough preparation; no profession and no class of men do so much charity work as the medical profession. Any member of the community who is able, therefore, should pay a proper fee for such medical service as he receives. The plan of having fees for private practice go to the university or to some special department is clearly unethical and

illegal. It is unethical because the compensation for the peculiarly personal and individual services rendered by the medical man to his patient should be paid to the individual rendering those services and not to any one else or to any institution. It is illegal because the fees for such services could not be collected in court by any one except by the individual rendering them. This feature of the Johns Hopkins plan should be clearly pointed out at this time, because if generally adopted, it would be extremely unfair to the medical profession as a whole. If generally adopted, it would be but another method of sweating the medical profession and another abuse of medical charity analogous to the rulings of certain boards of hospital trustees, such as that of the Massachusetts General Hospital, where no member of the medical staff is permitted to receive a fee from any patient in the hospital, even though that patient is sufficiently well-to-do to pay $50 or more a week for hospital accommodations. That such an objectionable feature should have been allowed to creep into the Hopkins plan can be explained only by the fact that the men who devised it were not in sufficiently close touch with the practice of medicine to consider the rights and interests of the profession as a whole. If a clinical teacher is to be limited to a salary and excluded from collecting fees for private practice, then in the interests of the profession as a whole, his practice should be limited to purely charity cases; to those who cannot pay to some member of the medical profession a fee for medical services.

TRAINING OF CLINICAL TEACHERS

Another important matter touched on in the committees' report which should be emphasized is that any system of clinical teaching which may be suggested should provide for the development and training of teachers. Each clinical department, therefore, should be organized with this point in view.

Under the head professor of the clinical department should be a number of associates and assistants, men from 25 to 35 years of age, who should devote all or most of their time to clinical work, teaching and research. These men should remain in these positions from five to ten years, receiving promotion from time to time as may be deserved, and during this service should receive a thorough training in their special clinical field, and also in teaching and research. It is from this body of men that teachers for the clinical departments must be developed and recruited. It is not necessary to pay these men very large salaries because the training which they would receive can be properly regarded as compensation of great value.

In addition to the regular teachers, connected with each clinical department, there should be a corps of clinical teachers and extramural teachers. These men should receive no salaries, or at most only nominal salaries. They should be men who occupy outside hospital and dispensary positions, who can offer elective courses and give to the student body the benefit of their clinical material and experience. Not infrequently most desirable teachers in special lines will be developed from these men. Incidentally, the college could in this way affiliate with itself the better hospitals and dispensaries and obtain a large amount of clinical material, and also secure the services and support of the high-grade scientific clinicians in the community.

GRADUATE MEDICAL INSTRUCTION

Much credit is due to Dr. Horace D. Arnold for the excellent work he has done as chairman of the Council's special Committee on Graduate Medical Instruction. A digest of the preliminary report of this committee was presented a year ago, in the report to this body. During the past year an inspection was made of the postgraduate medical schools of the country and a careful study was made of the problems of graduate medical education. A brief abstract of the last report of the committee is as follows:

A distinction should be made between the advanced courses, which may properly be called "graduate courses," and the more elementary courses, constituting the bulk of the work especially designed for practitioners, which may well be designated as "practitioners' courses."

The following definitions for use in connection with the instruction of graduates in medicine are recommended for general acceptance:

1. *An Undergraduate School* is understood to mean a regular medical school, since the instruction it gives leads to graduation in medicine.

2. *An Undergraduate Course* is one required for the degree of M.D.

3. *A Graduate Course* is one more advanced than an undergraduate course.

4. *A Practitioner's Course* is one of undergraduate grade but intended for practitioners.

5. *A Graduate Department, or a Graduate School,* is one organized to give graduate courses. Such a school may also give practitioners' courses.

6. *A Practitioners' Department, or a Practitioners' School,* is one organized to give courses for practitioners. Only in exceptional instances should such a school attempt to give graduate courses.

7. *A Certificate* means a document which resembles a diploma in form, is suitable for display, and may impress the public.

The instruction of graduates in medicine is essential in order to furnish better doctors to the public. By raising the standards of medical schools, the proper training of medical students is practically settled. Much remains to be done, however, to improve the training of physicians who are already in practice, and enable them to keep pace with progress in medical knowledge.

No medical school should attempt to provide graduate teaching unless its undergraduate course is satisfactory developed. Consequently schools in Classes B and C should not attempt to teach graduates. Even Class A schools should not attempt to teach graduates unless the instruction for their undergraduates is in a complete state of development. The standards for the instruction of graduates should be just as high as those for the instruction of undergraduates, no matter whether the courses are advanced or elementary.

During the past year the committee inspected the more important "postgraduate" schools of the country—independent schools organized for the purpose of teaching medical graduates. As a class the independent "postgraduate" schools are inferior and unsatisfactory. Few of them can stand comparison with even fairly good medical schools. Not only is the instruction poor and the equipment inadequate in many of these schools, but some are clearly commercial in type. They cannot be depended on for adequate instruction for graduates. Good medical schools, therefore, which have adequate facilities, should undertake this form of instruction. Good medical schools can readily secure the services of competent teachers, if the regular force is unable to undertake the teaching of graduates. They already have the necessary equipment, or they are in position to secure such equipment, if more is needed. It would mean a needless waste of money for the "postgraduate" schools as a body to attempt to secure the means which would enable them to secure an equipment adequate to meet the demands of the many graduates who wish instruction. Herein lies one of the strongest arguments why medical schools should undertake this work.

There are five classes of graduates who need opportunity for further study, depending on their desire (1) to undertake research; (2) to enter some specialty; (3) to take other advanced instruction; (4) to take the latter improved studies in the medical school, and (5) to make up deficiencies in previous medical training.

1. *Research.*—Abundant opportunities for research, sufficient to meet the needs of those who wish such work, are already available in the medical schools of this country.

2. *Training for Specialists.*—There is an urgent necessity of establishing standards for specialists. Nothing brings greater discredit to the profession than the blunders of self-styled specialists who have had an inadequate training. The training of specialists should involve a systematic course of instruction of at least one year, followed by a year or more of supervised clinical experience. This involves the possession of exceptionally good clinical facilities. It is clear that only the better university medical schools which have exceptionally good opportunities should attempt the training of specialists. Such a course is worthy of some degree in medicine higher than M.D., and such degrees should be granted only by universities.

3. *Advanced Instruction Other Than (1) or (2).*—Several of the best medical schools are beginning to give serious consideration to the needs of graduates who seek opportunities for keeping abreast of the advances in medical knowledge and practice. Instruction of this type can be given only with the teachers and equipment of the best schools; therefore, it is a duty these schools owe to the community to seriously consider how far they can meet the demand for such courses. They should not hesitate to take up graduate teaching because they could not do so on an extensive scale. It is the quality of the work that is important, not the quantity. It is creditable for a school to offer but a single course if it is a good one and is useful to the profession. On the other hand, it is discreditable for a good school to try to cover more ground than it can do well, for the sake of making a showing. Only when this form of instruction is undertaken on an extensive scale is it desirable to establish a separate department or school. Many schools could offer at least a few graduate courses, at some time in the year, which would be attractive to physicians who wish advanced instruction. There is an advantage in having centers for teaching graduates distributed over the country, for the greater convenience of those physicians who are limited as to time or money.

4. *Admission of Graduates to Undergraduate Courses.*—Graduates in Classes 4 and 5, those who have become "rusty" and wish to "brush up," and the graduates of poor schools who have had an inadequate training, constitute the bulk of those who seek further instruction. They do not need advanced courses, and, as a rule, are not qualified to take them. The admission of these graduates to undergraduate exercises is per-

missible, provided it does not interfere with the regular teaching. As a rule, undergraduate courses require more time than physicians can spare from their professional work. Specially organized practitioners' courses are, therefore, desirable.

Hitherto such courses have been left for the "postgraduate" schools, which vary from good to very bad, and as a class are inferior and unsatisfactory. They could be made satisfactory only through extensive improvements, and the funds required for such improvements would be expended to better advantage in strengthening the regular medical schools. Therefore, it is unwise to leave the giving of practitioners' courses to these independent schools. The better medical schools, as far as they can, should provide practitioners' courses, as a public service. The better the school, the greater the advantage for the public.

"Postgraduate" schools do not merit universal condemnation, even if, as a class, they are unsatisfactory. They deserve credit because they have attempted to meet the demand of graduates for further instruction. Hitherto they have been successful because they have had to compete only with poorer schools of the same class. If the good medical schools enter this field of teaching, the "postgraduate" schools will face a crisis, which is accentuated by the question of standards for such teaching. Either they must come up to the standards of good medical schools, or they will lose their best teachers, many of whom have become associated with "postgraduate" schools because these were the only ones where such teaching could be done. Now that the question of standards is raised, these men will be in demand for the good medical schools which undertake this work. The problem of the independent "postgraduate" schools will take care of itself if the good medical schools undertake this kind of teaching. The better "postgraduate" schools will be forced to join the regular schools, and the poorer ones will find it unprofitable to continue. The number of physicians who will patronize poor schools of this type when better instruction is offered is very limited.

Medical schools should understand, however, that courses for practitioners must often be different from the regular undergraduate courses. Practitioners, as a rule, can leave their practice for only a limited time. Courses should be arranged that may be completed in a month or six weeks. This means a greater subdivision and a greater variety of subjects than in undergraduate studies; it means also that the work should be concentrated and practical. Courses should be so arranged that the graduate can occupy himself with studies along certain narrow lines throughout the day. If courses cannot be offered throughout the year, they should be concentrated so that there will be definite periods when the practitioner can have a wide range of choice.

Admission Requirements.—There can be no uniform admission requirements of an educational character. Medical graduates need courses which range from the elementary to the most advanced. For the benefit of the public, even the most poorly trained practitioner, if he is legally entitled to practice medicine, should have an opportunity to improve his medical knowledge. He should, of course, be admitted only to such courses as he is qualified to take. It is desirable that graduates from poor schools who are not registered should not be able to coach up in these courses and learn just enough to pass the state licensing boards.

Certificates.—To offset the evils attendant on the loose regulations about granting certificates, it is recommended that the minimum time requirement for the granting of a certificate be four months of all day work, taken consecutively; that it should be granted only for a systematic course, approved by the school, in which attendance and work have been satisfactory; and that the student must pass an examination based on this course of study. A school may issue for shorter courses an official statement as to the student's attendance or the character of his work, but the form must be such that it does not resemble a diploma.

The Council will not at present attempt to divide all the independent schools into those which are approved and those which are not approved. Any such school, however, may apply for the approval of the Council. Such approval may be granted if the school meets the requirements as to admission and certificates, and if, in all departments in which instruction is given, it comes up to the standard of a Class A school.

RECOMMENDATIONS OF THE COMMITTEE

The committee makes the following special recommendations, which have been endorsed by the Council:

(*a*) It is recommended that no graduate medical school be approved by the Council which accepts, as students, physicians who are not licensed practitioners, unless they are graduates of medical schools rated in Class A.

(*b*) It is recommended that certificates, diplomalike in character, be not granted for less than four months of all day work, taken consecutively; that they be granted only for a systematic course, approved by the school, in which attendance and work have been satisfactory; that the student must pass an examination based on this course of study, and that only such graduate medical schools be approved which exact these requirements. (A school may issue for shorter courses an official statement as to the student's attendance or the character of his work, but the form must be such that it does not resemble a diploma.)

(*c*) There can be no fixed entrance requirements for graduate medical schools, there is no definite curriculum or time requirement, and it is not possible to classify graduate medical schools as has been done with the undergraduate schools. Therefore, it is recommended that the Council's approval be on the basis of the content and character of the courses offered, and that in deciding on the approval of courses, the equipment of the school and the qualifications of the instructor be taken into account.

(*d*) It is recommended that the Council be empowered, in its discretion, to give its approval to research courses, to systematic courses for the training of specialists, and to other graduate courses where given in Class A medical schools. (This does not mean that all such courses in Class A medical schools will be approved, but that no such courses will be approved if given in medical schools graded lower than Class A.)

(*e*) It is recommended that in determining the standard of graduate departments of medical schools, or independent schools giving instruction to graduates, the Council be guided by the following outline, grading the various institutions on a civil service basis, in a manner similar to that employed for undergraduate medical schools:

1. Any evidence obtainable showing the character of the training furnished by the graduate medical school.
2. The observance by the graduate medical school of the rules herein set forth regarding the admission of students.
3. Supervision of the students' work: character of the records; observance of the rules herein set forth regarding the granting of certificates.
4. Graduate school buildings or quarters; light, heat, ventilation, cleanliness.
5. Laboratory facilities and instruction.
6. Dispensary facilities and instruction.
7. Hospital facilities and instruction, maternity work, necropsies, specialties.
8. Faculty, number and qualifications of trained teachers, full-time instructors and assistants, organization, research work, etc.
9. Extent to which the school is conducted for teaching rather than for the profit of the faculty directly or indirectly.
10. Possession and use made of libraries, museums, charts, stereopticons, etc.

The Council does not deem it advisable to attempt at present to divide the independent schools into those which are approved and those which are not approved. Any graduate school may apply for the approval of the Council, however, which may be granted if the school meets the requirements as herein set forth, and if, in all departments in which instruction is given, it comes up to the standard of a Class A school.

The Council shall collect data about schools which offer courses for graduates. It may publish such information as seems desirable about courses which meet approval in accordance with the foregoing regulations.

CONCLUSION

It is seen, therefore, that at the beginning of the second decade of the Council's work, marked progress in medical education continues to be made. Through the collection and distribution of information by the Council, the weak places which continue to exist in our system of medical education are well known, and efforts are being directed toward their improvement.

In regard to medical colleges, the total number now approaches more nearly the normal supply for this country, but there is still much room for internal developments.

In clinical teaching, much improvement will be made by the establishing of closer relationships between hospitals and medical schools—relationships which even now are being rapidly brought about. It is now fairly well recognized that, from every point of view, the best hospitals are those which hold a close teaching relationship with high-grade medical schools.

A further investigation of hospitals is highly important, not only in the interest of medical education and to enable the Council to prepare a list of those in position to provide acceptable internships for medical graduates, but also—and even more important—to lead to the publishing of such information as will result in improving hospitals generally, and lead to a greater efficiency in hospital management.

In medical licensure, although the obtaining of legislation is slow—and properly so, since it is the more certain to be constructive—nevertheless much progress is being made. Legislators are beginning to realize that the first essential in

any effective regulation of the practice of the healing art is to provide that the practitioner has obtained an adequate training, regardless of the "system" or "method" followed.

In graduate medical instruction, only a bare beginning has been made, and there is promise of a rapid development which should be under the direction and with the assistance of the Council.

It is believed that along all lines, the work is being conducted in a manner which will bring about the most rapid and lasting improvements in medical education in the United States.

Respectfully submitted.

ARTHUR DEAN BEVAN, Chairman,
GEORGE DOCK,
W. D. HAGGARD,
JAMES W. HOLLAND,
HORACE D. ARNOLD,
N. P. COLWELL, Secretary,
Council on Medical Education.

On motion, duly seconded, the report was referred to the Reference Committee on Medical Education.

Report of the Committee on Red Cross Medical Work

Dr. George M. Kober, District of Columbia, Chairman, read the report of the Committee on Red Cross Medical Work, which was referred to the Reference Committee on Reports of Officers.

The report is as follows:

To the Members of the House of Delegates of the American Medical Association:

A Committee on Red Cross Medical Work was created at the 1912 session in accordance with Section 3 of Chapter VIII of the By-Laws.

The object of this committee was to stimulate in every county medical society the creation of a Committee on "Red Cross Medical Work" so as to provide a body of representative physicians of approved qualification to direct or participate in medical work, carried on by the Red Cross in different localities in times of war or emergencies, and to advise with the representatives of that society in handling medical and sanitary problems incident to such an occurrence. The certification of physicians by county committees is accepted as ample evidence of the physical, moral and professional qualifications of the gentlemen recommended for appointment in the Red Cross service.

NUMBER OF COUNTY MEDICAL SOCIETIES BY STATES WHO HAVE APPOINTED COMMITTEES ON RED CROSS MEDICAL WORK

Alabama	7	Montana	4
Arizona	5	Nebraska	12
Arkansas	11	Nevada	1
California	14	New Hampshire	5
Colorado	7	New Jersey	5
Connecticut	6	New Mexico	5
Delaware	1	New York	24
District of Columbia	1	North Carolina	6
Florida	6	North Dakota	5
Georgia	11	Ohio	28
Idaho	1	Oklahoma	18
Illinois	39	Oregon	4
Indiana	33	Pennsylvania	30
Iowa	26	Rhode Island	3
Kansas	12	South Carolina	6
Kentucky	13	South Dakota	4
Louisiana	6	Tennessee	12
Maine	5	Texas	33
Maryland	1	Utah	2
Massachusetts	13	Vermont	2
Michigan	13	Virginia	9
Minnesota	9	Washington	5
Mississippi	11	West Virginia	6
Missouri	21	Wisconsin	9

It is gratifying to report that during the past year 296 county medical societies have created committees on Red Cross medical work so that on May 1, 1915, not less than 510 committees, composed of 2,550 representative men in forty-eight states, covering nearly all parts of the country, are available to render reliable advice or assistance in any of the activities of the American Red Cross.

Major Robert U. Patterson, Medical Corps, U. S. Army, and Chief of the Bureau of Medical Service of the American Red Cross, reports that during the present war in Europe many of these committees have been called on to report on the qualifications of physicians and surgeons offering to serve the Red Cross in Europe. The recommendations have been invaluable, as it is highly important that reputable men only be chosen in order to protect the American Red Cross and the reputation of the medical profession of the United States, whom they represent abroad.

Respectfully submitted,

GEORGE M. KOBER, Chairman,
WILLIAM J. LYSTER,
Major, Medical Corps, U. S. Army,
R. C. HOLCOMB,
Surgeon, U. S. Navy.

APPENDIX A

To the Secretary, County Medical Society:

DEAR SIR:—The undersigned have been constituted a committee by the President of the American Medical Association to cooperate with the American Red Cross, in the matter of medical work.

The committee feels that a great deal of substantial good will come to all communities by providing a body of representative physicians of approved qualifications to direct or participate in medical work carried on by the Red Cross in different localities in times of emergencies and to advise with the representatives of that society on questions of medical policy and procedure. Besides its activity in emergency relief work, the Red Cross is engaged in an educational campaign for the mitigation of human suffering and the saving of lives. So far it has extended this movement only to the teaching of prevention of accidents and first aid to the injured, but it is hoped in future that it shall include popular instruction in the prevention of disease. These medical committees are not in any way bound to this educational work of the Red Cross, but members of the committees who may be interested are invited to correspond with the First Aid Department of the Red Cross.

In the opinion of this committee, the plan may be properly considered under the following headings:

1. OBJECT. Primarily this service is designed to meet local emergencies when conditions of disaster are such as to call for the intervention of the Red Cross. When exigencies come about in any community the Red Cross would be glad to feel that it might call on carefully selected physicians in that community to lend their aid in the medical work incident to the situation.

2. ORGANIZATION. It is desired to have in every county a central committee of five physicians, two of whom shall be the president and secretary of the county medical society, *ex officio*. The president of the county medical society shall select the other three members, preferably from the list of councilors or of the executive committee. This committee shall be designated the "Committee on Red Cross Medical Work." The names and residences of the members, immediately after organization, should be reported to the chairman of the American Medical Association committee. In case of disaster, requiring relief action by the Red Cross, these county committees will be called on to nominate qualified medical men in their respective counties for Red Cross service. The committees will also serve in an advisory medical capacity to the Red Cross in time of disaster and in other lines of Red Cross activity as indicated in a preceding paragraph.

3. QUALIFICATIONS. The certification of physicians by county committees will be accepted as ample evidence of the physical, moral and professional qualifications of the gentlemen recommended for appointment. It may be pertinent to state that service in time of disaster may entail severe physical effort, and physical fitness of appointees to perform hard work is, therefore, important.

4. COMPENSATION. In some instances the Red Cross may require the services of physicians at a distance from their places of residence and for varying periods. Under these conditions the Red Cross will be prepared to pay traveling expenses and a moderate honorarium to be agreed on between the physicians and the National Director of the Red Cross.

It will be obvious to you that the arrangement here proposed is primarily intended to provide for emergencies which may suddenly arise in any community or, on the other hand, may happily never occur. Thus it may be that the committee which we are inviting you to create may never be called

into action, while, on the other hand, it may have occasion to perform a very great public service. Your cooperation in the completion of this plan at as early a date as convenient will be appreciated.

Please address all communications bearing upon the contents of this letter to the chairman, Doctor George M. Kober, c/o Major Robert U. Patterson, the American Red Cross, 1624 H Street N.W., Washington, D. C.

Very respectfully,
GEORGE M. KOBER, Chairman,
WILLIAM J. LYSTER,
Major, Medical Corps, U. S. Army,
R. C. HOLCOMB,
Surgeon, U. S. Navy.

At a meeting of the Executive Committee of the American National Red Cross held in Washington, D. C., Feb. 14, 1913, the foregoing plan of cooperation between the medical profession and the Red Cross was unanimously approved.

GEORGE W. DAVIS,
CHARLES L. MAGEE, Major General, U. S. A., retired,
Secretary. Chairman, Central Committee.

The President announced the Committee on Reapportionment as follows:

Robert M. Funkhouser, Missouri; A. B. Walker, Ohio, and Lyman Asa Jones, Massachusetts, in addition to the President and Secretary.

On motion, which was duly seconded, the House of Delegates adjourned until 2 p. m.

Second Meeting—Monday Afternoon, June 21

The House of Delcgates reconvened at 2 p. m., and was called to order by the President.

The minutes of the previous meeting were read and approved.

Dr. E. J. McKnight, Connecticut, Chairman, presented a supplcmentary report from the Committee on Credentials, stating fifty-one additional delegates had qualified.

Report of the Committee on Scientific Research

Under reports of Special Committees, the Committee on Scientific Research was called, and in the absence of the Chairman, Dr. Ludvig Hektoen, Illinois, it was moved that this report be received as printed in the handbook for the House of Delegates, and be referred to the Reference Committee on Reports of Officers.

Seconded and carried.

The report is as follows:

To the Members of the House of Delegates of the American Medical Association:

The Committee on Scientific Research begs leave to submit the following report:

Since the last meeting of the House of Delegates, the balance to the credit of the committee has been exhausted in the payment of pending grants in full as follows:

Grant 34, $200, Gerald B. Webb, Colorado Springs, for work on immunity in tuberculosis.

Grant 35, $250, A. L. Prince, Yale University, New Haven, for work on the methods of determining thc efficiency of the hcart.

Grant 36, $200, E. R. Le Count, Chicago, for study of syphilitic leptomeningitis.

Grant 37, $400, William DeB. MacNider, Chapel Hill, N. C., for work on the toxicity of anesthetics in nephritis.

Grant 38, $350, C. C. Bass, New Orleans, for work on pathogenic protozoa.

The work supported by these grants has been finished, or practically finished, and the results published. The committee regrets that it has no funds for further grants.

Respectfully submitted,

LUDVIG HEKTOEN, Chairman,
F. G. NOVY,
C. C. BASS.

The report of the Committee on Scientific Exhibit was called.

Dr. Frank B. Wynn, Indiana, Chairman, stated that the question of exhibit this year was a double one. At the present time the committee was in a chaotic state in endeavoring to secure scientific and conservation health exhibits, so that it was impossible to make a report at this time. He therefore requested that the report be postponed until the session of Thursday.

The committee had only this recommendation to make, that the Committee on Awards be selected early to study the different exhibits and pass on their merits. He, therefore, suggested that a committee of threc be appointed by the President at this session.

The President stated that this preliminary report would be accepted, and when the full report was made it would be referred to the proper committee.

Report of the Committee on the Nomenclature and Classification of Diseases

In the absence of the chairman of the Committee on Nomenclature and Classification of Diseases, Dr. Cressy L. Wilbur, New York, it was moved that this report be accepted as printed in the handbook, and referred to the Reference Committee on Reports of Officers.

Seconded and carried.

The report is as follows:

To the Members of the House of Delegates of the American Medical Association:

For various reasons it has not been possible to accomplish much in the way of definitive work along the lines previously planned. Owing, perhaps, to the interruption resulting from the great war now in progress, the expected cooperation with the Committee of the Royal College of Physicians of London, now engaged on the fourth decennial revision of the English nomenclature, has not materialized. It will be well to await the results of this revision, which may be found to be an excellent system for adoption by American physicians, with such slight changes as may be necessary for this country. Moreover, it will not be long before the third decennial revision of the International List of Causes of Death and Disability, which is set for thc year 1919, will be at hand. The second revision, now in use, which was to be the basis of the work of this committee, has proved difficult in its adaptation to practical requirements in some respects; see the Nomenclatures of Bellevue and Allied Hospitals and of the Massachusetts General Hospital. Other modifications are suggested by its results, as shown in recent reports of thc Registrar-General. Studies, like those of Dr. Cabot and Dr. Emerson with respect to the uncertainty of clinical diagnoses when not confirmed by necropsies, point to the necessity of revising our statistical classifications so that prominence will be given chiefly to the more definite and certain returns.

While the need of a nomenclature of diseases should not be lost sight of, it may be expedient to discharge the committee for the present, with a view to the taking up of the whole subject afresh, by the aid of the data more particularly from English sources not now available, after an intermission of a year or two and in time for the work to be of service in connection with the next revision of the International List of Diseases, which is the official standard for statistical purposes in England, France, the United States and many other countries.

Respectfully submitted,
CRESSY L. WILBUR, Chairman.

Report of the Committee on Anesthesia

In the absence of the chairman of the Committee on Anesthesia, Dr. W. D. Gatch, Indiana, it was moved that this report be accepted as printed in the handbook and referred to the Reference Committee on Reports of Officers.

Seconded and carried.

The report is as follows:

To the Members of the House of Delegates of the American Medical Association:

This committee has arranged with THE JOURNAL of the Association for the publication of monographs on Intratracheal Insufflation, by Dr. Samuel Meltzer, and on the Theory of Anesthesia, by Dr. Evarts Graham. The plan is to sell these at a price which will just cover the cost of their publication. They will appear as soon as the work of THE JOURNAL will permit. These monographs give work of fundamental importance in anesthesia, and represent a great amount of original research by their authors.

It is planned to bring out similar monographs from time to time. The hope of the committee is that men of sufficient training and ability to do really valuable work in anesthesia may be stimulated to do the same by the inducement of having their results published in full by the American Medical Association.

The committee has decided that this plan is best adapted to increase our knowledge of anesthesia.

Respectfully submitted,

W. D. GATCH, Chairman.
REID HUNT.
THOMAS S. CULLEN.
JAMES T. GWATHMEY.
EVARTS GRAHAM.

Report of the Committee on Sections and Section Work

Dr. Hugh Cabot, Massachusetts, Chairman, read the report of the Committee on Sections and Section Work. The report follows:

To the Members of the House of Delegates of the American Medical Association:

Your Committee has assumed it to be its duty to consider the present division of the Scientific Assembly into Sections and the working of such division, with a view to improving the arrangement if possible.

The division of the work into sections was clearly intended to subdivide the subject in such a way as to make the work of the Association more effective without allowing it to become so highly specialized as to interfere with its value to the general practitioner. The membership of the Association has consisted, and probably always will consist, chiefly of general practitioners; and the importance of making the work of the Scientific Assembly of the greatest possible value to this, the majority of the membership, must not be lost sight of. Should too high a degree of specialization occur, the great educational function of the Association might be impaired or lost, with the result that it might become simply a gathering place for groups of highly special workers. On the other hand, since the Association comprehends among its members a vast majority of the most highly trained medical scientists in the country, it is important to provide opportunity for these men to meet each other in discussion and to share with each other work of so highly special a nature that it is of necessity beyond the grasp of many members of the Association.

We believe it to be clear that the wise division into Sections must comprehend these two important functions of the Association.

The method pursued by your committee in obtaining the widest possible knowledge of conditions was first by direct interview with many members of the Association who have been closely associated with the scientific work, and second, the sending to many past and present officers of sections a list of questions tending to bring out their views on possible methods of redivision. We have on the whole been disappointed by the results obtained by the questions sent to officers of sections, since only a comparatively small number seemed willing to express opinions and many regarded the question as one on which they could express no opinion as they were not familiar with the work of any section other than their own. We did, however, obtain clear evidence on some points.

In the first place, it appeared that there were some very strong sections which were not generally recognized as such by the Association. Of these the most striking were the Sections on Ophthalmology and on Laryngology, Otology and Rhinology, which are among the best organized and most valuable in the Association.

It further appeared that there were some very weak sections, inasmuch as the attendance was small, the number of papers was rarely up to the maximum and the success of their meetings depended very largely upon the rather accidental qualifications of the section officers. The weakest of the sections appeared to be that on Stomatology and among others in this group were those on Hospitals, and Pharmacology and Therapeutics.

From personal discussions with the members above referred to, it further appeared that there were some sections which, though their programs were full, could not properly be regarded as using their time to the best advantage because the papers were obtained with difficulty and were hardly up to the standard properly to be required by the Association. In contrast to this there were certain sections, particularly those on Practice of Medicine and on Surgery, General and Abdominal, which could use considerably more time to advantage and were obliged yearly to refuse admission to their program to papers of a very high grade of excellence.

Particularly from the answers obtained from the officers of sections it appeared that there was a lack of the intelligent continuous cooperation between sections on allied subjects, which must be regarded as essential to the best development of the Scientific Assembly, a condition which can hardly be avoided since this cooperation is entirely in the hands of officers elected at short intervals with incomplete knowledge of past relations between various sections and occasionally influenced by temporary personal considerations. This lack of cooperation, coupled with the lack of any machinery likely to produce it, seems to us on the whole the most striking weakness of the present arrangement.

Coming now to more specific consideration of the division into sections, the following points are striking:

In the group of what might be called the medical sciences, that is to say anatomy, physiology, pathology, bacteriology and pharmacology, it appears that some of these subjects have been strikingly neglected while others have been related together in a faulty way. Thus the association of pathology and physiology in one section seems to be based on no inherent similarity. There is no section on anatomy; and while therapeutics is dealt with in every section, certain undefined portions of the subject are linked with pharmacology.

It is further apparent that while obstetrics is one of the most important divisions of medical practice from the point of view of the public health, it is most unsatisfactorily represented in the Section on Obstetrics, Gynecology and Abdominal Surgery, and section officers have had the greatest difficulty in obtaining papers on this subject.

Among the so-called specialties represented by special sections, there is the greatest unevenness, and the lack of stability of certain specialties has been very striking as compared with others. Thus the Sections on Ophthalmology and on Laryngology, Otology and Rhinology have maintained a very even and high degree of excellence for many years, while the Section on Obstetrics, Gynecology and Abdominal Surgery found it difficult to fill its program until it annexed the field of abdominal surgery.

This but serves to call attention to the notorious fact that the division of the field of medicine into specialties, through an always increasing tendency, advances at no definite or specified rate, and that subdivisions which appear a proper field for special work may after the lapse of years cease to be so considered. From this it necessarily follows that a hard and fast division of the Scientific Assembly is bound to be unsatisfactory, and that provision must be made for changing the divisions through the medium of some body having the matter more continuously under consideration than the annual Reference Committee of the House of Delegates.

With a view to remedying the difficulties which we have pointed out, your committee has thought it best to make two general recommendations:

1. The division of the sections into four general groups in order to correlate their work. Within these groups some consolidation and some rearrangement of sections should be made.

2. The creation of a standing committee or council, whose duty it should be to assist section officers to help in the development of continuous policies and to advise the House of Delegates in regard to the creation of new sections or the consolidation of old ones.

Division of the sections into groups:

A. The Medical Sciences

This group, consisting of anatomy, physiology, pathology, bacteriology and pharmacology, constitutes the basis of medical practice. They are developed largely in the laboratory, and therefore tend to produce a highly specialized group of workers. Their contribution to the scientific sessions is therefore a dual one, and papers on these subjects should be presented:

(*a*) In the general and special sections in order that the basis of the work of these sections may not be lost sight of, and

(*b*) An opportunity should be given for these highly specialized workers to meet under the auspices of the Association and discuss their problems of special interest.

The grouping heretofore followed in these subjects seems to us illogical; as we have already pointed out, physiology and pathology have no necessary relationship, and anatomy does not appear at all. We therefore advise the creation of five separate sections, having one session each, and therefore taking the time at present allotted to one section. This would, we believe, give sufficient opportunity for the presentation of special papers and tend to force the papers of more general interest into the other sections, where they more properly belong. It might be desirable to have one chairman for this group and five secretaries, whose business it should be to arrange the program.

B. Medicine

In this group are placed the present Sections on Practice of Medicine, Diseases of Children, Nervous and Mental Diseases, Preventive Medicine and Public Health, and Hospitals. The correlation between these sections seems to us clear, and among them there should be more cooperation, resulting in more even apportionment of the program and more joint sessions. The present Section on Hospitals, though highly important, has not created a sufficient demand to entitle it to a place as a full section, and it is therefore grouped with the Section on Preventive Medicine and Public Health. The number of sessions to be allotted to these four sections should, we think, be as follows:

Practice of Medicine and Diseases of Children, each five sessions, which is the present allowance. To Mental and Nervous Diseases, and Preventive Medicine, Public Health, and Hospitals, each four sessions, which is a diminution of one session each from the present allowance.

This may be deemed a hardship, but appears only to hold an even balance between the importance of the subjects at the present time. Some of the papers now presented before the latter two sections clearly belong in the Section on the Practice of Medicine.

C. Surgery

In this group we have placed Surgery, General and Abdominal; Obstetrics, Gynecology and Abdominal Surgery; Genito-Urinary Diseases, and Orthopedic Surgery. To the first two of these sections we have allotted their present number of sessions, namely, five. To the Sections on Genito-Urinary Diseases and Orthopedic Surgery we have assigned four sessions each, a reduction of one from the present allotment. This suggestion is made for precisely the same reason that it was made in the preceding paragraph, because we believe that these special departments of general surgery should be more closely linked to the general section and should consider in their own sessions only highly special questions, whereas the questions of general interest should remain in the general section.

Much discussion has arisen, and your committee has gone at considerable length into the question of the apportionment of abdominal surgery between the Sections on Surgery, General and Abdominal, and that on Obstetrics, Gynecology and Abdominal Surgery. The facts appear to us to be these:

The program of the Section on Surgery, General and Abdominal, is habitually overcrowded, particularly with papers dealing with abdominal surgery; and, as a result of this overcrowding, many papers of a degree of excellence clearly entitling them to consideration were necessarily refused. In a word, the Section on Surgery, General and Abdominal, has more than it can attend to. The Section on Obstetrics, Gynecology and Abdominal Surgery has for a considerable time, and of necessity, been receiving papers on abdominal surgery. The work of the gynecologist, at first confined to the pelvis, has necessarily spread into a broader field. If this section is required to confine itself strictly to papers on obstetric and gynecologic subjects, the program will be filled with difficulty and papers not up to the standard properly required will have to be taken. In a word, on the basis of strict construction, this section has less than it can do. The logic of the situation, therefore, appears to demand that papers on abdominal surgery be received both in the Section on Surgery, General and Abdominal, and in that of Obstetrics, Gynecology and Abdominal Surgery. In this way the pressure on the former section will be diminished, and the lack of material in the latter section will be remedied.

It is further obvious that the more frequent employment of joint sessions is here particularly desirable. If the grouping of all these surgical specialties is to be maintained, a high degree of cooperation will be necessary, a condition which has not obtained in the past.

D. The Specialties

In this group we have placed those sections which are well recognized specialties, and yet are not particularly affiliated either with medicine or surgery. They are the Sections on Ophthalmology, Laryngology, Otology and Rhinology; Dermatology, and a new Section on Stomatology, Gastro-Enterology and Proctology.

To the Sections on Ophthalmology and on Laryngology, Otology and Rhinology we would assign five sessions each, which is their present allowance. To Dermatology we would assign four sessions and an equal amount to the new Section on Stomatology, Gastro-Enterology and Proctology.

It is clear that no change ought to be made in the amount of time allotted to the first two of these sections, since, as we have already pointed out, they are among the best-established and most efficient of the Scientific Assembly.

It will probably be felt that the reduction from five to four in the sessions of the Section on Dermatology is a hardship, but we would call attention to the fact that if the Sections on Practice of Medicine and on Surgery, General and Abdominal, are allowed only five sessions, the Section on Dermatology can hardly lay claim to more than four.

The new section is created in order to help out the very weak Section on Stomatology, while giving recognition to the excellent special work now being done in gastro-enterology and proctology. The creation of such a section must be regarded as experimental, and further experience might make further modification desirable.

In making allowances of time to the various sections, your committee has not been unmindful of the fact that the increase in the number of sections in recent years has been a not inconsiderable burden on the finances of the Association. It has required an increasing number of meeting places and an increasing number of stenographers. Under the former arrangement there were fifteen sections with an allowance of seventy-five sessions. Under the plan which we propose, there would be thirteen sections if we group

together into one section the group on medical sciences. To these sections are allotted fifty-nine sessions, a diminution of sixteen sessions from the former classification, and therefore a considerable reduction of expense. Such a reduction can be justified only if it appears that the balance of the work is at least maintained if not improved; but we believe that with this schedule, the balance will be considerably better and that at least no hardship will result.

A STANDING COMMITTEE OR COUNCIL ON SECTION WORK

It will, we think, be generally recognized that the questions coming yearly to the House of Delegates concerning the sections, whether in regard to new sections or to disputed questions between existing sections, have necessarily been dealt with by the House of Delegates with an insufficient knowledge of the facts. Some reference committees have been very willing to create new sections, while others have been entirely unwilling to take similar action on what appeared to be equally cogent reasons. The recent controversy between the Sections on Surgery, General and Abdominal, and on Obstetrics, Gynecology and Abdominal Surgery, is thought by many to have been dealt with by the House on insufficient knowledge; but more important than this is the obvious fact that the development of the scientific work of the Association has showed a striking lack of cooperation between sections dealing with somewhat similar subjects. It has even been suggested that as time goes on, medical and surgical specialties tend to withdraw more and more from the parent section to their mutual disadvantage. Our study of the question has convinced us that the best development of the scientific work requires the creation of some body having continuity of service:

1. To help cooperation between sections by having a broader and more long distance view of the problems than can be expected of section officers.

2. To settle questions of policy when difference of opinion arises between section officers.

3. To stimulate the development of weak sections.

4. To consider at first hand applications for new sections or for changes in existing sections, and to report to the House of Delegates.

Such a committee or council would not in any way interfere with section officers in their conduct and management of their sections, but could be of great service along broader lines than these officers can ordinarily find time to consider. Such a council should, we think, consist of five members, one member to represent in a broad way each of the four general divisions of the Scientific Assembly, and the fifth member should be the secretary of the American Medical Association ex-officio. The four members should be elected by the House of Delegates on nomination by the president, one each year to serve for four years.

We append a table (page 217) showing the plan of division of Sections.

Respectfully submitted,

HUGH CABOT, Chairman,
WESLEY T. MULLIGAN,
F. C. WARNSHUIS,
MORGAN SMITH,
FLOYD W. MCREA.

In connection with the report the committee offered the following amendments to the By-Laws:

Chapter VII—Section 3, Page 15—add Council on Sections and Section Work.

Section 9, Page 19—add new section, Council on Sections and Section Work.

The Council on Sections and Section Work shall consist of four Fellows representing the four main divisions of the Scientific Assembly—medical sciences, medicine, surgery, the specialties, and the Secretary of the American Medical Association ex officio. One member of the Council shall be elected to serve one year, one to serve two years, one three years and one four years. Thereafter, one shall be elected each year to serve four years. The Council shall organize and elect its own officers.

The function of the Council on Sections and Section Work shall be:

1—To secure cooperation between the sections.
2—To pass upon questions of policy in relation to section work.
3—To stimulate the development of the Sections.
4—To consider at first hand applications for new Sections, or for changes in existing Sections, and to report to the House of Delegates.

Chapter XI, Page 27—Sections.

Section 1—Titles of Sections for Scientific Work—The Scientific Assembly of the A. M. A. shall be divided into the following Sections:

MEDICAL SCIENCES	Sessions
A—Anatomy	1
B—Physiology	1
C—Pathology	1
D—Bacteriology	1
E—Pharmacology	1
MEDICINE	
2—Practice of Medicine	5
3—Diseases of Children	5
4—Mental and Nervous Diseases	4
5—Preventive Medicine, Public Health and Hospitals	4
SURGERY	
6—General Surgery	5
7—Obstetrics and Gynecology	5
8—Genito-Urinary Surgery	4
9—Orthopedics	4
SPECIALTIES	
10—Ophthalmology	5
11—Laryngology, Otology and Rhinology	5
12—Dermatology	4
13—Stomatology, Gastro-Enterology and Proctology	4

Section 12, Page 30, number of papers on program.

The maximum number of papers on the program of any Section shall be thirty. Sections having four sessions shall be limited to twenty-four papers, and Sections having one session shall be limited to six papers.

After presenting the above amendments to the By-Laws, Dr. Cabot moved that they be referred to the Reference Committee on Amendments to the Constitution and By-Laws.

Seconded and carried.

The President appointed as the Committee on Awards, Dr. Hugh Cabot, Massachusetts; Dr. E. W. Haass, Michigan, and Dr. V. H. Vecki, California.

Dr. L. H. McKinnie, Colorado, was appointed a member of the Reference Committee on Legislation and Political Action.

On motion, which was duly seconded, the House of Delegates adjourned until 2 p. m., Tuesday.

Third Meeting—Tuesday Afternoon, June 22

The House of Delegates met and was called to order at 2 p. m. by the President, Dr. William L. Rodman, Philadelphia.

On taking the chair, President Rodman said:

Before the reading of the minutes, I wish to thank heartily the House of Delegates for making me its presiding officer, and with your assistance I trust things will go along smoothly. I shall, at least, do my best.

The Secretary called the roll and announced a quorum present.

The minutes of the previous meeting were read and approved.

Supplementary Report from Committee on Credentials

Dr. E. J. McKnight, Connecticut, Chairman, presented a supplementary report from the Committee on Credentials, announcing that nine additional members had qualified.

Supplementary Report from Board of Trustees

Dr. William T. Councilman, Chairman, presented a supplementary report from the Board of Trustees as follows:

WHEREAS, The antinarcotic law known as the Harrison Narcotic Law, approved December 17, 1914, is one of the most important public health measures that has been enacted in recent years, and

WHEREAS, The Council on Pharmacy and Chemistry has called attention to the fact that this law is seriously weakened because Section 6 permits the indiscriminate sale and use of narcotics when they are contained in proprietary and stock preparations, and

WHEREAS, This exemption discriminates in favor of the proprietary medicine interests and against the public interest, is contrary to the aims and objects of the law, and is a detriment to the public health and welfare,

Therefore, The Board of Trustees earnestly recommends that the House of Delegates take action at this time to induce the Congress of the United States to amend the said Act by repeal of Section 6, so that the indiscriminate sale of proprietary and other ready made preparations containing narcotics shall not be permitted.

Dr. H. Bert Ellis, California, moved that the House of Delegates express its approval of this resolution and recommendation of the Board of Trustees, and that the House of Delegates authorize the Board of Trustees to take such action in the matter as the board thinks proper.

Seconded and carried.

Report of the Reference Committee on Medical Education

Dr. H. Bert Ellis, Chairman, read the report of the Reference Committee on Medical Education, as follows:

It is recommended that the House of Delegates adopt the report of the Council on Medical Education as a whole, and that they approve of the special recommendation contained in this report regarding the further investigation of hospitals, and also the recommendations in regard to graduate medical instruction.

The changes in the ratings of medical colleges made by the Council on Medical Education during the past year are approved.

The report of the Special Committee on the Reorganization of Clinical Teaching is especially commended.

Respectfully submitted,

H. BERT ELLIS, *Chairman,*
RICHARD C. CABOT,
A. H. LEVINGS,
PERRY BROMBERG.

It was moved that the report be accepted.

Seconded and carried.

Report of the Reference Committee on Reports of Officers

Dr. William H. Arthur, U. S. Army, Chairman, read the report of the Reference Committee on Reports of Officers, as follows:

Your Reference Committee has had referred to it the report of the Secretary, the report of the Board of Trustees, including the report of a Special Committee of the Board of Trustees of the Council on Pharmacy and Chemistry and the addenda appended to the Trustees report including the Treasurer's report and the Auditor's report, the report of the Judicial Council, the report of the Committee on Red Cross Work, together with the reports on the following special committees:

Committee on Scientific Research.

Committee on the Nomenclature and Classification of Diseases.

Committee on Anesthesia.

In reviewing these reports, your Reference Committee finds a number of suggestions, the consideration of which in your committee's opinion, belongs to the Committee on Amendments to the Constitution and By-Laws. We, therefore, present such parts of these several reports to the House of Delegates with the recommendation that they be referred to the Reference Committee on Amendments to the Constitution and By-Laws.

Secretary's Report: We find on the table certain recommendations for Honorary Fellowship in the Association and recommend that this portion of the Secretary's report be referred to the Reference Committee on Sections and Section Work.

The paragraph relating to the resolutions from the Medical Society of the District of Columbia is recommended for reference to the Committee on Constitution and By-Laws as it involves a change in a By-Law.

Trustee's Report.—It is gratifying to note the increasing use of the cards of the Propaganda Department by state and municipal Boards of Health and it is anticipated that their use will soon be nation wide.

Law Suits.—The law suits attendant on the progress of the work of the Propaganda Department indicate that the majority of such suits were instigated solely in the hope of intimidation. The defense of the one remaining suit it is anticipated will be safeguarded by those who have so well disposed of the previous suits against the Association.

It is gratifying to note the increase in circulation of our JOURNAL and we endorse emphatically the methods used by the management as representing the best modern business practice. It is the opinion of your committee that the Trustees should be encouraged to continue the publication of the *Archives of Internal Medicine,* in spite of the fact that it is done at present at a slight financial loss. The high character of this publication makes it a model for medical journals and an inspiration to professional writers.

Your committee commends the efforts of the Trustees in improving the methods of securing advertising material and in standardizing sizes of medical journals. The increase in revenue is sufficient endorsement of the success of the work of the bureau.

The wisdom of the action of the House of Delegates at its last session in establishing a reserve fund is apparent, and the recommendation that this fund be added to yearly and drawn on only by the affirmative vote of seven of the Trustees is endorsed by your committee.

Believing further that advertising in medical journals is the basis for the successful promotion of the trade in certain proprietary medicines, we earnestly advise all members of the medical profession to withhold their support from those journals which advertise proprietary remedies that have not been investigated by and accepted by the Council on Pharmacy and Chemistry.

In reference to the expenditures by the Association, it is difficult to see how these could be curtailed without materially interfering with its work. Especially is this true of Exhibit "B," Schedule 1. It would be very unfortunate if this work should have to be curtailed. It is recommended that the Board of Trustees continue this work and that funds be kept available for this purpose.

All the expenditures have been audited by an expert accountant, and there is no possible criticism as to the very proper and economical expenditure of the funds.

Report of Judicial Council

The carefully prepared and very comprehensive report of the Judicial Committee on the subject of Workmen's Compensation Laws, their effect on the medical profession in Europe, the insurance principles applied, European social accident insurance, compulsory sickness insurance, old age insurance, insurance for pension for widows and orphans, maternity insurance, etc., appears to your committee to embody a very careful consideration of every phase of each of these all important questions; questions which bid fair to be completely revolutionized. It is earnestly recommended that the Board of Trustees be requested to publish the part of the report of the Judicial Council beginning with the Workmen's Compensation Laws to its conclusion.

It is further recommended that the constituent state societies of this Association be urged actively to bring before the members of the county societies these important questions. As the literature on these subjects is not readily accessible to the members of the state and county societies, these masterly reports appear to your committee to constitute a *vade mecum* on these important social economical problems.

Your committee emphatically reiterates every sentiment voiced by the Judicial Council on the subject of commissions on surgical appliances.

The report of the Judicial Council on the subject of medical defense of its members against malpractice suits is concurred in. This question appears clearly to be one for the constituent state and territorial societies rather than the national Association.

Membership in Adjoining States.—This is recommended for reference to the Committee on Constitution and By-Laws.

Procedure in Preferring Charges.—The proposed procedure in preferring charges appears to your committee to be an entirely fair and impartial method of dealing with alleged irregularities. It is recommended for reference to the Committee on Rules and Order of Business.

The action of the Judicial Council on the cases reported on in executive session appears to your committee to be the only logical method of disposing of these cases.

Red Cross.—The report of the Committee on Red Cross Medical Work is recommended for approval, except that it is deemed advisable that its activities be directed through the state associations rather than with the county societies directly.

Scientific Research.—The report of the Committee on Scientific Research is referred to the Board of Trustees. Your committee recommends this for approval.

Nomenclature and Classification of Diseases.—The report of the Committee on the Nomenclature and Classification of Diseases is recommended for approval. Your committee wishes to express the highest appreciation of the valuable work performed by this committee, and concurs in the recommendation that the committee be discontinued for the present.

Anesthesia.—The report of the Committee on Anesthesia is recommended for reference to the Board of Trustees with the suggestion that the work of this committee be carried on by the Committee on Scientific Research.

WM. H. ARTHUR,
A. R. MITCHELL,
F. E. MCCULLOUGH.

Dr. Wendell C. Phillips, New York, moved that the report be received as a whole and adopted. Seconded.

Dr. Alexander Lambert, New York, moved as an amendment that that section of the report relating to Procedure in Preferring Charges be referred to the Reference Committee on Amendments to the Constitution and By-Laws, instead of to the Reference Committee on Rules and Order of Business.

The amendment was seconded, accepted, and the original motion as amended was put and carried.

Report of Reference Committee on Amendments to the Constitution and By-Laws

Dr. Floyd M. Crandall, New York, Chairman, read the report of the Reference Committee on Amendments to the Constitution and By-Laws, and moved that the report be considered seriatim.

Seconded and carried.

The report is as follows:

Your committee respectfully recommends that the following changes be made in the Constitution and By-Laws of this Association:

That there be added to Chapter VII, Section 3:

(*f*) Council on Sections and Section Work.

Sec. 9. COUNCIL ON SECTIONS AND SECTION WORK. The Council on Sections and Section Work shall consist of four Fellows representing the four main divisions of the Scientific Assembly: Medical Sciences, Medicine, Surgery, the Specialties and the Secretary of the A. M. A. ex officio. One member of the Council shall be elected to serve one year, one to serve two years, one three years, and one four years. Thereafter, one shall be elected each year to serve four years. The Council shall organize and elect its own officers.

The function of the Council on Sections and Section Work shall be:

1. To secure cooperation between the sections.
2. To pass upon questions of policy in relation to section work.
3. To stimulate the development of the sections.
4. To consider at first hand applications for new sections, or for changes in existing sections, and to report to the House of Delegates.

That the sections of the By-Laws which follow be renumbered.

That paragraph (1), Sec. 11, Chapter VII be repealed.

(The said Section reads: "A Committee on Sections and Section Work, to which shall be referred all business relating to the sections.")

Your committee also recommends that the portions of the report of the Committee on Sections and Section Work dealing with the rearrangement of the sections be referred to the Council on Sections and Section Work when appointed.

A communication directed to the Secretary of the American Medical Association by the Medical Society of the District of Columbia was referred to this committee for consideration. This communication asked the following change in the By-Laws: To substitute the following for Sec. 3, Chapter VIII:

REMOVAL OF MEMBERS.—A member of a constituent association removing from the jurisdiction thereof, may remain eligible for membership in the American Medical Association for a period of eighteen months following such removal, after which such eligibility shall cease, unless or until it is reestablished by his becoming a member of the constituent association of the jurisdiction in which he is located.

Your committee recommends that the proposition by the District of Columbia be not concurred in.

In view of the fact that certain sections of the By-Laws are contradictory, the Judicial Council recommends: "That from Section 8, Chapter X, the words 'at the time of the election of its officers' be deleted from the first section of the sentence, and that there be added immediately after the first section of the sentence a new section as follows: 'Provided, however, that nominations for honorary fellowship in the American Medical Association shall be acted on by the sections on or before the second day of each assembly,' so that the entire section shall read:

'Each section at each Scientific Assembly may nominate for Honorary Fellowship in the American Medical Association a physician of a foreign country who has risen to preeminence in the profession of medicine, provided, however, that nominations for Honorary Fellowship in the American Medical Association shall be acted on by the sections on or before the second day of each Scientific Assembly. The secretary of the section shall immediately notify the Secretary of the Association of such nomination.' "

Your committee recommends the adoption of this amendment.

Upon the subject of membership in an adjoining state, the Judicial Council further recommends to the House of Delegates:

"That the following sentence be inserted immediately before the final sentence in Section 3, Chapter VIII, of the By-Laws:

'and provided further, that members of a constituent state association who are located for the purpose of practicing medicine in a state adjacent to that through the association of which they hold membership in the American Medical Association, may be continued as members of the American Medical Association, provided the Council of the medical association of the state in which they are practicing medicine waives jurisdiction over the membership of the individual member who holds his connection with the organization through a neighboring constituent state medical association.'

In compliance with the recommendations of the Judicial Council your committee recommends that the words "(b) organization" be stricken from Section 5, Chapter VII of the By-Laws.

This action is taken in order that the By-Laws shall agree with the existing organization of the American Medical Association.

Standing Rule.—In compliance with the recommendations of the Judicial Council, your committee recommends the enactment of the following standing rule:

PROCEDURE IN PREFERRING CHARGES

The Secretary of the American Medical Association shall file charges with the Judicial Council against Fellows of the Association when overt acts on the part of such Fellows, supported by reasonable evidence, are brought to the attention of the Secretary of the American Medical Association.

FLOYD M. CRANDALL,
C. E. CANTRELL,
DEAN LEWIS,
SOL G. KAHN.

(1) That part of the report relating to a Council on Sections and Section Work was read.

Dr. Wendell C. Phillips, New York, moved that it be adopted.

Seconded and carried.

(2) That section of the report pertaining to the communication from the Medical Society of the District of Columbia was read. It was moved that the recommendation of the committee be concurred in. Seconded.

After discussion by Dr. G. Wyeth Cook, District of Columbia, the chairman of the Reference Committee, and Dr. Alexander Lambert, New York, the motion was put and carried.

(3) That section of the report relative to an amendment to Section 8, Chapter X, was read.

Dr. William L. Noble, Illinois, moved that the recommendation be adopted.

Seconded and carried.

(4) The section relating to Membership in an Adjoining State was read.

Dr. C. E. Cantrell, Texas, moved its adoption.

Seconded and carried.

(5) The section relating to the enactment of a Standing Rule for Preferring Charges was read.

Dr. Wendell C. Phillips, New York, moved its adoption.

Seconded and carried.

On motion, which was duly seconded, the report was then adopted as a whole.

Dr. Dwight H. Murray, New York, offered the following resolution, which was referred to the Reference Committee on Rules and Order of Business:

Resolved, That the order of business for the Thursday afternoon meeting of the House of Delegates be changed by inserting as No. 4 "Report of Committee on Transportation and Place of Session" and No. 5 "Selection of the Place and Fixing the Time for the 1916 Annual Session" and numbering the present No. 4 No. 6 and the present No. 5 No. 7.

Dr. Wendell C. Phillips, New York, moved it is the sense of the House of Delegates that only condensed reports of standing committees be presented at the Monday morning meeting of the House of Delegates (the first meeting), and that there be no afternoon meeting, in order that the Reference Committees be permitted this time for their work.

On motion, which was duly seconded, this matter was referred to the Reference Committee on Rules and Order of Business.

Dr. T. C. McCleave, California, delegate from the Section on Diseases of Children, presented the following:

The Committee on "Betterment of the Section," Section on Diseases of Children, begs to submit the following for the consideration of the House of Delegates:

WHEREAS, The activity of the American Association of Medical Milk Commissions has resulted in the establishment of some seventy-five commissions in the United States and Canada, largely under the auspices of county medical societies, and there has thus been made available in many communities a certified milk designed for clinical purposes, which, at the same time, has greatly stimulated improvement in the general milk supply, to the consequent reduction of infant morbidity and mortality, be it

Resolved, That the House of Delegates commends the purpose of the American Association of Milk Commissions, and recommends to component societies the organization of medical milk commissions wherever warranted by local conditions.

Committee,

J. P. SEDGWICK,
F. S. CHURCHILL,
T. C. MCCLEAVE.

T. C. MCCLEAVE,
Delegate.

The above resolution was referred to the Reference Committee on Sections and Section Work.

Dr. T. C. McCleave, California, then presented the following preambles and resolutions, which were referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, The American Association of Medical Milk Commissions, through its nine (9) years of existence, has fostered the establishment by county medical societies of some eighty (80) medical milk commissions; and

WHEREAS, These commissions now an activity of our unit organizations, the county medical societies, have uniformly crystallized public sentiment in favor of a pure milk supply and indirectly, through public interest thereby developed, have been able to bring about better health administration; therefore, be it

Resolved, That the House of Delegates commend this activity to county societies and to this end instruct the Council on Health and Public Instruction to issue a bulletin on organization and purpose of medical milk commissions.

Dr. A. W. McAlester, Jr., Missouri, offered the following preambles and resolutions, which were referred to the Reference Committee on Legislation and Political Action:

WHEREAS, It is becoming increasingly evident that the people, and especially the wage-earning classes, are being deceived and defrauded and not infrequently their health being seriously impaired through the use of remedies of unknown composition, and

WHEREAS, The Council on Pharmacy and Chemistry of the American Medical Association has repeatedly proven the worthlessness and fraudulency of many of these so-called remedies, and

WHEREAS, The health of the people is the basis of all national progress and prosperity and should be conserved and safeguarded as a national asset by the national government, and,

WHEREAS, The medical profession through its organization, the American Medical Association, has faithfully endeavored to fulfil its obligation by rendering to humanity its best service in promoting the health of the nations, freely and unselfishly, and has through its Council on Pharmacy and Chemistry exposed the cupidity of persons who exploit the sick and afflicted for financial gain, and has proven the fraudulency and worthlessness as well as the dangers of many of the so-called remedies sold to the people; and through its Council on Health and Public Instruction has endeavored to instruct the people in the laws of hygiene and sanitation and the fundamental principles of preventive medicine, and

WHEREAS, The evil influence of fraudulent and worthless remedies upon the health of the people is nation wide and cannot be adequately counteracted by the limited facilities of any private body of citizens, therefore be it

Resolved, That the House of Delegates of the American Medical Association in general session assembled should petition, and it does hereby petition, the President of the United States and Congress to create a commission either through a department or bureau already established, or by special appointment, to investigate patent and proprietary remedies sold in interstate traffic and offered to the people for the relief and cure of bodily and mental infirmities, to the end that the people shall have a plain, truthful and unprejudiced report of the actual value of such articles, and to expose the fraudulent and deceitful practices that such investigation might disclose; so that the people may no longer be made the innocent victims of avarice and fraud when seeking the means to regain their health, and be it further

Resolved, That the House of Delegates pledge the earnest support and cooperation of the American Medical Association to the President of the United States and to Congress in the prosecution of this all important duty to the people.

Dr. E. J. Goodwin, Missouri, nominated Dr. William Porter, St. Louis, for affiliate fellowship.

At this juncture, the first vice-president, Dr. D. S. Fairchild, Clinton, Iowa, took the chair.

Report of Reference Committee on Legislation and Political Action

Dr. E. J. Goodwin, chairman, Missouri, presented the report of the Reference Committee on Legislation and Political Action as follows:

Your Reference Committee on Legislation and Political Action has before it the report of the Council on Health and Public Instruction with the several subcommittees of that Council.

Your Reference Committee endorses the suggestion of the Council that the Board of Trustees be requested to consider an appropriation to the Council for the purpose of placing the Medicolegal Bureau on a sufficiently firm financial basis to enable that bureau to compile and digest all Supreme Court decisions on professional malpractice suits for the benefit of the state societies.

The work of the Council in coordinating the activities of the numerous voluntary health organizations is particularly commended, and your Reference Committee recommends that the Council be encouraged to pursue this endeavor with special efforts.

Your Reference Committee desires also to lay special emphasis on the successful endeavor of the Council to interest the cooperation of the National Educational Association, and urge the Council to use every proper means for the continued harmonious cooperation of these two bodies.

We especially commend the work of the subcommittees of the Council, and find only words of commendation and encouragement for these bodies to continue their functions in the splendid spirit of cooperation so manifest throughout the report.

Your Reference Committee believes it is needless to instance any further the numerous activities of the Council, and concludes its report with a very emphatic endorsement of the manner in which the Council has fulfilled its duties.

Dr. A. W. McAlester, Jr., Missouri, moved the adoption of the report. Seconded.

Dr. C. E. Cantrell, Texas, moved as an amendment that inasmuch as the appropriation of money was involved, the report be referred to the Board of Trustees.

The amendment was seconded, accepted, and the original motion as amended was carried.

On motion, which was duly seconded, the House of Delegates adjourned until 2 p. m., Thursday.

Fourth Meeting—Thursday Afternoon, June 24

The House of Delegates met and was called to order at 2:15 p. m., by the President.

Dr. E. J. McKnight, Connecticut, Chairman, made a supplementary report from the Committee on Credentials, stating that eleven additional delegates had qualified, making a total registration of 108 delegates.

The Secretary called the roll, and 101 delegates responded.

The minutes of the previous meeting were read and approved.

Election of Officers

The first order of business was the election of officers. The House proceeded with an election, which resulted in the choice of the following:

President—RUPERT E. BLUE, Washington, D. C.

First Vice-President—ALBERT VANDER VEER, Albany, N. Y.

Second Vice-President—GEORGE B. EVANS, Dayton, Ohio.

Third Vice-President—DONALD CAMPBELL, Butte, Mont.

Fourth Vice-President—HERBERT C. MOFFITT, San Francisco.

Secretary—ALEXANDER R. CRAIG, Chicago.

Treasurer—WILLIAM ALLEN PUSEY, Chicago.

Trustees—M. L. HARRIS, Chicago; WILLIAM T. COUNCILMAN, Boston and THOMAS MCDAVITT, St. Paul.

Judicial Council—JAMES E. MOORE, Minneapolis, and RANDOLPH WINSLOW, Baltimore (to fill unexpired term of GEORGE W. GUTHRIE, deceased).

Council on Health and Public Instruction—MILTON BOARD, Louisville, Ky.

Member of Council on Medical Education—ROBERT C. COFFEY, Portland, Ore.

Council on Scientific Assembly—GEORGE H. SIMMONS, Chicago; RICHARD S. MORRIS, Clifton Springs, N. Y.; E. S. JUDD, Rochester, Minn.; J. SHELTON HORSLEY, Richmond, Va., and the Secretary of the Association, ex officio; DR. SIMMONS to serve for four years; DR. MORRIS for three years; DR. JUDD for two years and DR. HORSLEY for one year.

The Secretary presented a list of applicants for associate fellowship endorsed by the officers of the Section on Pathology and Physiology, and also a similar list endorsed by the officers of the Section on Preventive Medicine and Public Health.

It was moved that the Secretary be authorized to cast the ballot of the House in each instance in which the applicant is not eligible for membership in the state association of the state in which he resides, and provided that no objection to the applicant is filed by the officers of the said state association.

Seconded and carried.

Dr. E. E. Montgomery, Pennsylvania, Chairman, reported that the Reference Committee on Sections and Section Work unanimously recommended the names of the following nominees for Honorary Fellowship: Prof. G. Arndt of Berlin, Germany; Prof. Otfrid Foerster, Breslau, Germany, and Dr. Wilfrid Harris, London, England.

In addition, the Reference Committee recommends that Dr. William Porter, nominated and endorsed by the Council of the Missouri State Medical Society for Affiliate Fellowship, be elected an Affiliate Fellow.

Dr. C. E. Cantrell, Texas, moved the adoption of the report, together with the recommendations contained therein.

Seconded and carried.

Report of Committee on Transportation and Place of Session

Dr. J. R. Pennington, Illinois, Chairman, presented the report of the Committee on Transportation and Place of Session as follows:

Your Committee on Transportation and Place of Session met and considered carefully the hotel advantages and railroad facilities of the various cities that have extended invitations to the Association in which to hold its 1916 meeting.

Invitations have been received from the following cities: Chicago, Cincinnati, Detroit and New York.

Your committee recommends that the 1916 session be held in the city of Detroit.

Respectfully submitted,

J. RAWSON PENNINGTON, Chairman,
W. T. SARLES,
G. A. HARE,
DONALD CAMPBELL,
R. W. CORWIN.

Detroit, Cincinnati and New York were placed in nomination, and a ballot taken with the result that Detroit was selected as the place for the next meeting.

It was then moved and seconded that Detroit be made the unanimous choice as the place for the annual session of 1916. Carried.

Dr. E. J. McKnight, Connecticut, moved that the Board of Trustees be empowered to determine the time of meeting.

Seconded and carried.

Dr. Alexander Lambert, New York, asked unanimous consent to present an amendment to Article IX, Section 1, of the Constitution, which was granted, when he offered the following: After the word "Vice-Presidents," insert the words "a Chairman of the House of Delegates." (To lie over until next year.)

Dr. Dean Lewis, Delegate from the Section on Surgery, asked unanimous consent, which was granted, to introduce the following, which was referred to the Board of Trustees:

At the meeting of the American Surgical Association the Committee on Fractures made the following explanations and recommendations:

The work of this committee has been greatly hampered by the inadequacy of the records submitted for its consideration. A large proportion of the cases had to be rejected entirely, and most of them were so incomplete as to make deductions based upon them possibly misleading.

The first step in the betterment of practice is the study of results achieved by present day methods. An adequate study is impossible without adequate records.

The committee strongly urges the American Surgical Association to set its seal of approval upon the standard form of record submitted by the committee, and to further petition the American Medical Association to do the same. The committee also urges each member of this Association faithfully to keep these records in his practice and to see that they are kept in the hospitals to which he is attached.

The committee further recommends that a copy of the approved form be sent to all corporations within the United States of sufficient importance to have their own relief organizations or medical service or both, to all accident insurance companies to be embodied and incorporated in the papers given to the insured, with the requirement that they be filled at the time of an accident involving fracture; to all hospital boards with the request that these records be made a part of the routine records of fracture patients, pointing out that thus not only are the hospital and its surgeons protected in case of litigation, but that most valuable material is being collected to serve for attaining better results in the treatment of fractures.

The American Surgical Association adopted the report and recommendations and now especially petitions the American Medical Association to do the same.

The following resolution is, therefore, submitted to the Surgical Section:

Resolved, That the Surgical Section heartily recommend the standard form of fracture report submitted by the American Surgical Association; and be it further

Resolved, That the Section present this standard form of fracture report to the House of Delegates with the request that it be adopted as the standard form of fracture report by the American Medical Association.

Dr. G. Wyeth Cook, District of Columbia, Chairman, reported that the Reference Committee on Rules and Order of Business had considered the resolution offered by Dr. Dwight H. Murray in regard to transposing the order of business, and recommended that it be not done.

Dr. Wendell C. Phillips, New York, moved that the report be received and adopted.

Seconded and carried.

Dr. G. Wyeth Cook, District of Columbia, also reported that the Reference Committee on Rules and Order of Business had considered the motion of Dr. Phillips relative to condensed reports of standing committees, and recommended that it be adopted.

Dr. William L. Noble, Illinois, moved that the recommendation be concurred in.

Seconded and carried.

Report of Reference Committee on Legislation and Political Action

Dr. E. J. Goodwin, Missouri, Chairman, presented the report of the Refcrence Committee on Legislation and Political Action as follows:

Your Referènce Committee on Legislation and Political Action had referred to it the preamble and resolutions requesting the president of the United States and Congress to create a commission to investigate patent and proprietary remedies sold in interstate traffic, and offered to the people for the relief and cure of bodily and mental infirmities, to the end that the people shall have a plain, truthful and unprejudiced report of the actual value of such articles, to expose the fraudulent and deceitful practices that such investigation might disclose, so that people may no longer be made the innocent victims of avarice and fraud when seeking means to regain their health.

Your Reference Committee heartily endorses the preamble and resolutions and recommends that the Secretary of the Association be instructed to send official communication to the president and to the members of both branches of Congress, and convey to them the facts in connection with the manufacture and sale of these so-called remedies as disclosed through the various activities of the American Medical Association.

E. J. Goodwin, Chairman,
L. H. McKinnie,
M. R. Walker,
W. H. Seeman.

It was moved that the report be adopted.

Seconded and carried.

Dr. J. W. Kerr, Washington, D. C., Chairman, reported for the Reference Committee on Hygiene and Public Health that two resolutions had been referred to the committee relating to the same subject, and were of like purport, encouraging the adoption by medical societies of a plan for the production of pure milk for clinical purposes. In view of the fact that the plan has been utilized by many societies, the committee respectfully recommends the adoption of the resolutions passed by the Section on Preventive Medicine and Public Health.

It was moved that the report be adopted.

Seconded and carried.

Dr. William H. Arthur, U. S. Army, Chairman, reported for the Reference Committee on Reports of Officers that the proposal contained in the address of President Rodman concerning a national board of examiners was approved by all members of the committee except one, who desired to submit a minority report. The other members of the committee respectfully recommended that the matter be submitted to the House of Delegates for approval.

Dr. A. R. Mitchell, Nebraska, presented the following minority report:

Not being in accord with the majority of your Refcrence Committee on Reports of Officers to which the President's address was automatically referred, I beg leave to submit the following minority report:

The scope of the address was very comprehensive and instructive. That portion which calls for the action of your committee, namely, the advisability of establishing a board of national examiners, contains material worthy of further consideration of the House of Delegates, and it is recommended that it be referred to the Council on Medical Education.

Respectfully submitted. A. R. Mitchell.

Dr. William L. Noble, Illinois, moved the adoption of the minority report. Seconded.

Dr. G. V. I Brown, Wisconsin, moved as a substitute that the majority report be adopted. Seconded.

After considerable discussion, which was participated in by Drs. McCullough, Kerr, Brown, Hare, Carroll, Goodwin, Mitchell, Board, McKnight and President Rodman, who called Vice President Dr. Wisner R. Townsend to the chair, the substitute motion was put and declared lost. A division was called, and a rising vote taken, with the result that eighteen favored the majority report, and thirty-eight opposed. The motion was lost.

Dr. E. J. Goodwin, Missouri, moved that the minority report be adopted.

Seconded and carried.

Report of Committee on Awards for Scientific Exhibit

Dr. Hugh Cabot, Massachusetts, Chairman, presented the report of the Committee on Awards for Scientific Exhibit, as follows:

The Committee on Awards for the Scientific Exhibit begs leave to report as follows:

After much careful consideration, we have been unable to decide between two exhibits of unusual excellence, and are of the opinion that their value must be regarded as equal. We therefore advise that two gold medals be awarded, one to the Pathological Department of Stanford University and the other to the Pathological Department of the University of Michigan. The committee awards the following certificates of merit for the following exhibits:

1. The Indiana State Board of Health, for its exhibit of a public health campaign.

2. Drs. C. C. Bass and F. M. Johns, Tulane University, on pyorrhea alveolaris and malaria.

3. Drs. Claude A. Smith and Jack Witherspoon on hookworm.

4. The Pathological Laboratory of the New York Lying-in Hospital on demonstration of the cultivation of human tissue in vitro.

5. Dr. Martin H. Fischer on newer experiments on physiology and pathology of kidney functions.

6. Dr. J. T. Case on lantern slides illustrating Roentgen ray studies.

Your committee has been deeply impressed with the very high grade of excellence of the exhibits, and believes that everything should be done to encourage the development of this part of the Association's activity. Too much praise cannot be given to the untiring energy and efficiency of Dr. Frank B. Wynn, Chairman of the Committee on Scientific Exhibit, and we desire to record our opinion that the Association owes him a debt of gratitude.

Hugh Cabot,
V. G. Vecki,
E. W. Haass.

It was moved that the report be adopted.

Seconded and carried.

Report of Committee on Scientific Exhibit

Dr. Frank B. Wynn, Indiana, Chairman, presented the report of the Committee on Scientific Exhibit as follows:

Both in quality and number, the scientific exhibits presented at this session have exceeded the most sanguine expectations of the committee. The counter attraction of the Panama-Pacific Exposition, with its artistic and elaborate exhibits dealing with all phases of science, was no small obstacle in the way of securing participation in a transient exhibition. In spite of the fear of contrast, thirty-two have shown their loyalty to and deep interest in this important feature of the Association work.

The geographic distribution of those participating is of interest. Of the thirty-two exhibitors, twelve are from the Far West, ten from the Mississippi Valley, six from the Eastern Coast, and four from the South. The wide distribution of participants throughout the country teaches the lesson of how deep the hold of this phase of the Association work is upon the scientific investigators everywhere. It emphasizes, too, the growing conviction that the Scientific Exhibit offers the best possible arena in which to present the fruits of research investigations.

The exhibits presented cover a wide range of subjects. The one feature emphasized at the session is the scientific foundation of preventive medicine, shown in exhibits especially on malaria, hookworm, syphilis, gonorrhea, tuberculosis and pyorrhea aveolaris. They are not the conventional public health exhibits, which all too often indulge in the sensational and extreme — necessary perhaps in appealing to the ignorant. On the contrary, they seek to show the scientific basis upon which substantial progress in disease prevention must rest. These, after all, constitute the most valuable public health propaganda, for they appeal to the reason and well-poised judgment of the intelligent and ruling minority.

These exhibits have been prepared with great pains and at considerable expense. Their presentation will interest and instruct the practitioner, permitting him to look in upon the very latest facts regarding these preventable diseases. Intelligent laymen cannot fail to be impressed by the truths made plain.

Besides these exhibits, the Board of Trustees put upon your committee the responsibility of preparing a program of lantern lectures dealing with the same topics. As has been stated regarding the exhibits, let it also be said of the addresses. They are not merely popular presentations. Given by experts, they will show the historical and scientific evolution of our knowledge concerning these diseases, setting forth triumphantly both to physicians and to laymen the debt of the world to scientific medicine in the promotion of social, economic and humanitarian progress.

Sixteen years as chairman of this committee warrants the statement that the metes and bounds of scientific truth are not alone within the walls of great universities. From these sources naturally we must continue to receive the chief light to illumine our way. But this does not excuse even the humblest practitioner from obligation to ideals in the use of the talents given him. Immemorial is the tenet of our profession to search for the truth and make it known to our fellows, without money and without price. The country practitioner constitutes an important factor in the membership of this great democratic organization. How may he be served more fully; and in what manner may he be made to contribute his part toward medical progress? The awesomeness of laboratories and specialism should not drive him into inactive scientific stagnation. This is a serious problem for Association consideration. In its solution your committee feels that the Scientific Exhibit presents an avenue through which great encouragement and aid may be rendered toward a neglected class of our fellows. Why not exhibits limited to country practitioners as ordinarily construed? Let these set forth his problems and difficulties, which ofttimes bring the gravest responsibilities and in emergencies call into action the finest kind of originality. In this way there should come to this large class of our professional brethren great benefits to themselves and mutual enlightenment to us all. The country doctor is even more beloved by the laity than the city practitioner. The Committee on Scientific Exhibit stands committed to a policy which will aid him in solution of his problems, and stimulate him to research, clinical and scientific, in a field which is peculiarly his own.

FRANK B. WYNN, *Chairman,*
WILLIAM OPHULS,
LOUIS B. WILSON,
STANLEY P. BLACK,
P. M. HICKEY.

It was moved that the report be adopted.
Seconded and carried.

Report of Committee on Reapportionment

Dr. R. M. Funkhouser, Missouri, reported for the Committee on Reapportionment as follows:

Your Committee on Reapportionment recommends to the House that the apportionment of the next three years shall be on the basis of one delegate for every 765 and fraction thereof of membership of the constituent state association reported as of April 1, 1915.

The committee appends a table recording the present apportionment, the number of members of the different state associations reported by the secretaries of these state associations as of April 1, 1915, and an apportionment made on the basis of 765 and fraction thereof.

The apportionment based on a representation of one delegate for every 765 and fraction thereof members distributes 140 voting delegates of the House of Delegates.

ROBERT M. FUNKHOUSER, *Chairman,*
LYMAN ASA JONES,
ALONZO B. WALKER,
VICTOR C. VAUGHAN,
ALEXANDER R. CRAIG.

(The appended table shows changes in the delegations from but two of the states—California is accorded four delegates, while Ohio receives but five.)

It was moved that the report be adopted.
Seconded and carried.

The following expression of appreciation for courtesies received by the Association and the Fellows in attendance on the annual session just closing was moved, seconded, and unanimously carried:

Resolved, That the House of Delegates hereby express the thanks of the Association to the Local Committee on Arrangements and to the members of the San Francisco County Medical Society and to the other members of the Medical Society of the State of California for the welcome which has been accorded the Fellows of the Association during their visit to San Francisco.

Also, to the Board of Directors of the Panama-Pacific International Exposition for placing at the disposal of the Association the Exposition Memorial Auditorium and for other courtesies extended to the Association, and to the press of San Francisco and to all who have contributed to the comfort and convenience of the Fellows during their stay in San Francisco.

As there was no further business, on motion, which was duly seconded and carried, the House of Delegates adjourned *sine die.*

THE SCIENTIFIC ASSEMBLY

THE OPENING GENERAL MEETING

Tuesday Morning, June 22

The opening meeting of the American Medical Association was held at the Columbia Theater, Tuesday, June 22, 1915.

On the stage were Ex-Presidents, members of the Board of Trustees, members of Standing Committees, members of the House of Delegates, and Delegates from the Pan-American Medical Congress.

The meeting was called to order at 10:30 a. m. by the President, Dr. Victor C. Vaughan, Ann Arbor, Mich.

Prayer was offered by Bishop William Ford Nichols, San Francisco.

In the absence of the Hon. James Rolph, Jr., Mayor of San Francisco, Mr. Edward J. Rain was introduced as the representative of the Mayor, who delivered the following address:

ADDRESS OF WELCOME

Mr. President, Members of the American Medical Association, Ladies and Gentlemen: I understand that the delegates here present come from all over the state and from all over our country, and that you as an association are devoting yourselves to the task of putting yourselves out of business. The great object of your organization lies along the lines of preventive medicine. San Francisco has more opportunities to test the theory of preventive medicine than any other city in the world, because we have been through so many things. You all know what Dr. Blue has done in the way of preventive measures along the lines of health protection for San Francisco immediately after the fire, and I feel it is an especial honor that the people of San Francisco should have you hold your convention in this city. I feel that I am talking to the greatest body of men and women I have ever had the pleasure of addressing in behalf of the people of San Francisco. I may say, you are the most expensive men and women that there are in the country. (Laughter.) In saying that, I am not trying to joke about doctors' bills, but I

mean it because it is a great privilege for me personally to have a few minutes' conversation with so many doctors without charge. (Laughter.) I am thinking of the fact that in the education of medical men of this country more money has been spent both by the public and by private individuals to make you what you are than upon any other class of men and women; and I do not exclude lawyers who are to come here some time next month. Some wonderful things have been accomplished by you, and through your individual efforts and the organization which you represent for the public. The public ought to think mighty well of such an association as this, and I am sure they do. As a profession, you are striving to prevent disease and to keep us on earth as long as possible. You first bring us into the world, and then you strive to have us remain here as long as you can, and then finally you help us out of it. We owe you a great debt of gratitude. The people of San Francisco greatly honor and respect the medical profession. They value highly what you are doing. You are welcome to our city. We wish you good luck in your deliberations, success through all the days of your lives, and we hope that you will visit this city again and give us this honor which we so highly appreciate. (Applause.)

Dr. Harry M. Sherman, San Francisco, President of the Medical Society of the State of California, was next introduced and delivered an address of welcome on the part of the medical profession.

ADDRESS OF WELCOME BY DR. SHERMAN

Mr. President, and Fellows of the American Medical Association, Ladies and Gentlemen: I am here this morning to extend to you a welcome from the medical profession of California, and I do so with open arms and open heart. We welcome you here to this meeting as brothers coming from all over the country. From the northernmost coast of Maine to the southernmost coast of our state, and from Florida to Oregon and Washington, we are all brothers, following one calling and doing one thing. As the animals in the jungle in Kipling's wonderful story, we are all brothers, you and I, although we are not as predatory as the animals.

We have here the same problems to deal with that you have at home, and while we may not be solving them exactly as you do, we are doing our best, and we wish you to watch us, see what we are doing, and compare our ways and methods with your ways and find out or help us to find out which may be the better. Our school problems, our hospital problems, our clinical problems, our social service problems, press closely upon the medical profession, and we wish you to see what we are doing, and if we are doing things as we should, and if not, teach us to do better.

It is almost impossible to get away from the climate of California. I had not intended to mention this threadbare subject to you, but as so many complaints have been dinned into my ears from those who came from the East, I cannot refrain from doing so. The people are searching for warmer clothing, more blankets, and claim they are colder here than they are at home in winter. There is a bit about the geography of this state which can be told. North of us is the interior of the Sacramento Valley, and south of us is the San Joaquin Valley, where we have the heated air and breezes from the ocean which come in through the Golden Gate. The climate of California has been arranged for us by Nature. People find it a welcome climate to stay in, to live in, to play in and to work in.

It is now twenty-one years since the American Medical Association came to San Francisco, and that is about the right time that should elapse before the next visit. (Laughter.) In that time you have been to Los Angeles on the south and Portland on the north, but you must remember the distance from San Francisco to Los Angeles is not that between Philadelphia and New York, and that it takes nearly three-quarters of a day to go to Los Angeles, and more than a day to get to Portland. We think your coming here once in about twenty years is about the right proportion, because this Association brings tremendous things with it. It brings them to us, and to many who cannot go to it. Then it gives us here the inalienable right to return the same hospitality and goodfellowship and courtesies which we have received when we have gone to the East. I think each one of you will agree with me, whether born in California, or a California resident, that to come to California five times in a century is something no man should object to. I thank you. (Applause.)

ADDRESS OF WELCOME BY MR. ROWELL

The President, Dr. Vaughan, said:

There has been some discussion as to whether the Progressive Party is alive, or whether it should be addressed as the late party. The belated representative of the Progressive Governor of California, Mr. Chester Rowell, will now address us. (Laughter.)

Mr. President and Members of the American Medical Association: Since Dr. Vaughan has mentioned politics, I may say that whatever question there may be about the Progressive Party in Michigan, there is no question that in California it is very much alive. (Laughter.)

I have come as the belated representative of the Governor of California to extend to you a welcome on behalf of the state. Unfortunately, the governor is unable to be present, partly by reason of business, and partly owing to the strenuous labors of vetoing a considerable number of progressive bills which the progressive legislature has just passed, and his physicians have ordered rest and retirement. (Laughter.) As his poor representative, I have the proud privilege of addressing you, the proudest body in America, because you represent that profession which most proudly, most worthily carries forward the chief task of the twentieth century—the task of making this world better fit to live in. You, too, represent in a high degree the medical profession as a profession, as a science and as an art. You stand committed to the truth that there are no sects in the Temple of Truth, and that there are no frontiers in the Republic of Science. There may be many sorts of ignorance, and of error, but there is only one sort of truth, and inasmuch as all of us are to a very considerable extent ignorant, and are subject to many errors, we shall continue to make them so long as we retain our human imperfections. We all recognize the Republic of Science, which includes all known truths and all genuine search after truth, and to that unity of medical science and medical art you stand as a profession committed. To the elevation of the standards of the profession, to the protection of its ethics, to the protection of its relations to the public, and to the protection of the public itself, you stand also committed, and as a member of that unenlightened public, may I express to you our obligations and our debt of gratitude to you for what you have done, and our hope for that which you shall do. Among other things, may I express the hope that you will devote yourselves, not merely to the alleviation of our physical ills, but to some extent to the enlightenment of our mental darkness, because no one can be more painfully conscious than you of the depths of that darkness and of the needs of being alive in it. Through the profession in which I am engaged there has been promulgated for illgotten gain a lot of medical information to the people. The people have been informed that all their traditions and prejudices were correct in regard to the medical profession. They have been educated to believe that medicine is still an art of magic. They have been educated to know that any person is fully competent to diagnose his own case, and that the physician, by reason of his expert knowledge, specifies the remedy that will cure the particular disease, or that Nature has provided a remedy for every disease, and all physicians know the secrets of these remedies. But the particular physician who has received this particular bit of education has discovered a new remedy which will cure some of the diseases that nobody could cure before, and so he is regarded as a great and wonderful man. The people have been taught that they are right in believing that just as there is one creed for the Methodists, one for the Jew, one for the Catholic, so there are as many creeds of medicine, and that there is no difference between them, except that each one of them is regarded as the best, no matter to which he belongs.

I congratulate you that you have in some small way sent around some lecturers to educate a small number of people in the broader doctrine, and I have had the pleasure sometimes of presiding over meetings at which wonderfully brilliant lectures were delivered to audiences of from twenty-five to forty-two, and every one seemed fully enlightened. (Laughter.) I do not say this to disparage your efforts, for you are making a great and noble effort toward spreading the gospel of sanitation and good health among the people. But it is to be hoped that you will go deeper, that you will spread things farther apart until at last there shall be an aperture through the outer encasement of the mental darkness in which many of us dwell, through which the light may enter.

I remember very well that thirty years ago, when I was a student in the University of Michigan, sanitary science was taught one hour a week, and when the boys needed an extra rest they took that course for a snap. (Laughter.) Those were the times when the whole science of bacteriology was quite new to students, and very new to the people. Those were the times when Dr. Vaughan did his own epoch-making work on ptomaines, leukomaines, beginning to bridge the gap between bacteriology and chemistry. Those were the times when sanitary science was taught as a snap one hour a week, and now we have just established in the University of California a new degree, Doctor of Public Health, which is granted to trained persons, not necessarily physicians, to take care of the public health, and possibly it would be a good thing if the medical profession should so brilliantly succeed in monopolizing that function that there would be no room for our lay graduates in public health. (Applause.)

Again, the science of preventive medicine has gone on until it has built the Panama Canal, until it has established the Republic of Cuba, until it has protected this frontier on which you now stand, a frontier between the sanitation of the Occident and the plagues of the Orient. (Applause.) At this frontier a distinguished member of your profession has protected the city of San Francisco against the violent and narrowminded opposition of members of my profession, and has made it a city in which you can meet with pleasure and comfort. (Applause.) In this frontier your profession has taught us the relation between rats and the plague. At other frontiers it has taught us the relation between mosquitoes and malaria and yellow fever. You are teaching the whole world how to protect itself, and at last Cuba and Panama are examples of it, thus bridging the gap between the North and the South.

It is my pleasing function to greet you and to welcome you upon behalf of the governor of the state of California. We in California are very proud of this city and of our state. We are proud of the medical profession, and of the things that the medical profession stand for in this state. We are proudest of all of the things that Nature has done for California, making it the beauty spot of the world. We hope all of you will enjoy your stay in this city. We want you all to remain as long as you can. In short, you cannot stay too long in California. I have been here myself more than twenty years. I have traveled all over it and have just begun to see it. If some of you could extend your visit for twenty days, we will try to show you something worth while. In the meantime, you are a thousand times welcome to California. (Loud Applause.)

THE PRESIDENT: My friends and Fellow members of the Association: During the past year, as President of the American Medical Association, many honors and many privileges have come to me which I have greatly appreciated. None, however, do I appreciate more than that which now falls to my lot, and that is to introduce to you the distinguished surgeon who is to be your President for next year —Dr. William L. Rodman. (Applause.)

Dr. Rodman then delivered his address as President of the Association. He selected for his subject "Work of the American Medical Association."

Adjourned.

MINUTES OF THE SECTIONS

PRACTICE OF MEDICINE

TUESDAY, JUNE 22—AFTERNOON

The meeting was called to order at 2 p. m. by the Chairman, Dr. Thomas McCrae, Philadelphia.

Dr. McCrae then read the Chairman's Address, entitled "The Use of Words." No discussion.

Dr. James S. McLester, Birmingham, Ala., read a paper on "Phenoltetrachlorphthalein Test of Liver Function; a Series of Unselected Cases (Lantern Demonstration)." Discussed by Drs. George Whipple, San Francisco; Thomas Addis, San Francisco, and James S. McLester, Birmingham, Ala.

Dr. Ray Lyman Wilbur, San Francisco, read a paper on "Leukemia — an Infection?" with report of cases. Discussed by Drs. Carl R. Krone, Oakland, Calif.; Max Einhorn, New York; J. A. Lichty, Pittsburgh, and R. L. Wilbur, San Francisco.

Dr. W. W. Duke, Kansas City, read a paper on "Clinical Interpretation of the Platelet Count." Discussed by Drs. Gerald Webb, Colorado Springs; S. H. Hurwitz, San Francisco, and W. W. Duke, Kansas City.

The Chairman appointed the following Nominating Committee: Drs. W. Jarvis Barlow, Los Angeles; Alexander Lambert, New York, and William Fitch Cheney, San Francisco.

Dr. Max Einhorn, New York, read a paper on "A Clinical Contribution to Our Knowledge of Chronic Pancreatitis." No discussion.

THURSDAY, JUNE 24 — MORNING

The report of the Nominating Committee was read by Dr. W. Jarvis Barlow, Los Angeles. On motion, duly seconded, the secretary cast the ballot for the unanimous election of the officers recommended by the Nominating Committee.

Dr. C. C. Bass, New Orleans, read a paper on "Specific Treatment of the Malignant Forms of Malaria." Discussed by Drs. Walter V. Brem, Los Angeles; C. S. Williamson, Chicago, and C. C. Bass, New Orleans.

Dr. Frank Smithies, Chicago, read a paper on "Syphilis of the Stomach (Lantern Demonstration)." Discussed by Drs. Dudley Fulton, Los Angeles; S. Max White, Minneapolis; Max Einhorn, New York; George Eusterman, Rochester, Minn.; Charles E. Sears, Portland, Ore.; Frank Smithies, Chicago; Joseph von Werthern, San Francisco, and Frank Smithies, Chicago.

Dr. William Fitch Cheney, San Francisco, read a paper on "Gastric Cancer as a Sequel to Gastric Ulcer." Discussed by Drs. Frank Smithies, Chicago; Max Einhorn, New York; F. A. Speik, Los Angeles; Thomas McCrae, Philadelphia, and W. F. Cheney, San Francisco.

Dr. George Eusterman, Rochester, Minn., read a paper by Dr. Christopher Graham and himself, Rochester, Minn., on "Essential Factors in the Diagnosis of Duodenal and Gastric Ulcers." Discussed by Drs. J. N. Hall, Denver; Max Einhorn, New York, and J. A. Lichty, Pittsburgh.

Dr. J. A. Lichty, Pittsburgh, read a paper "Concerning the End-Results of Gallbladder and Duct Diseases." Discussed by Drs. J. N. Hall, Denver; Max Einhorn, New York; J. A. McGarry, Los Angeles, and J. A. Lichty, Pittsburgh.

THURSDAY, JUNE 24 — AFTERNOON

Drs. W. Jarvis Barlow and R. L. Cunningham, Los Angeles, presented a paper on "Chronic Nephritis, with Analysis of Two Hundred and Fifty Cases in Private Practice." Discussed by Drs. Alexander Lambert, New York; Philip King Brown, San Francisco; Joseph S. Cipes, Albuquerque, N. M., and W. Jarvis Barlow, Los Angeles.

Drs. Thomas Addis and Junsai Watanabe, Seattle, read a paper on "Standards of Urea Excretion (Lantern Demonstration)." Discussed by Drs. Lawrence Selling, Portland, Ore., and Thomas Addis, San Francisco.

Dr. Ernest C. Dickson, San Francisco, read a paper on "Botulism. An Experimental Study." Discussed by Dr. Thomas McCrae, Philadelphia.

Dr. Charles Spencer Williamson, Chicago, read a paper on "Influence of Age and Sex on Hemoglobin. A Spectrophotometric Analysis of Nine Hundred and Nineteen Cases." Discussed by Drs. Thomas Addis, San Francisco, and Charles Spencer Williamson, Chicago.

Dr. W. H. Witt, Nashville, Tenn., read a paper on "Prognosis in Heart Disease from the Point of View of Etiology." Discussed by Drs. C. S. Williamson, Chicago; James S. McLester, Birmingham, Ala.; John A. Witherspoon, Nashville, Tenn.; George E. Ebright, San Francisco, and W. H. Witt, Nashville.

SECTION ON SURGERY, GENERAL AND ABDOMINAL

TUESDAY, JUNE 22—AFTERNOON

The meeting was called to order at 2:15 by the chairman, Dr. Charles H. Peck, New York.

Dr. M. Estes, chairman of the American Surgical Association, presented the following resolution:

Resolved, That the Surgical Section heartily recommend the standard form of fracture report submitted by the American Surgical Association; and be it further

Resolved, That the section present this standard form of fracture report to the House of Delegates with the request that it be adopted as the standard form of fracture report by the American Medical Association.

The resolution was duly seconded, and, without discussion, carried.

Dr. Peck then read the chairman's address, entitled "Benign Lesions of Stomach and Duodenum, with Special Reference to Late Operative Results." No discussion.

Dr. W. J. Mayo, Rochester, Minn., read a paper on "Chronic Gastric Ulcer." No immediate discussion.

Dr. A. J. Ochsner, Chicago, read a paper on "The Relation Between Chronic Ulcer and Cancer of the Stomach." Discussed by Drs. Emmet Rixford, San Francisco; William L. Rodman, Philadelphia; W. I. Terry, San Francisco; Miles F. Porter, Fort Wayne, Ind.; A. E. Rockey, Portland, Ore.; J. Chris O'Day, Portland, Ore., and C. G. Levison, San Francisco.

Dr. R. D. Carman, Rochester, Minn., read a paper by himself and Dr. D. C. Balfour, Rochester, Minn., on "Gastrojejunal Ulcers: Their Roentgenologic and Surgical Aspects." No discussion.

Dr. J. Rilus Eastman, Indianapolis, read a paper on "Surgical Anatomy of Cleft Palate." Discussed by Drs. Harry Sherman, San Francisco; Charles D. Lockwood, Pasadena, Calif.; Charles H. Peck, New York; George V. I. Brown, Milwaukee, Wis., and J. Rilus Eastman, Indianapolis.

The chairman announced that as Drs. Edward Martin, Philadelphia, and Arthur D. Bevan, Chicago, were absent, the section would have the papers of Drs. Rea Smith, Los Angeles, and O. M. Shere, Denver, read.

Dr. Rea Smith, Los Angeles, read a paper on "Ileocolostomy and Colectomy for Arthritis Deformans." Discussed by Drs. J. F. Percy, Galesburg, Ill., and M. Casper, Louisville, Ky.

Dr. O. M. Shere, Denver, read a paper on "Myositis Ossificans Traumatica." Discussed by Drs. Otis Lamson, Seattle; D. D. Lewis, Chicago; Alexius McGlannan, Baltimore, and O. M. Shere, Denver.

THURSDAY, JUNE 24—MORNING

Dr. Dean D. Lewis, Chicago, read a paper by himself and Dr. E. G. Kirk, Chicago, on "Fascial Tubulization in Repair of Nerve Defects—An Experimental Study." Discussed by Drs. A. A. Law, Minneapolis; John Golden, Chicago; Kenith MacKenzie, Portland, Ore.; F. W. Rinkenburger, Los Angeles, and Dean D. Lewis, Chicago.

The following officers were elected: Chairman, Dr. E. W. Andrews, Chicago; Vice Chairman, Dr. Fred. Murphy, St. Louis; Secretary, Dr. E. S. Judd, Rochester, Minn.; Orator, Dr. Emmett Rixford, San Francisco; Delegate, Dr. Dean D. Lewis, Chicago; Alternate, Dr. W. D. Haggard, Nashville, Tenn.

Dr. W. B. Russ, San Antonio, Tex., read a paper on "Selection of Operative Cases in Chronic Intestinal Stasis." Discussed by Drs. J. N. Jackson, Kansas City, Mo.; Robert Coffey, Portland, Ore.; Rea Smith, Los Angeles; F. W. Rinkenburger, Los Angeles; Robert Morris, New York; J. W. Draper, New York, and W. B. Russ, San Antonio, Tex.

Dr. W. B. Brinsmade, Brooklyn, read a paper on "Intestinal Adhesions." Discussed by Drs. A. S. Lobingier, Los Angeles; A. F. Jonas, Omaha; L. S. Pilcher, Brooklyn; W. I. Terry, San Francisco, and J. W. Draper, New York.

Dr. H. Beeckman Delatour, Brooklyn, read a paper on "Malignant Diseases of the Large Intestine."

Dr. D. F. Jones, Boston, read a paper on "Combined Abdominal and Sacral Operation for Carcinoma of the Rectum."

These two papers were discussed by Drs. Miles F. Porter, Fort Wayne, Ind.; C. B. Davis, Chicago; Alexius McGlannan, Baltimore; Louis J. Hirschmann, Detroit; Robert Coffey, Portland, Ore.; John Rawson Pennington, Chicago; H. Beeckman Delatour, Brooklyn, and D. F. Jones, Boston.

Dr. A. E. Rockey, Portland, Ore., read a paper on "The Transverse Incision in Operations for Appendicitis." Discussed by Drs. Robert Emmett Farr, Minneapolis; A. V. Moschcowitz, New York; J. Chris O'Day, Portland, Ore.; O. O. Witherbee, Los Angeles, and A. E. Rockey, Portland, Ore.

THURSDAY, JUNE 24—AFTERNOON

Dr. Samuel J. Mixter, Boston, read the Oration on Surgery, entitled "The Intestinal Tract.

Dr. J. T. Case, Battle Creek, Mich., read a paper on "Postoperative Roentgen Studies in Gastric and Intestinal Operations." No discussion.

Dr. F. H. Albee, New York, read a paper on "The Use of Inlay and Dowel Grafts in the Treatment of Fractures." Discussed by Drs. E. W. Ryerson, Chicago; John Golden, Chicago; Thomas W. Huntington, San Francisco, and F. H. Albee, New York.

Dr. J. F. Corbett, Minneapolis, read a paper on "The Suprarenal Gland in Shock." Discussed by Drs. J. E. Moore, Minneapolis, and J. F. Corbett, Minneapolis.

Dr. Bransford Lewis, St. Louis, read a paper on "Cystoscopic Methods in Ureteral Stricture and Calculus." Discussed by Drs. W. F. Braasch, Rochester, Minn.; L. W. Bremerman, Chicago, and Bransford Lewis, St. Louis.

Dr. Robert Abbe, New York, read a paper on "Roentgen-Ray Epitheliomas Curable by Radium—An Apparent Paradox." No discussion.

The following papers were read as a Symposium on War Surgery:

Dr. Wesley Earle Drennen, Birmingham, Ala.: "Experiences in Military Surgery."

Dr. F. E. McCullough, U. S. Navy, San Francisco: "Casualties of Modern Naval Warfare."

No discussion.

SECTION ON LARYNGOLOGY, OTOLOGY AND RHINOLOGY

TUESDAY, JUNE 22—AFTERNOON

The meeting was called to order by the Chairman, Dr. Norval H. Pierce, Chicago.

The Chairman appointed as substitutes on the Executive Committee Drs. H. W. Loeb, St. Louis; Henry Horn, San Francisco; Edward C. Sewall, San Francisco. Delegate, Dr. Hill Hastings, Los Angeles.

Dr. Pierce read the Chairman's Address, entitled "Transvaluations."

Dr. Henry Horn, San Francisco, read a paper on "The Etiology of Ozena." Discussed by Drs. W. T. Cummins, Southern Pacific Hospital; George H. Willcutt, San Francisco; William R. Murray, Minneapolis; Henry L. Wagner, San Francisco, and H. W. Loeb, St. Louis.

Dr. H. B. Graham, San Francisco, presented an exhibit showing by Roentgen-ray plate a tack in a man's lung.

Dr. Jerome B. Thomas, Palo Alto, Calif., read a paper on "Tuberculosis of the Frontal Sinus, with Report of Two Cases." Discussed by Dr. J. A. Pratt, Aurora, Ill.

Dr. Howard A. Lothrop, Boston, read a paper on "Frontal Sinus Suppuration with Results of Operative Procedure." No discussion.

Dr. Howard Young McNaught, San Francisco, read a paper on "Intranasal Antrum Operations with Report of Ninety Cases." Discussed by Drs. John J. Kyle, Los Angeles; Cullen F. Welty, San Francisco; William R. Murray, Minneapolis; Wendell C. Phillips, New York; H. B. Graham, San Francisco; Fred Stauffer, Salt Lake City; Justus A. Matthews, Rochester, Minn.; Norval H. Pierce, Chicago, and G. C. Kneedler, Pittsburgh.

THURSDAY, JUNE 24—MORNING

Instruments and appliances were presented as follows:

Dr. Frank C. Todd, Minneapolis, presented a device for packing the nose.

Dr. Harry L. Pollock, Chicago, presented a wash bottle for use in nasal operations; also knives for closing the eustachian tube after mastoid operation.

Dr. Edward C. Sewall, San Francisco, presented a light for giving binocular vision in tonsil work; also an instrument for opening the hypophysis.

Dr. George H. Willcutt, San Francisco, read a paper on "Acoustic Disturbances in the Early Stages of Lues."

Dr. Hill Hastings, Los Angeles, read a paper on "Syphilis of the Internal Ear. Report of Case."

These two papers were discussed by Drs. J. Holinger, Chicago, and George W. MacKenzie, Philadelphia.

Dr. G. P. Wintermute, San Francisco, read a paper on "Inflammation of the Auditory Nerve." Discussed by Drs. D. Harold Walker, Boston; H. B. Graham, San Francisco; Cullen Welty, San Francisco; H. W. Loeb, St. Louis; Harry L. Pollock, Chicago; William R. Murray, Minneapolis, and George W. MacKenzie, Philadelphia.

Dr. D. Harold Walker, Boston, read a paper on "Chronic Deafness: The Present Status of Its Treatment." Discussed by Drs. H. B. Graham, San Francisco; Harry L. Pollock, Chicago, and Henry Horn, San Francisco.

Dr. Edward C. Sewall, San Francisco, read a paper on "Operation on the Hypophysis After the Hersch Method." No discussion.

The report of the Nominating Committee, which was adopted, was as follows: Chairman, Dr. Hill Hastings, Los Angeles; Vice-Chairman, Dr. William R. Murray, Minneapolis; Secretary, Francis P. Emerson, Boston; Executive Committee, Drs. Robert Levy, Denver; Burt R. Shurly, Detroit; Norval H. Pierce, Chicago; Delegate, Dr. George E. Shambaugh, Chicago; Alternate, Dr. H. B. Graham, San Francisco.

THURSDAY, JUNE 24—AFTERNOON

Dr. H. B. Graham, San Francisco, read a paper on "Difficulties in the Diagnosis of Sinus Thrombosis." Discussed by Drs. Cullen F. Welty, San Francisco; George F. Cott, Buffalo; D. H. Trowbridge, Fresno, Calif.; Norval H. Pierce, Chicago, and Harry L. Pollock, Chicago.

Dr. John J. Kyle, Los Angeles, read a paper on "Early Diagnosis of Mastoiditis."

Dr. Virginius Dabney, Washington, D. C., read a paper on "Idiopathic Mastoid Abscess."

Dr. Cullen F. Welty, San Francisco, read a paper on "Mastoid Operations, with a Report of 150."

These three papers were discussed by Drs. J. Holinger, Chicago; Henry Horn, San Francisco; Frederick E. Franchere, Sioux City, Ia.; George F. Cott, Buffalo; Hill Hastings, Los Angeles; Edward C. Sewall, San Francisco; H. B. Graham, San Francisco; George W. MacKenzie, Philadelphia; James J. Pattee, Pueblo, Colo.; Norval H. Pierce, Chicago; Peter A. Jordan, San Jose, Calif., and W. C. Phillips, New York.

Dr. Wendell C. Phillips, New York, read a paper on "Chronic Purulent Otitis Media, with Reference to Tuberculosis." Discussed by Drs. John J. Kyle, Los Angeles; Cullen F. Welty, San Francisco, and Edgar F. Conant, Denver.

Dr. John J. McLoone, Phoenix, Ariz., read a paper on "Defects of the Singing Voice Due to Nasal and Accessory Sinus Disease." No discussion.

The new Chairman, Dr. Hill Hastings, Los Angeles, was then duly installed.

Dr. Justus A. Matthews, Rochester, Minn., read a paper on "Tonsillectomy, with Analysis of Four Thousand Cases." Discussed by Dr. Henry Horn, San Francisco.

Moved by Dr. Hill Hastings that a vote of thanks be extended to the officers of the Section for the fine program and for their efforts in bringing about a successful meeting. Seconded and carried.

Moved by Dr. George Cott, Buffalo, that a rising vote of thanks be extended to Dr. Norval H. Pierce for his work in presiding over the Section. Seconded and carried.

SECTION ON DISEASES OF CHILDREN

TUESDAY, JUNE 22—AFTERNOON

The meeting was called to order by the Chairman, Dr. Lawrence T. Royster, Norfolk, Va. He announced that since Drs. Isaac Abt and F. S. Churchill, of Chicago, two members of the Executive Committee, were not present, it would be necessary to appoint two members in their places. He therefore appointed Dr. F. C. Neff, Kansas City, Mo., and Dr. Langley Porter, San Francisco.

Dr. H. M. McClanahan, Omaha, presented the following resolution looking toward cooperation on the part of this section with other organizations working for the reduction of infant mortality.

WHEREAS, The problem of infant mortality occupies such an important place in pediatrics, and,

WHEREAS, Preventive work on the part of many organizations has been started for the purpose of helping to lower the death rate, and,

WHEREAS, Many of these are not guided or directed by proper authority in their pediatric affiliations, be it

Resolved, That the section on Diseases of Children request the Board of Trustees to form in that body a Council on Infant Mortality for the purpose of cooperation with other organizations.

Dr. L. T. Royster, Norfolk, delivered an address on "The Pediatrician and the Section on Diseases of Children." No discussion.

Dr. F. C. Neff, Kansas City, read a paper on "Recent Methods of Treating Diphtheria." Discussed by Drs. J. Zahorsky, St. Louis; L. Porter, San Francisco; A. A. O'Neil, San Francisco; H. D. Chapin, New York; J. McGavin, Portland, Ore.; J. A. Colliver, Los Angeles; W. W. Behlow, San Francisco; P. S. Roy, Washington, D. C.; William P. Lucas, San Francisco; L. T. Royster, Norfolk, Va.; F. C. Neff, Kansas City, Mo.

Dr. H. M. McClanahan, Omaha, read a paper on "Practical Value of the Examination of Stools in Infants." Discussed by Drs. J. I. Durand, Seattle; C. G. Grulee, Chicago; William P. Lucas, San Francisco; F. W. Schlutz, Minneapolis; L. Porter, San Francisco; J. Zahorsky, St. Louis; H. M. McClanahan, Omaha.

Dr. H. D. Chapin, New York, read a paper on "A Clinical Study of Pneumonia in Early Life." Discussed by Dr. F. C. Neff, Kansas City.

Dr. W. P. Lucas, San Francisco, read a paper on "The Problem of Unresolved Pneumonia in Infancy and Childhood." Discussed by Drs. H. D. Chapin, New York; L. Porter, San Francisco; F. C. Neff, Kansas City; J. P. Sedgwick, Minneapolis; E. C. Fleischner, San Francisco; J. A. Shreck, Redlands; W. P. Lucas, San Francisco.

THURSDAY, JUNE 24—MORNING

The meeting was called to order by the Chairman, Dr. L. T. Royster, who then asked for the report of the nominating committee with reference to the officers for the ensuing year.

Dr. H. D. Chapin, New York, reported that the nominating committee had selected the following officers: chairman, Dr. T. C. McCleave, Berkeley, Calif.; vice chairman, Dr. E. P. Copeland, Washington; secretary, Dr. F. P. Gengenbach, Denver; delegate, Dr. H. M. McClanahan, Omaha. A motion carried that the officers be accepted as nominated.

Dr. T. C. McCleave, Berkeley, Calif., stated that at the last meeting in Atlantic City this section appointed a Committee of Betterment. Dr. Hamill was one of the original members of that committee, and took up several matters of importance, among them the subject of the advertisement of proprietary infant foods. He was not able to be present at this time, and Dr. Sedgwick was appointed in his place. These advertisements advised mothers to give up nursing their children and advocated foods by the use of which infants were not scientifically fed. This, he said, was unfair to the medical profession, and he presented the following resolution in reference to the matter.

He also presented a resolution commending the work of the American Milk Commission.

The Committee on Betterment of the Section, Section on Diseases of Children, begs to submit the following for the consideration of the House of Delegates:

WHEREAS, The advertising of proprietary infant foods to the profession, and especially to the laity, is carried on by methods more insidious and objectionable than those used in the promulgation of proprietary drug preparations, and constitutes a serious obstacle to the propaganda for rational and scientific infant feeding, be it

Resolved, That proprietary infant foods proposed for advertisement in the publications of the American Medical Association shall be submitted to the Council on Pharmacy and Chemistry under the same conditions as apply to proprietary drug preparations.

Respectfully submitted.

J. P. SEDGWICK.
F. S. CHURCHILL.
T. C. MCCLEAVE.

The Committee on Betterment of the Section, Section on Diseases of Children, begs to submit the following for the consideration of the House of Delegates:

WHEREAS, The activity of the American Association of Medical Milk Commissions has resulted in the establishment of some seventy-five commissions in the United States and Canada, largely under the auspices of county medical societies, and there has thus been made available in many communities a certified milk designed for clinical purposes, which, at the same time, has greatly stimulated improvement in the general milk supply, to the consequent reduction of infant morbidity and mortality, be it

Resolved, That the House of Delegates commends the purpose of the American Association of Milk Commissions, and recommends to component societies the organization of medical milk commissions wherever warranted by local conditions.

Respectfully submitted.

J. P. SEDGWICK.
F. S. CHURCHILL.
T. C. MCCLEAVE.

Dr. H. M. McClanahan, Omaha, moved that these resolutions be adopted. Motion carried.

Dr. Philip S. Roy, Washington, D. C., stated that the work of this committee was very important and it should be continued; that this committee should be in close touch with the House of Delegates, and the new delegate should be added to the committee.

Dr. C. G. Grulee, Chicago, moved that this committee be made a standing committee of this section and that the delegate from this section be added to the committee. Motion carried. Dr. C. G. Grulee, Chicago, presented the following resolution:

WHEREAS, There is a journal of the diseases of children published by the American Medical Association that is upholding a very high standard and publishes the best medical material that this country produces, but which, it seems to us, is lacking in one factor of primary importance, namely, that it publishes no adequate abstracts of articles as is done in foreign journals; and

WHEREAS, In this country we have no journal, excepting one that is objectionable because of the character of the advertisements it carries, and many of those advertisements have been condemned by the American Medical Association; and

WHEREAS, This condition of affairs works to the disadvantage of the pediatric profession, since the pediatrician must go to foreign journals for a digest of pediatric literature, be it

Resolved, That it is the sense of the pediatric section of the American Medical Association that the *American Journal of Diseases of Children,* published by the American Medical Association, establish a department which will publish abstracts comprising not only those in our own language, but in every other language, and also abstracts of various meetings of pediatric societies in this country.

Dr. G. H. Clark, Waterloo, Iowa, read a paper on "Craniometry in Diseases of Children." Discussed by Drs. J. P. Sedgwick, Minneapolis; C. G. Grulee, Chicago; H. D. Chapin, New York; J. A. Colliver, Los Angeles; G. H. Clark, Waterloo.

Dr. G. H. Cattermole, Boulder, Colo., read a paper on "Tuberculin Tests in Children of Colorado." Discussed by Drs. C. G. Grulee, Chicago; L. Porter, San Francisco; H. D. Chapin, New York; E. Lackner, Chicago; J. I. Durand, Seattle; J. P. Sedgwick, Minneapolis; R. B. Sweet, Long Beach, Calif.; T. C. McCleave, Berkeley, Calif.; E. Lackner, Chicago; J. Ritter, Chicago; G. H. Cattermole, Boulder, Colo.

Dr. F. W. Schlutz and Dr. C. J. Pettibone, Minneapolis, presented a paper on "Quantitative Determinations of Nitrogen Elements in the Newborn," which was read by Dr. Schlutz. Discussed by Drs. L. Porter, San Francisco, and F. W. Schlutz, Minneapolis.

Dr. J. P. Sedgwick and Dr. W. P. Larson presented a paper on "Epidemic Abortion Reactions in Children," which was read by Dr. Sedgwick. Discussed by Drs. G. Lyman, San Francisco; J. I. Durand, Seattle; J. P. Sedgwick, Minneapolis.

Dr. J. S. Bardin, Fort Worth, Texas, read a paper on "Cerebrospinal Meningitis During the Texas Epidemic of 1912." Discussed by Drs. H. D. Chapin, New York; H. M. McClanahan, Omaha; L. Porter, San Francisco; J. S. Bardin, Fort Worth, Tex; H. D. Chapin, New York.

THURSDAY, JUNE 24—AFTERNOON

The meeting was called to order by the Chairman, Dr. L. T. Royster, Norfolk, Va. Drs. Clifford C. Grulee and F. W. Gaarde, Chicago presented a paper on "Involvement of the Urinary Tract as the Result of Focal Infections in Children," which was read by Dr. C. G. Grulee. Discussed by Drs. W. D. Ludlum, Brooklyn; F. C. Neff, Kansas City, Mo.; L. T. Royster, Norfolk, Va.; C. G. Grulee, Chicago.

Drs. Langley Porter, A. Huffaker and A. Ritter, San Francisco, presented a paper read by Dr. Porter, San Francisco, on "Mental and Physical Survey of Supposedly Normal Children." Discussed by Drs. C. G. Grulee, Chicago; E. Merritt, San Francisco; A. Huffaker, San Francisco; H. M. McClanahan, Omaha; L. Porter, San Francisco.

Dr. H. H. Yerrington and Dr. Clyde T. Wetmore, San Francisco, presented a paper, read by Dr. H. H. Yerrington, on "Starch Digestion in Children, with Some Clinical Observations." Discussed by Drs. F. W. Schlutz, Minneapolis; H. D. Chapin, New York; C. G. Grulee, Chicago; L. Porter and H. H. Yerrington, San Francisco.

Dr. Walter Gellhorn, Seattle, read a paper on "Casein Milk Feeding in Infancy and Childhood." No discussion.

SECTION ON PATHOLOGY AND PHYSIOLOGY

TUESDAY, JUNE 22—AFTERNOON

The meeting was called to order at 2:10 p. m., by the Vice-Chairman, Dr. L. B. Wilson, Rochester, Minn.

Dr. Walter C. Alvarez, San Francisco, read a paper entitled "The Motor Functions of the Intestine from a New Point of View." Discussed by Drs. L. B. Wilson, Rochester, Minn., and Walter A. Alvarez, San Francisco.

Dr. W. T. Councilman, Boston, presented a paper, illustrated by slides, entitled "Torula Infection." Discussed by Drs. Rusk, Berkeley, Calif.; Karl Meyer, San Francisco; W. V. Brem, Los Angeles; William Ophuls, San Francisco, and Professor Councilman, Boston.

Dr. A. D. Hirschfelder, Minneapolis, read a paper entitled "Pathologic Physiology of Lead Colic and Its Relation to Experimental Therapeutics." Discussed by Drs. Seawell, Denver, and A. D. Hirschfelder, Minneapolis.

Dr. C. D. Spivak, Denver, read a paper entitled "Weighing Parts of the Living Body." Discussed by Drs. William Ophuls, San Francisco; T. Brailsford Robertson, Berkeley, Calif.; Joseph Erlanger, St. Louis, and C. D. Spivak, Denver.

Dr. G. H. Whipple, San Francisco, read a paper entitled "Intestinal Obstruction: The Chemical Nature of the Toxic Agent." Discussed by Drs. V. C. Vaughan, Ann Arbor, Mich.; Fred T. Murphy, St. Louis, and G. H. Whipple, San Francisco.

The Chairman appointed Drs. G. H. Whipple and Boardman additional members of the nominating board.

THURSDAY, JUNE 24—MORNING

L. B. Wilson, Vice-Chairman, called the section to order at 9:10 a. m.

Dr. Arthur H. Morse, San Francisco, read a paper entitled "Creatin and Creatinin Excretion During the Puerperium and Its Relation to the Involution of the Uterus." Discussed by Dr. T. Brailsford Robertson, Berkeley, Calif.

Dr. William Ophuls, San Francisco, presented the report of the Executive Committee, recommending the election of the following officers for 1916: Chairman, Dr. F. P. Gay, Berkeley, Calif.; Vice-Chairman, Dr. James Ewing, New

York; Secretary, Dr. Isabella C. Herb, Chicago; Delegate, Dr. A. W. Hewlett, Ann Arbor, Mich.; Alternate, Dr. R. M. Pearce, Philadelphia.

Besides, the Executive Committee recommended that from now on the services of the secretary be continued for three years. The report was, on motion duly seconded, unanimously adopted.

Dr. T. Brailsford Robertson, Berkeley, Calif., read a paper entitled "Globulin and Albumin Percentage Determination in Small Quantities of Blood Serum." Discussed by Drs. R. A. Kocher, San Francisco; F. P. Gay, and T. Brailsford Robertson, Berkeley, Calif.

Dr. Joseph Erlanger, St. Louis, read a paper entitled "Examination of Some of the Indirect Blood Pressure Principles." No discussion.

Dr. Paul Roth, Battle Creek, Mich., read a paper entitled "Estimation of Carbon-Dioxid Tension in Alveolar Air." No discussion.

Dr. William Carpenter MacCarty, Rochester, Minn., read a paper entitled "A New Classification of Tumors." Discussed by Drs. W. T. Councilman, Boston; A. W. Warthin, Ann Arbor, Mich.; D. Hopkinson, Milwaukee; W. V. Brem, Los Angeles; L. B. Wilson, Rochester, Minn., and William Carpenter MacCarty, Rochester, Minn.

Dr. R. A. Kocher, San Francisco, was, on motion, granted permission to read a paper entitled "Chemistry of Cancer." Discussed by Drs. G. H. Whipple, San Francisco, and R. A. Kocher, San Francisco.

Thursday, June 24—Afternoon

Dr. Rachel L. Ash, San Francisco, read a paper entitled "Spinal Cord Tumors in Children." Discussed by Drs. L. B. Wilson, Rochester, Minn., and Rachel L. Ash, San Francisco.

Dr. K. F. Meyer, San Francisco, read a paper entitled "The Relation of Animal to Human Sporotrichosis." No discussion.

Dr. W. A. Sawyer, Berkeley, Calif., read a paper entitled "Efficiency of Various Antityphoid Vaccines." Discussed by Drs. G. E. Ebright, San Francisco; R. J. Nichols, San Francisco; E. S. Kilgore, and W. A. Sawyer.

Dr. John Nivison Force, Berkeley, Calif., read a paper entitled "Laboratory Diagnosis of Smallpox by Skin Reaction." Discussed by Drs. Allen F. Gillihan and John Nivison Force, Berkeley, Calif.

Dr. William Ophuls, San Francisco, read a paper entitled "Nephritis: A New Series of Cases." Discussed by Drs. Joseph von Werthin, San Francisco; Lawrence Selling, Portland, Ore., and William Ophuls, San Francisco.

Dr. C. H. Bailey, San Francisco, read a paper entitled "Atheroma and Other Lesions Produced in Rabbits by Cholesterol Feedings. Discussed by Drs. B. Jablons and C. H. Bailey, San Francisco.

Adjourned.

SECTION ON NERVOUS AND MENTAL DISEASES

Tuesday, June 22—Afternoon

The meeting was called to order at 2:30 p. m., the Chairman, Dr. Francis X. Dercum, Philadelphia, presiding.

Dr. Francis X. Dercum, Philadelphia, read the Chairman's Address: "Recent Aspects of Nervous and Mental Pathology." No discussion.

The Chairman appointed Drs. William A. Jones, Minneapolis, George H. Moody, San Antonio, and Ross Moore, Los Angeles, members of the Executive Committee, and Dr. James H. McBride, Pasadena, Calif., Delegate to the House of Delegates.

The Chairman appointed the following Nominating Committee: Drs. Charles R. Ball, St. Paul; H. C. McClenahan, San Francisco, and J. T. Fisher, Los Angeles.

Dr. Adolf Meyer, Baltimore, read a paper on "Objective Psychology and Psychopathology with Subordination of the Medically Useless Contrast of Mental and Physical." Discussed by Drs. Thomas J. Orbison, Los Angeles; Josephine A. Jackson, Pasadena, Calif.; Andrew L. Skoog, Kansas City, Mo.; Cecil E. Reynolds, Los Angeles, and Adolf Meyer, Baltimore.

Dr. Charles Lewis Allen, Los Angeles, read a paper on "Delusions of Persecution as a Biologic Defense Reaction." No discussion.

Dr. Mary Lawson Neff, Des Moines, Iowa, read a paper on "Serviceable Psychology." Discussed by Drs. Elizabeth Kearny, Los Angeles; Charles R. Ball, St. Paul; E. B. Hoag, Los Angeles; C. Eugene Riggs, St. Paul; W. J. G. Dawson, Eldridge, Calif.; H. L. Ewing, Lincoln, Neb., and Mary Lawson Neff, Des Moines, Iowa.

Dr. J. T. Fisher, Los Angeles, read a paper on "Traumatic Hysteria." Discussed by Drs. Thomas J. Orbison, Los Angeles; Charles L. Allen, Los Angeles; Walter F. Schaller, San Francisco; Andrew L. Skoog, Kansas City, Mo.; Charles R. Ball, St. Paul; Francis X. Dercum, Philadelphia, and J. T. Fisher, Los Angeles.

Thursday, June 24—Morning

The Nominating Committee offered the following report on nominations for the ensuing year: Chairman, Dr. George A. Moleen, Denver; Vice-Chairman, Dr. M. A. Bliss, St. Louis; Secretary, Dr. A. S. Hamilton, Minneapolis; Delegate, Dr. Milton B. Lennon, San Francisco; Alternate Delegate, Charles L. Allen, Los Angeles.

Approved on motion and carried.

Dr. W. A. Jones, Minneapolis, read a paper on "Myotonia Congenita." Discussed by Drs. Frank R. Starkey, Philadelphia; G. W. Robinson, Kansas City, Mo., and W. A. Jones, Minneapolis.

Dr. J. P. Munroe, Charlotte, N. C., read a paper on "Chronic Tetany; Report of Case." Discussed by Drs. J. T. Fisher, Los Angeles; J. M. Wolfsohn, San Francisco; Cecil E. Reynolds, Los Angeles; Josephine A. Jackson, Pasadena, Calif.; Frank R. Starkey, Philadelphia; George A. Moleen, Denver, and J. P. Munroe, Charlotte, N. C.

The following papers were read as a symposium:

Dr. T. H. Weisenburg, Philadelphia, and Dr. Philip Work, Pueblo, Colo., (read by Dr. Work), "The Diagnosis of Tumors in the Posterior Cranial Fossa."

Dr. Ernest G. Grey, Boston: "Cerebellar Tumor Without Nystagmus."

Dr. I. Leon Meyers, Chicago: "Galvanometric Studies of the Cerebellar Function."

The above papers were discussed by Drs. A. L. Skoog, Kansas City, Mo.; G. W. Robinson, Kansas City, Mo.; John S. Turner, Dallas, Tex.; Cecil E. Reynolds, Los Angeles; George A. Moleen, Denver; Philip Work, Pueblo, Colo.; Ernest Grey, Boston, and I. L. Meyers, Chicago.

Dr. Charles R. Ball, St. Paul, read a paper on "Focal Disease of the Brain: Report of Eight Cases." Discussed by Drs. C. Eugene Riggs, St. Paul; Cecil E. Reynolds, Los Angeles; D. M. Hansen, Lincoln, Neb.; George A. Moleen, Denver, and Charles R. Ball, St. Paul.

Thursday, June 24—Afternoon

Dr. Benjamin T. Burley, Worcester, Mass., read a paper on "Acute Ascending Hemorrhagic Myelitis." Discussed by Drs. Charles R. Ball, St. Paul, and B. T. Burley, Worcester, Mass.

Dr. A. L. Skoog, Kansas City, Mo., read a paper on "Spinal Cord Compression from Leptomeningeal Cysts: Report of Two Cases." No discussion.

Dr. C. Eugene Riggs, St. Paul, read a paper on "Salvarsanized Serum in Syphilitic Nervous Disease." Discussed by Drs. G. W. Robinson, Kansas City, Mo.; C. R. Ball, St. Paul; Frank R. Starkey, Philadelphia; George H. Moody, San Antonio, Tex.; W. J. G. Dawson, Eldridge, Calif.; A. W. Hoisholt, Napa, Calif.; G. P. Sanborn, Boston; H. G. Brainerd, Los Angeles; Cecil E. Reynolds, Los Angeles; F. X. Dercum, Philadelphia; Philip Hillkowitz, Denver; W. A. Jones, Minneapolis; W. V. Brem, Los Angeles, and George A. Moleen, Denver.

Dr. Ross Moore, Los Angeles, read a paper on "Testing Muscular Tonus or Reflex Excitability in the Upper Extremity." No discussion.

SECTION ON DERMATOLOGY

TUESDAY, JUNE 22—AFTERNOON

The Chairman, Dr. Howard Fox, New York, called the meeting to order at 2:20 p. m. Dr. Fox expressed his appreciation of the honor conferred in electing him to the high office which had been held by Dr. Zeisler and Dr. Sutton, and he thanked Dr. H. H. Hazen, secretary, for energetic, kind and cordial cooperation, and the San Francisco gentlemen for their kindness in providing the section with a symposium on leprosy.

Dr. Howard Fox, New York, then read the Chairman's Address entitled "Dermatology of the Ancients."

The Chairman designated the following Nominating Committee: Dr. A. Ravogli, Dr. A. J. Markley and Dr. George Miller MacKee.

Dr. Joseph Zeisler, Chicago, read a paper on "An Uncommon Case of Multiple Sarcoid of the Skin." Discussed by Dr. Richard L. Sutton, Kansas City, Mo.

Dr. A. Ravogli, Cincinnati, read a paper on "The Treatment of Burns." Discussed by Drs. W. A. Pusey, Chicago; Joseph Zeisler, Chicago; Ernest Dwight Chipman, San Francisco, and A. Ravogli, Cincinnati.

Dr. Richard L. Sutton, Kansas City, Mo., read a paper on "Symptomatology and Treatment of Some Common Palmar Eruptions." Discussed by Drs. A. Ravogli, Cincinnati; W. A. Pusey, Chicago; Howard Morrow, San Francisco; Ernest Dwight Chipman, San Francisco; Douglas W. Montgomery, San Francisco; Howard Fox, New York; E. S. Lain, Oklahoma City; A. J. Markley, Denver; J. C. Pickett, San Francisco; George D. Culver, San Francisco; Richard L. Sutton, Kansas City, Mo., and Howard Fox, New York.

Dr. George D. Culver, San Francisco, read a paper on "Lupus Erythematosus of the Mucous Membranes." Discussed by Drs. Joseph Zeisler, Chicago; Everett S. Lain, Oklahoma City; J. B. Kessler, Iowa City, Iowa; W. A. Pusey, Chicago; Douglas W. Montgomery, San Francisco; A. Ravogli, Cincinnati; A. J. Markley, Denver; H. H. Hazen, Washington, D. C.; Ernest Dwight Chipman, San Francisco, and George D. Culver, San Francisco.

THURSDAY, JUNE 24—MORNING

The Nominating Committee presented its report, placing in nomination the following names: Chairman, Dr. Howard Morrow, San Francisco; Vice-Chairman, Dr. Everett S. Lain, Oklahoma City; Delegate, Dr. Ernest Dwight Chipman, San Francisco; Alternate, Dr. George Miller MacKee, New York.

On motion, the secretary cast one ballot for the nominees presented by Dr. Ravogli, chairman of the Nominating Committee, which motion being carried, the chairman declared the members elected to the respective offices mentioned.

A recess was taken for five minutes to receive and arrange twelve patients produced by Dr. Howard Morrow from the Isolation Hospital, San Francisco.

The Chair reconvened the section, and the following papers were read as a Symposium on Leprosy:

Dr. Douglass W. Montgomery, San Francisco, "Historical Review of Leprosy."

Drs. Howard Morrow and A. W. Lee, San Francisco, "Symptomatology and Diagnosis of Leprosy, with Presentation of Cases."

Dr. Ernest Dwight Chipman, San Francisco, "Treatment of Leprosy."

Dr. A. A. O'Neill, San Francisco, "Public Control of Lepers."

Dr. Harry E. Alderson, San Francisco, "Demonstration of Cases from the Skin Clinic of the Stanford University Medical School."

These papers were discussed by Drs. Joseph Zeisler, Chicago; George W. McCoy, Honolulu; Capt. H. J. Nichols, U. S. Army; A. Ravogli, Cincinnati; Richard L. Sutton, Kansas City, Mo.; Schmidt; Everett S. Lain, Oklahoma City; Howard Fox, New York; Douglass W. Montgomery, San Francisco; Howard Morrow, San Francisco; A. W. Lee, San Francisco; A. A. O'Neill, San Francisco, and Ernest Dwight Chipman, San Francisco.

Dr. Harry E. Alderson, San Francisco, exhibited a number of patients, giving history and treatment. Discussed by Drs. George Miller MacKee, New York; Oliver S. Ormsby, Chicago; Joseph Zeisler, Chicago; Everett S. Lain, Oklahoma City; Richard L. Sutton, Kansas City, Mo.; A. J. Markley, Denver; Ernest Dwight Chipman, San Francisco, and Harry E. Alderson, San Francisco.

THURSDAY, JUNE 24—AFTERNOON

The Chairman called the section to order at 2:10 p. m., and invited Vice-Chairman Dr. Ravogli to take the chair.

Dr. Oliver S. Ormsby, Chicago, read a paper on "Fictitious Dermatoses." Discussed by Drs. Howard Morrow, San Francisco; Hart; George Miller MacKee, New York; A. J. Markley, Denver; Oliver S. Ormsby, Chicago.

Dr. A. J. Markley, Denver, read a paper on "Acanthosis Nigricans as an Indication of Internal Malignancy." Discussion by Dr. Oliver S. Ormsby, Chicago.

Dr. J. B. Kessler, Iowa City, Iowa, read a paper on "Xeroderma Pigmentosum: Its Treatment with Autogenous Serum." (Dr. Fox returned to the chair.) Discussed by Drs. Oliver S. Ormsby, Chicago, and J. B. Kessler, Iowa City, Iowa.

Dr. H. H. Hazen, Washington, D. C., read a paper on "Cutaneous Cancer of the Extremities." Discussed by Drs. A. Ravogli, Cincinnati; Richard L. Sutton, Kansas City, Mo.; Douglass W. Montgomery, San Francisco; Harry E. Alderson, San Francisco; George Miller MacKee, New York; Everett S. Lain, Oklahoma City; Howard Fox, New York, and H. H. Hazen, Washington, D. C.

Dr. George Miller MacKee, New York, read a paper on "The Present Status of the Roentgen Ray in the Treatment of Diseases of the Skin."

Dr. Everett S. Lain, Oklahoma City, read a paper on "Radiant Energy in the Treatment of Diseases of the Skin."

These two papers were discussed by Drs. Richard L. Sutton, Kansas City, Mo.; Ernest Dwight Chipman, San Francisco; Douglass W. Montgomery, San Francisco; H. H. Hazen, Washington, D. C.; Harry E. Alderson, San Francisco; George Miller MacKee, New York, and Everett S. Lain, Oklahoma City.

SECTION ON PREVENTIVE MEDICINE AND PUBLIC HEALTH

TUESDAY, JUNE 22—AFTERNOON

The meeting was called to order by the temporary chairman, Dr. W. C. Rucker, Washington, D. C.

Dr. A. F. Gillihan, Oakland, Calif., was elected delegate to the House of Delegates.

Dr. W. C. Rucker delivered an address of welcome.

Dr. William B. Wherry, Cincinnati, read a paper on "A Plaguelike Disease of California Rodents, Affecting Man." Discussed by Drs. G. W. McCoy, Honolulu, T. H.; N. S. Wayson, San Francisco, and Nathan Barlow, Cuyamel, S. Honduras.

On motion of Dr. M. P. Ravenel, Columbia, Mo., seconded by Dr. B. Franklin Royer, Harrisburg, Pa., the following resolution was adopted and presented to the House of Delegates:

WHEREAS, The American Association of Medical Milk Commissions through its nine years of existence has fostered the establishment of some eighty medical milk commissions by county medical societies; and,

WHEREAS, These milk commissions, now an activity of our organizations the county medical societies, have uniformly crystallized public sentiment in favor of pure milk, and indirectly, through public interest in the same, have been able to bring about better health administration; therefore be it

Resolved, That the House of Delegates recommend this activity to county societies, and to this end the Council on Health and Public Instruction issue a bulletin on the "Organization and Purpose of Medical Milk Commissions."

Dr. W. C. Rucker, Washington, D.C., read a paper, by himself and Dr. Samuel G. Dixon, Philadelphia, entitled "The Sanitary Engineer in Public Health Work." No discussion.

Dr. John W. Kerr, Washington, D. C., read a paper on "The Full-Time Health Officer." Discussed by Drs. James A. Hayne, Columbia, S. C.; A. F. Gillihan, Oakland, Calif.;

Adelaide Brown, Sacramento, Calif.; J. N. Force, Berkeley, Calif.; William Simpson, San José, Calif.; M. P. Ravenel, Columbia, Mo.; B. Franklin Royer, Harrisburg, Pa.; T. D. Tuttle, Seattle; Otto P. Geier, Cincinnati, and O. B. Nesbit, Gary, Ind.

On motion of Dr. Otto P. Geier, duly seconded, a resolution was carried that a committee of three, of which Dr. John W. Kerr be chairman, be appointed by the temporary chairman to draft a resolution, to be presented to the House of Delegates, calling on the Council on Health and Public Instruction to include in its propaganda the advocacy of the full-time health officer.

The temporary chairman appointed as a committee on resolutions Drs. John W. Kerr, A. F. Gillihan and Otto P. Geier; and as a committee on nomination of officers, Drs. William Simpson, San José, Calif.; N. K. Foster, Oakland, Calif., and B. Franklin Royer, Harrisburg, Pa.

Thursday, June 24—Morning

The report of the Committee on Nominations, which was adopted, was as follows: Chairman, Dr. William C. Rucker, Washington, D. C.; Vice President, Dr. James Adams Hayne, Columbia, S. C.; Secretary, Dr. Otto P. Geier, Cincinnati; Delegate, Dr. Eugene R. Kelly, Seattle.

The following papers were read as a Symposium on Industrial Sanitation:

Dr. Otto P. Geier, Cincinnati: "Introductory Remarks: Industrial Sanitation—The New Factor in Public Health."

Dr. Sidney Morrill McCurdy, Youngstown, Ohio: "Physical Examination of Employees."

Dr. William F. Snow, Sacramento: "Occupations and the Venereal Diseases."

Dr. B. S. Warren, Washington, D. C.: "Sickness Insurance."

These four papers were discussed by Mr. Frederick L. Hoffman, Newark, N. J.; Drs. G. M. Kober, Washington, D. C.; R. W. Corwin, Pueblo, Colo.; G. H. Richardson, San Francisco; G. H. Taubles, San Francisco; W. C. Rucker, Washington, D. C.; Leo Munter, San Francisco; G. H. Chamberlain, Jr., New York; Mary Lawson Neff, Des Moines, Ia.; Otto P. Geier, Cincinnati; S. M. McCurdy, Youngstown, Ohio; William F. Snow, Sacramento, and John W. Kerr, Washington, D. C.

A motion was duly carried that the chairman appoint a committee on Industrial Sanitation, to report to the section at its next meeting.

Thursday, June 24—Afternoon

Mr. Sherman C. Kingsley, Chicago, read a paper on "Some Medical Aspects of the Open-Air School." Discussed by Drs. B. Franklin Royer, Harrisburg, Pa.; N. K. Foster, Oakland, Calif.; F. E. Corey, Alhambra, Calif.; Heman Spalding, Chicago; Burt Howard, Sacramento, Calif., and Otto P. Geier, Cincinnati.

Dr. William C. Hassler, San Francisco, read a paper on "The Administration and Control of Communicable Diseases by a City Health Department." Discussed by Drs. Jackson Temple, Santa Rosa, Calif., and W. C. Rucker, Washington, D. C.

Dr. W. C. Rucker, Washington, D. C., read a paper on "The Relation of Rodent Plague to Human Infection." Discussed by Dr. William C. Hassler, San Francisco.

Dr. Anna Wessels Williams, New York, read a paper on "Significance and Prevention of Amebic Infections in Mouths of Children." Discussed by Drs. Woods Hutchinson and C. C. Bass, New Orleans.

The Chairman announced the appointment of Drs. J. W. Kerr (Chairman), Washington, D. C.; Otto P. Geier, Cincinnati, and S. M. McCurdy, Youngstown, Ohio, as a committee on Industrial Sanitation, to make a report at the next meeting.

Dr. B. Franklin Royer, Harrisburg, Pa., read a paper written by himself and Dr. Samuel G. Dixon, Harrisburg, Pa., on "The Sanitary Engineer in Public Health." Discussed by Dr Victor C. Vaughan, Ann Arbor, Mich.

SECTION ON GENITO-URINARY DISEASES

Tuesday, June 22—Afternoon

The meeting was called to order at 2:15 p. m., the Chairman, Dr. Granville MacGowan, Los Angeles, presiding.

Dr. George S. Whitcside, Portland, Ore., read a paper on "Prostatectomy, Mistakes and Failures." Discussed by Drs. A. B. Cecil, Los Angeles; Sherman Peterkin, Seattle; L. W. Bremerman, Chicago; J. I. Butler, Tucson, Ariz.; Hiram R. Loux, Philadelphia, and George S. Whiteside, Portland, Ore.

Dr. W. F. Braasch, Rochester, Minn., read a paper by himself and Dr. A. B. Moore, Rochester, Minn., on "Clinical Observations on Stone in the Ureter." No discussion.

Dr. Frank Hinman, San Francisco, read a paper on "Urinary Antisepsis: A Clinical and Bacteriologic Study."

Dr. Victor G. Vecki, San Francisco, read a paper on "Local Application of Fuchsin in the Urethra and Bladder."

These two papers were discussed by Drs. J. A. Fulton, Astoria, Ore.; Herman L. Kretschmer, Chicago, and W. F. Braasch, Rochester, Minn.

Dr. Hiram R. Loux, Philadelphia, read a paper on "Plastic Operations on Ureters and Kidney Pelves."

Dr. W. Howard Barber, New York, read a paper on "An Entero-Ureteral Operation."

Dr. Hugh Cabot, Boston, read a paper on "Stone in the Ureter: A Critical Review of Cases."

These three papers were discussed by Drs. R. C. Coffey, Portland, Ore.; Bransford Lewis, St. Louis; Frank Hinman, San Francisco; W. K. Draper, New York; Herman L. Kretschmer, Chicago; Hugh Cabot, Boston; George Eaton, San Francisco; W. F. Braasch, Rochester, Minn.; Hiram R. Loux, Philadelphia; W. Howard Barber, New York, and A. J. Crowell, Charlotte, N. C.

Dr. A. J. Crowell, Charlotte, N. C., read a paper on "Importance of Thorough Examination in Urologic Cases." No discussion.

Thursday, June 24—Morning

The following officers were elected for the ensuing year: Chairman, Dr. Louis E. Schmidt, Chicago; Vice Chairman, Francis McCullum, Kansas City; Secretary, Dr. W. F. Braasch, Rochester, Minn.; Delegate, Dr. Martin Krotoszyner, San Francisco, and Alternate, Dr. G. Sherman Peterkin, Seattle.

Dr. Lewis Wine Bremerman, Chicago, read a paper on "Effect of Trauma on the Genito-Urinary Tract." Discussed by Drs. W. F. Braasch, Chicago; George S. Whiteside, Portland, Ore.; William J. Pennock, Spokane, Wash.; Martin Krotoszyner, San Francisco; Louis E. Schmidt, Chicago; Stanley R. Woodruff, Bayonne, N. J.; John R. Barber, Fort Huachuca, Ariz.; Granville MacGowan, Los Angeles; G. Sherman Peterkin, Seattle, Wash., and L. W. Bremerman, Chicago.

Dr. G. Sherman Peterkin, Seattle, read a paper on "Diagnosis of Genito-Urinary Conditions in Women by Means of the Roentgen Ray." Discussed by Drs. George S. Whiteside, Portland, Ore.; L. W. Bremerman, Chicago; G. H. Mize, San Francisco; Louis E. Schmidt, Chicago, and G. Sherman Peterkin, Seattle, Wash.

Dr. Martin Krotoszyner, San Francisco, read a paper by himself and Dr. George W. Hartman, San Francisco, on "Blood Cryoscopy and Blood Urea: A Comparative Study of Renal Function." Discussed by Drs. Arthur B. Cecil, Los Angeles; William E. Stevens, San Francisco; Edgar G. Ballenger, Atlanta, Ga.; Frank Hinman, San Francisco; George W. Hartman, San Francisco; William F. Braasch, Rochester, Minn.; Fred R. Charlton, Indianapolis; Louis E. Schmidt, Chicago; A. J. Crowell, Charlotte, N. C.; Granville MacGowan, Los Angeles, and Martin Krotoszyner, San Francisco.

Dr. Robert V. Day, Los Angeles, read a paper on "Destroying Limited Obstructive Glandular Growths in the Posterior Urethra by the High Frequency Current." Discussed by Drs. Stanley R. Woodruff, Bayonne, N. J.; W. P. Willard, San Francisco; Granville MacGowan, Los Angeles, and Robert V. Day, Los Angeles.

Thursday, June 24—Afternoon

The Chairman read his address. No discussion.

Dr. Carl C. Warden, Ann Arbor, Mich., read a paper on "Vaccine in Gonococcus Infections." Discussed by Drs. J. A. Fulton, Astoria, Ore.; Frank Hinman, San Francisco; John C. Spencer, San Francisco; L. H. Wolf, Louis E. Schmidt, L. W. Bremerman, Chicago; Fred R. Charlton, Indianapolis; Granville MacGowan, Los Angeles, and Carl C. Warden, Ann Arbor, Mich.

Dr. Arthur B. Cecil, Los Angeles, read a paper on "The Mechanism of Urination." Discussed by Drs. Martin Krotoszyner, San Francisco, and Arthur B. Cecil, Los Angeles.

Dr. W. J. Pennock, Spokane, Wash., read a paper on "Verumontanitis." Discussed by Drs. Edgar G. Ballenger, Atlanta, Ga., and W. J. Pennock, Spokane.

The Chair appointed Dr. Edgar G. Ballenger as a member of the Publication Committee.

SECTION ON HOSPITALS

Tuesday, June 22—Afternoon

The meeting was called to order by the Acting Chairman, Dr. William H. Walsh, Philadelphia, at 2:20 p. m.

Dr. Walsh read the Chairman's address, entitled "Relation of the Hospital to the Community."

The following papers were read as a Symposium on "Venereal Diseases":

Mr. Michael M. Davis, Jr., Boston, read a paper entitled "Efficient Dispensary Clinics a Requisite for Adequate Coping with Venereal Disease." No discussion.

Dr. Robert T. Legge, Berkeley, Calif., read a paper entitled "The Control of Venereal Diseases by Health Authorities." Discussed by Dr. John A. Hornsby, Chicago.

Dr. Calvin S. White, Portland, Ore., read a paper entitled "The Problem of Venereal Disease Quackery." No discussion.

Dr. Robert J. Wilson, New York City, read a paper entitled "Venereal Disease Clinics in New York and a Statistical Efficiency Test." Discussed by Drs. W. S. Snow, New York; John A. Hornsby, Chicago; Robert J. Wilson, New York; Calvin S. White, Portland, Ore.; Robert T. Legge, Berkeley, Calif., and by Mr. Michael M. Davis, Jr., Boston.

Dr. W. S. Snow introduced the following resolution:

Resolved, That we further the extension of the equipment of municipal and state boards of health, and of hospital dispensaries, to include facilities for early diagnosis for the necessary treatment of men and women, as now being practical measures for the reduction of venereal diseases; be it further

Resolved, That when practicable, these diseases be reported; be it further

Resolved, That, since prostitution is largely responsible for the transmission of venereal diseases, we approve of the efforts to steadily repress prostitution; be it further

Resolved, That effective measures be promoted against venereal disease charlatans.

The resolution was seconded and unanimously adopted.

Thursday, June 24—Morning

The meeting was called to order by the Acting Chairman, Dr. William H. Walsh, Philadelphia, at 9:30 a. m.

Dr. L. W. Littig, Davenport, Iowa, was unanimously elected Chairman.

Dr. Joseph M. Spellissy, Philadelphia, read a paper entitled "The Efficiency Standard at St. Joseph's Hospital, Philadelphia." Discussed by Drs. L. W. Littig, Davenport, Iowa, and John A. Hornsby, Chicago.

Dr. L. W. Littig, Davenport, Iowa, read a paper entitled "Important Elementary but Often Neglected Details in the Administration of Small Hospitals." Discussed by Drs. Joseph M. Spellissy, Philadelphia; I. D. Webster, San Diego, Calif., and William H. Walsh, Philadelphia.

Thursday, June 24—Afternoon

Dr. W. P. Lucas, San Francisco, read for Dr. Arthur A. Howard, Boston, a paper entitled "Hospital Efficiency as Produced and Measured by a Fellow-Up System." No discussion.

Dr. H. W. Van Allen, Springfield, Mass., read a paper entitled "The Relation of the Roentgenologist to the Hospital." Discussed by Drs. A. R. Warner, Cleveland; Joseph M. Spellissy, Philadelphia, and William H. Walsh, Philadelphia.

Dr. A. R. Warner, Cleveland, read a paper entitled "The Experience of Lakeside Hospital in the Manufacture and Administration of Nitrous Oxid for Anesthesia." No discussion.

SECTION ON ORTHOPEDIC SURGERY

Tuesday, June 22—Afternoon

The meeting was called to order at 2 p. m. by the chairman, Dr. Nathaniel Allison, St. Louis.

Dr. Allison then read the chairman's address, entitled "Orthopedic Surgery and the Crippled." No discussion.

Dr. Fred J. Fassett, Seattle, read a paper on "Late Results of Excision of the Transverse Process of the Fifth Lumbar Vertebra." Discussed by Drs. M. S. Henderson, Rochester, Minn.; E. W. Ryerson, Chicago; Wallace Blanchard, Chicago; Roland O. Meisenbach, Buffalo, and J. P. Lord, Omaha.

Dr. H. L. Langnecker, Boston, read a paper on "Lesions of the Lumbo-Sacro-Iliac Region." Discussed by Drs. C. C. Crane, San Francisco; Fred J. Fassett, Seattle; Leonard W. Ely, San Francisco; J. T. Rugh, Philadelphia; John Ridlon, Chicago; C. E. McClure, Seattle; Roland O. Meisenbach, Buffalo, and C. L. Lowman, Los Angeles.

Dr. M. S. Henderson, Rochester, Minn., read a paper on "Surgical Treatment of Bunions (Mayo Method)." Discussed by Drs. E. W. Ryerson, Chicago; John Ridlon, Chicago; J. P. Lord, Omaha; John F. Golden, Chicago; Leonard W. Ely, San Francisco; J. T. Rugh, Philadelphia, and B. M. J. Conlin, Long Beach, Calif.

The following papers were read as a symposium on "Congenital Hip Dislocation":

Dr. Russell A. Hibbs, New York: "Anteversion of Neck of Femur Causing Failure in Treating Congenital Hip Dislocation."

Dr. James T. Watkins, San Francisco: "Congenital Dislocations of the Hip, Reduced by Manipulation Followed by Arthrotomy."

Dr. Wallace Blanchard, Chicago: "Structural Changes in Congenital Hip Dislocations."

Discussed by Drs. John Ridlon, Chicago, and Leonard W. Ely, San Francisco.

Thursday, June 24—Morning

Minutes of the 1914 meeting of the Section were approved as read.

Nomination and election of officers for the ensuing year resulted as follows: Chairman, Dr. Russell A. Hibbs, New York; Vice-Chairman, Dr. E. W. Ryerson, Chicago; Secretary, Dr. Emil S. Geist, Minneapolis; Delegate to the House of Delegates, Dr. John Ridlon, Chicago; Alternate, Leonard W. Ely, San Francisco.

Report of Committee on "Therapeutic Methods and Results in Joint Tuberculosis" approved as read.

Motion made, seconded and unanimously passed that the above committee be continued, and that the chairman be allowed to change its personnel with the consent of the committee.

Dr. Henry W. Frauenthal, New York, read a paper on "Painful Feet." Discussed by Drs. Robert W. Lovett, Boston; John Ridlon, Chicago; Emil S. Geist, Minneapolis; Roland O. Meisenbach, Buffalo; E. A. Rich, Tacoma; Fred J. Fassett, Seattle, and E. W. Ryerson, Chicago.

Dr. Leonard W. Ely, San Francisco, read a paper on "Tuberculosis and Red Marrow." Discussed by Drs. Emil S. Geist, Minneapolis, and John Cowan, San Francisco.

Dr. Robert W. Lovett, Boston, read a paper on "Roentgenographic Characteristics of the Bone Changes in Rickets."

Discussed by Drs. H. W. Frauenthal, New York; Roland O. Meisenbach, Buffalo, and H. R. Allen, Indianapolis.

Dr. D. B. Phemister, Chicago, read a paper on "Subperiosteal Resections in Osteomyelitis." Discussed by Drs. Thomas W. Huntington, San Francisco; J. P. Lord, Omaha; Leonard W. Ely, San Francisco; E. W. Ryerson, Chicago; Roland O. Meisenbach, Buffalo; James Franklin Smith, San Francisco, and J. T. Rugh, Philadelphia.

THURSDAY, JUNE 24—AFTERNOON

Dr. Roland O. Meisenbach, Buffalo, read a paper on "Knee Joint Disability Caused by Hypertrophy of the Alar Ligaments." Discussed by Drs. Fred J. Fassett, Seattle, and J. T. Rugh, Philadelphia.

Dr. J. W. Cokenower, Des Moines, Iowa, read a paper on "Treatment of Fractures of Long Bones from an Orthopedic Point of View, with Clinical Observations and Conclusions." Discussed by Drs. Roland Hammond, Providence, R. I., and Roland O. Meisenbach, Buffalo.

Dr. H. R. Allen, Indianapolis, read a paper on "Fractures—New Ideas and New Instruments." Discussed by Drs. P. C. H. Pahl, Los Angeles, and H. M. Sherman, San Francisco.

Dr. Walter Baldwin, San Francisco, read a paper on "Syphilis of the Spine." Discussed by Drs. Henry W. Frauenthal, New York; James L. Whitney, San Francisco; D. B. Phemister, Chicago, and Carl C. Crane, San Francisco.

Dr. S. L. Haas, San Francisco, read a paper on "Experimental Transplantation of the Epiphysis with Observations on the Longitudinal Growth of Bone." Discussed by Drs. D. B. Phemister, Chicago; J. T. Rugh, Philadelphia, and Roland O. Meisenbach, Buffalo.

Dr. George J. McChesney, San Francisco, read a paper on "Juvenile Osteochondritis of the Hip Joint—Report and Exhibition of Three Patients." Discussed by Dr. H. M. Sherman, San Francisco.

The following papers were read as a symposium on "Arthritis":

Dr. Roland Hammond, Providence, R. I.: "Rôle of the Nose, Throat and Accessory Sinuses in Etiology of Chronic, Infectious Arthritis."

Dr. Thomas B. Hartzell, Minneapolis: "The Clinical Type of Arthritis Originating About the Teeth." Discussed by Drs. J. W. Cokenower, Des Moines, Ia.; Emil S. Geist, Minneapolis; Henry W. Frauenthal, New York; H. R. Allen, Indianapolis; M. C. Harding, San Diego, and J. P. Lord, Omaha.

[NOTE.—The roll of the House of Delegates will appear under Association News in the issue of THE JOURNAL for July 10. The minutes of the Section on Ophthalmology, and of the Section on Obstetrics, Gynecology and Abdominal Surgery, were not received in time for publication in this issue.]

THE REGISTRATION AT SAN FRANCISCO

The total registration at the San Francisco Session was 2,315.

REGISTRATION BY SECTIONS

Practice of Medicine	607
Surgery	588
Obstetrics, Gynecology and Abdominal Surgery	177
Ophthalmology	129
Laryngology, Otology, Rhinology	109
Diseases of Children	85
Pharmacology and Therapeutics	4
Pathology and Physiology	89
Stomatology	42
Nervous and Mental Diseases	81
Dermatology	34
Preventive Medicine and Public Health	110
Genito-Urinary Diseases	57
Hospitals	26
Orthopedic Surgery	43
Registrations without specifying any one section. Foreign guests and others who registered	134

Society Proceedings

ASSOCIATION OF AMERICAN PHYSICIANS

Thirtieth Annual Meeting, held at Washington, D. C., May 11-13, 1915

(*Continued from page 52*)

Open-Air Treatment of Pneumonia and Anemia in Children

DR. ROWLAND C. FREEMAN, New York: The best results in Roosevelt Hospital, compared with controls in the ward, were in cold weather. No increase of blood pressure was noted as a result of outdoor treatment; the most marked results were increased color in the cheeks, diminished cough and better sleep. There was reduced spread of contagion; there have been cases of measles on the roof without spread. Greatest interest centered in three cases of blood abnormalities treated in this way. 1. In a child with simple anemia (25 per cent. hemoglobin), bronchitis and colitis, the red cell count of 280,000 went to above 1,000,000 in a surprisingly short time. This child was given also syrup of ferrous iodid, but the improvement was out of all proportion to the drug given. 2. A child with leukemia had rapid improvement of lungs, spleen and blood. 3. A child with splenic anemia, showing normoblasts, megaloblasts, 60,000 white cells, etc., improved rapidly on the roof, relapsed when returned to the ward, and improved again when put outdoors. In 120 cases of pneumonia treated in the open air, twenty-one cases of uncomplicated lobar pneumonia had normal temperature in three days after admission; the mortality of the lobar pneumonia cases was 4.1 per cent.; thirty-one cases of bronchopneumonia were normal seven days after admission; the mortality in this form was 3.4 per cent.

Pain in Diaphragmatic Pleurisy

DR. JOSEPH A. CAPPS, Chicago: Pain as symptomatic of pleural lesions has been studied by mechanically irritating the membrane in thoracentesis operations. The visceral layer is not responsive to pain; the parietal pleura is very responsive to irritation, and the sense of location is precise; the diaphragmatic pleura is sensitive, but the pain is referred from the marginal area to the abdomen, and from the central area to the neck. This experimental work has been supplemented by clinical observations on diaphragmatic pleurisy in thirty-two cases of simple pleurisy and twenty-nine of pleuro-pneumonia. There was referred abdominal pain in fifty-four cases, of the same character as that produced experimentally. A phenomenon not noticed in the experiments was that in 50 per cent. of the cases the point of maximum pain corresponded with the point of maximum tenderness to pressure. The most common points of referred pain in the abdomen are above and to the right or left of the navel. There was referred neck pain in thirty-one cases. This had the same characteristics as the abdominal pain; the painful spots appear mostly along the ridge of the trapezius. In the neck the points of maximum pain and tenderness always coincide. Nine of the cases were at first diagnosed appendicitis; in two, operations were performed with negative findings. Six were called cholecystitis, and operations performed in two with negative findings; two were called ulcer of the stomach, and operation performed in one; two, abscess of liver, and operation performed in one; one, renal calculus; one, lumbago; one, abdominal inflammation of uncertain character.

Subphrenic inflammations give rise to direct pain as well as to referred abdominal pain; the neck pain gives no evidence as between subphrenic and supraphrenic inflammation.

Clinical Studies of Several Types of Acute Leukemic States

DRS. L. F. BARKER and W. A. BAETJER, Baltimore: Our studies cover twenty-one cases of acute leukemia recently under treatment. The disease is recognized to be not only a change in the total cell count but also a specific change in the blood-making organs. Acute and chronic forms are seen: the acute cases terminate fatally early as a rule; in those of

the chronic variety, the patients live longer. The chronic cases may begin with acute manifestations, or the disease may have an abrupt acute termination after a long chronic course. The acute cases are more often recognized now because the blood is studied oftener. They are sometimes mistaken for acute sepsis; but in any such cases associated with stomatitis and hemorrhagic diathesis, acute leukemia should be suspected. It is necessary for diagnosis to consider both the clinical course and the blood. The exact type may require postmortem histologic study for classification. There may be at the beginning and end, not a leukemia, but a leukopenia.

DISCUSSION

Dr. Joseph L. Miller, Chicago: What are the differential points between myeloblasts and large myelocytes?

Dr. Thomas Ordway, Boston: In the aleukemic stages, it is difficult to say that these cases are really leukemia. Differentiation between myelocytes and lymphocytes may be decided by the oxidase reaction. In numerous cases of myelogenous leukemia, citrated blood develops a buffy coat, from yellow to apple green, such as may be seen in the blood of chloroma, which many believe to be a form of leukemia which has left the blood and located by metastasis in the bones. In the treatment of leukemia by radium there has been no success in the acute, fulminant type. In more chronic cases, radium acts like the Roentgen rays, but with more striking results. Most of the cases treated unsuccessfully with the Roentgen rays or benzene (C_6H_6), when treated with radium over the spleen had remissions.

Dr. Frank Billings, Chicago: I should like to ask Dr. Barker whether any of his cases of acute leukemia of the infectious type had actual foci of infection anywhere? I have in mind a case with an infection of the jaw, in which acute myeloid leukemia developed; also two cases of gangrenous infection of the throat followed by acute lymphoid leukemia. I recall also a case of typical Hodgkin's disease in which the glands of the neck suppurated after salvarsan therapy. The glands finally healed; the patient improved for a time, and then died in an acute septic state with the blood picture of acute lymphoid leukemia.

Dr. J. B. Herrick, Chicago: Dr. Barker referred to a condition which he called acute infectious lymphemia. I am convinced that there is an acute lymphatic leukemia from which recovery is possible. I have in mind a young man who had 30,000 leukocytes, the majority of which were lymphocytes; he got entirely well.

Dr. Alfred Stengel, Philadelphia: I believe that many cases now called acute lymphocytic leukemia will hereafter be called myeloblastic forms. The digestive power found in myelocytes and myeloblasts is a useful differential criterion. Differentiation by selective staining is not altogether satisfactory. As to the possibility of acute infectious lymphemia being recognized, large series of these cases are now being published. Cases I have seen could not be told from acute lymphatic leukemia; the result alone tells the tale. All the true leukemias terminate fatally despite treatment.

Dr. S. J. Meltzer, New York: I wish to ask Dr. Barker whether so-called Auer bodies were absent in these cases? I have in mind a case at Johns Hopkins in which Auer described peculiar rod-shaped bodies. Pappenheim has said that he has observed such bodies, and Ottenberg has found similar corpuscles in three cases. Dr. Auer has not wished to push a claim of priority for this observation, but it would seem that he is entitled to it.

Dr. L. F. Barker, Baltimore: Proper reference is made in the paper to the work of Auer and others. The differentiation between myeloblast and large myelocyte is difficult. Naegeli refers to the myeloblast as an unripe, ungranulated bone marrow cell. There is a complex heteroplastic series of events in the development of cells, and the differentiation between these cells, as between lymphocyte and lymphoidocyte, depends largely on the recognition of differences of nuclear structure especially when seen in a series of transition forms under diverse staining. The chemical and enzyme differences are also important. The treatment of these formidable blood diseases is disappointing; radium may hold out some hope. The patients usually die, except in the cases of acute infectious lymphemia.

Colloid Carcinoma of Peritoneum

Drs. Thomas McCrae and W. M. L. Coplin, Philadelphia: The patient was a man who for four years suffered from ascites; there were no diagnostic evidences available until the end of the third year, when fluid withdrawn by tapping was found to contain colloid material resembling tapioca grains. In the last month of life, freely movable tumors could be felt in the abdomen. A terminal symptom was obstinate diarrhea; food taken could be recognized in the stools three or four hours later.

DISCUSSION

Dr. Louis B. Wilson, Rochester, Minn: I should like to suggest that for the sake of accuracy it might be well to abandon the word "colloid" and adopt "mucoid" for the designation of this form of cancer.

Dr. David Riesman, Philadelphia: At the Philadelphia Hospital there was recently a woman with mucoid cancer; the abdomen was full of hard masses arising from the mesentery and peritoneum generally; there was only one nodule on the liver. The neoplasms seemed to be entirely surface growths. The point of origin was a fungoid cancer of the anus.

Dr. Alfred Stengel, Philadelphia: It has been observed that after laparotomy the ascites in these cases may disappear and not recur. I have seen two cases in which simple incision resulted in freedom from ascites and prolongation of life for several years. This is not a curative measure but it may be enormously helpful in making comfortable the last days of these patients.

Dr. Thomas McCrae, Philadelphia: Laparotomy was done in this case with no beneficial result.

Dr. W. M. L. Coplin, Philadelphia: With regard to the proper designation of the neoplasm, collagen and precollagen were just as abundant as mucoid. It is doubtful whether either term is properly designative.

Aleukemic Lymphadenosis

Dr. T. B. Futcher, Baltimore: The patient was a single woman, aged 58. Her symptoms were dyspnea and weakness, with enlargement of axillary, cervical, inguinal and postperitoneal glands. The blood count revealed 7,000 leukocytes, 67 per cent. of which were large and small lymphocytes. The heart and kidneys were normal. Diagnosis rested between Hodgkin's disease and an atypical leukemia. The leukocytes during her stay in the hospital ranged between 7,000 and 14,000; large and small lymphocytes constituted from 67 to 90 per cent. Wassermann and tuberculin reactions were negative. A gland was removed: cultures were negative; histologically, it showed a chronic lymphadenosis, resembling lymphosarcoma. Hodgkin's disease was not simulated. Treatment with sodium cacodylate resulted in clinical improvement but did not improve the blood. There is now a metastatic nodule in the eyelid. The case must be regarded as one of Naegeli's aleukemic lymphadenosis, in which there is no change in the total white cell count, but a great change in the differential picture. The disease is very chronic and is characterized by a tendency to the development of metastases in the skin. The course may abruptly become acute with an early fatal termination.

Dr. Franklin W. White, Boston: The case suggests some analogies with certain mouse tumors. As in man, so also in mice, there is an indistinguishable series of conditions from lymphadenoma to sarcoma. But the tumors in question are not inoculable, not contagious, and occur only in cancer strains. They cannot be produced by ordinary infectious agents. There are many things to indicate that the leukemias may act just like these other conditions; leukemia may, in fact, be a malignant tumor of the leukocytes.

(To be continued)

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 2 CHICAGO, ILLINOIS JULY 10, 1915

THE USE OF WORDS*

THOMAS McCRAE, M.D., F.R.C.P. (LONDON)
Professor of Medicine, Jefferson Medical College
PHILADELPHIA

It may be thought that this subject is too simple to deserve attention and that the use of words comes naturally to us all. So it does, but the manner in which we use them shows much variation and it is both with the use and abuse of words that this address deals. To point out the importance of the proper use of words may clear the ground. They are, in the spoken or written form, our principal means of communication with each other and with the outside world. Some persons can convey much by gestures and pantomime, but these count for little in the ordinary mode of expression. Each of us lives in his own circle giving ideas to others or receiving them from others by the medium of words. The point that if one is to give or receive clear ideas the medium of exchange should have a definite value does not need emphasis. There must always be some difficulty in regard to this for we grow up having special associations with particular words, sometimes conscious, sometimes unconscious, yet we should make a continual effort to realize the general sense in which the word is used. Take the word "hospital" as an illustration. This may call up different associations in the mind of a trustee, a physician, and a patient who has happy or unhappy recollection of a sojourn there, but the general meaning attached to the word "hospital" is well understood.

Words are our coins of mental exchange and as in money transactions we demand a rigid standard so should we in the use of words. Financially we would be in confusion if a five dollar bill was regarded by one man as ten dollars and by another as one dollar; we could never do business properly. Yet in the sphere of ideas we are content to do this and exchange terms which may have a very different value for each person concerned. This discrepancy may be known and allowed for, but too often it is not and one person conveys an idea to another using a word in one sense which is received by the other person with a very different significance. This must always be the case to some extent, but in medicine it seems important for us to try to make the use of words as uniform as possible. This applies particularly to the teaching of students and the information of the public. We know how many controversies have raged over questions in which the participants were really not discussing the same subject at all. Each had quite a different idea as to what was under discussion because, while they used the same words, these stood for different concepts.

For many, indeed, words stand for their own particular ideas and conceptions. Words are given attributes which they do not possess, as for instance the word "pneumonia." Some men magnify the word and when they use it the whole train of thought called up is some mental creation of their own and not of the usual disease picture. Among these persons are those who cannot consider the possibility that the disease may be present without certain definite physical signs. For them pneumonia must always be accompanied by crepitant râles; in their absence the disease cannot be pneumonia. Others cannot consider that a patient may have typhoid fever unless rose spots and diarrhea are present.

Some years ago a clinical club composed of teachers of medicine in several eastern cities took up the subject of the terminology of the diseases of the chest. The varied meanings attached to the same term which were brought out by the discussion surprised every one. For example, what meaning does one attach to the terms "pectoriloquy" and "bronchophony"? It may be supposed that there is only one meaning for each, but some inquiry will show the error of such an opinion. How are the terms "bronchial" and "tubular" used in their application to breath sounds? Much difference of opinion will be found in regard to this. One point which demonstrated how an error may be perpetuated was the meaning attached to the word "rhonchus." In one city this word had been given an incorrect meaning and this had been so perpetuated by successive teachers that many students graduated with an erroneous idea. One can readily illustrate the point if he will occasionally have curiosity enough to look up a word the meaning of which he thinks he knows correctly. For instance what is the meaning of the word "bruit"? Many have mysterious ideas as to its significance. Good schoolmasters have the idea, with which many of their pupils do not agree, that one does not know a thing which he cannot explain. Many schoolboys when cornered have a habit of saying they know a thing but cannot explain it. Nor does the habit disappear with boyhood by any means. It is not so uncommon to wake up suddenly to the fact that we have an erroneous idea as to the meaning of a word. Many words are learned before their meaning is understood and many words continue to be used while representing confused and uncertain ideas. Some departments of medicine are continually coining new words and we have to be alert to learn the meaning as well as the sound of these terms.

*Chairman's address, read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Medical education has suffered much from teaching being too much confined to words and not given by means of observations. It has been said that the most besetting sin of a young teacher of medicine is the desire to talk to his students when he should have them making observations or thinking. Some of us may have to plead guilty to this even when no longer young. It is very easy to talk, but when we are using words we may employ them with one meaning while the student receives them with another. An illustration came up recently in connection with Litten's sign (the diaphragm phenomenon) in a discussion as to the diagnosis of a lesion which involved the diaphragm. The point at issue was whether the lesion was above or below the diaphragm. Part of the class thought that Litten's sign was the *presence* of the diaphragm phenomenon, the others thought that it meant its *absence*. Here were two exactly opposite ideas obtained from the same words. Teachers are too inclined to take for granted that their words are understood by the listeners in the same sense as the one in which they are given. Sometimes the teacher might as well be using a foreign language though in that case the listener would know that he did not understand. Too often teacher and pupil think they are using the same language when they are not.

It is tempting to discuss the use of proper names in connection with signs and diseases, but that is another story. We should endeavor to limit that use as much as possible and discourage any additions to the list of eponymous designations. Some have the sanction of age and one hesitates to demolish what is venerable with time; but certainly upstart moderns should not be received readily. If any one is in doubt regarding this let him take his medical dictionary and look at the headings under "sign" or "disease." It is good mental exercise to see how many he knows. When we find four distinct signs under the name of one man we have a right to protest. How can we know which of the four is intended when we read of A's sign? This also tends to the careless use of terms as, for example, when we read that "There was no von Graefe."

There is a steady effort to make our diagnoses as exact as possible. Does it not seem rather absurd to bend every effort to this end and then use words which have no precise meaning whatever to represent that exact diagnosis? For illustration certain examples may be discussed. There are some words which are misleading and cause much confusion because they have no definite meaning; they prevent clear thinking and lead to many errors. There are others which have varied meanings and are used to designate both a disease and a symptom. Some of the more marked instances are worthy of discussion in some detail.

The terms "rheumatism" and "chronic rheumatism" are perhaps the most notable examples of the confusion caused by the careless use of words. To my mind they are responsible to a large extent for much of the confusion which surrounds the subject of arthritis. The word rheumatism is used with no set meaning and when one hears it or comes across it in reading it may be quite impossible to know what is intended. For example, I read this statement recently: "Acute neuritis is frequent with rheumatism." What is meant by this? If the reference is to rheumatic fever it does not seem reasonable, as neuritis is extremely rare in this disease. If the reference is to some other form of arthritis, such as arthritis deformans, it is quite intelligible. But the statement is of no value as quoted and might be understood very differently by various men. An article headed "Scarlatinal Rheumatism" is a case in point. From its reading no clue could be obtained as to whether the article discussed the occurrence of arthritis in scarlet fever, a combination of scarlet fever and rheumatic fever, or a hybrid disease. A little care in the use of words would have made the matter clear. As the title stood, the article served only to "darken counsel." If one wishes to find confusion worse confounded let him read an article in French or German dealing with arthritis. What the term rheumatism means in many of these no one but the author can tell.

The use of the words as a designation for any pain, which may or may not be associated with some joint change, has no justification. To give a disorder the designation of rheumatism is too often a means of avoiding a definite diagnosis. Give a thing a name and you have the comforting feeling of having settled it and this checks further inquiry. Another point in this connection is that we are too apt to take such a diagnosis from a patient who comes stating that he has "rheumatism," and accept it. I have quoted elsewhere the example of a man who volunteered the diagnosis of rheumatism, which he said had been made by a number of physicians. (I suspect that he supplied it and they accepted it.) He objected strenuously to taking off his clothes—no other doctor had wanted that—but a glance gave the diagnosis, and it was not rheumatism—he had a popliteal aneurysm. Any man who examined him could make the diagnosis, but it had been easy to accept his opinion and be content with that. Now if a physician would not be willing to rest content with such a diagnosis, this sort of pitfall could be avoided. The use of this word leads to careless diagnosis and loose habits of thinking, which might have stronger adjectives to describe them properly. The list of diseases and conditions which have been included under the term rheumatism is a long one. For example, probably each of us knows of at least one case of tabes dorsalis so termed for a long period. What percentage of cases of acute osteomyelitis are called rheumatism for some days? No comment is needed to emphasize the serious consequences of this error.

We cannot use the word rheumatism as synonymous with arthritis generally and also to designate one special form of arthritis, rheumatic fever, and keep any clearness of thought. It would be difficult to settle which meaning should prevail and so the best plan is to give up the use of the word entirely. This may sound radical, but anyone who makes the attempt honestly can prove the advantage of it. Nothing will be lost and much will be gained. It may be difficult for a time to say gonorrheal arthritis instead of gonorrheal rheumatism but it will help in clear thinking and give a more accurate idea of the condition. Certainly for anyone who desires to have proper ideas about arthritis it is essential. The term rheumatic fever has no ambiguity; arthritis is equally definite. Another point is the mental association which is so common between the words rheumatism and salicylate. The one as a diagnosis brings up the other as a therapeutic measure. This may explain the frequency with which salicylates are given to patients with

"gonorrheal rheumatism." If the designation gonorrheal arthritis was more generally used there would probably be a saving of much good salicylate.

While on this subject the designation "acute articular rheumatism" is worth some consideration. It is an unfortunate term for it emphasizes the "articular" features of the disease. With attacks of rheumatic fever in childhood there may be no arthritis or it may be so slight that it readily escapes notice. Yet this term has fixed in our minds the articular idea as a necessary part of rheumatic fever to the great disadvantage of many patients, especially children. "Acute myocardial rheumatism" would be a much more fitting designation if it is desired to mention a part which is specially involved.

The word "phthisis" has fully as many meanings as it has pronunciations and what does a medical man understand when another speaks of phthisis? One man applies it to any form of pulmonary tuberculosis, another to an advanced stage only, another when there is a cavity present and so on. Some would emphasize the derivation of the word and use it only when marked emaciation occurs. How much better to use definite terms! A report of a Roentgen-ray examination recently came with the statement that the plate showed "fibroid phthisis." What meaning should we take from such a statement? My feeling was that the roentgenologist merely meant fibrosis, but inquiry proved the contrary. He considered that from the plate he could make a diagnosis of fibroid tuberculosis. As all other methods of investigation suggested that the patient did not have tuberculosis, I might be forgiven some doubts as to the correctness of such a conclusion from the study of the plate alone. Somewhat the same may be said about the word "consumption," but perhaps the difficulty in regard to the meaning of this is more with the public. If a patient asks you if he has consumption and you answer yes, what meaning may be taken? You have to question him to find out. One man takes it as meaning any form of tuberculous lung involvement, however slight, another as meaning cavity formation, and another as meaning an advanced condition close to death.

I hesitate to suggest anything which might diminish the use of the name of the celebrated Guy's hospital physician, but the term "Bright's disease" is not a satisfactory one. Among the profession it has no set meaning and it has still less in the minds of the public. It is not proper to tell a patient that he has Bright's disease without ascertaining what he understands by that statement or explaining what you mean by it. To many the term gives the idea of a hopeless malady with only a short duration of life. The physician and the patient may have widely different views of its meaning, especially if the former uses it for any form of nephritis, or even for the occurrence of albuminuria.

Another term which is used with various meanings is "asthma." It is employed to designate a disease, bronchial asthma, and also to designate a symptom, dyspnea, as seen in the phrase cardiac asthma. Some of you may remember that following a paper by G. A. Gibson[1] there was rather a heated discussion in the correspondence pages of the *British Medical Journal* for many weeks on this very point. The confusion connected with this term leads to unfortunate mistakes, for some men get the idea that cardiac asthma, so called, is connected with bronchial asthma and is not a serious condition. This may be responsible for the complete overlooking of myocardial disease for a considerable time with serious results to the patient. The term "asthma" should be employed to designate what is often called bronchial asthma and "dyspnea" should be called dyspnea and not asthma. The use of the same term to designate a disease and also a symptom is unfortunate.

There may be a definite condition to which the words "bilious" and "biliousness" are properly applied, but I fancy that the majority would have some difficulty in giving an exact description of it. However that may be I do not believe that anyone who strives to be definite in his ideas can have any pride in using the term. A careful search will usually show some more definite condition. Whether this be the case or not, it is to another result that attention is directed. A patient comes and states that he is "bilious." How many of us will accept this as a diagnosis and be content with it? I hope not many, but it is a temptation to do so; it is the path of least resistance. If you question the patients who volunteer such a statement it will be a surprise to find how little idea they have of what the term means and what a motley assemblage of disorders is included. In the last few months among patients who gave the information that they were "bilious" the following conditions were found. One patient, who volunteered a history of biliousness for years, was found to have ophthalmic migraine, the cause of the attacks. Another had gallstones and a third had a duodenal ulcer. A fourth had recurring attacks of vomiting and disturbance called biliousness and treated with the invariable calomel, which were found to be due to eye strain. The list might be greatly prolonged. The use of such terms as "bilious typhoid," "bilious pneumonia," etc., is difficult to justify. The expression "bilious fever" would be better forgotten.

This is not meant to suggest that there is not a condition characterized as malaise, gastric disturbance and constipation, which is helped by free purgation; but it is doubtful if the bile is often concerned. Overeating and deficient elimination seem to play the principal etiologic parts. But it is easy to put all sorts of such disturbances under the designation "biliousness," which really means nothing. Why not drop the term entirely?

There are some terms to which there are not the same objections as to those quoted but which encourage hazy conceptions. One is the word "typhoid," which is employed quite apart from the disease typhoid fever, as in the designation "typhoid pneumonia." This may mean a combination of typhoid fever and pneumonia but it is often applied to instances of pneumonia in which there are severe toxic symptoms. We have the same in the designations "typhoid malaria" and "malaria typhoid," which are happily rapidly passing out of use. A new term has recently come into usage, namely, "typhoid pellagra," to which there are the same objections. It seems a pity that we cannot get away from the tendency to employ the word "typhoid" in this way, as such constructions are confusing to students and practitioners.

I had a lesson recently from a neurologic colleague on the careless use of the word "mania." He pointed

1. Gibson, G. A.: The Varieties and Treatment of Asthma, Brit. Med. Jour., 1911, ii, 791.

out very properly that I had used it to describe a condition of very severe delirium which had maniacal characters but that such usage was confusing and did not represent the proper meaning of the word. He was perfectly right and on reflection it was quite evident that a more careful use of the word tended to clearer ideas in my own mind. There are many examples from neurology which might be given. Take the word "hysteria." Of the many times that word is used today how many times is it justified? I leave the answer to my neurologic friends. If we are sorting and classifying papers so that we can find them again without difficulty we require very definite labels on each receptacle. If there are many miscellaneous ones jumbled together we are going to have difficulty in finding a special one some time afterward. We cannot classify everything exactly or always give definite names but if we know this and keep the realization of it before us, at any rate we know our ignorance. If we give a name to such things it is easy to be satisfied with this. The men who agreed that the patient with popliteal aneurysm had "rheumatism" perhaps were satisfied but it did not help the patient.

The use of the word "temperature" when fever is meant is too common. Thus we often hear it said, "The patient has no temperature," which suggests that his temperature is zero, when the meaning is that he has no fever. If the temperature is normal, why not say so? Of another expression, "running a temperature," it would be interesting to know the origin. It suggests rather a careless use of words.

The misuse of the terms "patient" and "case" is by no means rare. I quote some examples noted recently at medical meetings which serve to bring out the incorrectness and frequent absurdity of this confusion — "A case who got," "The case was one of chronic nephritis; it died in coma," and "This case was a young man which was seen three months ago." Now it may be said that such errors make no essential difference, that everyone understands the meaning desired to be conveyed. Doubtless this is true, but the same might be said of the most ungrammatical sentences or of wrongly spelled words. Most of us would prefer to be correct. Anyone who has to read articles intended for publication knows how often this loose use of the words "patient" and "case" disfigures what may be otherwise good material. Dr. R. C. Cabot is rather pessimistic as to the number of men who seriously try to write good English. In a memoir of the late James G. Mumford he refers to him as "one of the three or four American medical writers who seriously tried to write good English." Dr. Cabot may be right in regard to the number who succeed, but I cannot agree with him as to the number who try. My purpose, however, is not so much with the writing of good English as with the value of using words as accurately as possible in our daily work. Naturally the man who uses words carelessly in his speech is not likely to do differently when he substitutes the written for the spoken word. For both speaking and writing a careful study once or twice a year of the excellent hints by Sir Clifford Allbutt[2] is advisable.

There are other choices in words which tend to clearness. Take the words "tubercular" and "tuberculous," which are often employed as synonymous. As Sir Donald Macalister well suggested it would be an advantage to use the adjective "tubercular" for morphologic conditions characterized by tubercles and "tuberculous" as the adjective corresponding to the noun tuberculosis. Thus leprosy is a tubercular disease. Lesions due to the tubercle bacillus would be termed "tuberculous pleurisy," "peritonitis," "adenitis," etc.

It may be thought that these remarks are unnecessary and perhaps savor of pedantry. To those who feel this objection, I would suggest a trial of the matter. Watch your speech for a time and when some of the words which are discussed come to your lips inquire in what significance you are using them. If you have used the word "rheumatism" decide what you mean by the term. What disease is described when an advertisement states that so many cases of "rheumatism" were aided by a particular remedy? If the term is used for one disease condition today and another tomorrow, it is like changing the labels on the bottles in a pharmacy or chemical laboratory. The label must correspond to the contents of the bottle or there will be error. Why not strive for equal accuracy in the mental labels?

Another objection may come from the difficulty of knowing what word to use in place of the discarded terms. "What am I to call these conditions if I do not use the word rheumatism?" was one comment. Surely if one is using a word to cover ignorance it is well to discard it. Try to find out what the condition really is, arthritis, fibrositis, bursitis, flatfoot, neuritis, etc. Otherwise we are not likely to help our patients or our own education. If we are not content to give meaningless names to obscure conditions, there is some chance that we may endeavor to clear up the situation.

The patient with subdeltoid bursitis is not likely to be helped by a physician who makes the diagnosis of rheumatism and rests content with that. On the contrary, in the hands of a man who refuses to be content with this term there is decidedly more chance of a thorough investigation and correct diagnosis. An interesting sidelight on this is given if one investigates concerning the number of physicians consulted by patients with so-called "chronic rheumatism." One is rarely the first. This is due largely to this very point of careless diagnosis. The referred pains of an arthritis of the spine or chronic prostatitis are not likely to be helped if they are called rheumatism.

For those of us who are teachers the duty of accuracy in the use of words is important. We desire to cultivate habits of clear thinking in our students. Is it not a handicap if we use words carelessly, with no fixed meaning? We try to give students definite ideas as to diagnosis. How can definite ideas be conveyed by indefinite words? For proper therapy it is equally important to have clear ideas. Treatment directed to a name is not likely to help the patient. To term a diseased condition cardiac asthma, when myocardial insufficiency is the cause of the symptoms, and then give remedies suited for bronchial asthma is neither good diagnosis nor good therapy. Yet the association connected with words may be responsible for this. Therefore, when so much depends on the choice of terms is it not worth while to choose them with care and use them with precision?

2. Allbutt, T. Clifford: Notes on the Composition of Scientific Papers, New York, Macmillan & Co., 1904.

SYPHILIS OF THE BRAIN

ITS OCCURRENCE, SYMPTOMS AND PREVENTION *

JOSEPH COLLINS, M.D.
Physician to the Neurological Institute
NEW YORK

The *Spirochaeta pallida,* the specific organism of syphilis, attacks all the intracranial constituents of the nervous system — the meninges, the substance of the brain (that is the cells and the supporting framework) and the blood vessels. Syphilis of the brain, therefore, may display itself in the guise of any disease of the brain, its coverings or its constituents. Fortunately, we are able by examination of the blood serum and of the cerebrospinal fluid to determine whether or not such disease is due to syphilis. In many instances, we can make the diagnosis with much certainty from a consideration of the symptoms and the way in which they develop and group themselves. But in a very considerable percentage of all the cases of brain syphilis, we can only conjecture the nature of the disease, and we must rely on the laboratory for corroboration. This is particularly true of those which do not have so-called "pathognomonic" signs — alteration of the tendon jerks, irregular outline of the pupils and loss of the light response, transient ocular palsies, etc., and more especially of a class of cases, much larger than is suspected, that are diagnosticated headache, neurasthenia, epilepsy, allied to manic depressive insanity, hysteria and other psychoses.

There are two things that have stood in the way of advancing our knowledge of syphilis of the nervous system. The first is that every writer on the subject has insisted that syphilis affecting the nervous system causes well-defined diseases, each of which has been given a separate consideration as a clinical entity.

The second great stumbling block in the way of a comprehensive knowledge of the condition has been the separation of the diseases of the nervous system, caused by the syphilitic organism, into syphilitic and parasyphilitic. Three years ago[1] I took occasion to say that diseases caused by the syphilitic organism are *syphilitic diseases*—and *always* syphilitic diseases, and to discuss the subject at some length. Recently Head and Fearnsides and McIntosh and Fildes have taken up the subject, and the latter particularly have set forth a theory to explain the diseases formerly designated parasyphilitic which is plausible, though not yet susceptible to proof.

When Noguchi and Moore[2] demonstrated the existence of the spirochetes in the brains of twelve patients out of seventy who had died of general paresis (an observation which has since been abundantly substantiated[3]), and especially when the spirochetes were found in these cases, not only in the parenchyma of the brain, but within the lumen of the vessels, the vessel walls, and the surrounding tissues, all doubt that paresis is caused by the spirochete vanished, particularly as it had been conclusively shown by the Wassermann test of the blood and cerebrospinal fluid that paresis was a syphilitic disease. Noguchi swept away the mysterious substance which the organism was supposed to manufacture, and which was the specific morbific agency causing the parasyphilitic disease.

What is here said of general paresis is unquestionably equally true for tabes.

The most important step for us to take, in our pursuit of the pathogenesis of the diseases which we know have their origin immediately or remotely in syphilis, is to recognize that all of them are due to the same organism, the difference of lesion or effect being the result: (1) of the time that has elapsed between the introduction of the organism into the tissue and the occurrence of morbid changes; in other words, the time of combat; (2) the number of organisms present and, possibly, also the variety or strain, and (3) the vital resistance, the individual himself.

There can be no doubt whatsoever that the sensitization of the tissues which takes place in the so-called "parasyphilitic" diseases occurs soon after the invasion of the body by the syphilitic organisms, that is, in the majority of instances, soon after infection. This sensitization predisposes these tissues to disease. The disease itself is caused by the further action of the organism in the body. This matter has recently been set forth very clearly by McIntosh and Fildes.[4] They show conclusively that relatively little cell reaction is produced by a large number of spirochetes in acute syphilis, while an extensive reaction is caused by a small quantity of virus in chronic syphilis. This is due to an alteration in the susceptibility of the tissues to the virus. This alteration corresponds to that described by von Pirquet as *Allergie.* This word was originally used to denote the alteration in the reactions produced by *second injections* of certain viruses. The original state studied was the "serum disease" produced in man by injections of horse serum and jennerian vaccination and revaccination.

The type of "allergie" — hypersusceptibility — present in tertiary syphilis is developed as an immunity response of an intoxication of the tissues occurring in the acute state of syphilis. The actual occurrence of the lesion is due to an exacerbation of activity of spirochetes which have been dormant. The state of hypersusceptibility (an immunity response) leaves the tissues abnormally susceptible to the toxic action of the virus. When the interstitial tissue of the central nervous system is the sensitized part exposed to the delayed or persistent action of the spirochetes, the result is a gumma. When the parenchyma is the tissue affected, the disease that results is paresis or tabes or both.

One of the most striking characteristics of the parasyphilitic diseases has been that they, unlike the so-called "frank" syphilitic diseases, were not susceptible to cure. So-called syphilitic diseases yielded to mercury when properly given, in the majority of instances; parasyphilitic diseases *never* yielded. No matter how vigorous or drastic the antisyphilitic treatment, no one has ever been able to say that a case of tabes or general paresis has been cured by it; but, in making this "susceptibility to therapy" a distinguishing feature between the two classes of diseases (the syphilitic and so-called "parasyphilitic"), we have often lost sight of the fact that the former is a disease of the supporting or interstitial tissue and the latter of the parenchyma, that is, of the nerve elements of the central nervous system. The parenchymatous cells have no more, and indeed no less, capacity of

* Owing to lack of space, this article is abbreviated in THE JOURNAL by omission of case reports and other matter. It will appear in full in the author's reprints, a copy of which will be sent by him on request.

1. Collins, Joseph: Address before the Illinois State Medical Society.
2. Noguchi and Moore: Jour. Exper. Med., 1913, xvii, 232.
3. Marie, Levaditi and Bankowski: Compt. rend. Soc. de biol., 1913, lxxiv, 794.
4. McIntosh and Fildes: Brain, xxxvii, 141, 191.

regeneration than the parenchymatous cells of any other organ of the body. Then, so far as we know, there is no substitution of function by the cells of the central nervous system. We are not in a position to say that if one cell in the central nervous system be destroyed, its function can be taken up by an adjacent cell.

Since the introduction of salvarsan, and its utilization in the treatment of syphilis, there has been a great amount of reliable evidence — some of which I have furnished — tending to show that the parasyphilitic diseases can at least be brought to a cessation of activity by the appropriate use of this agency. It can no longer, therefore, be maintained that the so-called parasyphilitic diseases progress despite every treatment.

We are not concerned here with the subject of "why" treatment is ineffective in the diseases heretofore called parasyphilitic. We are concerned only to show that the sooner all such nomenclature is dispensed with, the more readily will the pathologic processes in the nervous system caused by the action of the spirochetes be recognized, and seen in their proper perspective.

Proceeding on the assumption that these statements are admitted to be facts, I shall discuss the subject of "brain syphilis" under four heads—

1. Its time of occurrence in relation to the time of infection.
2. Its clinical manifestations.
3. Its relative frequency, compared with all other forms of organic intracranial nervous diseases.
4. Its prevention and early treatment.

THE TIME OF OCCURRENCE OF BRAIN SYPHILIS

Nothing has hindered the recognition and successful treatment of brain syphilis so materially as the teaching that it is a late manifestation of infection. Incapacitating symptoms, indicative of destructive lesion of the nervous system, may first be recognized and interpreted long after the time of infection, but it does not follow that the time when such symptoms are recognized is the time when the nervous system is first affected. Not until physicians who treat patients with syphilis soon after infection, in hospitals and elsewhere, with facilities for study of the cerebrospinal fluid, publish the result of routine examination of that important secretion, shall we be in a position to say how often the "nervous system" is involved in early syphilis. Fortunately we are now beginning to get such reports.

Leopold of Breslau has recently published[5] a report of sixty-seven cases of so-called "primary syphilis," in 20 per cent. of which laboratory and clinical evidences showed that the central nervous system was affected even in this early stage.

Recently Wile and Stokes[6] of Ann Arbor have reported six cases of early syphilis, in four of which there were indications of serious disorder of the nervous system. In eight cases investigated by Altman and Dreyfus,[7] two had alteration of the cerebrospinal fluid that predicated affection of the central nervous system. Fahr[8] has recorded a case of syphilitic meningitis terminating fatally nine weeks after the primary lesion.

5. Leopold: Arch. f. Dermat. u. Syph., 1914, cxx, 101.
6. Wile, Udo J., and Stokes, John Hinchman: Involvement of the Nervous System During the Primary Stage of Syphilis, THE JOURNAL A. M. A., March 20, 1915, p. 979.
7. Altman and Dreyfus: München. med. Wchnschr., 1913, pp. 464, 530.
8. Fahr: Dermat. Wchnschr., 1914, lix, 1103.

It is not only recently that such reports have been published. As far back as 1880, Lang[9] pointed out very emphatically that the headache, lassitude, lethargy and other symptoms of so-called secondary syphilis were, in reality, due to disease of the meninges, and even the components of the nervous system. Ravaut[10] showed from examination of the cerebrospinal fluid taken from patients suffering from acute syphilis that there were evidences of meningeal irritation in seventy-one out of 118 specimens examined.

It is, however, in cases reported by neurologists that the most striking evidence is presented that the central nervous system is involved early in the career of the *Spirocheta pallida*. Of such cases it would be difficult to find more convincing ones than those reported from my clinic by Dr. C. B. Craig.

The neurologist is not in a position to state from his experience the percentage of cases of syphilis in which symptoms of *involvement* of the nervous system appear. There can be no doubt that many of the symptoms of early syphilis—particularly headache, lassitude, insomnia—are caused by invasion by the spirochetes of the large lymph spaces of the central nervous system, particularly those connected with the ventricles of the brain; which invasion, in many instances, is followed by ejection or destruction, and subsequent tissue reparation, by the *vis medicatrix Naturae*, or by the administration of mercury and salvarsan. There are other cases in which the invasion occurs, often violently, and then there is a long period of inconspicuous occupation while the tenure of the tissues by the spirochetes is being made secure, to be followed — often after many years — by arrogant manifestations of possession and determination to destroy.

ONE HUNDRED CONSECUTIVE CASES OF BRAIN "SYPHILIS"

Symptoms indicated that the predominant lesion was:		
Of the meninges	58	
Basilar	26	
Convexities	9	
Cerebrospinal	14	
Basal and convexities	9	
Of the blood vessels	36	
Of the brain substance	5	
Unclassified	1	
	42	100 Cases
History of Infection:		
Frankly admitted	58	
Inferred	10	
Denied	32	
		100 Cases
Time of Occurrence of Symptoms:		
Shortest period: 1 month (3 within 6 months, 6 within a year).		
Longest period: 30 years.		
Average interval between infection and onset of brain syphilis: 11 years.		
Preponderant average: 3 to 7 years.		
Strain of Organism:		
History of secondaries	29	
Absent (including 32 cases denied)	51	
No knowledge	13	
Sterility, repeated miscarriages	7	
		100 Cases
Number of cases that received orthodox treatment at time of infection	37	
Treatment not continued beyond few weeks	15	
Treatment during local lesion	6	
Antisyphilitic treatment later	11	
No antisyphilitic treatment	31	
		100 Cases

For the basis of this contribution, I have taken one hundred cases, seen consecutively at the Neurological Institute, of New York, in which the diagnosis of brain syphilis or cerebrospinal syphilis was made. Many of them were under my observation for from two to five years, and subjected to careful study and protracted treatment.

9. Lang: Wien. med. Wchnschr., 1880, p. 1305.
10. Ravaut: Bull. et mém. Soc. méd. de hôp. de Paris, 1913, xx, 1125.

THE CLINICAL MANIFESTATIONS OF BRAIN SYPHILIS

To state within a brief space the clinical manifestations of cerebrospinal syphilis is to delineate in miniature all the diseases of the brain and its coverings. This is manifestly impossible. I shall content myself with enumeration and brief discussion of the symptoms which are commonest in brain syphilis, and in cerebrospinal syphilis (for it cannot be said too often that these conditions are often indistinguishable), and I shall endeavor to state the specificity of such symptoms, that is, what there is about them which should suggest to the physician that they are the symptoms of syphilis.

The symptoms of brain syphilis taken individually have nothing specific or pathognomonic about them. The headache of syphilitic meningitis is not to be distinguished from the headache of other varieties of meningitis. Undue valuation has been given to the alleged nocturnal exacerbation of headache due to syphilis. The optic neuritis which is an expression of meningovascular syphilis cannot be told with the ophthalmoscope alone from the optic neuritis due to brain tumor. The hemiplegia of luetic endarteritis has often been described as different from hemiplegia depending on other forms of endarteritis, but in reality it is not. On the other hand, the grouping of the symptoms, their mode of onset and development and their conduct is most suggestive. The variability in intensity and the multiplicity of symptoms is quite characteristic. At one time they may be predominantly meningeal, a short time later cerebral or vascular or both. The meningeal symptoms may persist or recede as the latter develop. This variability of symptoms coincides without doubt with the invasion, disorder and destruction of different tissues. As a rule we can diagnosticate the chief site of the lesion from consideration of the way in which the symptoms develop and how they are grouped. For instance, cranial nerve symptoms are conspicuous early when the meninges at the base of the brain are the seat of the lesion; on the other hand, motor irritation phenomena point to implication of the convexities.

The symptoms in a general way are the same whether the lesion be of the covering, the supporting tissues or of the blood vessels. This seems paradoxical until we realize that syphilis invading the nervous system rarely confines itself to one area. We are in position to differentiate the acute and chronic forms of syphilis of the brain; to distinguish syphilis of the meninges and blood vessels from parenchymatous syphilis, that is from general paresis, in the majority of instances. That we cannot do this in all cases every one must admit.

I shall limit my discussion to syphilitic meningovascular disease, using that term synonymously for syphilis of the brain, with the full understanding, however, that parenchymatous brain syphilis, general paresis and gumma are also syphilis of the brain.

The symptoms of brain syphilis enumerated in the order of their frequency and diagnostic importance are:

1. Headache.

2. Mental irritability, alteration of personality, explosiveness, depression, inadequacy.

3. Cranial nerve disorder, particularly the third, eighth, second, fifth and seventh.

4. Insomnia.

5. Disorder of motor function, shivering attacks, stiffness, convulsion, paralysis, dysarthria, aphasia.

HEADACHE THE CONSTANT SYMPTOM

In seventeen of the patients, headache was the chief complaint, and other symptoms were disclosed only on interrogation. Pain in the head is the most constant symptom of every form of brain syphilis. In the series of cases upon which this article is based, it was not absent in any instance. The pain, always subject to paroxysmal exacerbation, is described by every conceivable adjective: throbbing, boring, splitting, terrible, agonizing. It is often referred to as affecting one part of the head, but usually the whole head aches. Everything save absolute rest makes it worse. The patient wants to keep quiet, he often holds the neck rigid when he moves, and the face has an expression of intense suffering. When the syphilitic process is predominantly of the meninges of the convexities, the skull is often sensitive to percussion. When it is of the base, rigidity of the neck is often marked, and usually ocular palsy or hemianopsia occurs. When the gasserian ganglion or the exits of the fifth nerve are implicated, there is profound hyperesthesia in the domain of that nerve.

The points, however, which I wish to emphasize are that headache may be the only symptom; that there may be nothing characteristic about it; that physical "pathognomonic signs" (Argyll Robertson pupils) may be entirely absent; that it may appear to be a simple migraine; and finally that the diagnosis can be made and substantiated only by laboratory tests.

The headache may be associated with dizziness, vomiting and optic neuritis, and in such instances we cannot exclude brain tumor until examination of the blood serum and the cerebrospinal fluid are made.

In our series there were a great many cases diagnosticated as headache and not a few as migraine. In fact, had we not resorted to laboratory tests, no other diagnosis could legitimately have been made. In some cases of headache, however, the real cause of the disease might be suspected in view of the history of syphilitic infection. Such was the case of a man aged 63 who was infected when 45 years old. It may be said in passing that there are few diseases more unrelenting than syphilis in an individual above 40. He complained of headache all through the head especially in and over the eyes; of occasional dizziness; of weakness and heaviness of the legs; of sensation in the arms as if they were dead and cold, of malaise and physical depression. Physical examination revealed no abnormality. The serum and spinal fluid Wassermann were both negative. The spinal fluid, however, contained 90 cells per cubic millimeter, and reduced Fehling's solution.

Syphilitic headache is a recurring headache. Cure it to the satisfaction of both patient and doctor, and when least expected, it will recur. I have under treatment now a woman of 39 in whom the sequence of events were: infection when 22; headache and dimness of vision at 27; disappeared while taking "mixed treatment"; seventh nerve palsy when 31; disappeared under inunctions; third nerve palsy when 33; cleared up under injections of mercury; headache and depression at 36; disappeared under prolonged salvarsan and mercury administration. The serum Wassermann remained negative for two years; then the patient was dismissed. She came back a few weeks ago complaining of headache. The serum Wassermann was positive.

DISORDER OF PERSONALITY

There is no disease save alcoholism that causes disorder of the individual's feeling tone, alteration of personality and mental habit so much as does cerebral syphilis. It is next to impossible to sketch such alteration, so much does it vary in different cases. In one it may be only a slight inattentiveness to social amenities at home and in business; in another it may be complete liberation of the customary inhibitions on which good conduct is founded. The individual of temperate habit may become reckless in his appetites, in his language, in his thrift; or he may become persecutory, depressed, sluggish and inert. In the majority of instances these "character alterations" are not volunteered either by the patient or his family, but sympathetic inquiry frequently elicits them. Such changes were noted in twenty-eight of the cases of our series. They are usually interpreted as "neurasthenia." It is rarely prudent to make the diagnosis neurasthenia until after a Wassermann test has been done. Of the multitude of sins that neurasthenia has been said to cover, cerebrospinal syphilis is an important one.

DISORDER OF SLEEP

Insomnia occurs at one time or another in the course of every case of brain syphilis. In many instances it seems to be directly dependent on the headache from which the patient suffers. In only a few instances is it the chief symptom. Four of the cases of our series were diagnosticated as insomnia until the laboratory tests informed us of the nature of the underlying condition. In several instances, however, inquiry revealed that insomnia had been a troublesome complaint for a considerable time before the appearance of symptoms which prompted the patient to come to the hospital. Even in cases in which lethargy, stupor and somnolency are conspicuous, a history of insomnia of variable duration has been obtained.

Insomnia, uninfluenced by treatment and protracted, not dependent on pain, is a danger signal and suggests beginning general paresis.

MOTOR DISTURBANCES

Disorder of the motor function, aside from the cranial nerve palsies, is a fairly frequent symptom of cerebral syphilis. It was the symptom for which the patient sought relief in twenty-three instances of our series. I do not include in these the cases of jacksonian epilepsy dependent upon gumma. In two instances the symptoms for which relief was sought was nervousness or shivering coming on in attacks and not accompanied by fever. One of these occurred in a young man who had Argyll Robertson pupils and the typical general paresis reaction of the serum and cerebrospinal fluid. Although he had no memory defect or dulling of insight, he was looked on as a general paretic. In the second case there were no physical signs, and had it not been for the laboratory aid, the diagnosis could not have been made. Rigidity of the neck and a complaint of stiffness of the extremities was not an unusual complaint.

In the majority of cases of meningovascular syphilis, especially when the vascular element predominates, paralysis of one or more extremities usually occurs.

In these cases premonitory symptoms of the attack are usually observable — headache, vertigo, a feeling of transient insecurity in standing or walking which may, however, reach a state of tumbling or pitching, a sensation of numbness or of no feeling in an extremity, and indescribable mental states: anxiety, apprehension and depression. On the other hand, none of these may be present. The patient may go to bed feeling quite well, sleep as usual during the entire night, and awaken in the morning partially or fully hemiplegic. The typical hemiplegia which results from vascular brain syphilis is the form which comes on in the day, preceded by some or all of the symptoms enumerated above. It usually develops gradually and incompletely without loss of consciousness. It need scarcely be said that the consciousness is often lost and for a long time; but as a rule the patient feels a gradually developing powerlessness in the arm or the leg which necessitates his sitting or lying. This act and the administration of stimulant not infrequently seem to cause a partial or complete disappearance of the paralysis, but within a few hours, or days at least, the paralysis is very likely to recur and with increased intensity. It depends on the seat of the lesion whether or not aphasia will be present. Next to this mode of attack, the most characteristic onset of hemiplegia of syphilitic cerebro-endarteritis is the contracture that develops soon after the hemiplegia occurs. It develops early and it is very intense. Mental and emotional disequilibrium is, in my experience, the most common manifestation.

Hemiplegia coming on gradually, or in attacks as it were, preceded by any of the symptoms enumerated above, not accompanied by a loss of consciousness, or attended with protracted loss of consciousness, and followed early by the development of spasticity, occurring in an individual under 50, is quite likely to be dependent on cerebral endarteritis of syphilitic origin. If the patient who has had such an attack has pupils that do not respond to light, there is no doubt whatsoever that such is the lesion; or if such patient gives a history of having had transient attacks of diplopia, it is probable that such is the lesion. Laboratory examination of the blood and of the cerebrospinal fluid may be relied upon to substantiate or deny the suspicions of the nature of the disease. It must be borne in mind, however, that the Wassermann reaction is more frequently negative in syphilitic endarteritis than in any other disease of the nervous system due to syphilis, so that a negative reaction in the blood and in the cerebrospinal fluid does not by any means put it wholly beyond question that the disease is due to syphilis. The laboratory tests must be repeated, particularly in patients who have been subjected to treatment.

CRANIAL NERVE PALSIES

The frequency with which the functions of the cranial nerves are disordered in syphilis of the brain has been habitually overstated by writers. This statement needs some explanation that it shall not be misunderstood. The cranial nerves are very frequently involved in cerebrospinal syphilis, but there are far more cases of cerebral syphilis without involvement of the cranial nerves than has heretofore been suspected.

The third, or motor oculus, is the cranial nerve oftenest affected.[1] Diplopia is the early symptom, and drooping of the lid the objective manifestation. One or all of the branches may be affected, and usually it is of one eye. As a rule it comes on gradually, often

1. Benario (Ueber Neurorezidive nach Salversan, etc., München., 1911) shows by statistics that the acoustic nerve is more frequently affected in early syphilis than any other cranial nerve. My experience has not been in accord with that.

at first intermittent in its manifestations, and it almost invariably disappears even without treatment. It may be associated with involvement of other cranial nerves, especially the fourth and the sixth; but, as a rule, it is the only cranial nerve affected. Upward of 50 per cent. of all cases of paralysis of the third cranial nerve is dependent on syphilitic meningovascular disease.

The optic nerve is affected next in frequency to the motor oculi. In the 100 cases on which this article is based, there were eight cases of optic neuritis, five cases of postneuritic atrophy. The majority of them came to me from ophthalmologists, which signifies that the chief symptom and the one that impelled the patient to consult a physician was disorder of vision. Headache was a symptom in every instance, but inquiry was necessary to elicit it. In three of the eight cases with optic neuritis, there were symptoms which suggested neoplasm. Had it not been for the aid of the laboratory, I would not have been able to make the diagnosis.

The fourth and sixth nerves are much less often affected than the third. The fifth was affected twice in our series, the seventh four times, the eighth six times, the ninth once and the eleventh once. In every one of these (save in two instances, one with affection of the fifth nerve and one of the seventh) there were other symptoms of meningovascular involvement. Deafness coming on abruptly or slowly in an otherwise healthy individual, disorder of equilibration, roaring in the ears or head, particularly if associated with slight vertigo, should always suggest to the physician that the serum and cerebrospinal fluid be examined.

The cranial nerves are affected at one time or another in every case of meningitis of the base, especially when the exudate is considerable. It is one of the diagnostic signs of brain syphilis, but that it shall be given correct valuation, it must be taken in conjunction with the other symptoms.

The most reliable objective symptom of cerebrospinal syphilis is the Argyll Robertson pupil. There are those who maintain that they have seen it in patients with other diseases than syphilitic diseases. I never have. I do not recall any published cases in which the Argyll Robertson pupil existed in individuals whose laboratory examination of the blood serum and cerebrospinal fluid were negative. The Argyll Robertson pupil is a symptom that is *rarely present* in early phases of meningovascular syphilis. In this series of one hundred cases it was absent in thirty-one, and chiefly in those cases in which the existence of syphilis as the cause of the symptom or symptoms was suspected only from consideration of the clinical manifestations and corroborated by the laboratory. It seems to me that when the luetic disease consists mainly of a mild meningeal exudate, which is subject to variation in intensity from day to day or week to week, even when not under the influence of treatment, the pupils do not lose their light reflex. It is only when the process has become chronic, or in cases in which the meningovascular infiltration is profound, that the Argyll Robertson pupil develops. I have recently discussed this matter in another paper not yet published.

DISORDER OF THE SENSORY SPHERE

Rheumatic or neuralgic pains in different parts of the body are very constant symptoms in syphilis of the nervous system, but they are rarely complained of by the patient until directly interrogated, because they are overshadowed by the other incapacitating symptoms.

That mysterious complaint of the Russian Jews, "breaking pains," which, like the "misery" seems to be the embodiment of all their woes, was found to be dependent upon cerebrospinal syphilis in seven cases of this series. The stiffness of the neck, of which many of the patients complain, is a root symptom, as is likewise the muscular atrophy which occasionally occurs. Paresthesias unassociated with definite vascular disease is in my experience a very uncommon symptom. But disturbance of the sensory nerves happens much more frequently than we surmise until we begin to search for such occurrence by making careful examination.

THE PREVENTION OF CEREBRAL SYPHILIS

What shall we do for the individual who has had the misfortune to become infected with syphilis, that his brain and its coverings shall not become affected? The answer is treat him immediately, vigorously, properly. In the vast majority of instances this will prevent it. In some it will not. In a certain percentage of cases, just how many cannot at this time be said, the spirochetes get into the perivascular lymphatic space of the central nervous system within a few days after infection, preceding often the full development of the so-called local lesion. No effort or art on the part of the physician, or the development of antibody on the part of Nature, can destroy or dislodge them. This explains the apparent paradox to which I called attention many years ago, namely, that cases of cerebral syphilis often develop in those who have had most vigorous antisyphilitic treatment.

There is greater unanimity of belief as to what constitutes adequate or proper treatment of syphilis today than there has ever been heretofore. It consists in the proper use of salvarsan and of mercury begun at the earliest possible moment after infection and kept up till all biochemical evidence of the disease has ceased, while the metabolism of the individual is maintained as nearly normal as possible. But the physician does not do his whole duty when he has accomplished this. He must solicitously watch the individual to see that no evidence reappears for months and even years after the apparent cure. As an index of such reappearance the Wassermann test of the blood serum and of the cerebrospinal fluid is the safest guide.

Until there is a definite unanimity of belief among physicians as to when the treatment of syphilis shall be begun, and some concert of action as to what constitutes the adequate treatment of syphilis, we cannot hope to make any considerable progress in the prevention of syphilis of the nervous system, save by educating the individual toward infection. That these do not exist at the present time cannot be denied. Basing my belief on the statements of physicians from different parts of the country, I say unhesitatingly that it is the customary practice for the majority of physicians to delay all constitutional treatment until the appearance of the so-called "secondary manifestations." Until syphilologists instruct students and physicians that the initial lesion is not infrequently itself a local manifestation of the generalized infection, and until they spread the knowledge that chancre is not necessarily an integral part of the syphilitic infection, we cannot hope to see syphilis properly treated.

It is also necessary that the minds of physicians be purged of the belief that we have in potassium iodid an antisyphilitic agency. I have so many times

dwelt on the fact that potassium iodid has not the slightest claim to be considered an agency of any value whatsoever to combat the activities of the pale spirochetes that I hesitate to revert to it again. And were it not for the fact that I encounter practically no cases of syphilis of the nervous system which have not been treated with potassium iodid, I should not again speak of it.

There is no more justification for considering potassium iodid an antisyphilitic agency, in the strict sense of the term, than there is for considering it an antituberculous agency.

In order that the forms of nervous syphilis that are not susceptible to cure by any treatment shall be prevented, it is necessary that these patients be treated during the course of the disease when the syphilosis is susceptible to treatment. That is, during the state of sensitization of the structures of the nervous system by the spirochetes.

There are two substances that kill the pale spirochetes — arsenic and mercury. Their administration encompasses the cure of syphilis. To administer successfully is an art. Some acquire this art early and easily, some never acquire it. It can never be acquired save by experience.

A NOTE ON THE OCCURRENCE OF PSEUDOREACTIONS ON THE SKIN

WITH SPECIAL REFERENCE TO THE SCHICK TOXIN TEST *

JOHN A. KOLMER, M.D.
AND
EMILY L. MOSHAGE, M.D.
PHILADELPHIA

While the value of the Schick toxin test for immunity in diphtheria has been fairly well established and accepted as reliable by numerous investigators who have agreed on the essentials, the practical value of the test is somewhat impaired by the occurrence of atypical and so-called pseudoreactions which may occur in susceptible and immune persons alike and which, even in the hands of experienced persons, are difficult or indeed impossible of differentiation from the true toxin reaction, especially in the first twenty-four hours after the injection has been made.

In conducting this test, especially on a large scale, a number of persons will present at the site of injection within twenty-four hours a small area of redness and infiltration which may be interpreted as a positive toxin reaction, whereas it may be demonstrated that they will react in a similar manner to an injection of the same amount of bouillon alone, and furthermore show that they are immune to diphtheria toxin by reason of the presence of more than one-thirtieth unit of antitoxin per cubic centimeter of serum. We are confident that we have misinterpreted such false reactions for true toxin reactions, and believe that others may have done likewise; certain technical factors, the study of all reactions for a period of at least forty-eight hours and longer, and probably the use of a control fluid are important or necessary to conduct and interpret the Schick toxin test properly, and under these conditions the percentage of persons immune to diphtheria will be found to be somewhat larger than commonly believed.

As far as we are aware, Park, Zingher and Serota[1] were the first to draw attention to pseudoreactions, ascribing them mainly to probable local anaphylactic reactions of a general character, due to the presence of protein substances in the bouillon used in cultivating the diphtheria bacillus and preparing the toxin, and describing them as of earlier development, more infiltrative, less sharply circumscribed, faintly or not at all pigmented and never followed by true scaling. Schick,[2] however, has not drawn particular attention to them. Owing to the difficulty we frequently experienced in detecting and differentiating these reactions from the true toxin reactions, we regarded all reactions evidently not traumatic as positive,[3] and unless a control bouillon is injected at the same time, we believe this is generally unavoidable especially if it is necessary to read the reactions at the end of twenty-four hours, as in the case of an outbreak of diphtheria when it is desired to immunize exposed nonimmune persons as soon as possible. Weaver and Maher,[4] Graef and Ginsberg[5] and Moody[6] have observed pseudoreactions as described by Park and his associates; Bundesen[7] does not mention them in his paper.

According to our studies in this subject, we would ascribe these false or pseudoreactions to the following:

1. To trauma due to the injection of a fluid containing tricresol into the epidermis of persons whose *skins are for some reason unduly sensitive.* We believe that this is the most important factor, and to obviate it as far as possible requires that the injection be of as small a bulk of fluid as practicable and made with a fine needle after proper cleansing of the skin.

2. To local anaphylactic reactions of a general protein character as described by Park. We subscribe to this view principally because of certain experimental data at hand indicating that general proteolysins are present in the body fluids which may digest such general protein substances as are contained in broth, or the protein substances may serve to saturate the unsaturated fatty acids (antitrypsin) of the blood serum followed by a release of tryptic activity and digestion of the patient's own serum protein (Jobling and Petersen and Bronfenbrenner), with the formation of proteotoxins capable of producing local reactions of redness and edema, rather than on the basis that we are capable of positively distinguishing these reactions clinically at the end of twenty-four hours from the true toxin reaction. These experimental studies were made in collaboration with Dr. Philip F. Williams in a study of Abderhalden's "protective ferments" and the nature of his pregnancy reaction, and will be described in other communications.

In order to study the pseudoreaction in relation to the toxin reaction, we have made intradermic injec-

* From the Laboratory of the Philadelphia Hospital for Contagious Diseases.

1. Park, W. H., Zingher, A., and Serota, H. M.: The Schick Reaction and Its Practical Applications, Arch. Pediat., 1914, xxxi, 481.
2. Schick, B.: Die diphtherietoxin Hautreaktion des Menschen als Vorprobe der prophylaktischen Diphtherieheitseruminjektion, München. med. Wchnschr., 1913, lx, 2608.
3. Kolmer, J. A., and Moshage, E. L.: The Schick Toxin Reaction for Immunity in Diphtheria, Am. Jour. Dis. Child., March, 1915, p. 189.
4. Weaver, G. H., and Maher, L. K.: The Diagnostic Value of Intracutaneous Injection of Diphtheria Toxin (Schick Reaction), Jour. Infect. Dis., 1915, xvi, 342.
5. Graef, C., and Ginsberg, G.: Some Observations of the Schick Test, The Journal A. M. A., April 10, 1915, p. 1205.
6. Moody, E. E.: The Intradermic Diphtheria Toxin Test, The Journal A. M. A., April 10, 1915, p. 1206.
7. Bundesen, H. N.: Schick Reaction, The Journal A. M. A., April 10, 1915, p. 1203.

tions of various dilutions of bouillon in doses varying in bulk from 0.05 to 0.2 c.c. while conducting a series of Schick tests. In a number of tests, normal salt solution containing 0.25 per cent. tricresol was also used as a control fluid.

Two toxins were used: the first with a minimal lethal dose of about 0.0085 c.c., obtained from Dr. A. P. Hitchens of the Mulford Biological Laboratories, and the second with a minimal lethal dose of about 0.01 c.c., obtained from Dr. Ayer of the Bureau of Health Laboratory. Both toxins were used in one-fiftieth the minimal lethal dose and so diluted with sterile normal salt solution containing 0.25 per cent. tricresol that this amount of toxin was contained in 0.05, 0.1 and 0.2 c.c. of fluid. With a toxin having a minimal lethal dose of 0.01 c.c., the injection of one-fiftieth of this amount equaled the injection of 0.0002 c.c. of the undiluted toxin bouillon. By means of injecting the three different amounts all containing the same dose of toxin, we were able to study the influence of the amount injected on the question of traumatic reactions.

Sterile bouillons made in the same manner as that used in preparing the toxins were kindly furnished us by the laboratories named above. Both were sugar-free veal bouillons (*Bacillus coli* fermented) with the addition of 0.2 per cent. dextrose and an end-reaction of about + 0.85 in one (Mulford) and + 1.2 and 0.1 per cent. dextrose in the second (City Laboratory). To both bouillons was added 0.4 per cent. tricresol in order to liken them in this respect to the toxin bouillons, for, in the preparation of toxin, this amount of tricresol is added by routine to kill the culture prior to filtration. Both bouillons were then diluted with sterile normal salt solution in such manner that the dose injected contained 0.0002, 0.002 and 0.02 c.c. bouillon, equal to the amount of toxin bouillon injected (0.0002 c.c.) and 10 and 100 times this amount, respectively. These three dilutions were used in three different doses, namely, 0.05, 0.1 and 0.2 c.c., and in this manner we were able to study the influence of the amount of bouillon protein and amount of fluid injected in relation to pseudoreactions.

In addition to these, we have tested the irritant action following the intradermic injection of 0.2 c.c. of sterile normal salt solution containing 0.25 per cent. tricresol as a control fluid when conducting toxin tests.

In all instances, readings were made at the end of twenty-four and forty-eight hours, and in the majority of cases, observations were made over a period of several days.

The majority of the Schick tests with controls were conducted with persons in the measles, scarlet fever and diphtheria wards of the Philadelphia Hospital for Contagious Diseases; a number were among patients in the isolation and children's wards of the Philadelphia General Hospital. Scarlet fever and diphtheria patients had received antitoxin prior to the tests, while of the patients ill with measles, only those giving true toxin reactions were immunized with antitoxin.

The results of this study may be summarized as follows:

A. The great majority of pseudoreactions appear to be due not so much to the injury of the epidermis by the needle and the fluid injected as to a peculiar hypersensitiveness of the skin in certain individuals.

B. This hypersensitiveness was found most evident among persons in the various stages of scarlet fever. It was also more apparent among children who had measles than among normal children. Of 103 persons in the scarlet fever wards receiving an intradermic injection of the same amount of bouillon (0.0002 c.c.) as contained in the toxin, about 60 per cent. showed a false reaction at the end of eighteen hours, while at the end of forty-eight hours, the reaction persisted in but 7 per cent., and in seventy-two hours in but 2 per cent., the latter showing a pseudoreaction corresponding to the description given by Park and his associates. Therefore, in conducting the Schick test, an interval of forty-eight hours should be allowed before reading the results whenever time permits.

C. These reactions were characterized by areas of erythema which were rather poorly colored and defined, irregular in outline, measuring roughly from 0.3 by 0.3 cm., to as much as 1.5 by 2.0 cm., and accompanied by some edema at the site of injection. The majority of these reactions, however, did not measure more than 0.5 cm. in any diameter, and were located just about the site of the injection. We are not able safely to differentiate these false reactions from true toxin reactions at the end of eighteen or twenty-four hours; after this time the great majority of traumatic or false reactions subsided, while a few persisted for a day or so longer, whereas the true toxin reactions persisted for several days and left a pigmented area and well-defined scaling of the epidermis.

A number of the scarlet fever patients had received 2,500 units of antitoxin within ten days prior to the time these tests were made, and it was particularly apparent that some persons showed no reaction at all with either toxin or control fluid, while of those showing a reaction, the size, general appearance and duration of each reaction were almost identical with the toxin and bouillon control injections.

This peculiar skin hypersensitiveness among persons who have scarlet fever or who had just recovered from the infection is shown by the large percentage (46 per cent.) of similar reactions following the intradermic injection of 0.05 c.c. of sterile normal salt solution containing 0.25 per cent. tricresol. After twenty-four hours these reactions rapidly and entirely disappeared. Among normal persons this injection was practically always without effect.

D. Among persons with diphtheria, normal children and children with such diseases as vaginitis, digestive disturbances and the like, as ordinarily found in children's hospitals, false pseudoreactions were found in about 7 to 8 per cent. at the end of twenty-four hours, and practically all of these reactions subsided and disappeared within forty-eight hours.

E. The amount of fluid injected bears a slight relation to the question of traumatic reaction in that the injection of 0.2 c.c. of fluid produced about 8 per cent. more reactions than when 0.05 c.c. were injected, both doses containing the same amounts of protein constituents and preservatives. What little difference exists in the percentage of false reactions following the injection of 0.1 c.c. and 0.05 c.c. of fluid is in favor of the latter, and when a proper syringe is at hand, it is better to inject the smaller dose (0.05 c.c.).

F. The amount of bouillon constituents injected was found to have less influence on the question of false reactions within the limits of this investigation than the total amount of fluid injected. For example, the percentage of false reactions following the injection of 0.02 c.c. bouillon was about 4 per cent., whereas with

0.0002 c.c., about 2.6 per cent., both doses being contained in the same amount of fluid, namely, 0.05 c.c. On the whole, therefore, it is better to use a highly potent toxin for the Schick test, one that requires high dilution, in order to reduce the quantity of protein and other constituents to a minimum. Schick used a toxin having a minimal lethal dose of 0.005 c.c., and injected one-fiftieth this amount so diluted as to be contained in 0.1 c.c.; this amount of toxin, therefore, corresponded to 0.1 c.c. of a 1 : 1,000 dilution.

CONCLUSIONS

1. In conducting the Schick toxin test for immunity to diphtheria, it would appear advisable to use as highly potent toxin as possible and to inject one-fiftieth or one-fortieth the minimal lethal dose so diluted with normal salt solution as to be contained in 0.05 or 0.1 c.c. The percentage of tricresol present should not be more than 0.25 per cent. In this manner the protein constituents of the toxin bouillon are reduced to a minimum owing to high dilution, and trauma of the epidermis is correspondingly reduced.

2. When time permits, it is better to read the reactions after forty-eight than after twenty-four hours, although in the presence of exposure to diphtheria it may be advisable and necessary to inspect the reactions and immunize nonimmune or positively reacting persons at the end of twenty-four hours.

3. The use of a control fluid composed of a bouillon diluted 1 : 10 or 1 : 100 and injected in the same amount as the toxin will aid in the detection of skin hypersensitiveness and pseudoreactions, and this is especially indicated when persons suffering with scarlet fever and measles are being tested. Otherwise the use of the control fluid is not absolutely necessary, although in the routine employment of the Schick test without a control injection, a small percentage of persons may be regarded after twenty-four hours as reacting positively on account of mistaking a pseudoreaction for a true toxin reaction.

In our experience, very small areas of erythema about the site of injection measuring, for example, about 2 or 3 millimeters in the largest diameter, may safely be regarded as purely traumatic reactions; but with larger areas we have been generally unable to differentiate at the end of twenty-four hours between the true and the false reaction, and for the purpose of caution usually regard them as toxin reactions and administer antitoxin.

Even under these conditions the use of the Schick test will obviate the necessity of giving antitoxin to about 40 or 50 per cent. of persons, and it is probably better in the presence of exposure to diphtheria to err on the side of giving antitoxin to an immune person than to withhold it from a nonimmune.

Second and Luzerne Streets.

Conservatism and Real Progress.—I will, however, venture to remind you that real progress does not consist in wiping out the past. That idea comes from Germany. A prudent veneration for the best of what has been left to us is ever a wholesome sign of the minds that are to guide the future. Well-gathered experience will always count for much in practical medicine. Knowledge that comes too quickly and too copiously has often to be recast and modified, and the elders do good service sometimes by calling a halt for meditation, for open minds and level heads. Moderation is one of the few things that last long in this world.—Sir Dyce Duckworth, *Lancet,* London, Nov. 28, 1914.

TUBERCULIN IN SURGICAL TUBERCULOSIS

WITH SPECIAL REFERENCE TO THE USE OF SENSITIZED BACILLARY EMULSION *

A. C. BURNHAM, M.D.
NEW YORK

Tuberculin, according to the generally accepted conception of its therapeutic status, is a valuable adjunct in the treatment of certain types of surgical tuberculosis. In many cases the results are too striking to be denied, the lesion showing improvement after the first or second dose, and rapidly progressing to a complete and final cure.

Sahli[1] is quoted as saying:

> All localized tuberculosis is suitable for tuberculin treatment provided the patient's system is not already overloaded with tuberculin.

According to this view, tuberculin treatment is indicated in every case of localized tuberculosis in a patient not too seriously ill to react to injection. Philip states the case more conservatively, and says in substance:

> In proportion as the disease is localized, the hope of successful treatment by tuberculin is increased. In a case of early tuberculous infection, when the process is limited to the lymphatic system, or in a case where, with further advance, the disease is still for the most part localized and the systemic disturbance relatively slight, the well regulated use of tuberculin affects the patient favorably and in many cases leads to a cure.

However, that there is a potency for harm in tuberculin is recognized even by its strongest advocates. Its administration requires careful selection of the cases, close observation of the patients and appropriate regulation of the dose. Because of these requirements, it has been argued that tuberculin has no place in the dispensary treatment of surgical tuberculosis, but should be confined to patients under hospital or sanatorium supervision. That even under the best conditions the treatment is often unsatisfactory is evidenced by the fact that the search for new preparations apparently never ceases.

Encouraged by the good reports following the use of sensitized gonococci and streptococci in infections due to the corresponding organisms, I have investigated the action of the sensitized bacillary emulsion of tubercle bacilli (S. B. E.) in cases of tuberculosis under dispensary control. The results are given subject to such handicaps as are always present in the dispensary treatment of surgical tuberculosis. These patients are difficult to control, and in many cases travel from clinic to clinic in search of relief, never staying long enough in any one dispensary to permit of satisfactory observation or treatment. Moreover, they are anxious to return to work, and stop attendance after improvement has begun, only to return later after a relapse has rendered further treatment necessary. For this reason, the cases chosen have been those in which operation was not indicated, or cases in which a tuberculous sinus persisted after one or more attempts at radical cure. It is in these cases that tuberculin treatment meets its greatest indication.

* From the Department of Surgery of Vanderbilt Clinic, College of Physicians and Surgeons, New York.

1. The Present Status of Tuberculin, Miscellany, The Journal A. M. A., March 14, 1914, p. 873.

Sensitized bacillary emulsion is prepared by growing tubercle bacilli in an antituberculous serum, and then washing the bacilli to remove the excess of serum. The bacilli are then prepared in an emulsion, 1 c.c. containing the equivalent of 5 mg. of the dried bacilli. In general, a sensitized vaccine (serovaccine, serobacterin) is a suspension of the pathogenic bacteria, living or dead, artificially sensitized by treating them with homologous immune serum. By this means, the amboceptors contained in the immune serum are made to combine with the bacteria and so sensitize them that, when injected, the complement normally present in the blood may combine with them directly. They were first introduced by Besredka[2] in 1902, and have since been elaborated by him and his co-workers. It is asserted that they give only a slight local reaction; that they cause no general reaction; that they may be given in larger doses and more frequently than non-sensitized vaccine, and that there is no negative phase.

In the cases tabulated the doses had to be guided almost entirely by the weight of the patient, the course of the disease, and the subjective symptoms. In only a few of the patients could an accurate temperature record be obtained. The cases were picked cases in that they were unsuitable for surgical treatment. They were, moreover, given any other form of treatment that might be indicated. Sinuses were dressed, tuberculous joints placed in plaster, and superficial abscesses punctured.

Excluding those cases which came only once or twice, fourteen cases were treated. Of these there was marked improvement in four cases. In these four cases improvement began soon after the treatment was started, and was so rapid and striking that clinically it seemed of necessity to be due to the use of tuberculin. Of the remaining cases, six improved while under treatment, three showed no apparent change, and one grew progressively worse. In Table 1 the

TABLE 1.—RESULTS OF TUBERCULIN (S. B. E.) TREATMENT IN CASES OF SURGICAL TUBERCULOSIS

Age and Sex*	Diagnosis	Pulmonary Tuberculosis	Weight		Local Lesion	Dosage	Remarks
			Before Treatment	After Treatment			
37 ♀	Tuberculous osteomyelitis of rib	Moderately advanced	119	118	Unimproved	Moderate	Pulmonary lesion slowly progressive
44 ♂	Tuberculous osteomyelitis of rib	Suspected	154	166	Improved	Moderate	Stopped treatment
24 ♂	Tuberculous elbow.....	None	129	126	Unimproved	Small	Diagnosis uncertain
26 ♂	Tuberculous ankle.....	None	143	140	Unimproved	Moderate	Gained 4 pounds, and ankle improved during first two months of treatment
23 ♂	Tuberculous wrist.....	None	131	137	Improved	Large	Improved under treatment; stopped treatment and returned to work and condition relapsed
21 ♂	Tuberculous wrist.....	None	151	151	Improved	Small	Patient stopped treatment; reported practically cured 6 months later
26 ♂	Tuberculous cervical adenitis	None	176	180	Cured	Large	Marked improvement under treatment
4 ♂	Tuberculous sinus of back	None	39	37	Sinus healed	Moderate	Six months later condition relapsed
4 ♀	Tuberculous sinus of neck	None	34	34	Sinus healed	Small	Marked improvement under treatment
13 ♀	Tuberculous cervical adenitis	None	106	113	Sinus healed	Small	Slight improvement under treatment; rapid improvement afterward
38 ♀	Tuberculous osteomyelitis of rib	Moderately advanced	129	129	Sinus healed	Moderate	Lung condition unchanged
6 ♂	Tuberculous cervical adenitis	None	49	50	Sinus healed; glands much smaller	Small	Apparently markedly improved
20 ♂	Tuberculous cervical adenitis	None	133	133	Unimproved	Moderate	General condition is improved
15 ♀	Tuberculous cervical adenitis	None	112	115	Cured	Large	Marked improvement

* In this and the following table, ♂ denotes male, and ♀ female.

The preparation which has been under trial is that suggested by Mayer of Berlin and further tested by Citron and Meyer. The original emulsion used in the cases under consideration was imported from Germany and diluted to the required strength before using. Stock dilutions from 1:1,000 down to 1:10,000,000 are made up every two or three weeks, and weaker solutions prepared when required.

A dose of 0.0000001 c.c. of the original solution has been advised, but I have felt that the results were better when the initial dose was considerably smaller (one tenth or even one hundredth of the foregoing dose). The dose is then gradually increased at intervals of from five to eight days until there is some sign of reaction, or until the patient is taking the pure emulsion.

In this preparation it is advised that the dose may be increased rapidly, making every dose from three to five times the preceding. I myself have had the most satisfactory results from giving small doses and increasing very slowly.

results of the individual cases are shown, the dosage being indicated. In those cases in which the dose was always less than 0.000001 c.c., the dosage was considered small; less than 0.0001 c.c. was moderate, and more than 0.0001 c.c. was large. The interval between the doses was usually a week, but occasionally as little as four or five days, and in a few cases as long as ten days or two weeks.

Of ten improved cases, I have records of the patient's condition from six months to one year later in eight cases. Five patients had no further return of the condition, and in three there had been a relapse. In one case the relapse had been much more severe and extensive than the original lesion.

In the summary of the cases treated, the results were as follows: progressive, 1 case; no apparent change, 3 cases; improved, 6 cases; marked improvement, 4 cases.

These results compare unfavorably with those of Meyer,[3] who, in 1910, reported improvement in 86 per cent. of all cases. It should be borne in mind,

2. Besredka: Ann. de l'Inst. Pasteur, 1902, p. 1918.

3. Meyer, F.: Ueber sensibiliserte Tuberkelbacillen Emulsion, Berl. klin Wchnschr., xlvii, 926, 1910.

however, that most of his cases were treated in the hospital and were no doubt carefully chosen.

In two cases in the series there was a coexisting infection of the lung moderately advanced and in the chronic stage. In one of these there was apparent improvement in the local lesion, but no change in the pulmonary condition; in the other case, both the pulmonary and local tuberculosis continued slowly progressive.

For purposes of comparison, the results of the use of sensitized emulsion in the dispensary control of pulmonary tuberculosis may be given here[4] (Table 2). Excluding those cases in which only one or two doses were given, tuberculin (S. B. E.) was given in sixteen cases.

These cases were also picked cases, and consisted principally of cases of a chronic type in patients who, for personal reasons, are unable to leave their homes and usually are obliged to continue to work at least part of the time. It should be recognized that these cases include those in which treatment is usually most unsatisfactory, and proper allowance be made in the consideration of the results. From the consideration of the table, it is seen that there was marked improvement in three cases and slight improvement in four cases. In view of the type of cases treated, this is a fairly satisfactory showing.

However, the management of the patients and the control of the dosage is much more difficult in pulmonary tuberculosis than it is in tuberculosis of the surgical type, and the most enthusiastic advocates of tuberculin treatment are much less optimistic regarding the treatment of cases in which there is a pulmonary lesion.

My personal experience with the sensitized tuberculin has been that the injections are no better tolerated than those consisting of corresponding doses of the ordinary bacillary emulsion. I have seen marked local and focal reactions after as little as 0.0001 c.c., and every attempt to increase the dose rapidly was followed by reaction which necessitated a modification of the dosage. A similar result made it necessary to abandon the attempt to give the injections at intervals shorter than five days.

Results following the use of very small doses have apparently been better than those in which a moderate dose was given at the beginning or in which the small dose was too rapidly increased.

In children, the first dose should not be over 0.000000001 c.c. of the original emulsion, and this should be slowly increased according to the nature of the case. I have sometimes increased the dose by making each injection double the preceding dose, but attempts to increase the dose more rapidly were usually unsuccessful. After reaching the dose of 0.0000001 c.c., it is better to increase even more slowly, that is, by increasing only from 10 to 50 per cent. Otherwise, the dosage and intervals have been similar to those advised in the use of the ordinary tuberculin.

TABLE 2.—RESULTS OF TUBERCULIN (S. B. E.) IN CASES OF PULMONARY TUBERCULOSIS

Age	Sex	Pulmonary Lesion	Dosage	Weight		General Condition
				Before	After	
31	♀	Incipient	Moderate	104	106	Unchanged
31	♂	Moderately advanced	Moderate	135	130	Progressive
23	♀	Moderately advanced	Small	120	120	Unchanged
39	♂	Far advanced	Small	113	113	Slight improvement followed by progression of symptoms
45	♂	Far advanced	Small	139	137	Progressive
40	♂	Moderately advanced	Small	140	140	Unchanged
28	♀	Far advanced	Small	125	118	Progressively worse
36	♂	Incipient	Large	137	139	Improvement
36	♂	Moderately advanced	Small	141	145	Improved
39	♂	Moderately advanced	Moderate	153	152	Improved
45	♀	Incipient	Large	107	113	Markedly improved
61	♂	Far advanced	Large	141	146	Progressive; died
42	♀	Moderately advanced	Large	114	113	Slight improvement
27	♀	Moderately advanced	Large	125	133	Marked improvement
26	♀	Far advanced	Large	93	93	No apparent change
26	♀	Moderately advanced	Moderate	158	164	Marked improvement

CONCLUSIONS

1. Sensitized bacillary emulsion of tubercle bacilli has apparently the same clinical action in surgical tuberculosis as the ordinary bacillary emulsion.

2. If there is less reaction following its use, the difference is so slight as not to be appreciable in the dispensary treatment.

3. Sensitized tuberculin, just as any other reliable tuberculin preparation, has its indications; but in surgical tuberculosis it should be recognized as a powerful therapeutic agent, and its contraindications and limitations kept ever in mind.

4. In this series of cases of surgical tuberculosis, in which the benefits of climatic treatment and hospital or sanatorium care were not available, the results of tuberculin therapy were favorable in the majority of the cases, and its use is fully justified in dispensary cases of this type.

140 West Seventy-Ninth Street.

4. From the Department of Tuberculosis, Presbyterian Hospital Dispensary, New York City.

Sugar in the Philippines.—An impetus to the cultivation of sugar in the Philippines has been given by the passage of the Sugar Central Act under which persons or corporations wishing to establish or extend the cultivation and manufacture of sugar are granted by the government an amount equal to the amount they are prepared to invest in the enterprise. Investigation is made by the government board before the grant is made. Sugar centrals are being established under this act and arrangements are made for the planters to send their cane to the mills for extraction, where they obtain a much larger percentage of sugar from the cane. This has stimulated planting. The government is endeavoring to introduce the Hawaiian variety of sugar cane into the islands, which is superior to that heretofore cultivated. Nurseries have been established, and at several points cane of this variety has been raised and distributed for seed.

A CLINICAL CONTRIBUTION TO OUR KNOWLEDGE OF CHRONIC PANCREATITIS *

MAX EINHORN, M.D.
Professor of Medicine at the New York Post-Graduate Medical School
NEW YORK

Although diseases of the pancreas were well known to clinicians for a long time and described under the name "lientery," an exact diagnosis could hardly be made during life until recently.

Operations, performed by surgeons during the last two decades, as well as functional examinations of the digestive tract and particularly the pancreas, have brought these conditions nearer to recognition. The diagnosis of chronic pancreatitis is even now rarely made, because the symptoms are so variable.

I should like to describe a few cases in which I have thought the diagnosis of chronic pancreatitis to be justified. In most of them the new methods of testing the pancreatic function were used and considered in making the diagnosis. Only three were brought to operation; in two of these the diagnosis of pancreatitis was made by the surgeon from the macroscopic appearance (the pancreas being thickened, enlarged, and harder than normal); in the third, the absence of carcinoma was established without the pancreas being particularly inspected.

The cases of chronic pancreatitis to be described may be subdivided into three classes:

1. Main symptom, diarrhea.
2. Main symptoms, gastralgia, constipation, weakness.
3. Main symptoms, diabetes mellitus, dyspepsia, weakness.

As representative of Group 1, I should like to describe the following cases:

CASE 1.—R. C., man, aged 46, with negative previous history, formerly drank considerably and was a moderate smoker. He denied syphilis. The present illness had lasted about two years. The principal complaint was pain in the abdomen, loss of weight, and at times diarrhea. He was treated differently at various times without improvement. About eight months before September, 1914, when I saw him, on the strength of roentgenograms showing a defect in the stomach, the diagnosis of cancer was made and operation advised. The latter showed nothing abnormal in the stomach beyond some adhesions, which were loosened. At the same time the appendix was removed. For about four months he improved and began then to suffer again from pains in the epigastrium, accompanied at times by vomiting. He did not vomit blood. The mental depression was intense. He kept on losing weight and strength.

Sept. 15, 1914, the stomach was dilated, extending two fingers' width below the navel; at times peristaltic restlessness was marked. The liver was considerably enlarged. The ascending colon was filled and dilated; there was borborygmus, and at times visible intestinal peristalsis.

Gastric contents, one hour after test breakfast: Hydrochloric acid, acidity = 40. In the fasting condition the stomach was empty.

Duodenal bucket test: Bucket passed pylorus; a faint trace of a blood stain at 55 cm.

The urine had a specific gravity of 1.010, and contained a small quantity of albumin and a few casts. In the stool undigested starch, fat and numerous muscle fibers were found. If the patient was kept on a meat-free diet for a few days, no blood could be discovered chemically. The digestive test capsule showed: return after fifteen hours, potato, fishbone, fat, meat, thymus present and hardly changed; nuclei very numerous (Fig. 1). Patient complained mainly of gas pressure and pains relieved by passing of flatus. There were from eight to twelve evacuations daily; they were copious, contained fat and some undigested food particles, which were visible macroscopically.

Under an appropriate diet and the addition of pancreon and diastase, his general condition improved markedly. Notwithstanding the abundant quantity of food ingested, however, the patient continued to lose steadily in weight. October 16, he had a severe attack of abdominal pain, which radiated to the thorax, causing dyspnea and rapid pulse. Morphin injections relieved him and he gradually rallied. His general condition, however, from now on grew rapidly worse. Although there were no new symptoms, no rise of temperature, no ischochymia (the stomach was found empty, even now, in the fasting condition) the patient succumbed, October 22, after going through another attack of pain and dyspnea.

The diagnosis of chronic pancreatitis was based on the existing lientery, with fatal termination, and absence of a possible carcinoma, as determined first by exploratory laparotomy and secondly by the absence of any sign pointing toward it.

CASE 2.—Mrs. R. N., aged 28, had been complaining for the last ten years of attacks of diarrhea. The first attack lasted about two weeks and was accompanied by quite a loss of blood from the bowels. The patient was very weak and tired. These attacks recurred every year until three years ago. Then they came more frequently, were of longer duration, and in addition to the blood there was a great deal of mucus. The patient also noticed a severe sharp pain in the lower right quadrant of the abdomen. She did not as a rule vomit. There never had been jaundice. She lost about 20 pounds since the onset. The appetite was fair. In the past three weeks the patient had a burning sensation on micturition and complained of both frequency of urination and scalding. Since then she had also felt feverish. She had to get up as often as six or eight times in one night to pass water on account of the diarrhea.

Physical examination of the thoracic and abdominal organs failed to reveal anything abnormal.

Gastric analysis: One hour after Ewald's test meal 35 c.c. of clear liquid were obtained which did not show any mucus; the reaction was slightly acid to litmus. The food particles were not digested; there was no free hydrochloric acid; total acidity = 6.

The feces were yellowish, fluid, and contained no blood, parasites or parasitic ova; there were present, however, a great deal of fat, starch, and food remnants, mixed with mucus.

Vaginal examination showed slight infiltration of the right fornix.

Roentgen examination was negative.

The blood showed nothing abnormal.

Digestive bead test: Everything had disappeared after thirty hours.

Examination of the duodenal contents: Amylopsin present, trypsin trace, steapsin absent.

The diagnosis here was founded on the behavior of the bowels (diarrhea) in connection with the result of the examination of the duodenal contents, showing diminished quantities of trypsin and an entire lack of steapsin.

CASE 3.—Mrs. H. M. W., aged about 40, had always been quite well until about two years ago, when she began to suffer from her digestive tract. She had persistent heartburn, frequent vomiting and severe profuse diarrhea. Sometimes the symptoms were less severe, but they never were entirely absent. During these two years she had lost about 60 pounds, having previously been quite stout. She was very weak and was confined to bed.

At the examination the patient looked pale. The skin could be lifted in large folds. She complained of severe pains all over her body, heartburn, diarrhea and weakness. The thoracic organs were normal. The stomach was much dilated and reached a hand's width below the navel; the liver was not enlarged.

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

One hour after a test breakfast, hydrochloric acid was present, an acidity of 100, no blood. The thread test proved the permeability of the pylorus and showed no blood spots. The bead test showed potato, meat and fat present. In the feces much undigested starch, numerous muscle fibers and an excessive quantity of fat were found. With the use of alkalies and pancreon in connection with diastase the patient recuperated and began to gain in weight.

The diagnosis here was based entirely on the symptoms and the result of the examination of the feces, and is strengthened by the beneficial influence obtained from the administration of pancreon, which replaced the missing pancreatic secretion.

CASE 4.—A. E., boy, aged 16 years, born in San Domingo, had been living in the United States for the past five years. He had twice had pneumonia when a baby and had had trouble with his stomach for the past eleven years, feeling well only at times. The present illness began about 1913, when he had mumps. Since that time he had progressively lost weight. Diarrhea began about this time and pains in the abdomen. In February, 1914, he began to vomit, first his supper and later on his dinner. He did not vomit breakfast until three months before I saw him. In November, 1914, he complained of chills and cold feet. He belched a great deal. Vomiting had increased until at the time of examination, Feb. 12, 1915, he vomited at times while eating.

At this time his appetite was not good, but he grew very thirsty on account of the vomiting and the diarrhea. Food did not taste good as a rule. He very seldom had pain and did not belch. The bowels were very loose, and about three weeks before they moved fourteen times in one night. As a rule the stools were greenish and with much mucus. The patient complained very much of weakness.

The physical examination of the chest organs failed to reveal anything abnormal. The stomach was somewhat dilated, the greater curvature extending to two fingers below the navel. The liver was slightly swollen, overlapping for more than 1 inch the right costal margin.

The gastric contents one hour after a test breakfast showed absence of free hydrochloric acid and almost neutral reaction, but presence of rennet ferment.

The urine was free from sugar or albumin.

The blood showed: hemoglobin, 75 per cent.; red blood corpuscles, 4,400,000; white blood corpuscles, 7,600; polymorphonuclears, 67 per cent.; lymphocytes, 30 per cent.; mononuclears, 3 per cent.

The bead test revealed: return of beads after thirty hours; potato, fishbone, catgut, fat, thymus, nuclei present.

The duodenal contents showed, February 16, color golden yellow; somewhat turbid; alkalinity = 20; amylopsin, 5 mm.; steapsin, 1 mm.; trypsin absent; rennet present.

The diagnosis of chronic pancreatitis was based on the clinical symptoms, diarrhea, vomiting and epigastric distress in conjunction with the result of the fecal examination, the bead test (presence of most test substances), and the analysis of the pancreatic secretion, which showed absence of trypsin and very little steapsin.

The following cases belong to Group 2, characterized by gastralgia, constipation and weakness:

CASE 5.—Mrs. J. R. S., aged about 67, had been troubled for the last four years with distress after meals and considerable flatulence. Her appetite was poor, her bowels constipated, and she slept poorly. Within a year she had lost 20 pounds.

The physical examination, Sept. 8, 1909, revealed nothing abnormal in the thorax nor any palpable tumor in the abdomen. The urine was normal; knee reflexes present. The blood showed slight anemia.

The gastric contents one hour after Ewald's test breakfast showed, Sept. 10, 1909, very little fluid; bread particles not changed; hydrochloric acid absent, total acidity 4, no food stagnation.

The bead test, Nov. 9, 1909, revealed the appearance of beads after sixteen hours: fat, potato, thymus present; nuclei had disappeared.

The diagnosis of achylia gastrica and intestinal dyspepsia (fat and starch variety) was made and the patient treated accordingly.

With the aid of various digestives (principally diastase and pancreon) the patient got along fairly well during the next four years, gaining slightly in weight and feeling rather comfortable. During this period the gastric contents were frequently examined, but always showed the same result, namely, achylia gastrica.

Feb. 28, 1910, the duodenal contents were examined. They were golden yellow, clear, and revealed the presence of the three pancreatic ferments.

During the summer of 1913 the patient began to manifest some graver disturbances. The distress in the abdomen was more pronounced, her appetite poorer, and the constipation became more marked. In August slight jaundice developed, accompanied by a low fever, for about one week. The liver at that time was somewhat enlarged, but no distinct hardness could be found. The blood showed some leukocytosis for a while. The urine contained no bile, but some urobilinogen. The patient lost some in flesh and grew considerably weaker. During September and October, 1913, the thought of a beginning neoplasm could not be positively dismissed. Examinations of the gastric contents and stool failed to show anything in this line. Roentgenoscopy likewise showed an entirely negative finding as to the presence of a neoplasm in the digestive tract (Fig. 2).

The liver swelling then subsided, the skin cleared up, and the patient again was somewhat stronger, but she never entirely regained her former state of health.

The pancreatic function was now watched and found to deteriorate steadily. The following examinations of the duodenal contents were made during this period; Nov. 9, 1913, the duodenal contents were golden yellow, alkaline, tinged with blood; amylopsin + 2 mm.; steapsin + 2 mm.; trypsin absent.

Jan. 13, 1914, the duodenal contents revealed the absence of all the three ferments.

Feb. 2, 1914, the duodenal contents showed amylopsin + 8 mm.; steapsin + 0.5 mm.; trypsin absent.

Feb. 11, 1914, the duodenal contents reveal the absence of all three pancreatic ferments.

The further course of the disease was briefly as follows: The patient grew steadily worse, becoming weaker, with anorexia and distress constantly increasing. During the month of February there was a return of the jaundice, the urine containing merely urobilinogen, but no bile. The icterus disappeared a few days later. During March the patient fainted several times. It became necessary to supplement the nutrition by the employment of glucose solutions by the Murphy drip. The inanition persisted and the patient began to suffer from hallucinations (due to anemia of the brain) and then became comatose. There was no vomiting, no ascites, and the patient died, April 17, 1914, with a preagonal rise of temperature.

We could make a fairly certain diagnosis of chronic pancreatitis in this case. Here the examination of the duodenal contents was of the utmost importance. It showed a gradual diminishing activity of the pancreatic secretion, and besides there occurred three times periods characterized by jaundice and swelling of the liver, and bile was found at the time in the duodenum. Since no new symptoms pointing toward malignancy occurred toward the end of life, we must attribute everything to the chronic pancreatitis.

CASE 6.—Mrs. M. R., aged about 54, had complained for the last eighteen months of frequent attacks of abdominal pain accompanied by vomiting. The attacks came on at intervals of from three months' to one month's duration. The pains were severe and often required hypodermic injection of morphin. During the interval the patient felt comparatively well. She, however, ate very little and had been constantly losing flesh (about 40 pounds).

The physical examination, June 18, 1914, revealed nothing abnormal in the thorax. The stomach was markedly dilated, extending a hand's width below the navel. The gastric contents show a normal acidity, no food stagnation, and no occult blood.

The patient was encouraged to eat and was given nerve sedatives. She did not, however, improve, and after a few weeks had another severe attack of pains and vomiting. The attack was accompanied by a rise in temperature which lasted

two days. This attack was followed by pronounced anorexia and almost constant nausea.

September 3 the patient entered the German Hospital.

The duodenal bucket test showed a permeable pylorus and no signs of ulceration. The duodenal contents were then aspirated and examined; they presented a turbid, dark greenish-yellow appearance, were alkaline, and showed absence of the three pancreatic ferments.

September 4 the patient had an attack of pain, with slight swelling of the liver and rise of temperature. September 5 she had a severe chill and a temperature of 103.5, which, however, became normal on the 6th. During the last attack, slight icterus of the sclera was noticed. The urine, however, contained no bile.

The examination of the feces showed absence of blood, presence of much undigested starch, muscle fiber and fat crystals.

The diagnosis of severe cholecystitis due to gallstone and chronic pancreatitis was made, and an operation advised.

The latter was performed by Dr. F. Kammerer, September 11, and consisted in cholecystectomy and choledochotomy, with removal of stones and drainage of the hepatic duct.

At the operation the whole gallbladder was found embedded in adhesions; several stones were found in the common duct, near the ampulla of Vater. The pancreas was found enlarged and somewhat harder than normal.

The patient rallied somewhat after the operation. There was, however, great difficulty in feeding her. She frequently vomited, and did not retain rectal alimentation. She grew gradually weaker and died, October 14, from inanition.

The diagnosis here was gallstones and chronic pancreatitis. The latter condition was recognized from the lack of pancreatic ferments in the duodenal contents and from the condition of the organ at the time of operation.

CASE 7.—Mrs. J. H. L., aged about 54, had been suffering for four months from severe pains in the epigastrium. She lost her appetite and became progressively weaker and thinner. Four weeks before her condition grew considerably worse. An irregular fever with chills developed. The pains were much more severe and the conjunctiva showed an icteric tinge. Patient had lost 40 pounds since the beginning of her illness. She was operated on by Dr. F. Torek. A thickened and swollen pancreas was found.

At the time of operation it was difficult to decide whether there was a carcinoma or simple inflammation of the organ. There were no gallstones. A simple gallbladder drainage to the outside was established.

About three weeks later, March 22, 1912, I saw the patient for the first time. She was very apathetic, her appetite was very poor, and she looked cachectic. Physical examination did not reveal anything abnormal.

The blood showed 2,300,000 red blood cells and 11,000 white blood cells.

Examination of the stomach contents showed absence of hydrochloric acid, a total acidity of 80, and the presence of rennet ferment.

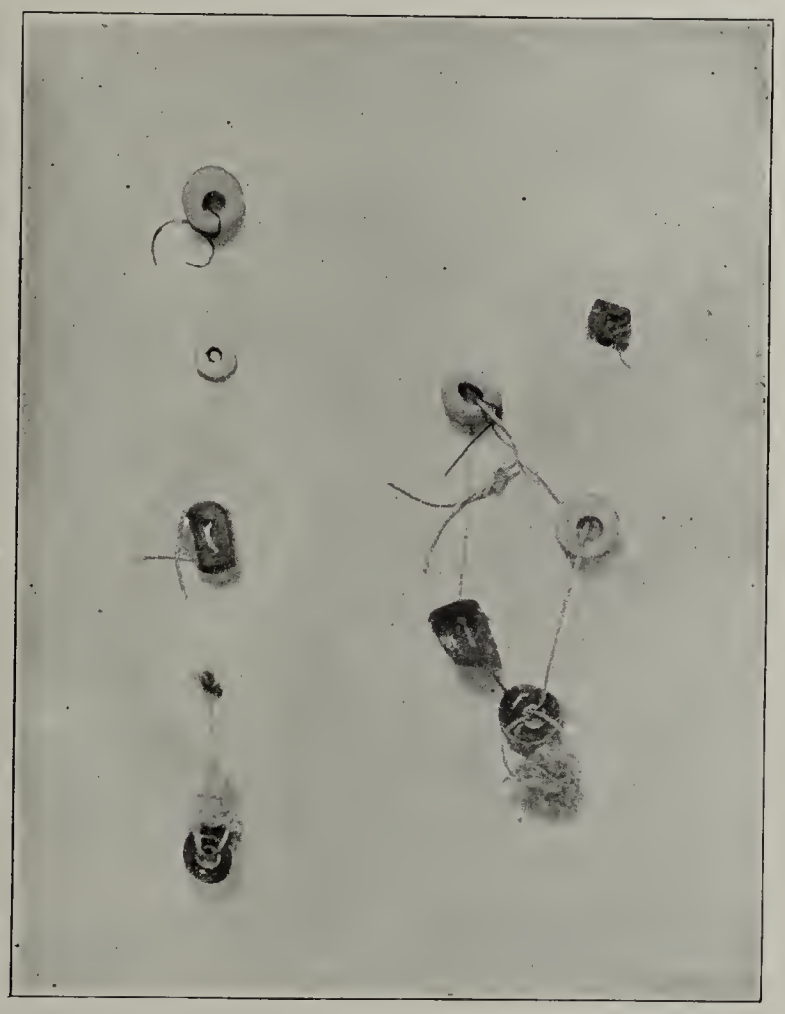


Fig. 1.—Result of bead test in Case 1: Sept. 26, 1914, return after fifteen hours (left half of illustration: potato, fishbone, fat entirely present; thymus present; nuclei partly present. Oct. 10, 1914, return after twenty hours (right half of illustration): catgut, fishbone, thymus, half fat, one-fourth potato present; nuclei partly present.

The digestive bead test showed the presence of meat, fishbone, potato, thymus, and fat. In the stool many undigested substances were found, particularly muscular fibers, starch and fat.

The fluid obtained from the gallbladder was very turbid, greenish yellow, and showed the presence of amylopsin, steapsin and trypsin.

Since the patient became weaker from day to day, I thought it would be better to protect her from the daily loss of pancreatic secretion and retain it in the organism.

After a consultation with Dr. Torek we both thought it advisable to subject the patient to another operation, in order to close the gallbladder fistula and to make a cholecystenterostomy. When the abdomen was again opened, a renewed examination of all the organs was made and no tumor found. The pancreas was somewhat harder than normal, but no longer enlarged. A few days later the patient died of inanition.

The diagnosis based on the necropsy in vivo during the operation was chronic pancreatitis without a tumor. This showed that even severe pancreatitis may occasionally show the presence of all three ferments.

CASE 8.—Mrs. R. W., aged 54, had been complaining for eighteen months of cramps occurring usually from one-half to one hour after meals in the lower part of the abdomen, and occasionally of diarrhea. Sometimes the symptoms abated and patient felt better for a few weeks; but then the attacks would recur. She had considerable pain in the rectum on defecation and otherwise. Six months ago she was operated on for gallbladder trouble without result.

Nov. 2, 1914, the Wassermann reaction was negative. The physical examination of the chest and abdomen revealed nothing abnormal. The bead test showed fishbone present, catgut trace, half fat, one-third potato, and half thymus present; nuclei disappeared.

Duodenal contents: amylopsin + 6 mm.; steapsin absent; trypsin absent.

Stomach contents were examined, Nov. 5, 1914. Hydrochloric acid was absent, blood absent, nothing microscopically. Stools were clay colored, no blood. The thread test showed no blood on the thread. Bile stain from 49 to 112 cm.

The diagnosis of achylia gastrica and chronic pancreatitis was made. The bead test showed a lack of gastric and intestinal digestion (presence of fishbone, catgut, fat and potato), and the duodenal contents revealed a lack of steapsin and trypsin.

As representatives of Group 3, diabetes mellitus, dyspepsia and weakness, I should like to cite the following cases:

CASE 9.—L. K., man, aged 60, cigar maker, Dec. 10, 1914, complained mainly of weakness and headache. Ten years ago he began to suffer from diabetes. During this time he was treated off and on in various hospitals. Recently he grew somewhat negligent in his diet and consequently began to suffer. Although his appetite was very good, he had lost in weight, and became so weak that he could scarcely stand.

He urinated a great deal. He had frequent frontal headaches, some dimness of vision and constipation. He complained of insomnia, cough, without hemoptysis, chilliness, and a sensation of fever. He had never had any severe illness, and denied syphilis and gonorrhea. Ten years ago he was operated on for a septic infection of his little finger. Off and on he drank some wine, took two or three cups of coffee or tea and smoked two cigars daily. The appetite was good, stool regular. Two brothers and two sisters died of diabetes.

The patient was a well-nourished man. The mouth and tongue were clean. In the upper jaw he had no teeth, in the lower jaw only a few in poor condition. He had a slight pharyngitis. Nothing in the lungs. The cardiac dulness extended 2 cm. to the right and 10 cm. to the left of the midsternal line. Sounds were pure. Pulse was regular and full. The abdomen showed nothing abnormal. The knee reflexes were present but diminished. Pupillary reflexes were also present. The urine showed some albumin and from 1/6 to 0.5 per cent. of sugar; no casts.

Stomach analysis: Hydrochloric acid, 62; total acidity, 83; no blood, microscopically negative.

December 11, Wassermann and luetin reactions were negative.

December 16, the duodenal contents were greenish-yellow; somewhat turbid; alkalinity, 10; amylopsin, + 2 mm.; steapsin, + 15 mm.; trypsin, 0.

Weight on admission, 134¾ pounds; weight December 21, 132 pounds.

Dec. 24, 1914, Dr. Torek amputated the right small toe in the middle of the metatarsal bone, as it was necrosed. No temperature. Secretion of urine about 1,500 c.c. daily.

Jan. 29, 1915, the duodenal contents were dark yellow-green; somewhat turbid; alkalinity, 25; amylopsin + 2 mm.; steapsin, + 3 mm.; trypsin, + 10 mm.; rennet, absent.

The diagnosis of chronic pancreatitis was here based on the absence at times of either trypsin or rennet in the pancreatic secretion, with a coexisting diabetes.

CASE 10.—W. W. B., man, aged 55, had been well all his life with the exception of an attack of malaria at the age of 22. The present trouble began about two and one-half years ago, when he first noticed a loss of weight and pains in the legs. He lost about 20 pounds in three or four months. A physician, whom he consulted, told him he had diabetes. He was treated and felt well, although he did not gain in weight. After having traveled a short time he came to New York weighing 134 pounds; he had again lost 18 pounds during the last five months and was much weaker. Two weeks before his arrival in New York he had an attack of gastritis with pains in his stomach lasting for one day.

Dec. 18, 1914, the thoracic organs were normal with the exception of some fine râles under the right and left shoulder blades. The stomach was much dilated, reaching nearly to the symphysis; the liver was much swollen, palpable below the costal margin, but not hardened. The skin had a slight icteric tinge.

The daily average quantity of urine was 2,600 c.c.; the amount of sugar, smallest quantity 2.5 per cent., the largest quantity 6.2 per cent., average 4.2 per cent. Acetone was at first present, but not later.



Fig. 2.—Stomach in Case 5, showing no neoplasm.

December 23, examination of the stomach contents revealed: hydrochloric acid present; total acidity, 80; blood reaction (guaiac), slightly positive.

December 28, examination of stomach contents revealed: hydrochloric acid, 44; total acidity, 76; no blood reaction.

Feces: No parasites; on admission traces of blood, later negative.

Examination of blood revealed: hemoglobin, 68 per cent.; red blood cells, 4,230,000; white blood cells, 10,600.

From December 21 to 24 the patient had some fever, the temperature ranging from 99.5 to 101.4 F. Thereafter the temperature was always normal.

The bead test of December 31 showed appearance of beads in stool after forty-two hours; everything had disappeared excepting fat.

The duodenal contents, examined in the fasting condition, December 28, showed the presence of yellowish, somewhat turbid bile of an alkaline reaction, and revealed amylopsin + 5 mm.; trypsin + 1 mm.; steapsin, absent.

The duodenal contents were again examined on the same day, about one hour after the ingestion of bouillon into the stomach, with the following result: amylopsin, + 2 mm.; trypsin, + 1 mm.; steapsin, + 2 mm.

Jan. 13, 1915, the duodenal contents were examined about three hours after the ingestion of koumiss into the stomach. The secretion obtained looked yellowish-green, somewhat turbid, of faintly acid reaction, and showed the absence of the three pancreatic ferments.

On alkalies, pancreon and a liberal diet, the patient improved considerably. Before leaving the hospital, Jan. 19, 1915, he had gained 10 pounds in weight, in the last five weeks, and felt much stronger. The amount of sugar, however, remained the same, but there was no acetone present. The liver has also been reduced in size, so that it approached more the normal condition, while the skin had entirely cleared up.

The diagnosis of chronic pancreatitis was made on account of the severe diabetes and a faulty pancreatic secretion; once steapsin alone was lacking, and another time all the three pancreatic ferments.

EPICRISIS—SYMPTOMATOLOGY AND DIAGNOSIS

If we at first look at the cases in Group 1, we find the following symptoms prominent:

1. Severe profuse diarrhea, attended with the passage of large quantities of feces; plenty of undigested food particles are found in them, which are easily recognized macroscopically.

2. General weakness.

3. The digestive test capsule shows a great many of the test substances undigested.

4. Examination of the duodenal contents reveals either an entire absence or a very faulty pancreatic secretion, as, for instance, frequently one or two of the ferments, and at times even all of the three ferments, may be entirely absent.

In Groups 2 and 3 we find similar conditions, with the exception of the diarrheas, in place of which we find constipation. In Group 3 we find another important additional symptom; the presence of sugar in the urine.

As, according to Opie, in the majority (87 per cent.) of cases of diabetes we find an affection of the islands of Langerhans in the pancreas, we can generally make the diagnosis of chronic pancreatitis in such cases without much difficulty. For it is clear that disease of these islands will lead to secondary involvement of the surrounding tissues of the pancreas. If, therefore, we find a diabetes with great weakness, loss of weight and dyspeptic symptoms, we must think of disease of the pancreas. If, in addition, examination of duodenal contents shows deficient pancreatic activity, the diagnosis of chronic pancreatitis is almost certain.

A transient icterus with slight engorgement of the liver was found in two cases (Cases 5 and 10), and may be explained on the hypothesis that occasionally the head of the pancreas becomes somewhat more acutely inflamed, with associated edema of the gland and subsequent pressure on neighboring organs. Thus, the ductus communis may be partially compressed, leading to mild jaundice. When the inflammation of the pancreas subsides, the icterus disappears and the liver returns to its normal size.

PROGNOSIS

The prognosis of chronic pancreatitis must always be considered grave, although some cases may be distinctly improved.

Those cases in which the chronic pancreatitis is the result of the presence of gallstones, when these have been removed and the gallbladder drained, present the most favorable outlook. In general the prognosis will depend on the extent of the pathologic process. The more the gland is destroyed, the worse the prognosis.

Clinically the prognosis may be based on the quantity of food that is still being assimilated. If the assimilation is poor, the prognosis is bad, and vice versa.

TREATMENT

There are two points to govern us in the treatment of such cases: first we must try to remove, if possible, any etiologic factor causing the disease, and, secondly, we must try to obtain a better assimilation of the food. Etiologically, alcohol and tobacco play a great rôle in producing chronic pancreatitis, and we must therefore forbid these or at least greatly diminish their consumption. Gallstones must be removed surgically and a possible cholecystitis treated by drainage, in order to relieve the pancreas.

A thorough study of the processes of digestion and a correction of any deficiencies present will lead to an improvement in the assimilation of food. We often find that achylia gastrica or subacidity, more rarely hyperchlorhydria, are associated with pancreatitis. Here we have to adapt the diet and medicinal treatment to the conditions present. The impaired pancreatic function will best be helped by giving preparations, made from this important gland (pancreatin or pancreon). In fact, these extracts here often work very favorably.

As to diet, we have to make use of entirely liquid substances in those cases in which the assimilation is very poor (lientery), in order thus to facilitate absorption. Rest, good fresh air, general massage and encouragement are of importance, and will materially contribute to the comfort of the patient.

20 East Sixty-Third Street.

FRONTAL SINUS SUPPURATION WITH RESULTS OF NEW OPERATIVE PROCEDURE *

HOWARD A. LOTHROP, A.M., M.D.
Visiting Surgeon, Boston City Hospital; Assistant Professor of Surgery in the Harvard Medical School
BOSTON

Chronic frontal sinusitis is a common condition and many cases are obstinate and difficult to cure. Many of the external operations are disfiguring and often unsuccessful. Intranasal methods are of value in the preliminary treatment in all cases and frequently result in a cure in the early and less obstinate types. The attempt to remove thoroughly the nasal floor of the sinuses by intranasal operating is unwise; first, because it cannot be done without actually inspecting the region, and, second, because the risks are too great. The following cases illustrate a type of operation to be used in all instances in which preliminary intranasal treatment fails to cure, in all cases of fistulas, and in all cases in which an external operation is demanded. All steps of the operation are open to inspection, a minimum scar results, and a maximum opening into the nose persists.



Fig. 1.—Anterior view frontal region; projected outline of opening into sinus through which all extranasal operating is performed on both sinuses: *n*, nasal bone; *np*, nasal process; *s*, septum; *l*, lacrimal bone.

Frontal sinusitis is caused and kept up by infection and obstruction; but, if very free drainage is established and the sinus is made easily accessible to intranasal treatment, all fistulas will close, all subjective symptoms will disappear, and the discharge from the sinus will cease or will be reduced to a minimum.

The important anatomic relations and the technic of operation have been published in the *Annals of Surgery,* June, 1914; hence I shall only briefly enumerate the steps in technic which are our final conclusions, based on the results of all the operations. The cases are reported in order of operation; the few earlier ones were mine, the others were patients of Dr. Oliver A. Lothrop and we have worked or consulted together on all of them.

---

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

REPORT OF CASES

CASE 1.—A man, aged 55, was sent to me by Dr. George Sanborn, Dec. 21, 1910, after vaccines had failed to give relief for double chronic frontal sinusitis. He had always been a farmer and, although otherwise in excellent physical condition, was obliged to give up an extensive farming business because of disability. As will be seen by the history, his case had resisted all treatment and I found it a most obstinate

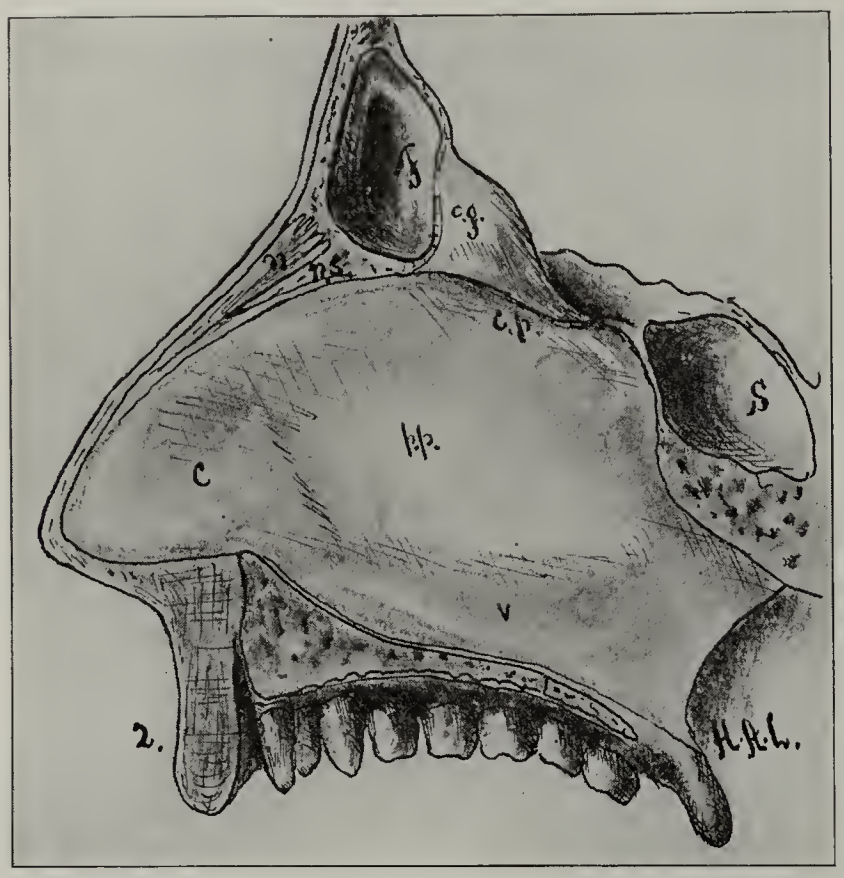


Fig. 2.—Nasal septum, also the dense bone below frontal sinus (*F*) in the median line; *n*, nasal bone; *ns*, nasal spine of frontal bone; *cg*, crista galli.; *cp*, cribriform plate; *S*, Sphenoidal sinus; *pp*, perpendicular plate; *c*, triangular cartilage; *v*, vomer.

one. It was during the effort to relieve this condition that the technic used in all subsequent cases was devised. Hence, this case will be considered in greater detail.

In August, 1906, he consulted a specialist because of dizziness, headache, and nasal discharge of some months' duration and underwent some intranasal operation on either side. This afforded no relief. In June, 1907, another specialist continued intranasal treatment. In July, the left antrum was opened into the nose and an external operation done on the left frontal sinus, and in August the same frontal sinus was operated on. Shortly afterward the right frontal sinus was opened by the external route. From September, 1907, until December, 1910, when first seen by me, an external fistula persisted on either side, from which escaped continuously much thick, purulent exudate. Meanwhile, he underwent many minor intranasal attempts to establish nasal drainage and several external efforts were made to cure his frontal sinusitis. During this period he continued to suffer from headache, much dizziness and profuse discharge.

On Jan. 5, 1911, I performed my first operation. An incision was made in the old scar in either eyebrow and it was found that considerable of the anterior facial walls had been removed, extending well down to the nasal process on either side. The sinuses were large and filled with pus and granulations, and the openings into the nose were much obstructed with cicatricial tissue and granulations. No bone was removed from the facial wall, but the openings into the nose were enlarged as much as possible with curets, the sinuses were curetted, and a small rubber dam drain was left in either incision for twenty-four hours. One week later both wounds healed but remained so only about a week when he relapsed into his former condition.

The prognosis appeared rather dubious. It was evident, according to the principles of drainage and the healing of suppurating cavities, that failure was due to inefficient drainage. Careful study of specimens showed that much larger openings from the sinuses could be obtained by removing the dense mass of bone directly behind the base of the nose, made up in part by the frontal and nasal and the nasal process of the superior maxillary bones. It was observed that this region was inaccessible through the opening in the sinus if the ordinary bone instruments were used, and was too dense to be removed by curets. It was found experimentally that this could be removed by burr drills of different sizes with more or less curved shanks, just as a dentist reams out the cavity of a tooth. When both sinuses were involved, it was found practicable to remove the interfrontal septum and its continuation downward on to the perpendicular plate of the ethmoid. In other words, the whole nasal floor of both sinuses could be taken away. The extra size of this opening, compared with what is usually taken away, was surprising. It was demonstrated later, in cases in which only one sinus was involved, that the combined floor of both sinuses should be removed, and this is accomplished through the single external opening on the affected side.

On Feb. 8, 1911, the new technic was carried out and both external wounds closed. He made a good recovery from the operation and was relieved of most of his pain and dizziness, and the exudate passed into the nose. As time went on the cicatricial tissue within caused the scar tissue of the incision to be drawn in because so much frontal and other bone had been removed in the earlier operations, and this tended to narrow the region of the new opening into the nose. On April 30 there appeared a fistula in the right sinus which closed again in forty-eight hours after the granulations were curetted intranasally. The sinuses were very accessible by this route as so much bone had been burred out. On June 13 the right sinus opened again externally and four days later



Fig. 3.—Nasal septum seen in Figure 2 after removal of floor of both sinuses, looking into the right sinus. The median projection of the crista galli and cribriform plate region is shown, also the portion removed by burrs from the perpendicular plate of the ethmoid, thus allowing easy access to both sinuses through either nostril.

the left sinus broke out, having remained closed since the operation of February 8. By means of intranasal treatment during July the fistulas remained closed most of the time, but the depressions over the sinuses increased and tended to narrow the exit into the nose so that the exudate had less chance to escape. This would not have occurred if there had not been a previous extensive destruction of the anterior

sinus wall toward the base of the nose, as is made in the Killian operation. In order to meet this complication a technic was devised and carried out on September 14 to epidermize the sinuses at this point by inverting a flap of skin from the upper lids (*Annals of Surgery*, June, 1914). This is the first attempt that I know of to epidermize the sinuses, and the desired object was attained. The incisions were closed and have never since reopened. Inspection of

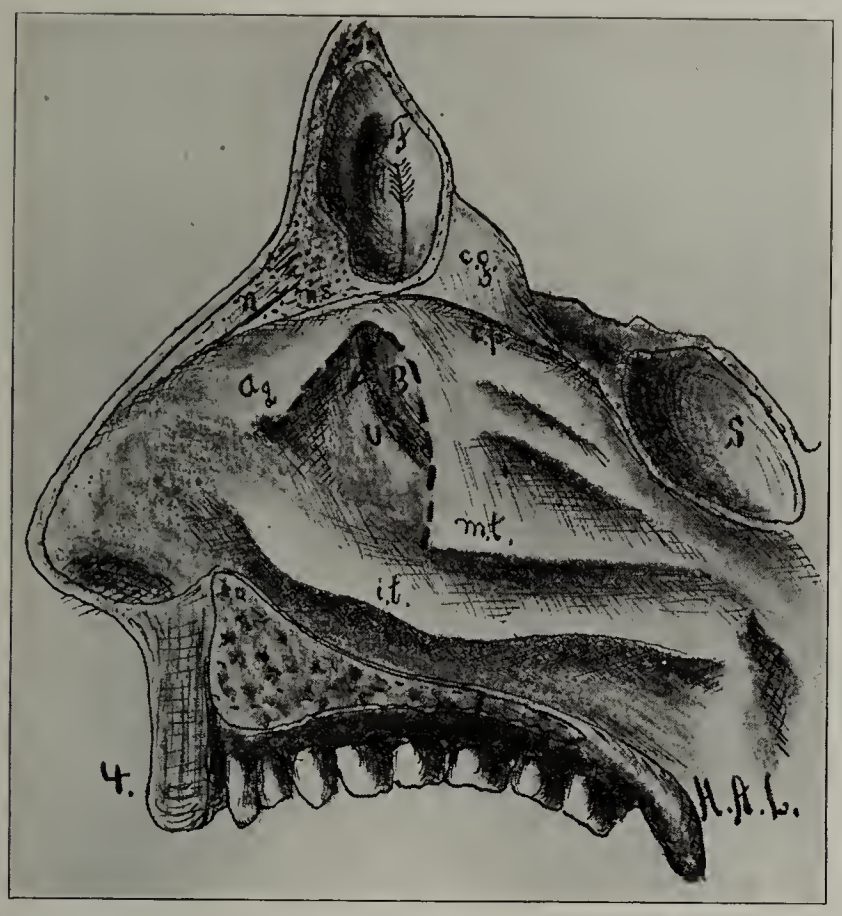


Fig. 4.—Outer wall of right nasal fossa. Arrow passes from sinus to infundibulum, between ethmoid bulla (*B*) and unciform process (*u*). Portion of middle turbinate removed: *ag*, agger nasi cell at front end of middle turbinate.

the sinuses at this time showed that the distal angles and borders had been more or less obliterated by dense scar tissue and this was left undisturbed. Intranasal irrigation of the sinuses was kept up for some time by the patient. His subjective symptoms gradually wore away and the exudate was only enough to form a few crusts. On June 24, 1912, he had no complaints and there was no nasal discharge. Over the right sinus there was no depression and it was only moderate over the left sinus and not enough to obstruct. This third operation was made necessary because bone had been removed at the point where support is needed to prevent sinking in of the soft parts which would thereby cause blocking of the sinus and would keep up or tend to result in fistulas.

CASE 2.—A man, aged 31, had suffered from double frontal sinusitis for about five years. About four years ago both sinuses had been operated on by the combined intranasal and external route. Six weeks ago a double, modified Ogston-Luc operation was performed. Neither wound healed and the usual symptoms persisted. When seen by me there were extensive scars and a moderate depression over each sinus and a profusely discharging fistula existed on either side. The anterior ends of both middle turbinates had been removed and there was pus in the middle meatus. It was evident that all the signs and symptoms were due to the fact that there was inadequate sinus drainage.

Both frontal sinus scars were reopened and the sinuses found full of pus and granulations. The openings into the nose were nearly occluded by granulations. The interfrontal septum was removed and also all the dense bone below it, as described in the technic for complete removal of the floor of the sinuses. The external wounds were closed. His convalescence was rapid. The wounds remained closed and the original edema as well as the headache and frontal tenderness gradually subsided. He left the hospital in ten days and has not been heard from since. The nasal discharge had very materially lessened.

CASE 3.—A woman, aged 54, states that there has been a left nasal discharge for several years and some headache and local tenderness. On March 30, 1914, she was suffering from acute frontal sinusitis. There was edema of the left frontal region and upper eyelid and there was hemorrhagic exudate in the left middle meatus. She was suffering severe pain. The anterior end of the middle turbinate was removed. Relief of symptoms followed and the swelling disappeared, but some discharge continued.

May 26: Edema has recurred at times attended with some pain and exacerbation of discharge. A curved incision was made in the left eyebrow and the supra-orbital nerve divided, for at this time we had not limited ourselves to the short incision, so as to avoid this nerve. The periosteum and superimposed soft tissues showed evidence of chronic inflammation and the frontal bone was soft. The sinus was full of pus and granulations. The interfrontal septum was already perforated and the probe passed deeply into the right sinus; this was found to be full of pus and granulations, and its ostium must have been closed because no discharge had reached the middle meatus. Through this single opening into the left sinus the floor of both sinuses was removed without much difficulty. This is the first case in which an attempt was made to operate on both sinuses from one side. This was done in all subsequent cases and no material difficulty was encountered. The wound remained closed and the patient's convalescence was rapid. On July 18 the nose was free from pus; there was no complaint except of paresthesia along the supra-orbital distribution.



Fig. 5.—Outer wall of nasal fossa seen in Figure 4 after removal of dense bone forming floor of right sinus leaving a thin anterior wall; *u*, unciform process broken off in vicinity of ethmoid cells opposite the lacrimal bone.

Jan. 5, 1915: There are no frontal symptoms, no exudate; frontal numbness is decreasing.

March 22: There are no complaints; the nose is perfectly clean; a small adhesion exists between the septum and the lateral wall of the nose high up but not obstructing the sinus outlet.

CASE 4.—A man, aged 32, has had attacks of right frontal sinusitis for three years accompanied by frontal edema and

a perforation (fistula); has been subject to epileptic attacks for some years. On Aug. 18, 1913, an Ogston-Luc operation had been performed and part of the middle turbinate removed and anterior ethmoid cells broken down. This failed to relieve the symptoms and the external fistula persisted as before.

March 21, 1914: An incision was made in the old scar, passing through the fistulous opening; the sinus was large and filled with granulations; the floor of both sinuses was removed. There was a slight catarrhal inflammation of the left sinus; the wound was closed.

March 22: A cocoon dressing was made.

March 26: The wound having healed, dressing was omitted; condition excellent.

March 28: An attack of facial erysipelas occurred accompanied by an attack of epilepsy. This caused us apprehension because his epileptic history was then unknown to us. His convalescence was uninterrupted and the wound remained closed without recurrence of nasal discharge.

April 20, 1915: There has been no recurrence of the frontal symptoms or of the epilepsy.

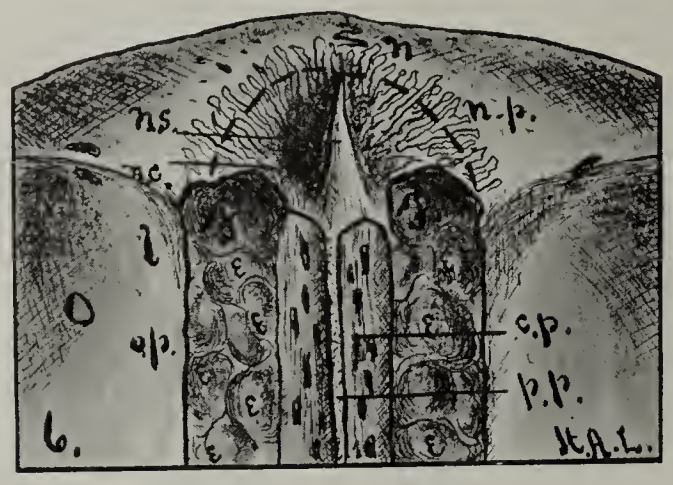


Fig. 6.—Looking up at the lower surface of the frontal bone disarticulated at the level of the naso-frontal suture; upper portion of ethmoid bone in situ; *n* and *np*, broad serrated area for articulation with thickened ends of nasal bones and nasal processes of superior maxillae; *ns*, nasal spine; *nc*, nasal crest; *F*, hiatus frontalis; *l*, articulation for lachrymal bone; *op*, os planum; *pp*, perpendicular plate; *cp*, cribriform plate external to which is a line representing the upward prolongation of the middle turbinate, still more externally are the ethmoid cells, *e*; *O*, roof of orbit. Dotted line shows area forming floor of both sinuses to be removed.

Case 5.—A man, aged 19, had a right nasal discharge for several years with much odor; the patient was neurasthenic. Transillumination showed the right antrum very dark. This was opened and cleaned on May 25, 1914, under the lower turbinate. The anterior end of the middle turbinate was removed and the ethmoid cells curetted. Right frontal sinusitis was suspected.

June 20: The right frontal sinus was opened and found full of pus and granulations. There was a small interfrontal perforation and the left sinus was found to be affected equally and was draining into the right side. The floor of both sinuses was removed, the ethmoid cells broken up, and nasal polypoid tissue removed; the wound was closed. There was a very moderate edema of the right upper eyelid.

July 31: The nose is nearly clean.

September 11: No supra-orbital numbness is present; there are no complaints.

Jan. 30, 1915: No nasal discharge is present; the scar is barely perceptible; complete physical and mental relief has been given.

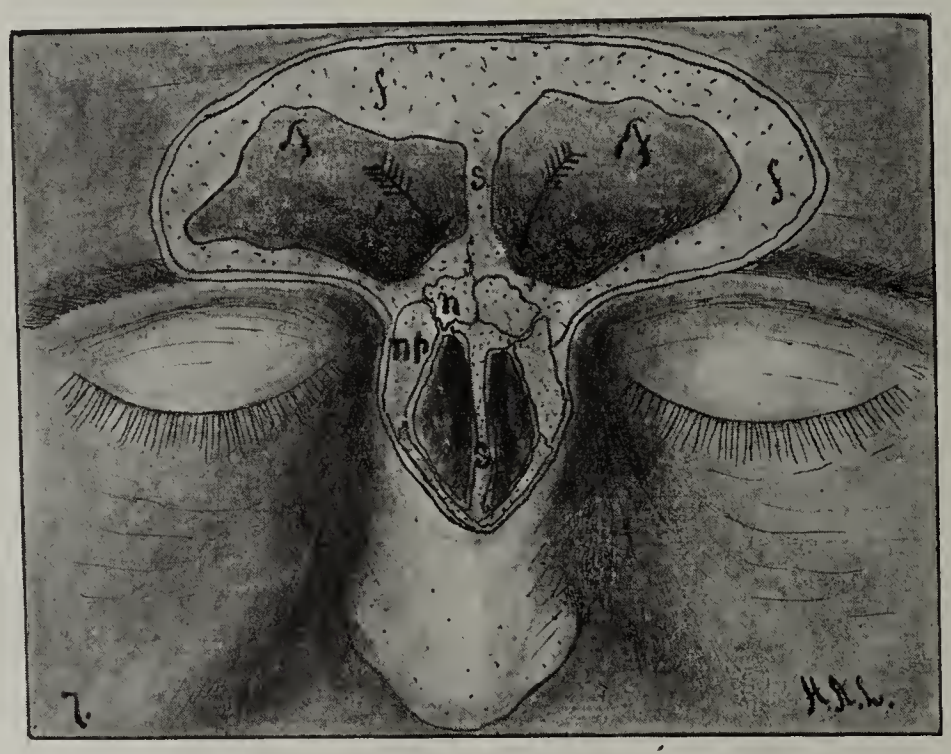


Fig. 7.—Front wall of both sinuses and of upper nasal fossae removed showing dense mass of bone behind the base of nose forming median portion of floor of sinuses: *n*, end of nasal bone; *np*, nasal process; *s*, septum of frontal sinus and of nose. Arrows pass through ostia to nose.

Case 6.—A man, aged 29, presented himself on May 1, 1914, suffering from an attack of acute right frontal sinusitis arising two weeks after an acute rhinitis. He was not relieved by local applications and on May 5 complete relief of pain followed the removal of the anterior end of the right middle turbinate. On June 4, in the left sinus, acute symptoms began, which were only partially relieved by applications and the removal of the left middle turbinate. The ethmoid cells were somewhat involved. Roentgenograms showed very large sinuses with deep orbital prolongations. On July 15 an opening was made in the left sinus through which both sinuses were explored and found filled with pus and polyps. The sinuses were cleared of polyps and the floor was removed, leaving a very large opening into the nose. The wound was closed and the patient left the hospital in three days.

August 3: The patient feels well; there is no discharge.

August 18: Some pain existed over the left sinus and with the removal of a large crust some pus followed; the patient feels well; there is some nasal discharge.

September 28: The left antrum is dark on transillumination. The Roentgen ray shows pus cavities at the tips of the two upper left molar teeth. The openings into the frontal sinuses are large and free. The teeth were extracted and the root cavities found to communicate with the left antrum.

November 22: The nasal condition is much improved; there is still some discharge but no frontal sinus complaints.

December 26: Under ether the intranasal examination of sinuses showed that the openings were still very large and that the sinuses were free of pus and polyps. The left anteronasal wall was removed.

January 1: The patient still has considerable bilateral nasal discharge.

March 1: There is much less nasal discharge. He has had a severe attack of acute follicular tonsillitis. This case has been obstinate.

Case 7.—A man, aged 27, has had left frontal sinusitis for four years, accompanied by frontal tenderness, headache, and left nasal discharge. Two years ago both middle turbinates were removed without much relief. The left sinus was dark on transillumination, which was confirmed by the Roentgen ray.

July 25, 1914: A short incision was made over the left sinus internal to the supra-orbital notch, a procedure followed out in all subsequent cases. The sinus was full of thick pus and polyps. No apparent inflammation existed in the right sinus. The floor was removed and the wound closed. A cocoon dressing was made on the second day; there was no supra-orbital numbness; immediate relief of all symptoms was given; the convalescence was uninterrupted.

October 9: The patient has gained 15 pounds over his usual weight and is perfectly relieved.

Case 8.—A man in whom the Wassermann test was positive, and who had left frontal sinusitis and ethmoiditis.

On Dec. 10, 1914, the left sinus was opened, found full of pus and granulations and curetted. The floor of both

sinuses was removed. The wound was closed, after the ethmoid cells on both sides had been curetted, and healed by first intention. The left antronasal wall was found gone and small sequestra of necrotic bone were observed, probably the result of syphilis. The wound remained closed. For a time there was considerable bilateral nasal discharge which gradually disappeared, leaving a little crusting.

Jan. 27, 1915: No subjective symptoms remained; there was still a little crusting in the nose, but no frontal sinus symptoms. Specific treatment was continued.

CASE 9.—A woman, in whom a fistula had persisted ever since an operation on the left frontal sinus about six months before. The Roentgen ray showed both sinuses involved. Examination showed a fistula at either end of the incision on the left and the right upper eyelid was much swollen and presented a discharging sinus from the soft tissues. There was much nasal discharge.

Dec. 11, 1914: The left sinus was opened through the left scar and was found full of pus and granulations and the right side was similarly involved. The floor was removed and the sinuses curetted. The incision was closed and remained so; the frontal edema gradually subsided.

December 28: No pain or headache exists; there is a very slight nasal discharge.

January 6: Both antrums were dark on transillumination and they were opened into the nose.

March 26, 1915: There is still some pus in the antrums; the frontal sinuses are free.

This case again illustrates how all fistulas close at once if adequate and permanent nasal drainage is established, and also that frontal pain and tenderness disappear spontaneously.

CASE 10.—A man, aged 30, had acute right frontal sinusitis for one week, with pain and edema over the sinus and pus in the middle meatus. The right middle turbinate was excised on Nov. 28, 1913, which was followed by relief of all symptoms. On December 12 there was very little discharge and no pain. March 29, 1914, both tonsils were enucleated following an attack of acute tonsillitis.

Jan. 20, 1915: Right frontal pain has existed for three days; there has been a discharge from the right nostril for two months. The Roentgen ray and transillumination show shading in the right sinus and antrum. Some pus was washed from the antrum.

January 30: The right sinus was operated on and was found to be empty; pus and granulations were found in a large cell occupying the front half of the crista galli which discharged into the nose. The left sinus was normal. The floor of both sinuses was removed. The wound healed at once; there was no supra-orbital numbness.

February 13: The antrum wash is nearly clear; there is no pus in either side; a slight crusting appears in the right middle meatus. March 8, following an acute rhinitis, considerable pus was washed from the right antrum; no sinus symptoms appeared.

March 18: The nose is clear.

CASE 11.—A man, aged 30, has had headaches and tenderness over the right frontal sinus for many years. A few weeks ago he was struck on the right eyebrow, receiving a wound. There has been swelling ever since. In December, 1914, he had been operated on and both sinuses opened externally and into the nose. At that time an opening was found in the anterior wall of each sinus. A horizontal incision was made across the center of the forehead. A fistula persisted in the center of the forehead leading to the left sinus and there was a second opening in the right eyebrow connecting with the right sinus. Two weeks later the middle turbinates were removed and the ethmoid cells broken down but without relief.

On Feb. 7, 1915, we found these fistulas discharging much pus and the frontal region much swollen. There was also much nasal discharge. A short incision was made in the right eyebrow and the right sinus was opened and through this opening both sinuses were exposed and curetted and the floor removed. This incision was closed and the sinuses in the old incision and eyelid were curetted. There was no further discharge from the fistula in the forehead and that in the eyebrow closed in five days. The incision healed at once. On February 15 the frontal swelling was about gone. On February 20 an abscess which developed in the septum was incised and healed rapidly. February 22 some carious bone was removed from the ethmoid cells. February 25 both antrums were opened and drained. No frontal sinus symptoms were present and all wounds had healed.

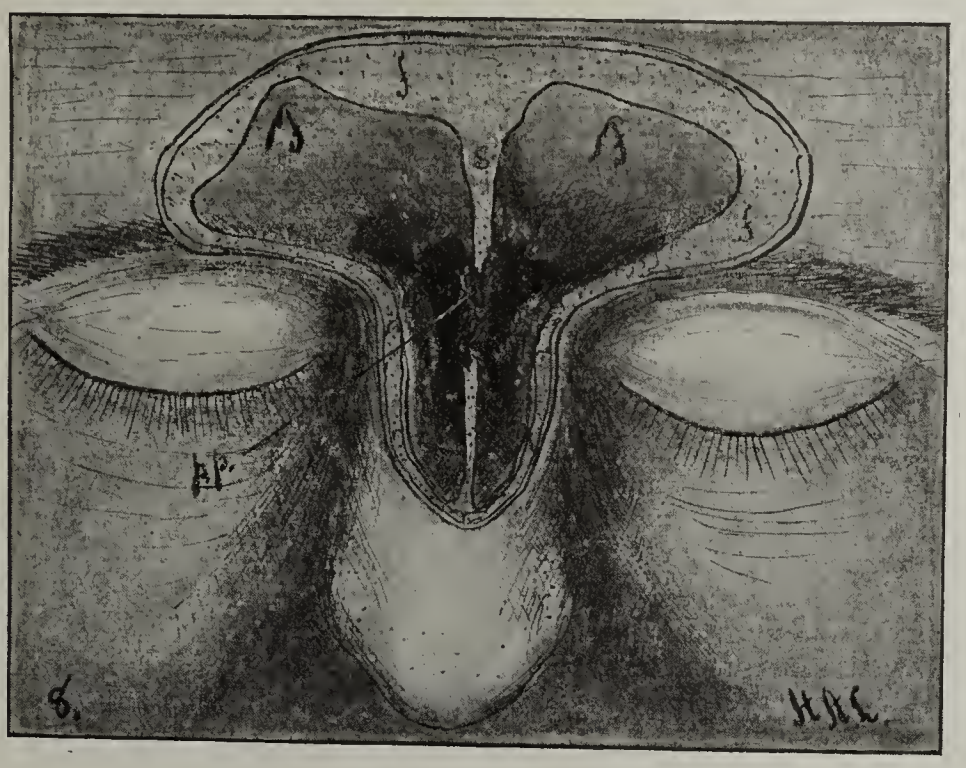


Fig. 8.—Same region as shown in Figure 7 after removal with burr drills and rasps, looking into the nasal fossae; *pp*, perpendicular plate deeply notched. A probe entering either nares would pass readily into either sinus.

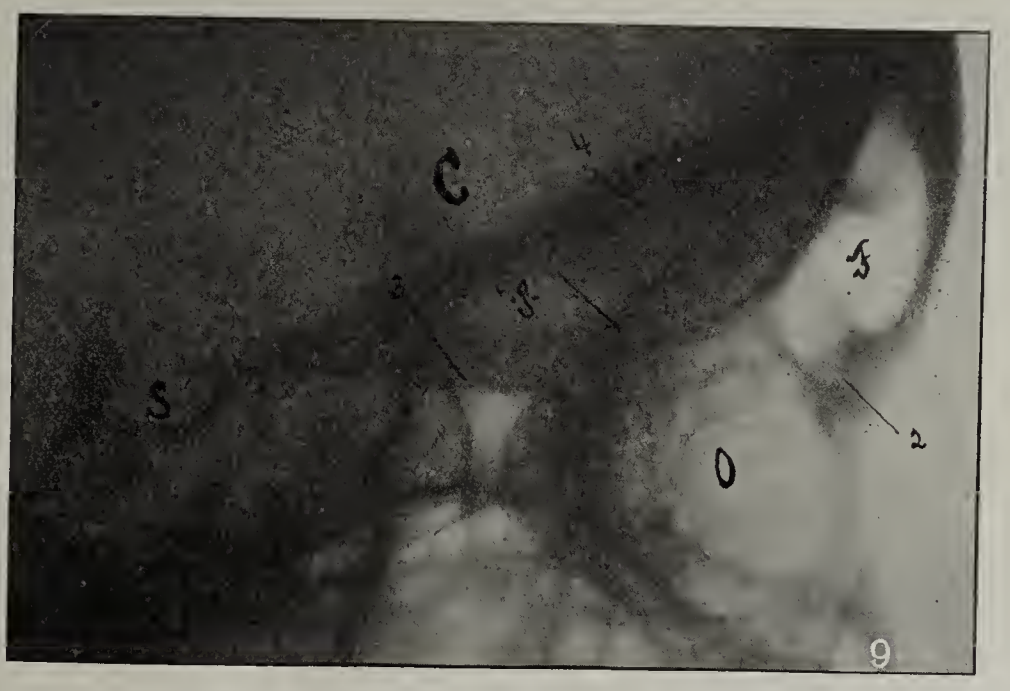


Fig. 9.—Lateral roentgenogram showing dense bone (*2*) at the base of a large frontal sinus, and the relative distance from the base of the nose to the crista galli (*cg*); 3, cribriform plate; O, orbit; *S*, sella turcica.

This case was unusually severe and complicated and was a good test of this method of dealing with obstinate fistulas and extensive suppuration.

Case 12.—A man, aged 45, has had symptoms of right frontal sinusitis for twenty-five years with attacks of pain lasting two or more weeks. The anterior portion of the right middle turbinate had been removed. During and following the attacks of pain, he complained of a discharge of pus from the right nostril.

On Feb. 5, 1915, the right sinus was operated on through a 1-inch incision in the brow, internal to the supra-orbital foramen. No supra-orbital anesthesia followed but there was a small numb area, from severing the supratrochlear fibers, which was of short duration. Through a small opening in the bone the sinus was explored and the mucous membrane found edematous and some pus was present. The interfrontal septum and the floor of the sinuses were then removed and the incision closed in the customary way.

March 7: There is no lid edema; a cocoon dressing was made.

March 20: No signs of any trouble exist; the patient feels perfectly well; there are some synechiae on right side which do not obstruct, but there is no discharge or crusts.

Case 13.—A woman, aged 25, has had double frontal tenderness and severe headache for eight weeks. Four weeks ago her left middle turbinate was excised, the ethmoids were punctured and the left frontal sinus opening enlarged internally by means of rasps. This was followed by slight relief. Two weeks ago the same operator repeated this procedure on the right side and punctured the right antrum. The operation was followed by ecchymosis and emphysema under the right eye and really gave no relief. Nine days ago an acute right otitis media developed.

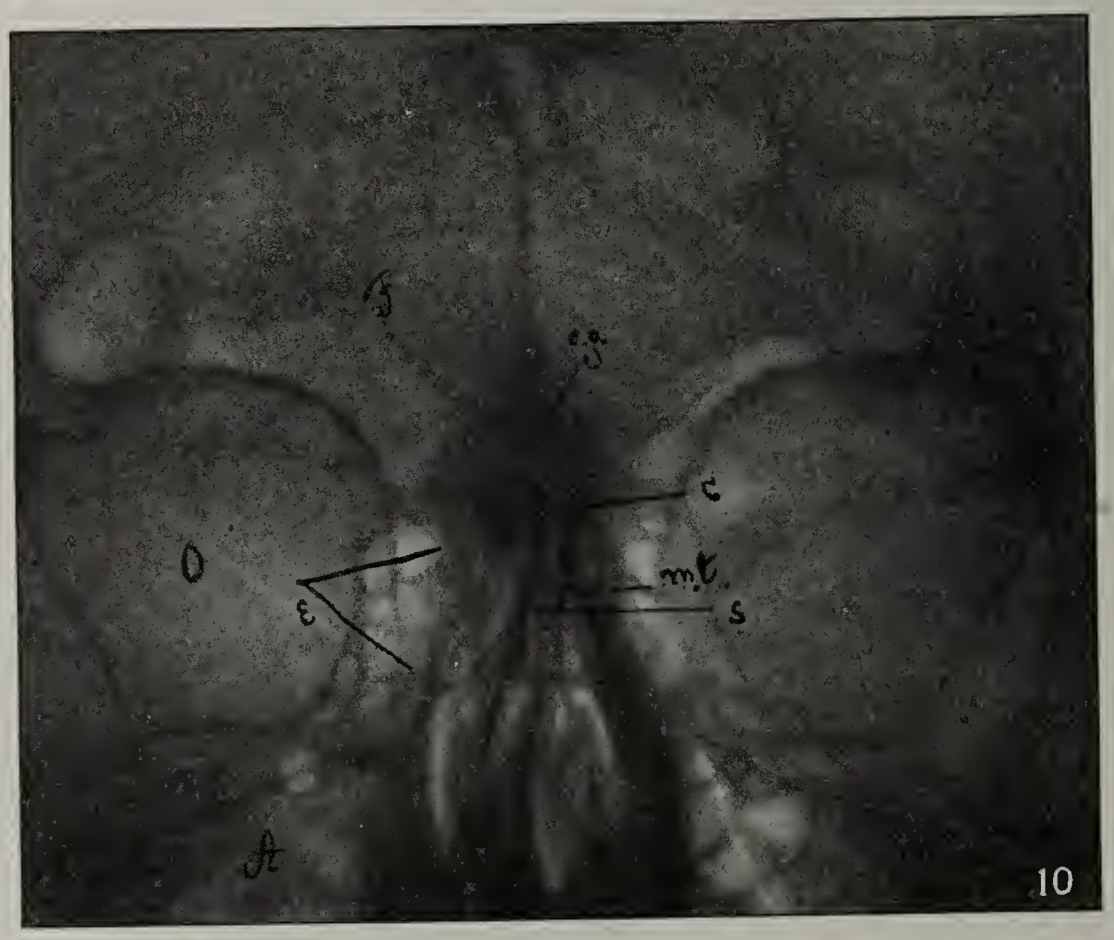


Fig. 10.—Anteroposterior roentgenogram showing the height and lateral extent of the sinuses: *O*, orbits between the inner boundaries of which is the nasal floor of the sinuses, all of which is to be removed; *cg*, crista galli; *C*, level of cribriform plate; *s*, nasal septum; *mt*, middle turbinate; *E*, ethmoid cells; *A*, antrum.

March 8, 1915, we operated in the usual manner on her frontal sinuses through a short incision in the left eyebrow. In the left sinus was pus under much tension and granulations. There was already a large perforation in the interfrontal septum. The right sinus also was filled with granulations. The sinuses were curetted, the floor removed, and the wound closed. Local inflammation gradually subsided and the wound remained closed; some supratrochlear numbness ensued. March 12, she had a small abscess of the septum which resolved quickly.

March 13: Most external signs are gone.

March 19: The patient was operated on for acute mastoiditis which had complicated her otitis; the mastoid was found full of pus, granulations and carious bone.

March 26: The frontal region is well.

March 29: Pus was washed from the right antrum.

April 2: A radical operation was done on the right antrum.

April 17: There is still some discharge from the right antrum; all the other lesions are well.

Case 14.—A woman, aged 30, for one month has had headaches which for eight days have been severe over the right sinus. No pus appears in the nose; no relief follows intranasal applications. She was advised by those in charge to have an exploration of the sinus; this was done and was followed by immediate relief. The sinus was found much congested and a small drain of rubber tissue was left in for three days. Meanwhile, a paracentesis was done in the right ear. March 25 there were edema and acute inflammation around the operation wound. This was incised and pus escaped, coming from the sinus.

On March 26 she came under the care of Dr. O. A. Lothrop and the usual sinus operation was performed. The sinus was found full of pus and granulations. The left sinus also was similarly involved. The wound was closed.

March 27: A cocoon dressing was applied; the wound broke down at one point and discharged pus for five days. April 29 she returned from a vacation. The nose was clean, the ear also well. There was some supra-orbital numbness because the nerve was cut at the first operation. The external scar was slightly depressed.

Case 15.—A man, aged 38, had left frontal sinusitis for three years, characterized by tenderness, discharge and headache. There were some polyps and a left ethmoiditis. The Roentgen ray shows the presence of large sinuses, the left shaded. The left middle turbinate had been removed three years ago.

On April 10, 1915, a 1-inch incision was made in the left brow, internal to the supra-orbital foramen. The sinus was full of pus and polyps; the cavity was very large. The mucous membrane of the right sinus was edematous. The nasal floor was removed and the incision closed. The ethmoid cells of the left side were curetted out and much polyp material removed. Only supratrochlear numbness resulted. The wound remained closed; there was no edema, but a considerable intranasal reaction. The patient was in the hospital five days.

April 17: No pain or headache is felt; pus shows in the nares.

May 10: Some polyps with pus are still in the left nose. No symptoms are referable to the frontal sinus. The polyps are to be removed.

Case 16.—A woman, aged 45, for fifteen years has had chronic suppuration in both antrums and the right frontal sinus, for which she has had intranasal treatment during much of this period. She has had much pain and tenderness over all these regions and much foul smelling pus. The cervical lymph nodes are enlarged. The Roentgen ray shows both antrums dark, also the absence of any appreciable frontal sinus trouble on the left. July 29, 1914, a radical operation was performed on the left antrum which was first approached through the canine fossa and found full of pus and polyps. The naso-antral wall had been removed pre-

viously and was now found to be fibrous. At this time the right antrum was fairly clear. On August 10 a similar operation was done on the right antrum because of acute symptoms and the same condition was found. Feb. 12, 1915: The antrums have remained in better condition than for years although somewhat troublesome, and the nasal openings tend to close with fibrous tissue. At this time the patient developed a left acute otitis media and on February 25 she was operated on for mastoiditis. The mastoid was found nearly sclerosed with vascular and soft bone. She made a good recovery.

April 13: The patient has complained of much pain in the right frontal sinus. This sinus was opened through a short incision in the eyebrow and found full of pus and granulations. The opening was enlarged into the nose and the left sinus approached carefully through this opening, having in mind the fact that the Roentgen ray showed no sinus on this side. Exploration showed only diploë and no sinus cavity on the left. Toward the end of the operation the patient suddenly stopped breathing but resumed in a moment and appeared to be suffering from some respiratory trouble. There was some cyanosis and increased rate of pulse and respiration. That afternoon respiration, pulse and temperature were elevated. On auscultation there was absence of respiration in the lower and middle lobes of the right lung. Next morning very little air entered the right lung. She was seen in consultation by Dr. J. B. Hawes, and it was agreed that she was suffering from infarct due to pulmonary embolus. She died that noon. No necropsy was allowed.

We have here a long history of suppuration in the nasal sinuses combined with chronic mastoiditis. All of these conditions were being relieved gradually. She probably had a thrombus in one of the veins of the neck and this was the source of the embolus which evidently became detached during the operation. This was our only fatality and was a coincidence rather than the result of any particular method of operation.

CASE 17.—A man, aged 39, had suffered four years from bilateral nasal polypi obstructing both passages. On March 27, 1915, the right antrum and right frontal sinus were dark on transillumination. The Roentgen ray showed the sinus to be very large and both apparently affected.

On April 20, the usual incision was made over the right sinus, sparing the supra-orbital nerve. Both sinuses were very large and filled with polypi which were curetted and the customary large opening was made into the nose. Masses of polypi were removed from the ethmoid regions. This caused considerable bleeding. Ether recovery was slow. The patient was very comfortable on the next day. The wound remained closed and he made a good recovery.

May 6: The patient is entirely relieved of frontal symptoms; there is much less discharge, but some polyps are still to be removed from the ethmoid regions.

CASE 18.—A woman, aged 17, had nightly headache and left nasal discharge following an acute rhinitis one month ago. Edema over sinus has existed for one week.

April 27, 1915: A short incision was made in the left eyebrow; pus was found under the periosteum, but no gross perforation was observed. The sinus was small but full of pus. The right sinus was entered with some difficulty on account of the thickness of bone, and was found to be large and much congested. The usual operation was completed and the wound remained closed.

May 1: No increase of edema has occurred.

May 4: The wound is solid; some discharge is present from both sides, but no pain, tenderness or headache.

May 21: No discharge is noted; there is slight crusting.

TECHNIC OF OPERATION

The technic originally presented has been changed only in certain details and, in brief, the steps are the following:

Preliminary intranasal treatment, including removal of anterior end of middle turbinate and breaking up some of the neighboring ethmoid cells, is advisable because this may effect a cure.

Roentgenologic examination should be made, both as an aid to diagnosis and, particularly, to determine the anatomic characteristics of the sinus. A lateral and an anteroposterior view should be taken. The patient should be etherized and placed in a position half way between sitting and supine. Just before etherization a pledget of cotton wet with an epinephrin (1:2,000) and cocain (4 per cent.) solution should be placed in each anterior ethmoid region. This will lessen the amount of hemorrhage and facilitate working in this locality. These pledglets are removed when the patient is etherized and the nasal cavities are to be tamponed from the posterior nares or with small strips of gauze introduced anteriorly, preferably the former, thus avoiding the annoyance of blood reaching the pharynx. The ether is supplied through a curved catheter or tube entering the mouth.

The eyebrow should not be shaved. A single, curved, 1-inch incision is made in the inner portion of the eyebrow, limited externally by the supra-orbital notch; saving this nerve avoids the unnecessary complication of numbness and then paresthesia along its distribution. The sensory disturbance caused by dividing the fibers of the supratrochlear nerve is trivial. The bone is bared of periosteum over the area indicated in Figure 1, the presence of a sinus having been portrayed by the Roentgen ray. The sinus is entered with the chisel and enlarged by the rongeur forceps so as to make an oval opening about ¾ inch long. The region is then explored with the probe, and pus, granulations and polypi are gently removed, if present, after which this curved probe is to be passed through the ostium into the nose and left in situ as a guide. Small, curved curets are then passed down from above just in front of the probe and the walls of the cells on the floor of the sinus are broken up. On account of the proximity of the anterior end of the cribriform plate to the ostium frontale, the posterior angle of the sinus should be constantly avoided. The operation is to be completed by means of burr drills devised by Tilley and Ballinger for antrum operations and by rasps fashioned for this operation by Dr. O. A. Lothrop. The rasps should be used first and may be passed from above and below through the enlarged ostium, cutting forward and laterally. The burrs and rasps are to be used alternately at the discretion of the operator, gradually reaming out all the dense bone of the floor of the sinus toward the base of the nose. As will be seen from the figures, this bone includes the nasal crest and spine of the frontal bone, the thick ends of the nasal bones, and the nasal process of the superior maxillae. The interfrontal septum should be perforated and then burred away so that the other sinus may be explored. Then, by means of the burr, the perpendicular plate of the ethmoid should be removed, as shown in Figures 3 and 8. Through this same opening in the anterior sinus wall and also through both sides of the nose, both of which are now accessible, the dense bone under the opposite sinus is burred or rasped away until, finally, there remains only a thin shell of bone around the whole circumference of the floor of the sinus in front, as shown in Figures 3, 5 and 8. In all instances, even when only one sinus is affected, experience has shown the wisdom of using the combined floor of both sides. Finally, with the large burr, determine that sufficient bone has

been removed from the perpendicular plate and that the cells opposite the lacrimal bone, the agger nasi cells, and other neighboring ethmoid cells have been broken up. If the antrum has served as a reservoir, it is wise to make a large opening under the inferior turbinate. The skin incision is to be closed without drain and all tampons removed. We have not found it necessary to pack the nose for hemorrhage. Blood pressure may be lessened by propping the patient up in bed. A compress bandage should be applied and, after a day or two a cocoon dressing. There should be but little edema of the superior lid. The subsequent treatment consists in keeping the nose clean. The sinus cavities are easily accessible to treatment if occasion arises.

101 Beacon Street.

THE POSTOPERATIVE ANTISEPTIC TREATMENT OF THE TONSILLAR FOSSAE

GEORGE PAULL MARQUIS, A.M., M.D.
CHICAGO

It is not the purpose of this paper to discuss the question of tonsillectomy versus tonsillotomy, or the respective merits of the dissection method as compared with other forms of technic, but to present a simple method of procedure which has tended to reduce the unpleasant after-effects following the operation, by whatever method it has been performed.

The operator is frequently confronted with a number of conditions which are decidedly unpleasant, and it was to relieve these that I began to look for some modification either of my method of operating or in the after-treatment. As the latter seemed the easier on which to experiment, I chose it, and continued to perform the operation as I have done for the past few years.

There had frequently been a good deal of reaction along the pillars, in the fauces, and occasional edema of the uvula. With these conditions was associated great soreness in the throat, difficulty in swallowing, and impaired speech. There was a heavy fibrous exudate in the tonsillar fossae, which persisted for from four to seven days. When this was removed with peroxid and then a 5 per cent. solution of silver applied, the pain in swallowing was much less, and it struck me that if fibrous crust could be prevented from forming, we could avoid some of these difficulties. This brought the question, What was the cause of the reaction — the edema and the exudate?

I think we must call it an infection. True, our instruments are sterilized, and we work under antiseptic precautions; but we know that at no time is the mouth free from bacteria. A prominent bacteriologist states that there are ten varieties of actively pathogenic and seven of potentially pathogenic bacteria found in the mouth.

As soon as the tonsil is removed, we have an open surface for their invasion and one where, through trauma, the most favorable conditions for their development are presented. If this surface is treated with a strong germicide, the infection is greatly lessened or in some cases altogether prevented. Acting on this theory, I began applying a 50 per cent. solution of tincture of iodin to the fossae immediately after the removal of the tonsil. The result fully justified this action, for none of the symptoms mentioned above were present. I did notice, however, that the membranes appeared to have been treated with an acid, so in the next case the solution was reduced to 25 per cent., and this I have continued to use.

The discomfiture has been reduced to a minimum, the great majority of the patients eating without complaint. In only one case has any edema of the uvula occurred, and I am inclined to ascribe this to an infection which I did not control, possibly through injury to the venous system in that locality.

It may be argued that this exudate is the normal pouring out of lymph as we see after an injury on the surface of the body. Probably in a measure this is true, but why should it be reduced to a minimum and in many cases fail altogether after the use of iodin?

There have been some cases in which, on the next day, there was some exudate and some soreness; but cleaning this out and applying the iodin again has usually given the desired relief.

I believe that here, as elsewhere, it is easier to prevent an infection than it is to cure one, and for that reason before the patient leaves the table, after retracting the pillars so as to give an unobstructed view to every part of the fossa, the iodin is carefully applied to the entire surface.

I have treated over 100 cases in this manner, and in only one case has it seemed to have no effect, and the same soreness, etc., occurred which I used to find before employing this method.

In order to convince myself that the tonsillar fossa was less septic after the iodin treatment, a series of cases was given this treatment, and bacteriologic examinations made before and after operation. Four cases were selected on each operating day. Cultures were made of these throats. At the operation two would receive this treatment and two would not. The next day cultures were again made of the four throats. The universal finding was that there was less bacterial growth in the cases in which the iodin and alcohol had been used.

Of course, it is necessary that all hemorrhage be controlled before applying the iodin, or it will simply be washed away and no effect produced by it. It is my custom to have ready a tampon about the size of the tonsil, and saturated with alcohol. Immediately on removal of the tonsil, this replaces it in the fossa and prevents the hemorrhage. When it does not, the pillar is retracted and the bleeding point grasped with a hemostat. The fossa is then painted with the iodin solution, which is also carried onto the pillars and uvula. As a rule, there is almost no soreness the next day, but when any is present the same solution is applied.

Of course, by far the greater number of the patients have been children, but I have had a fair proportion of adults, and am therefore in a position to state that the result is at least as good in the latter as in the cases of children.

30 North Michigan Avenue.

Morbidity Registration.—It will be an invaluable contribution to therapeutics, as well as to hygiene, for it will enable the therapeutists to determine the duration and the fatality of all forms of disease under the several existing systems of treatment in the various sanitary and social conditions of the people. Illusion will be dispelled, quackery, as completely as astrology, suppressed, a science of therapeutics created, suffering diminished, life sheltered from many dangers.—*Farr.*

CALOMEL POISONING

A CASE OF SOME VALUE TO OUR FELLOW PRACTITIONERS

J. H. BUFFORD, M.D.
Physician, Dermatological Department, Boston Dispensary
AND
C. G. LANE, M.D.
Assistant to Physicians, Dermatological Department, Boston Dispensary
BOSTON

The following report concerns a syphilitic patient who had a primary lesion of the lip two or three years ago and had been under treatment intermittently for lesions about the mouth and throat.

Miss X entered the Dermatological Department of the Boston Dispensary on December 30, complaining of sore throat, fever, malaise, sore face, inability to swallow, and huskiness of voice.

Four days previously, she was taken ill suddenly with the above symptoms, and two days later she consulted a physician who made a diagnosis of acute tonsillitis. He prescribed a cathartic, a gargle, and some other medicine to take internally. She felt a little better on the 29th but on the 30th her throat seemed worse and she returned to the dispensary. Examination showed a swollen face and neck, swollen lips, gums, tongue, and mucous membranes of practically the whole mouth and pharynx. Her tonsils were somewhat swollen, were red, with an occasional spot resembling a mucous patch. The gums were quite red, swollen, with a blotchy white appearance in places similar to the spots on the tonsils. The cheeks and folds between the cheeks and gums were also slightly red, and white patches were also observed in these places. There was considerable salivation but no mercurial odor, and it developed on questioning that a certain amount of pain was caused by forceful closure of the teeth. There was some tenderness beneath the jaw and palpation disclosed some enlargement of the submaxillary and submental glands. The case suggested hydrargyrism although no history of mercurial medication could be obtained at first.

She had not been under antisyphilitic treatment for some little time and the question arose as to whether her condition was a recurrence of the syphilis. The white patches with the glands and, especially, the fact that she had apparently not been taking mercury for some little time supported this view. She was questioned in regard to medicine taken during the past few weeks. Questioning to "back up" our diagnosis was futile for twenty minutes. By persevering, however, we finally elicited the fact that the week previous a friend had been using some "Calomel, 1 grain," pills for a laxative, and she had purchased at a drug store a hundred of these pills and had taken them as follows: On the 22d, she had taken four; on the 23d, 24th, and 25th, she had taken three four times a day; and on the 26th and 27th, she had taken enough others to make the total number taken fifty-six. On the 26th, the patient had noticed that her throat and mouth were swollen and that it hurt her to swallow. The condition had continued, becoming steadily worse, so that she had consulted the physician.

There had been no special laxative effect from the pills for it had been necessary for her to take some other laxative previous to consulting her physician. She had not even noticed any discomfort in her stomach or bowels, and the only complaint was of her throat and mouth.

The diagnosis in this case, until the full history was obtained, rested between a tonsillitis, a recurrence of the syphilis, and a stomatitis, probably of mercurial nature.

The case shows the importance of close and persistent questioning to bring out facts and also the importance of believing what one sees rather than what one hears in a dermatologic clinic. The history seemed very positive and was so very strong against mercurial medication, and was so clear as to repeated attacks of very unusual syphilitic manifestations of the whole mouth, tongue, throat, etc., that we were puzzled for a time. She made rapid recovery.

A FURTHER STUDY OF THE CHEMICAL COMPOSITION OF URINARY CALCULI*

JACOB ROSENBLOOM, M.D., PH.D.
PITTSBURGH

Together with Dr. Max Kahn,[1] I have reported the analyses of twenty-five urinary calculi. The results showed, contrary to the usual statement, that the large majority of renal stones are composed of calcium oxalate and not of uric acid or urates. I now report the results obtained in the chemical analysis of a new series of twenty-six renal calculi of which, as may be noted from the tabulated data, only two were uric acid stones, while the balance, or twenty-four, were composed principally of calcium salts.

PERCENTAGE COMPOSITION OF TWENTY-FIVE RENAL CALCULI

No.	Weight, Gm.	Moisture, Per Cent.	Calcium Oxalate, Per Cent.	Uric Acid, Per Cent.	Phosphorus Pentoxid, Per Cent.
1	5.8026	1.37	88.30	4.20	50.13
2	9.1904	4.30	40.60	6.72	58.16
3	0.5318	5.20	63.81	1.72	10.12
4	2.7525	2.80	7.72	90.10	.....
5	16.5630	8.70	33.90	4.80	53.46
6	1.5012	5.10	3.53	91.20	.....
7	1.3076	0.40	70.22	9.32	18.24
8	2.4723	1.06	91.30	6.71	3.82
9	3.1005	1.27	72.63	17.03	5.70
10	0.5246	0.60	98.60	1.12	7.30
11	5.7210	1.34	65.72	8.21	8.61
12	0.9205	0.78	90.76	7.92	6.82
13	0.4678	0.09	92.47	2.07	5.12
14	1.6240	0.63	90.82	3.17	4.18
15	1.9372	1.30	48.26	9.18	9.80
16	3.0042	3.20	47.22	6.72	7.56
17	1.2351	1.80	93.28	1.71	4.32
18	11.2678	1.65	94.27	0.62	3.74
19	8.5732	3.18	98.22	0.00	0.42
20	4.6002	2.75	94.17	1.82	6.10
21	4.7801	0.90	90.32	1.37	5.80
22	0.9763	0.09	95.12	0.24	6.22
23	1.2478	1.22	83.27	2.52	5.18
24	0.9908	0.78	39.93	7.62	3.42
25	3.2005	1.42	86.47	2.24	5.35
26	8.7632	5.81	82.17	9.35	3.72

I was unable to demonstrate any trace of lecithin or cholesterol in the ether-alcohol extract of any of these calculi.

We have pointed out previously the necessity of changing our therapeutic ends with regard to the treat-

* From the Biochemical Laboratory of the Western Pennsylvania Hospital.

1. Kahn, Max, and Rosenbloom, Jacob: A Report of Some New Chemical Analyses of Urinary Calculi, THE JOURNAL A. M. A., Dec. 31, 1912, p. 2252. Kahn, Max: A Study of the Chemistry of Renal Calculi, Arch. Int. Med., January, 1913, p. 92; Ztschr. f. exper. Path. u. Therap., 1914, xvii.

ment of renal calculi.[2] We again draw attention to the fact that the therapeutic measures for the treatment of insoluble calcium salt calculi are completely different from those employed for uric acid. The usual antacid treatment is just the opposite of what is indicated, on account of the fact that uric acid and its acid salts are soluble in alkaline mediums and insoluble in acid, the opposite is true for calcium oxalate and calcium phosphate, which are deposited in alkaline mediums and dissolved by acids. For these reasons all calculi obtained should be chemically analyzed and on the basis of their chemical composition more rational therapy can be instituted.

5737 Forbes Street.

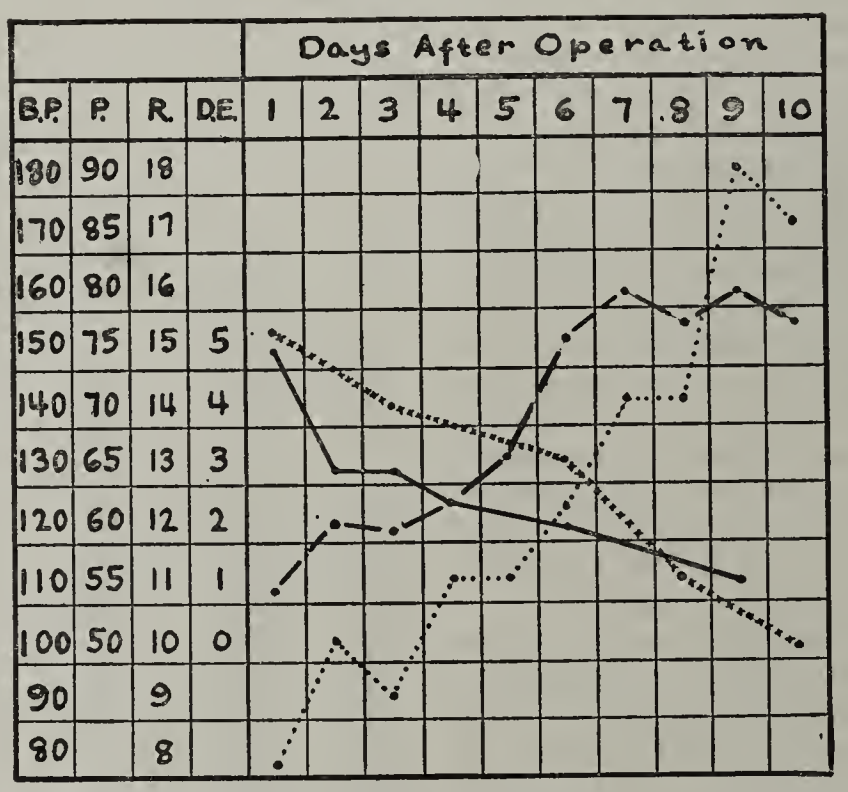
SURGICAL MEASURES IN APOPLEXY

REPORT OF A CASE

CHARLES M. REMSEN, M.D.

ATLANTA, GA.

It may appear radical to advocate operative procedures on spontaneous intracerebral hemorrhage; nevertheless, a correlation of the pathology with the symptoms suggests, in selected cases, two rather positive operative indications: first, the relief of the general intracranial pressure due to the presence of the clot, and, second, the removal of the clot, if this be possible, in order to relieve the more delicate portions of the brain, should the clot remain, from secondary changes which may become permanent because of the surrounding reaction. The following case may be of interest in illustrating features which indicate operative procedures, and the results obtained are somewhat instructive when considered from an operative and pathologic basis:



Convalescence chart: blood pressure, solid line; pulse, line of dashes; respiration, line of dots; disk edema, line of crosses.

History.—A patient referred to me by Dr. William Thompson of Dublin, Ga., six days previously had slight sensory disturbances of the left arm—tingling and pain—followed within an hour by complete paralysis. Similar disturbances in the foot were felt almost immediately, and with no delay paralysis of the whole leg ensued. The patient soon became unconscious, and during the next five days his condition became gradually worse. He was at this time in a comatose state, which was punctuated occasionally by attacks of great irritability.

Examination.—The patient was in a semistuporous condition, and did not answer questions. Occasionally some incoherent remarks were made. There was quite marked restlessness and flinging about of the right arm and leg at indefinite intervals. The left arm and leg were not moved. Occasionally a slight response could be obtained, and it was possible to demonstrate a slight grasp in the left hand. Throughout the whole left side of the body there were definite disturbances of sensation, though occasionally the patient perceives marked sensory impulses very slightly. It was extremely difficult to elicit reflexes, and nothing of note could be ascertained from these. There was a definite weakness of the left side of the face, the left arm and the left leg. Both eyes were closed, and it seemed impossible for the patient to open them. Pulse, 60; blood pressure, 146; respirations, 8; Cheyne-Stokes. On forcible opening of the eyes there seemed to be a momentary nystagmus, but this passed off rapidly. The pupils were practically the normal size, but there was practically no reaction to a strong light flashed into the eye.

Examination of the disks showed on the right side a swelling of 2 D. on the temporal side of the disk, and 5 D. on the nasal side. The veins were somewhat enlarged and tortuous. In the left side a similar condition was seen, the swelling being more marked on the nasal side and less so on the temporal. In general, there was an edema of the right disk which was quite marked, and of the left disk which was very slightly less marked.

Considering the history and the examination, which showed increased intracranial pressure, it seemed advisable to perform an exploratory craniotomy with the hope of removing the clot or, in the case of finding cerebral edema only, of performing a subtemporal decompression.

Operation.—The usual muscle-splitting approach was employed. A generous decompressive opening was fashioned, and the dura was opened so as to expose the operculum and that portion of the cortex overlying the basal ganglia. The brain itself was edematous and evidently under pressure. There was a distinct tendency of this to extrude through the opening. The fissura cerebri lateralis was demonstrated, and anteriorly there were no visible suggestions of underlying hemorrhage. Posteriorly, on careful separation of brain and dura, there was encountered a collection of clotted and semiclotted blood forming a cavity about the size of a golf ball or larger, which had as its external opening the lateral cerebral fissure between the gyrus centralis posterior and gyrus temporalis superior. Small portions of brain tissue were extruded with the old clotted blood. This, then, suggested a lenticular hemorrhage which had worked out through the surface of the insula. A drain was inserted through the opening deep into the cavity and closure was made in the manner usual in such a field. The protective drain was brought through the middle of the incision.

Owing to the fact that this patient had been subjected to six days of pressure, I was not optimistic in the prognosis of the relief from permanent changes of the fibers of the internal capsule, even had the hemorrhage itself been located in the lenticular nucleus principally. The convalescence, as may be seen by the accompanying chart, was a complete success from the standpoint of the relief from the general increased pressure. The mentality cleared rapidly, and the facial paralysis on the eighth day was fast disappearing. The paralysis of the extremities cleared more slowly, and it is difficult to say whether or not the procedures had marked influence on this feature. Nevertheless, it is only suggestive that procedures such as this should be undertaken sooner, not only with the hope of avoiding fatal issue which was

2. Schildecker: Am. Jour. Obst., 1914, lxx, 979. This article gives detailed directions for the treatment of the various urinary calculi.

most certainly the case with this patient, but also with the desire of removing secondary permanent disabilities which may occur when the hemorrhage does not involve the capsule primarily, but only by its reactive processes and its slow extension brings about the more far-reaching results.

GASTROPYLORODUODENOSTOMY

WITH EXCISION OF THE ULCER-BEARING AREA FOR ACUTE PERFORATED ULCER IN THE PYLORIC CANAL *

VINCENT ANTHONY LAPENTA, A.M., M.D.
INDIANAPOLIS

History.—C. P., man, aged 26, while standing on the sidewalk in front of his residence, May 16, 1914, talking to friends, was seized with an acute excruciating pain in the upper abdomen. So intense was the pain that it caused him to fall to the ground unconscious. The friends who picked him up and carried him into the house noticed that he vomited a small quantity of blood.

About one hour after this happening, he was seen and found still in a semicomatose condition, pulseless at the wrist, with cold, clammy sweat covering his body, the respiration entirely thoracic, his face having a very pinched and blanched expression. He was found sitting in bed with the body acutely flexed on the knees. No amount of persuasion could induce him to change this position. It was impossible to examine his abdomen carefully. He would allow no one to touch it. No information or clinical history could be obtained from him. All the facts on which to evolve a working diagnosis had to be obtained from bystanders who had witnessed the attack and knew nothing about the patient. Information obtained from relatives was no more illuminating. They said that he had always been well and had never lost a day's work. That morning he complained of a headache, but had eaten a very large meal at noon.

The diagnosis of perforated gastric ulcer instinctively fixed itself on my mind. Indeed, I could not think of a gallbladder perforation, as there would have been no hematemesis in such a condition, nor would such a perforation be likely to occur suddenly, without the occurrence of a few biliary colic pains. Of great weight, also, was the assurance received from the family that the patient had never had any acute gastric distress or acute abdominal pains before. I was also impressed by the unmistakable signs of shock and pinched expression. An acute perforated appendicitis could cause the same type of shock, but I have never seen the occurrence of hematemesis in these cases.

The patient was quickly taken to the Protestant Deaconess Hospital, a hypodermic of morphin, one-fourth grain, and atropin, 1/150 grain, was given, and a hasty preparation made for an abdominal section.

Operation.—A long paramedian incision was made on the right epigastric region, extending down to the right iliac fossa. When the peritoneum was opened, a large amount of blood and gastric contents escaped. From the amount of food and liquid in the abdomen, it was evident that the patient had had an excellent dinner and had certainly not lacked in wine. A careful surgical toilet was made, and the examination of the viscera was started at the stomach. Exactly in the pyloric ring and in the lower outer portion of it, a perforation large enough to admit the index finger was found. This was certainly a fortunate location for the perforation, as it enabled me to make a wide excision of the ulcer-bearing area, and it was possible to restore the pyloric end of the stomach, insuring a large pylorus, by employing the technic of Vidal, effecting a gastropyloroduodenostomy. To my astonishment, on examining the ileocecal juncture, the appendix was found to be acutely inflamed and with a cleancut perforation, with a little fecalith just extruding from it.

The appendix was removed in the usual manner. The abdomen was properly closed with adequate drainage being provided at the lower angle of the incision. An intravenous injection of physiologic saline solution had been given during the operation, and the patient left the table in a much better condition than before the operation.

The recovery was uneventful, the patient leaving the hospital after three weeks. A communication received from him in April informed me of his excellent health and absolute freedom from any symptoms whatsoever.

This case seems to me strongly to emphasize the etiologic rôle played by an appendiceal lesion in the production of acute gastric and duodenal ulcers. This case, whose final issue would have been death, in my opinion, seems to have had its basic etiology in the appendiceal lesion. I am induced to attribute to the concomitant acute appendicitis more importance than that of mere coincidence.

Dieulafoy and D'Antona have held for many years that an appendiceal lesion can be the primary focus which may set up metastatically an ulcerative process in the stomach and duodenum. Indeed, they have conclusively proved that even acute gastric hemorrhage without ulcer may be produced by an appendiceal lesion.

If I am correct in assigning to the appendiceal lesion a greater importance than that of a mere coincidence, we may reasonably assume that acute appendiceal infections do play an important etiologic rôle in the production of acute gastric and duodenal ulcers, if not in those ulcers of the chronic type.

In a reasonably large number of gastric cases which it has been my good fortune to have had in the last four or five years, I have been impressed by the frequency of concomitant appendiceal lesions in my cases of acute gastric and duodenal ulcers and of their relative rarity in those of the chronic type, both of the stomach and the duodenum. Certainly this case stimulates much thought, and it has been for this reason that I have taken the liberty to report it.

347 Newton Claypool Building.

* Read at a meeting of the Indianapolis Medical Society, May 4, 1915.

ACUTE ARTICULAR SINOVITIS OF CRYPTIC NASOPHARYNGEAL ORIGIN

W. SOHIER BRYANT, A.M., M.D.
Fellow of the American College of Surgeons
NEW YORK

The following case is presented as a justification of my theory[1] that the primary source (focus) of an infection or of anaphylaxis—whether general, metastatic, or local—is, as a rule, to be found in the nasopharynx, localized in Luschka's tonsil. The case described was one of acute poliarticular "rheumatic" sinovitis.

History.—The patient, a man, aged 26, had been under treatment by the usual internal and external remedies in a large orthopedic hospital with little relief. No focus of infection had been located, in spite of well-directed effort.

He had been subject to severe attacks of "lumbago" as long as he could remember. The present illness began in the right knee. Pain and a large effusion in the right knee and ankle had lasted for six weeks, while the right hip had been painful and useless a week. He came to the office on

1. Bryant, W. S.: Air-Borne Infections, Their Mode of Entrance; Preventive, Abortive and Ameliorative Treatment, Med. Rec., New York, May 16, 1908, p. 816; the Involution of the Naso-Pharynx, and Its Clinical Importance, Am. Jour. Med. Sc., 1914, cxlviii, 61.

crutches, walking with difficulty. He said that he had always been a nose breather by day, but a mouth breather by night. Since childhood, he had had no sore throat, but he often has "neuralgia" over his eyes.

Examination.—When the patient came to me, he was thin, with haggard facies, and was unable to stand or walk without crutches. The right hip was very painful on motion and tender. The right knee had a very large effusion, and was painful; the right ankle was tightly distended, painful and tender. The man could bear no weight on the right leg at all, or bend the joints or sit on right hip. He could sit on the left side only. The examination showed a red pharynx. There was also nasal obstruction from a deflected septum. The tonsils were negative in appearance. Posterior rhinoscopy showed an enlarged soft adenoid which bled very readily. The left adenoid was the larger. Small lymph nodes were palpable along both jugular veins. There was no subjective symptom of the throat, however, and no obvious indication that any infection was present.

Treatment and Result.—The first treatment began with postnasal applications of hydrogen peroxid through the nose, followed by a 10 per cent. solution of silver nitrate and a chinosol nasal douche. The following day, the patient reported that he had felt relief in a half hour after the treatment of the previous day. When he came to my office this day, he had a good color, and his expression was no longer pinched. He said that the pain had entirely gone during repose. He was able to walk without crutch or cane, and could sit down normally. Palpation detected scarcely any fluid in the knee. A saturated solution of ferric ammonium sulphate and menthol and eucalyptol was applied.

On the fifth day of treatment, the hip had entirely recovered, and the nasopharynx also was well. The patient himself was much better and all pain was gone, both at rest and during locomotion. On the twenty-third day, after eleven treatments, there was no sign left of the old "rheumatism."

Here is a case of acute polyarticular "rheumatic" sinovitis. Under the usual hospital treatment the case was prolonged and convalescence delayed. The source of the rheumatic infection had not been located. On inspection of the postnasal adenoid or Luschka's tonsil region, the cryptic infection was discovered.

CONCLUSION

When, in cases of acute articular inflammation, the primary infection is not obvious, a cryptic infection probably thrives in the nasopharynx. Luschka's tonsil is the most usual seat of cryptic infections that extend to the general system or form metastatic inflammations.

19 West Fifty-Fourth Street.

REPORT OF CASE OF UNILOCULAR OVARIAN CYST

Agnes M. Edmonds, M.D., Chungking, China
Physician in Charge, Gamble Memorial Hospital

The patient, Mrs. H., came from a wealthy family; a clear family history was difficult to obtain, but she had no knowledge of any other member of the family having had a similar tumor; she had smoked opium for several years, which fact she succeeded in concealing from us until after the operation, by secretly taking pills.

The tumor had been growing for four or five years; there had been no severe pain, but great discomfort. When brought to the hospital the patient was also suffering from a severe attack of diarrhea, which, however, we succeeded in getting under control before the operation.

On measurement we found the patient to be 4 feet 10 inches tall and 5 feet 8½ inches in circumference at the waist line. With an assistant on each side, she could with great exertion walk a few steps; getting her to the operating room, which is situated on the second floor, and on the operating table was a problem. As one of the visiting physicians aptly remarked, it was a case of engineering as well as surgery. She was too broad to sit in a rolling chair or balance herself on a stretcher, so we had four coolies carry her on an improvised stretcher—a woven cane bed—and when she was finally transferred from that to the operating table, we had to put her at an angle of 45 degrees, reclining on her side, with two assistants under the tumor to support it.

An incision about 3 inches long was made through skin and peritoneum just below the umbilicus, the cyst tapped and over 100 pounds of dark brown fluid removed. The cyst with its contents weighed 139½ pounds. The incision was then extended above and below, when, on examination, the cyst wall was found to be bound by heavy adhesions to the abdominal wall, intestines and omentum, while the pelvic organs, including the bladder, formed a solid mass for the pedicle.

The bladder was carefully dissected away from the mass, although in several places the adhesions were so dense that a portion of the cyst wall had to be left, and in spite of the utmost precaution the bladder was entered. After the bladder wall was finally dissected free, the rent was sutured, the pedicle clamped and tied, and the cyst wall, including both the ovaries and uterus, removed. The stump was covered with peritoneum and dropped back into the pelvis. About a quart of normal salt solution was poured into the abdominal cavity, and the abdomen closed. In the meantime the patient was very much in shock. Gradually, as the abdominal contents were removed, she had been placed in the horizontal, and finally in the Trendelenburg position. Intramuscular and intravenous infusions of normal salt had been given, while strychnin, nitroglycerin and pituitary extract had also been administered.

Recovery was uninterrupted. In three days the patient was urinating, the bowels moved without even a laxative being given, and in five weeks she left the hospital cured of her opium habit, and with no bad after-effects from the operation.

Six months after the operation she continues in good health.

The physicians who so kindly assisted in the operation were Drs. McCartney and Freeman of our own (Methodist) mission, Dr. Sheridan of the Canadian Methodist Mission, and Dr. Post of the American gunboat *Palos*, who was then in port.

The Physician and Health Administration.—In a reprint in Public Health Reports of a paper read by J. W. Trask before the Tennessee State Medical Association he again emphasizes the responsibility and the opportunity of the physician with reference to effective health administration and disease prevention. He says the principal function of the federal health department is the control of epidemics and the prevention of the spread of disease from one state to another. In order to accomplish anything in this respect it is necessary to have prompt and accurate information of the occurrence of epidemic diseases from every section. For this information the service is dependent largely on local boards of health, and they in turn depend on the notification of such diseases by physicians who come in contact with the individual cases. He says that physicians are still remiss in reporting cases to their local health departments, and do not recognize as they should that they are essentially a part of the health department. He says, "The practicing physician who fails to report a case of a communicable disease thereby endangers the welfare of the community and exposes others to the danger of contracting the disease, and among those thus exposed may be others of his patients. He is neither a good physician nor a good citizen, and must be considered as opposed to the principle of the control of disease and the protection of the community for which the health department stands."

DISCUSSION
ON
BLASTOMYCOSIS OF THE EYELIDS, WITH REPORT OF CASES*

EDWARD JACKSON, M.D.,
DENVER

DR. ROBERT FAGIN, Memphis, Tenn.: I am reporting five cases of this disease which have appeared in Memphis. Each case has been worked out pathologically by Dr. Marcus Haase, and in each instance the organisms demonstrated and cultures grown. (The cases and lesions were illustrated with the lantern.) The first is my case, a negro man, aged 39, from Mississippi. The patient came in November, 1913, with a lesion on the right eye. This lesion had been removed five times previously at different hospitals in Mississippi. Two of the best surgeons of Memphis said it was cancer and should be cut out. My partner, Dr. Simpson, had studied several cases of blastomycetic dermatitis in Chicago and had had a case of this kind in 1906. Dr. Simpson at once suggested that it was blastomycetic dermatitis. I thought it was an infected epithelioma or syphilis. Pus was trickling down the side of the face. The patient had suffered from the lesion for two years. Pus and a section of the growth were taken for diagnosis. Examination proved it beyond doubt to be blastomycetic dermatitis. Under potassium iodid and a few treatments of the Roentgen ray the lesion soon disappeared. The man, however, died suddenly about six months later. As far as we know there has been no involvement of brain tissue by a blastomycetic infection. If this was not a brain lesion we do not know what caused his death. The second case is the first instance of blastomycetic dermatitis reported from Memphis, in 1906. This was Dr. Simpson's case. The illustration was made in May of this year, and shows the healed lesion. The resulting ectropion was corrected by Dr. Simpson by an operation. The third case was one of fifteen years' duration. It was not recognized until 1908. The lesion extended over on one side, traveled below and across the nose, and involved the other side. The lesion healed. This and the others reported are Dr. Haase's patients. The fourth case is the only white patient in our list. Quite a deformity of both lids followed the healing of the lesions. Dr. Ellett operated on this patient in May, 1915, and corrected the ectropion. Case five is of another colored man. This lesion commenced as a stye in the corner of the eye and progressed outward. Also there are lesions on his arms and legs. We think the infection has been carried from the eye to other parts of his body by scratching. The lesion is made up of abscess cavities. Pus is expelled from these cavities when pressed on. Finding the organism is the only means of differentiation from epithelioma or tuberculosis. The lesion will disappear readily under potassium iodid, 30 grains three times a day, increasing to 300 grains. Roentgen-ray treatment helps.

DR. HAROLD GIFFORD, Omaha, Neb.: I have been looking for cases of blastomycosis for a number of years without success, but while hunting for it I came across a case of sporotrichosis. This may sometimes assume characteristics which are not dissimilar to blastomycosis. The formations are quite different, however. It has two points which easily define it. It has a characteristic form under the culture medium. In culture the organism develops readily. We failed at the first trial because we put the tubes in an overheated oven and after two or three weeks, when nothing developed, we gave up the experiment. By accident, however, we left a tube lying carelessly on a table where we had been conducting our experiments and in about two weeks, by mere chance, we noticed it was covered with a beautiful culture of sporotrichosis. Another point in differentiation is a tendency of the sporotrichosis organism to form along the lymph channels. I believe this has not been true in blastomycosis. I merely want to remind you that in looking for blastomycosis do not forget the other.

DR. JOHN A. DONOVAN, Butte, Mont.: About five years ago a patient, a fisherman, came to me with a diagnosis of syphilis which he felt certain was not correct. His trouble was on the side of his face and eyelids. I did not know what diagnosis to make and I have wondered all these years what it was I treated. I put the patient on biniodid of mercury and Roentgen-ray treatment, and later changed this for the arc light, which gave better results. Between the internal and light treatments he got well. When he came to me he told me he had been treated by a surgeon of Salt Lake City and that surgical treatment made it worse.

DR. GEORGE S. DERBY, Boston: I hesitate to report this case as I have not seen it. However, Dr. MacDonald was kind enough to send me rather a long telegram last night about a case of blastomycosis which occurred in my service at the Massachusetts Charitable Eye and Ear Infirmary since I left Boston. The patient was a wood-chopper. The lesion first appeared on the bridge of his nose. It spread on the lids of each eye, and he is said to have sores on the right shoulder and both breasts. He was taken into the Massachusetts State Almshouse Hospital three times during the past three years and operations were performed on his lids and face. The microscopic examination showed blastomycosis. There was a slight corneal scar on the right eye, but in spite of this the vision in each eye was normal. The right eye showed marked conjunctival injection and ectropia; two-thirds of the lids had disappeared and the palpebral fissure was narrowed. The left eye showed some ectropia nasally and loss of tissue in the lower lid.

DR. EDWARD C. ELLETT, Memphis, Tenn.: I have seen several of these cases of blastomycosis and have been struck with the marked cicatricial contraction which follows the healing of the lesions. I have noticed, too, that the lid would be spread out to fall over the whole cheek and produce a degree of ectropion that I do not remember to have seen from any other lesion. In colored individuals the cicatrix is nonpigmented. The skin is left perfectly clear and this forms a striking and distinctive feature. The spreading of the lesions is very irregular and not along the blood or lymph channels. In one case that Dr. Fagin referred to the patient developed a lesion on his right leg, on the other side from the original lesion. The involvement of the eyeball in the cases I have seen, as in the experience of Dr. Jackson, was apparently accidental.

DR. EDWARD JACKSON, Denver: The pictures shown give an idea of the lesions that cannot be obtained from any description by words. With reference to the diagnosis of sporotrichosis, such a case would give a different history; and there is a difference in the manner of the spread of the affection, as mentioned by Dr. Gifford. The spread of blastomycosis is very much like a culture on the gelatin plate, and the lesion has a tendency to ultimate healing. It is like erysipelas, getting better in one spot and at the same time growing worse in another. Without any particular treatment the whole anterior right half of my patient's head had been the seat of lesions, beyond the median line and back of his ear, up on the scalp. The lesion was on the cheek when I saw him, extending in several directions. The history of such lesions and these pictures would be sufficient for diagnosis. Anyone who has seen these pictures ought to be helped tremendously in making the diagnosis. With reference to treatment, the Roentgen ray has been mentioned favorably. Pusey of Chicago in reporting a case ascribed all the benefit to the Roentgen ray, but he also gave potassium iodid, perhaps 10 or 20 grains at a dose. This he thought so small a dose that it did not count for anything in the cure. My second case got up to 37 or 38 grains of potassium iodid before the lesions were healed. In the second case I started with 10 grains. Larger doses are fully justifiable. The records show uniformly that potassium iodid is beneficial and brings results. Operative interference is bad. This patient, who had been ill for seven months, had had four distinct operations and was growing constantly worse.

* The paper by Dr. Jackson appeared in THE JOURNAL, July 3, 1915, p. 23. It was read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Special Article

PRACTICAL PHARMACOLOGY *

(Continued from page 29)

XXVII

THE HEAVY METALS AND THEIR SALTS

The salts of the heavy metals act locally as astringents, irritants or corrosives, dependent on the nature of the compounds which they form with the tissues; thus the lead salts, which are astringent when used in dilute solution, are corrosive when concentrated solutions are employed.

The intestinal mucous membrane acquires a certain degree of tolerance toward irritant action of the metals if small doses are given at first, and gradually increasing amounts are employed. The large amounts of arsenic taken by the arsenic eaters of the Tyrol afford a well-known example of this acquired tolerance.

The salts of metals which dissociate readily into their ions have many actions in common after the absorption of toxic doses into the circulation. The marked differences in the effects commonly observed after their administration are attributable in part to differences in their rates of absorption, in part to differences in their rates of dissociation. Arsenious acid is absorbed fairly well from the gastro-intestinal tract and it dissociates readily, hence it is actively poisonous, whereas most of the salts of iron and lead are absorbed so slowly that toxic symptoms rarely follow the administration of single doses of them.

When soluble salts of the metals are administered they are partially converted in the duodenum into insoluble carbonates or into albuminates, in which form they may be absorbed, or they may pass into the large intestine, being converted into sulphids. A larger part of the dose of the metallic salts escapes absorption and the sulphid renders the feces black.

Slow as the absorption of the metals usually is their excretion is commonly even slower, so that they may accumulate in the body and give rise to symptoms of poisoning. This action is prominent in the case of lead, even when minute amounts are taken over prolonged periods.

Most of the metals are excreted through the large intestine mainly, and to a slight extent through the kidneys. The irritant action at the seat of elimination in the intestine may give rise to enteritis and diarrhea, aside from any local irritant action and diarrhea induced by the unabsorbed portion, as with calomel.

The excretion of metals by the kidneys may give rise to nephritis, this being especially prominent after poisoning with mercuric salts.

The intravenous injection of toxic doses of the metallic salts or the rapid absorption of one of the arsenites, such as potassium arsenite, causes a rapid fall of blood pressure due to the direct action on the heart and vessels. This is attended with disturbances of the central nervous system, as profound circulatory disturbances always are.

The astringent and irritant local effects of the salts of some of the metals are utilized therapeutically, but the systemic effects just mentioned are of toxicologic, rather than therapeutic, interest.

Lead

The systemic effects of lead are of little or no therapeutic importance but they are of toxicologic interest.

Acute lead poisoning is not observed frequently, but a single large dose of one of the lead salts may cause gastro-intestinal irritation with nausea, vomiting and diarrhea, which may be bloody, or constipation with pain, and in exceptional cases these symptoms may be followed by collapse. The acute symptoms are said, in rare instances, to be followed by chronic poisoning.

Chronic lead poisoning is said to be the commonest of all forms of metallic poisoning owing to the widespread use of the metal and its constant absorption with slow elimination.

It is stated that workers in more than one hundred trades are liable to lead poisoning, especially where suitable precautions are not observed. Dust should be avoided as much as possible in lead works, work rooms should be ventilated thoroughly, and workmen should avoid putting their hands in their mouths or holding articles between their teeth. Food should not be kept where it can be contaminated with the dust arising from the metal work, and clothes should be changed when the workmen leave the work room.

Painters and other workers in white lead are said to be most frequently attacked, and lead smelters, plumbers, typesetters, electricians, potters, enamel ware workers and dyers are said to be affected frequently.

The use of new lead pipes for conveying drinking water is said to be a common source of plumbism, but this is probably less dangerous than is popularly supposed, for the bureau of health of the city of New York requires that lead pipes be used to connect houses with the public water mains, and poisoning seldom results from the use of this water.

Wall paper, solder used in sealing canned foods, and even hair dyes are said to be sources of lead poisoning. The cosmetic known as flake white (lead carbonate) is sometimes responsible.

Nausea and loss of appetite with a metallic taste in the mouth are among the earliest symptoms of chronic lead poisoning. A bluish line may appear on the margin of the gums but this may be absent when the mouth and the teeth receive proper attention. Anemia is also an early symptom and it may be the only one to attract attention. Sollmann states that at first there may be a pallor due to a constriction of the cutaneous vessels and later a diminution of the hemoglobin and the number of red blood corpuscles. The red blood cells frequently undergo granular degeneration, the granules staining with basophil dyes. If there is extensive destruction of the red cells there may be jaundice and highly colored urine. This granular degeneration of the red cells is characteristic, and may afford the first clue to the nature of the disease.

Amenorrhea is not infrequent in women so poisoned and lassitude and weakness are frequently observed.

Lead is said to cause gout or a predisposition to it in regions where gout is prevalent.

It is well known that abortion is a frequent result of lead poisoning in pregnant women, and Cushny states that abortion is common among women workers in lead even when they do not show other symptoms of plumbism. Children born to parents either of whom suffers from chronic lead poisoning are weak and seldom live to reach adult life.

* This is the twenty-seventh of a series of articles on useful drugs — on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

Various manifestations of lead poisoning are due to its actions on peripheral nerves, but the central nervous system may be concerned in certain of these manifestations. Lead causes a general peripheral neuritis affecting both motor and sensory nerves, but certain groups of nerves are much more frequently affected than others, and colic, wrist-drop, anesthesia or excessive tenderness of the skin, arthralgia and disturbances of vision are among the most frequent effects of the actions on the nerves.

Colic is among the most constant symptoms of chronic lead poisoning and Bastedo cites Starr to the effect that it precedes palsy in more than 90 per cent. of the paralytic cases. The attacks come on suddenly, the paroxysms alternating with periods of relative comfort. During the paroxysms the abdominal muscles are tense and hard, the patient often lies face down and obtains some relief by pressing his fists against the region of the umbilicus where the pain appears to be localized. The colic is usually accompanied by obstinate constipation and attacks of vomiting, but occasionally there is diarrhea. The paroxysms of colic are due to spasm of the intestinal wall, but the precise mechanism by which the spasm is induced is not known with certainty. Sollmann attributes it to a stimulation of the nerve endings (vagus) in the intestine as it lacks the peristaltic nature of ganglionic stimulation and it sometimes yields to atropin, which paralyzes the vagus endings.

The intestinal spasms are attended with high blood pressure, which Sollmann also explains as being due to pressure exerted on the splanchnic vessels, whereby the blood is forced into the peripheral circulation.

The paralysis of the extensor muscles in the forearm is also fairly characteristic of chronic lead poisoning. The middle and ring fingers are usually involved before the thumb and index and little fingers, the wrist being affected later, the condition being commonly termed wrist-drop. The neuritis may be followed by degeneration that extends to the cord and this is followed by rapid atrophy of the extensors, when the unopposed contraction of the flexors gives the hand a claw-like appearance.

Bastedo states that the general peripheral neuritis may be similar to that resulting from alcohol and that it may at least superficially resemble locomotor ataxia.

Among the sensory disturbances are anesthesia, which sometimes begins suddenly and disappears after a few days, or there may be intense pain in certain joints and muscles near them, or great tenderness over different areas of the skin.

Various disturbances of the brain are described under the title of saturnine encephalopathia; these include intense headache, vertigo and mental depression, but these manifestations are said to be rare when the earlier stages of chronic lead poisoning are treated properly.

Lead shares with other metals their irritant actions on the kidneys, and nephritis is a constant result of chronic lead poisoning; lead may possibly induce arteriosclerosis.

Prophylaxis is of the first importance with reference to lead poisoning, but it is not always possible to foresee when one will suffer from its effects, since many escape under conditions that lead to poisoning in others.

Persons who suffer from anemia or general ill health, and those who have suffered from lead poisoning are especially susceptible to its effects. Those who are exposed to the effects of lead have been advised to take very dilute sulphuric acid with a view to converting any of the metal that may be swallowed into the relatively insoluble sulphate, but this should not be permitted to give a false sense of security and cause the neglect of more important prophylactic measures, and it cannot be understood too well that the insolubility of a substance in water does not necessarily mean that it is not absorbable from the gastrointestinal tract.

An overdose or a soluble lead salt frequently causes vomiting that serves to remove practically all of the poison from the stomach, thus preventing further symptoms, but even in such cases it is well to give a dose of magnesium sulphate and wash the stomach in order to remove the resulting sulphate of lead, after which a second dose of magnesium sulphate may be administered with a view to inducing purgation and removing any of the lead that may have escaped from the stomach into the duodenum.

In the absence of sulphate of magnesium or sulphate of sodium one may administer egg-white or milk in order to form the insoluble albuminate of lead, but in any case the precipitate must be removed as promptly as possible. If vomiting and diarrhea have already resulted from the local action of the lead, magnesium sulphate may be administered in order to convert any remaining lead into the sulphate and hasten its passage from the intestinal tract.

Those who work in trades in which lead poisoning is an ever-present danger should be instructed to consult a physician on the appearance of the earliest symptoms such as the metallic taste in the mouth and the loss of appetite.

When a diagnosis of chronic lead poisoning is made one should not be content to find a single source of the intoxication, but owing to the frequency with which minute amounts of lead find entrance into the body from such a variety of sources, the physician should exercise especial care to exclude all sources of poisoning, for a lead worker having become poisoned through the pursuit of his trade may at the time be absorbing minute amounts from other sources. These minute amounts might be harmless to one in good health but might be extremely injurious to one already suffering from the effects of the metal.

The treatment of chronic plumbism includes the relief of symptoms and elimination of the poison.

Atropin paralyzes the vagus endings in the intestine abolishing the intestinal spasm, and with it a nonirritant evacuant, preferably a saline, should be used to empty the bowel. An excessively high blood pressure independent of that caused by the mechanical pressure on the splanchnic vessels is apparently concerned in the colic, and a vasodilator, such as amyl nitrite, frequently affords relief.

Since the local action of atropin is desired in such cases it would seem better to administer it by the mouth in order that it may reach the nerve endings in the maximum concentration. Since, however, the intense vagus stimulation (if indeed that is the cause of the spasm) may also cause spasm of the pylorus and interfere with the passage of the drug into the intestine after its oral administration, it may be necessary to inject the drug subcutaneously. Even in that case one may fail to elicit the full effect on the nerve endings, not only because of its greater dilution in

the general blood stream but because the anemia attending the intense splanchnic constriction interferes with the drug's reaching the endings in the intestine. In such a case it would seem logical to give amyl nitrite by inhalation or nitroglycerin subcutaneously, followed immediately by atropin intramuscularly. If a single dose of atropin (1 mg. or 1/60 grain) does not relieve, it may be repeated once or even twice.

Opium or morphin may be required for the relief of the intense pain attending the paroxysms of colic and for the relief of the joint pains that usually come later in the course of poisoning. Gout requires the same treatment as that arising under other conditions.

Lead, like other metals, is excreted in part by the kidney, but mainly by the intestine, and while it is stated that the intestinal epithelium participates in the excretion, the fact that the metal is stored more abundantly in the liver than in the other tissues suggests that that organ is responsible for the elimination of the larger part of that remaining in the body after absorption has ceased.

Potassium iodid has long been used to hasten the elimination of the metal, but it seems probable that it has little effect on the excretion of the metal stored in other parts of the body, but it may lower blood pressure and assist the action of diuretics.

Diuretics are also commonly used to hasten elimination and while they, too, have probably but little effect on the elimination of the metal stored in other parts of the body, they may lessen the local action on the kidneys by hastening the process of elimination of that actually stored in them.

The foregoing discussion might lead one to suppose that the diagnosis of chronic lead poisoning is comparatively easy. While it is an extremely simple matter in typical cases, there are many cases presenting such obscure symptoms that the diagnosis will tax the ingenuity of the most careful physician to the utmost. It must be remembered that traces of lead may be found in the urine and feces of persons in health, and that while its detection in the excreta of persons presenting other characteristic symptoms is strong evidence of chronic plumbism, the detection of traces of lead in the urine and feces cannot be accepted as conclusive proof of poisoning by it.

The systemic actions of bismuth, copper, silver and zinc are of some toxicologic interest but they do not require detailed discussion here.

Numerous attempts have been made to utilize the systemic effects of colloidal metals, colloidal silver having been exploited widely as a systemic germicide and antiseptic. The use of colloidal copper has also been suggested, but the results are not encouraging.

Iron

The normal human body contains some 3 gm. (45 grains) or less of iron, the greater part being present in the hemoglobin of the blood. It is generally stated that only a few milligrams of iron are eliminated from the body daily in the feces and urine, this loss being made good from the iron contained in the food. It is supposed that roughly one-tenth of the hemoglobin of the blood is destroyed daily, the pigments being eliminated in the bile, but the iron is evidently utilized again and again in the formation of hemoglobin, the absorption of extremely small amounts sufficing to make good the loss already mentioned. It is seldom that the normal diet contains an insufficient amount for the daily needs, but in disease there is often a disturbance of metabolism which prevents the utilization of the iron of the food and additional supplies are required to be administered therapeutically.

Iron has long been used empirically in anemia, but its rational use dates from 1746, when it was discovered that it is a constituent of the red blood corpuscles. Since then there have been many investigations intended to show the form in which iron is taken into the circulation and in which it is utilized in the formation of hemoglobin.

Bunge believed that only those forms of iron which exist in the food, such as meats and vegetables, were absorbed and he suggested that in the form of nucleoalbuminates they escaped conversion into the insoluble sulphid in the intestine, but that, under certain pathologic conditions, even these might be attacked by the hydrogen sulphid in the intestine, and their absorption prevented. He suggested further that in such conditions the administration of ferrous carbonate, or other inorganic salts of iron, would serve to prevent the action of the hydrogen sulphid on the iron of the food, which would then undergo absorption, as usual.

This theory of Bunge's is no longer held by physicians or pharmacologists, but it is still urged by certain interested manufacturers as the basis for their claims for the value of their preparations. On this basis is urged the use of preparations of manganese which are employed in anemia, as it is claimed that the manganese unites with the hydrogen sulphid, thus sparing the iron of the foods for absorption. One need only remember that iron is absorbed mainly in the duodenum and that there is no hydrogen sulphid in that part of the intestine, to recognize that administration of manganese can not affect the absorption of iron.

Bunge calls the iron which exists in the yolk of egg hematogen, and this is evidently the source of iron in the blood of the chick. One manufacturer placed a preparation on the market under the name of hematogen, but Bunge distinctly states that it is a waste of money to buy this expensive preparation.

Schmiedeberg isolated an iron compound from the liver of the pig, supposing this to be the immediate precursor of the iron in hemoglobin. While this may be the form in which iron exists immediately before it is built up into hemoglobin, there is no evidence that it is absorbed any better than other forms of iron.

Tartarkowsky bled animals repeatedly until they were unable to regenerate hemoglobin from stores of iron in the body, and fed some of these animals food free from iron, and others the same food with the addition of inorganic iron salts.[1] Those which received the iron with their food regenerated their blood and recovered their normal condition; those which did not, succumbed to the effects of the hemorrhage.

He also found that when animals which had been bled in this way received food containing an abundance of iron they regenerated hemoglobin as well as others which received similar food with the addition of inorganic iron, showing that in simple anemia organic iron in abundance suffices for the restoration of the blood. It seems probable that when the food does not contain an *abundance* of iron the addition of inorganic iron may be of benefit in simple anemia.

It is significant at least that widely different forms of vegetation are capable of supplying the animal

1. Those salts of iron which are precipitated by ammonium sulphid at room temperature are called "inorganic," regardless of whether they contain organic material or not, iron albuminate and peptonate being classed as inorganic.

organism with all of the iron which it requires for regenerating hemoglobin, and as this iron is almost certainly broken down before it is absorbed, we must suppose that both organic and inorganic forms may be utilized by the body for building up hemoglobin, but only careful clinical experience will determine which of these is preferable for therapeutic use.

At best there can be little difference between the organic and inorganic forms so far as their utilization is concerned, and clinical experience has, as yet, failed to indicate any advantage of one over the other.

The results of various experiments indicate that an amount of iron equal to about 5 mg. (1/10 grain) is excreted daily in the intestine and about 1 mg. (1/60 grain) in the urine, and it is evident that the diet should contain at least as much as is eliminated. It is in agreement with these estimates that Stockmann found that the normal daily diet of several healthy persons averaged about 8 to 10 mg. (1/8 to 1/6 grain) of iron, while the diet of two chlorotic females contained from 1½ to 3 mg. (1/40 to 1/20 grain).

The following table adapted partly from Bunge and partly from Stockmann, shows approximately the amounts of iron which various foods contain. Sugar, cream, butter, and white of egg are practically iron-free.

IRON CONTENT OF FOODS READY TO SERVE

	Mg.
1 teacupful of boiled oatmeal	0.2 to 0.5
Two apples or oranges	0.1 to 0.5
500 gm. (about 1 pound) of grapes	0.4 to 1.0
Yolk of two eggs	2.0 to 5.0
500 c.c. (about 1 pint) of milk	1.0 to 1.5
500 gm. of white bread	2.5 to 5.0
500 gm. of whole wheat bread	5.0 to 15.0
1 teacupful of mashed potato	0.3 to 1.5
1 teacupful of boiled cabbage	0.5 to 3.0
1 teacupful of boiled carrots, peas or beans	0.5 to 2.0
1 teacupful of boiled spinach	3.0 to 15.0
500 gm. "blut-wurst"	50.0 to 125.0
100 gm. yellow ox-marrow (dried)	4.0
100 gm. red calf-marrow (dried)	8.7
100 gm. roast beef	4.0 to 12.0

The foregoing table shows that the normal diet need not contain an insufficient amount of iron, but it is not always convenient to order a diet for an invalid which will contain an abundance of it, but when ox-marrow, red meats, eggs, whole wheat bread, spinach or "blut-wurst" can be taken there will be no difficulty in supplying the normal daily needs. Hazel nuts, almonds and *green* vegetables are relatively rich in iron.

THERAPEUTIC USES

The use of copperas, or ferrous sulphate, as a disinfectant has been mentioned, and the astringent uses of iron will be considered later. Iron is used in various conditions attended with anemia, being especially useful in those cases in which the red blood corpuscles individually contain less than the normal amount of hemoglobin. There are few therapeutic facts that are better established than that iron is useful in chlorosis, and it is also apparently beneficial at times in secondary anemias. Organic iron is sometimes found to cause less gastric disturbance than the inorganic forms.

Owing to the uncertainties concerning the most absorbable forms of iron one might suppose that the intravenous injection of iron is indicated in those cases in which the oral administration is not followed by improvement, but it must be remembered that iron is extremely poisonous when administered intravenously, and when the oral administration is without results this is probably due to an inability to utilize the iron in the formation of hemoglobin, rather than to any want of iron in sufficient amounts in the blood-building organs. We have no reason, therefore, to suppose that intravenous injections are ever indicated.

It is said that the anemia of ankylostoma yields readily to treatment with iron. One writer records observations on more than 300 cases and states that reduced iron, ferric chlorid, and ferrous sulphate gave better results than organic iron compounds, such as the peptonate. Iron has been used in numerous conditions in addition to those mentioned, but without sufficient evidence of any beneficial action.

It has long been taught that moist ferric hydroxid is an antidote for arsenic if it be given while the arsenic is still in the stomach, as iron and arsenic react to form an insoluble compound which should be removed as soon as possible. Later experiments seem to show that this procedure is of doubtful value, as the arsenical compound seems to be broken down and the arsenic to be absorbed about as promptly as when no iron hydroxid is given. If the stomach is washed promptly, the antidote is probably of value, as the stomach then contains little but water (if that be used for washing it), and, as previously stated, the arsenic is rendered insoluble in water. When the stomach cannot be emptied promptly, however, the iron is probably worse than useless.

DOSAGE

It is obvious that the dosage of iron usually bears little relation to the amount which it is expected will be utilized in the formation of hemoglobin, and the amount administered is frequently regulated with reference to the tolerance shown by the stomach. There is little correspondence between the amounts of iron present in the doses of the different salts as commonly administered: for example, the dose of reduced iron is given as 65 mg. (1 grain) but larger doses are frequently used, whereas the average dose of the syrup of ferrous iodid contains less than one sixth as much iron as the average dose of reduced iron.

The dose of ferrous carbonate is 0.25 gm. (4 grains); of the pills of ferrous carbonate (Blaud's pill) two containing 0.06 gm. (1 grain) each of ferrous carbonate, are taken; of ferrous sulphate, 0.2 gm. (3 grains); of the dried ferrous sulphate two thirds as much as of the crystalline; of the syrup of ferrous iodid, 1 c.c. (15 minims); of iron and ammonium citrate or of soluble ferric phosphate, 0.25 gm. (4 grains); of the tincture of ferric chlorid, 0.5 c.c. (8 minims).

The well-known disadvantages of inorganic salts of iron, such as the difficulty of preventing the oxidation of the ferrous and the astringency of the ferric; the tendency of many of them to injure the teeth; the difficulty of securing absorption and their tendency to disturb the stomach, have led to the introduction of a very large number of official and unofficial, galenical preparations, while the numerous theories advanced with regard to the form of iron which is utilized directly in the formation of hemoglobin have resulted in the introduction of numerous proprietary preparations of iron, and of manganese intended as substitutes for iron, but there is not the least evidence that any of these proprietary preparations,[2] even those sponsored by eminent investigators, have any advantage over the preparations enumerated below.

(To be continued)

2. Examples of the way in which some of the proprietary preparations of iron or its substitutes are exploited are discussed in THE JOURNAL A. M. A., Sept. 23, 1905, p. 934; April 6, 1907, p. 1197, and April 23, 1910, p. 1389.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, JULY 10, 1915

A HISTORY OF BOTANIC GARDENS

One of the stock figures of ancient and primitive medicine is the herb gatherer, the ῥιζοτόμος (*rhizotomus*) of the Greeks and Romans, who made his living by wandering about through forest and meadow, collecting medicinal roots and herbs and selling them. The herbal medicine of primitive man was, in fact, the origin of our therapeutics, and was frequently delegated to the so-called "wise women." These beldames, as the old dramatists show, would sometimes enlarge the sphere of their activities to embrace the triple functions of fortune teller, procuress and abortionist. The word "drug" is derived from the Anglo-Saxon verb *drigan,* to dry, referring to the dried collections of simples which were for a long time a medical commodity. The herbalists and drug sellers were naturally concerned to monopolize their business, and in order to frighten away the ignorant from collecting such plants for themselves, they encouraged and even invented superstitions to impose on the masses. To protect the doctor and the apothecary from these abuses, there arose the necessity of growing plants in special gardens set apart for the purpose, and these naturally clustered around the monasteries. From these monastic gardens it was but a step to the botanic and physic gardens of the medieval and Renaissance universities.

Mr. Arthur W. Hill,[1] assistant director of the Royal Gardens at Kew, England, and former university lecturer on botany at Cambridge, has published a delightful account of the history and functions of botanic gardens, illustrated with fine pictures. The earliest garden known and represented was that of Thotmes III (1000 B. C.), planned by Nekht, head gardener of the Temple of Karnak; but the modern idea of a botanic garden, for economic and scientific purposes, seems to have originated with the Chinese and was known to the ancient Aztecs. The Egyptian royal garden, with its rows of date palms, its vine pergola and lotus tanks, was really a pleasure resort. The earliest European botanic garden on record was the *hortus* at St. Gall (ninth century), with its *herbularis* or physic garden, the former of which was an oblong enclosure containing eighteen rectangular beds, while the *herbularis* was square and near the doctor's house. Here the monks cultivated their fruits and vegetables, gathered their medicinal simples and studied them. The epoch-making work of Abbot Mendel in the monastic garden at Brünn was, as Hill remarks, an offshoot of this idea. The earliest botanic garden attached to a university was that at Pisa (1544), which owed its origin to the suggestion of Francesco Bonafede, who held the chair of simples (*lectura simplicium*) at the University of Padua (1533), that a botanic garden be started there. This came to pass in 1545, and among the prefects of the Paduan garden were the eminent botanists Anguillara and Prospero Alpini. About 1561, there was added to the Paduan teaching an *ostensio simplicium* or demonstration of living plants for the students. John Ray, the English botanist, visited both these places in 1664, describing the Paduan physic garden as "well-stored," the Pisan as "meanly stored" with simples. Zurich acquired a botanic garden in 1560, and was followed by Bologna (1568), Leyden (1577), Leipzig (1579) and Paris (1597), the latter being the original of the Jardin des Plantes (1635). John Gerard, of the famous "Herball" of 1597, catalogued in his physic garden at Holborn in 1596, listing 1,030 plants, the first catalogue printed. The Jardin des Plantes had about 1,800 species under cultivation in 1636, and 4,000 in 1665. Heidelberg had a garden before 1600, and, in the seventeenth century, gardens were established at Giessen (1605), Strassburg (1620), Oxford (1621), Jena (1629), Upsala (1657), Chelsea (1673), Berlin (1679), Edinburgh (1680) and Amsterdam (1682).

Private physic gardens were owned in England by Thomas Johnson at Snowhill (1633), by John Parkinson, apothecary to James I, and John Tradescant, whose private collection of curiosities became the present Ashmolean Museum at Oxford. The land for the Oxford garden was given by the Earl of Danby, and a greenhouse or conservatory was put up in 1670. The Edinburgh garden was founded by the physicians Sir Robert Sibbald and Sir Andrew Balfour, "to safeguard the Practitioner against the Herbalist and to enable him to have a correct knowledge of the plants which were the source of the drugs he himself would have to compound." It still retains its connection with the medical school and is described as an ideal garden for instruction. The Chelsea Physic Garden, founded as the Garden of the Society of Apothecaries in London (1673), was originally at Westminster, but was moved to Chelsea in 1776, the freehold having been purchased for the society by Sir Hans Sloane in 1712 and conveyed to it by deed in 1722. It contained the first specimen of cedar of

1. Hill, A. W.: Anniversary Proceedings, Missouri Botanical Garden, St. Louis, 1915, ii, 185. This would appear to be the first detailed history of the subject since the German monograph of A. Kerner von Merilaun, Innsbruck, 1874.

Lebanon in England (1683), the final survivor of the original four planted having been removed as late as 1904. The heating arrangement of its greenhouses by a vaulted subterranean plant was an innovation, noted by Evelyn in his diary in 1685. The Berlin garden of 1679 was reorganized in 1801, and was removed from the heart of the city to Dahlem in 1909. Its splendid collections, institute and museums make it now one of the finest schools of botany in the world.

At the end of the eighteenth century, there were about 1,600 botanic gardens in Europe, including Petrograd (1713), Vienna (1754), Kew (1759), Cambridge (1762), Madrid (1763), Coimbra (1773) and the Glasnevin Garden of the Royal Dublin Society (1790). Tropical and subtropical gardens existed at St. Vincent (1764), Calcutta (1786) and Sydney (1788). The lovely Kew Gardens, celebrated in literature by Matthew Arnold and William Ernest Henley ("On the Way to Kew"), and in the lines of Erasmus Darwin:

> So sits enthroned, in vegetable pride,
> Imperial Kew by Thames's glittering side,

was originally a royal preserve first in charge of William Aiton, and afterward of Sir Joseph Banks, who made it an unrivaled center "of botanical exploration and horticultural experiment." The first botanic garden in America was established by John Bartram at Philadelphia in 1728. It was followed by the Elgin Botanical Garden, founded by David Hosack (1801), which became the Botanic Garden of New York State (1810), acquiring the celebrated herbariums of Torrey, Chapman and Meisner; and the fine and complete Botanic Garden of Harvard University (1805), which, with the Gray Herbarium (1864) and the Arnold Arboretum (1872), is "a Mecca for botanists all the world over." In our modern period were also founded the tropical and subtropical gardens at Penang (1801-1884) and Singapore (1823-1878), which are associated with the name of Sir Stamford Raffles (of the *Rafflesia*), also those of Rio de Janeiro (1808), Buitzenorg, Java (1817), Cape Town (1848), Durban, Natal (1853), the restoration of the St. Vincent garden (1890), the National Botanic Garden of South Africa at Kirstenbosch (1913), and many flourishing gardens in Australia, Tasmania and New Zealand. In addition to the American gardens already mentioned, those at Berkeley, Cal., University of Pennsylvania (Philadelphia), Smith College, Northampton, Mass., the Michigan Agricultural College (1877), the Medicinal Plant Garden of the College of Pharmacy of the University of Minnesota at Minneapolis (1910-1911), and the Wisconsin Pharmaceutical Experiment Station (1913) are of special interest in university teaching. The Missouri Botanical Garden at St. Louis, founded by Henry Shaw in 1889, and closely connected with the Shaw School of Botany of Washington University, has just celebrated its twenty-fifth anniversary, of which Hill's monograph is a pleasant memorial.

A HALF CENTURY OF ANTISEPTIC SURGERY

In a review of the scientific features in the development of modern surgery, Lee[1] has written:

> With the discovery of practicable anesthetics, the battle was only half won. The operation itself had lost much of its horror, but the tragedy of the subsequent days was unchanged. There were the almost inevitable suppuration of the wound, the putrefaction and sloughing off of tissue, the sickening odor, the high fever, the danger of hemorrhage, the slow healing, the complications of blood poisoning, erysipelas, gangrene and tetanus, the physical and mental anguish, and the uncertainty of the final outcome. The mortality from major operations was from 50 to 100 per cent.

Today, on the contrary, the opening of the abdomen, the chest or the skull no longer is equivalent to signing the death warrant of the patient. Pasteur proved that fermentation and putrefaction were neither spontaneous, on the one hand, nor due to occult causes, on the other, but are in reality the result of minute living organisms. Among the fruits of Pasteur's labors was the work of Joseph Lister.

It is sometimes stated that antiseptic surgery had its birth in 1867, when Lister reported, in the *Lancet,* his eleven cases of compound fracture, with a "preliminary note" on the antiseptic method of opening abscesses. He had furnished the first solution of the problem of how to prevent putrefaction in open wounds. As Stephen Paget[2] remarks, "Pasteur could prevent putrefaction in broth, by his aseptic method: but patients cannot be boiled, nor kept in filtered air, in flasks." To kill the germs in the wound, Lister at first chose phenol (carbolic acid). To prevent any more germs from getting in, he left untouched the scab or crust formed by the antiseptic and blood together on the wound. His first case, in March, 1865, failed; his next case, in August, was successful.

Half a century has elapsed since those memorable experiences. The wonderful strides which surgery has made during these years are fresh in our minds. The work of the surgeon is not confined to the repair of wounds, the correction of deformities, or the removal of tissues. Deficiencies may be supplied by transplantation; transfusion is readily carried out; a new era in reconstructive surgery has been inaugurated. There is no reason to believe that the end of these progressive advances in surgery in recent years is in sight. As a recent writer has remarked, surgery is no longer merely an art of skilful cutting and sewing; it has risen to the higher level of a science.

The incalculable benefit of Lister's studies and of that which has grown out of them can best be appreciated in the contemplation of the surgical infections which, in the memory of physicians now living, were once the dread of all operating surgeons. Roswell Park[3] has thus recorded his impressions of the earlier days:

1. Lee, F. S.: Scientific Features of Modern Medicine, Columbia University Press, New York, 1911.
2. Paget, Stephen: Pasteur and After Pasteur, London, 1914, p. 36.
3. Park, Roswell: An Epitome of the History of Medicine, Philadelphia, 1898, p. 326.

I deem myself fortunate in this—that I have been a living witness of the benefit of change from the old to the new, since when I began my work, in 1876 (over twenty years ago), as a hospital intern, in one of the largest hospitals in this country, it happened that during my first winter's experience—with but one or two exceptions—every patient operated upon in that hospital, and that by men who were esteemed the peers of any one in their day, died of blood poisoning, while I myself nearly perished from the same disease. This was in an absolutely new building, where expenditure had been lavish; one whose walls were not reeking with germs, as is the case yet in many of the old and well-established institutions. With the introduction of the antiseptic method, during the two years following, this frightful mortality was reduced to the average of the day, and in the same institution today is done as good work as that seen anywhere. The same was true without exception in the great hospitals of the Old World; and in Paris, where, thirty years ago, famous surgeons would go from one end of the building to the other, handling one patient after another without ever washing their hands, and where erysipelas and contagion of various kinds were thoroughly distributed, as it were, impartially, now the successors of these very same men, employing modern methods, get results which challenge comparison.

Those who fail to recall the historical development of the modern surgical technic are sometimes wont to assume that because certain current aseptic procedures have entirely superseded the antiseptic devices introduced by Lister, the advantages of his precautions are no longer essential. It must be remembered, however, that antiseptic and aseptic are nothing other than two ways of arriving at one result. In the words of Sir William Osler: "It is the difference between tweedledum and tweedledee. They are both applications of the same principle." We cannot summarize the situation better than by quoting Paget.[2] It is true, he writes, that Lister was more afraid of the powers of the air, half a century ago, than surgeons are now: it is true that his use of a phenol spray, to sterilize the air around the wound, has been given up: but the law of all operations remains today that law which was revealed to Lister in 1865, in the light of Pasteur's work on putrefaction. From the very first, antiseptic surgery had in itself the making of aseptic surgery.

The principles defended and applied by Lister find applications in everyday life at the hands of the layman; their value is further attested in the prominence which they play in the modern military régime. The soldier on the European battlefields has been taught to apply an antiseptic dressing promptly to the wound he has received in action, and the enlightened teachings of Lister follow him through all the subsequent stages of his treatment to recovery. After a lapse of fifty years we may well pause to recall that Lister was instrumental in saving more lives than the armies of the greatest general or potentate have destroyed. Let us mark the anniversary on our medical calendar and pay a tribute to the masterful genius of Lister, "a man serene through controversy, a spirit of invincible patience and of radiant purity."

THE ETIOLOGY OF RHINITIS

Benjamin Franklin[1] is given the credit of being the first to point out that colds and coughs are catching, that is, transferable from the sick to the well. At present the infectious nature of the catarrhal conditions, commonly known as colds, is accepted generally, and the bacteria commonly present — pneumococci, streptococci, influenza bacilli, *Micrococcus catarrhalis,* etc. — have been assumed to be the infectious agents. The reason for this assumption seems to be solely the fact of the presence of these organisms in various combinations and proportions in the catarrhal secretions of the affected parts. Anxious to grasp any chance to exploit their wares, manufacturers have recommended vaccines for both preventive and curative purposes, and offer to this end stock vaccines of an all-inclusive polyvalence.

That the underlying cause of many cases of "colds" is not as assumed heretofore is indicated strongly by certain recent investigations of much interest. Tunnicliff[2] has discovered, in acute as well as more chronic forms of rhinitis, a delicate, curved, gram-negative, anaerobic bacillus (*Bacillus rhinitis*) which, as a rule, is not found in the normal nose. In a large percentage of the cases of acute rhinitis, this organism is present in practically pure form.[3] It was found to be present also in 90 per cent. of cases of chronic rhinitis with mucoid discharges. That *Bacillus rhinitis* actually has an etiologic relationship to acute rhinitis is shown, first, by the experimental production with it of rhinitis with recovery of the organism in pure culture, and, secondly, by the production in cases of acute and chronic rhinitis and in persons injected with the bacillus of specific opsonin and complement-binding antibodies.[4]

In connection with this, the work of Kruse is of interest. He diluted the secretion in acute rhinitis with fifteen times its volume of salt solution and passed the mixture through a Berkefeld filter. This filtrate was instilled into the nose of twelve persons, and four came down with snuffles in from one to three days. In a second experiment, the secretion was diluted twenty times, filtered, and inoculated into the noses of thirty-six persons, fifteen of whom came down with acute rhinitis. Kruse found the filtrate sterile, and consequently he regards the result of his experiment as due to the action of an invisible and filterable virus. It is not clear, however, that in making the cultures he used modern anaerobic methods, and the question that possibly the bacillus of rhinitis of Tunnicliff was present in the filtrate must be determined by the results of future experiments.

1. Ben Franklin's Views, Correspondence, The Journal A. M. A., this issue, p. 189.
2. Tunnicliff, Ruth: An Anaerobic Organism Associated with Acute Rhinitis, Jour. Infect. Dis., 1913, xiii, 283.
3. Tunnicliff, Ruth: Further Observations on the Bacteriology of Rhinitis, with Special Reference to an Anaerobic Organism, Jour. Infect. Dis., 1915, xvi, 493.
4. Howell, Katharine: Complement Fixation in Acute Rhinitis, Jour. Infect. Dis., 1915, xvi, 456.

At all events, the work of Tunnicliff goes far toward establishing a distinct group of "colds" in which *Bacillus rhinitis* seems to be the etiologic agent. Whether or not the work here outlined will lead to improved methods of prevention and cure remains to be learned. It should serve, however, to restrain the eagerness of manufacturers and other persons to build up methods of treatment on such flimsy foundations as illustrated by the exploitation of polyvalent vaccines for colds.

FOOD FAKES OF WAR TIMES

The hardships of war naturally make a profound and sympathetic impression on the relatives and friends of the combatants. Those who remain at home desire to send an occasional token of affection to the soldiers in the trenches and to furnish them some appetizing adjuvant to the monotonous diet that must inevitably constitute the routine nourishment under the conditions of actual warfare as it is conducted today. In Germany this human longing has given an impetus to a trade in suitable gifts or *Liebesgaben,* such as articles of wearing apparel and food products. One outcome of the business promoted by this national personal generosity has been the introduction of frauds of the most shameful character. The loving mother or devoted sweetheart has been prompted unwittingly to spend exorbitant sums for worthless or inferior supposed delicacies intended to refresh and invigorate the patient sufferers at the front.[1]

This disgraceful traffic has developed some rather unique novelties in the way of fraudulent food products. One of these is "solid alcohol," advertised as a substitute for familiar alcoholic drinks like punch. The specimens sold consist of cubes of gelatin, to which brandy and sugar have been added before the mixture has solidified. The directions are to pour hot water on these cubes, whereupon one obtains a sweetish fluid, weak in alcohol and possessing a rather disagreeable flavor of glue. The longer the cubes are kept, the greater is the tendency of the alcohol originally present to disappear by evaporation, so that the supposedly invigorating "solid brandy," never at any time a representative product, becomes weaker and weaker in alcoholic strength. In some cases the cubes have been replaced by collapsible tubes of semigelatinous mixtures containing some brandy and advertised for use in the same way with hot water. The price of 60-c.c. (2-ounce) tubes varies from 25 to 35 cents. The alcohol content has gradually been reduced by the unscrupulous manufacturers, and one firm went so far as to introduce brandy substitutes and substances of a "peppery" nature to simulate the "warmth" of a dose of brandy. Painful irritations in the mouth have been reported by soldiers on the march who were unable to wash out the fraudulent adulterant that was sent to them at high cost by affectionate friends. Equally outrageous has been the traffic in "substitutes" for the much desired alcoholic beverages — often nothing more than a cube of sugar colored red with dyes admixed with citric or tartaric acid. The concoction prepared by addition of hot water to this "present from home" is an inferior kind of artificial lemonade.

Coffee and cocoa have likewise been dispensed in tablet form of most inferior quality at exorbitant prices. One pound of a favored brand, doubtless wrapped in covers with ennobling messages to the heroes of the war, sold at the rate of three dollars (12 marks) per pound! Coffee was often replaced by chicory, diluted with sugar. It is reported that 500,000 kilograms of cacao husks found their way into the market in Hamburg alone. Tablets supposedly made of dried milk, but evidently deteriorated or else originally inferior, have been unloaded on the willing buyers who have been made innocent victims of their humane impulses.

Owing to a peculiar wording of the German laws respecting food adulteration, which insist in certain cases that adulteration involves imitation, and therefore a new or novel product like a cube of "solid alcohol" cannot represent adulteration, many prosecutions have failed. The faker is a heartless villain who knows neither integrity nor patriotism. In war as in peace, he feeds on the gullibility of his patrons.

1. Our information on these facts is derived from a communication by the Director of the Chemical Laboratory of the Department of Police in Berlin. See Juckenack, A.: Liebesgaben auf dem Lebensmittelmarkte, Vrtljschr. f. gerichtl. Med., 1915, xlix, 258.

SOME FALLACIES IN THE TREATMENT OF PHENOL (CARBOLIC ACID) POISONING

The frequency with which individual chemical substances appear in the rôle of poisons varies from era to era. There was a period when arsenic, for example, occupied a more prominent place among the lists of fatalities by poisoning than it does at the present day. Acute intoxication with phenol (carbolic acid) has of late years assumed large proportions. The substance has become a popularly known household chemical which finds a diversity of applications. It is found at the bedside of the sick, in homes, in public places, in stables and in numerous similarly scattered places which indicate how readily accessible and how recklessly distributed the poison is. The comparatively recent period in which phenol has become thus "vulgarized" is indicated by the fact that it was not discovered until 1834, and its use for antiseptic purposes dates much later. Sometimes the poisoning has been due to medical misuse, though this is not very common; frequently it has been taken by mistake; many persons have employed it with suicidal intent. Under all these circumstances the seriousness of its improper use is enhanced by the fact that phenol is readily absorbed whether it be taken into the system by mouth,

through the lungs in the form of a vapor or spray, through external application to the skin in dressings of wounds and otherwise, or even by absorption from the bowel when administered as an enema. The most significant feature of the toxic action of phenol is the rapidity with which the collapse and death may ensue.

Naturally the question of first aid and suitable antidotes is of preeminent interest in this connection. When coma and collapse have set in and reached the point at which artificial respiration becomes desirable, there is little prospect of resuscitation. Everything hinges on early procedure, particularly the removal of any unabsorbed poison, whether it be in the stomach or on the exterior surfaces. Dr. David I. Macht[1] of Baltimore has recently reviewed the current antidotal recommendations in detail before the Johns Hopkins Hospital Medical Society, devoting special attention to two drugs, alcohol and sodium sulphate, which have been used in this connection on seemingly rational grounds.

The internal use of alcohol in phenol poisoning originated, according to Macht, out of the demonstration that the destructive action of the phenol on the skin is promptly overcome by quickly rinsing it with strong alcohol.[2] A critical survey of the clinical reports, together with such experimental evidence as is available, indicates the uncertain basis on which the use of alcohol in phenol poisoning really rests. The same may be said of the treatment with sodium sulphate. Phenol is known to conjugate with sulphuric acid arising in metabolism and leave the organism in the form of an ethereal sulphate or sulphonate which appears to be comparatively harmless. Baumann and Preusse therefore suggested, years ago, that the administration of a sulphate in large quantities might act as an antidote against phenol. It is questionable, however, whether the latter combines with sulphates as such in the body. Sulphites have also been considered; but they are themselves too toxic to be taken internally.

Aside from the use of ordinary demulcents like white of egg, which has not proved of value, lime water and syrup of lime have been recommended in cases in which phenol has been swallowed, with the idea that they would form an insoluble compound in the stomach. Macht reports that they too are very unsatisfactory. According to his careful and extensive experiments on animals, death can often be averted by a thorough lavage of the stomach. In accord with the promptness of the onset of symptoms, the efficiency of lavage in phenol poisoning depends on the quantity of poison taken, on the time after poisoning that the lavage is begun, and on the solution used for washing the stomach. A strong solution of sodium sulphate appears to be most useful for this purpose, water coming next in efficiency. The favorable action of the sulphate in this connection is probably not a chemical one, but is perhaps due to some hindrance to absorption and possibly also to an induced purgation.

Macht has clearly demonstrated, contrary to the popular experience, that the internal use of alcohol in cases of phenol poisoning may be unfavorable. The conflicting opinions are reconciled, however, by his investigations. The influence of alcohol depends on the time of administration. If it is given after the ingestion of phenol, as must be the case therapeutically, the symptoms will be aggravated. The alcohol here acting as an excellent solvent for phenol, still further promotes its absorption. Death may actually be hastened. On the other hand, an animal previously intoxicated with alcohol can somehow withstand better the effects of phenol taken afterward. Macht suggests, in accord with experience, that a previously drunken person will probably withstand the ravages of phenol better, whereas one that takes phenol mixed in alcohol or victims of phenol poisoning washed or doused with alcohol for therapeutic purposes, are more liable to perish. Clinical statistics are in agreement with this view. Taken together with the newer experimental evidence, they suggest, despite the advice found in some of the prominent textbooks on toxicology, that the use of alcohol in phenol poisoning should be strongly discouraged.

1. Macht, D. I.: An Experimental Study of Lavage in Acute Carbolic Acid Poisoning, Bull. Johns Hopkins Hosp., 1915, xxvi, 98.
2. Powell, S. D.: Med. Rec., New York, 1899, lv, 372. Buchanan, J. D.: ibid., lvi, 441.

THE CHLORIN TREATMENT OF WATER SUPPLIES

The increasing use of chlorin in liquid form for the disinfection of water supplies was noted last year by THE JOURNAL.[1] Continued experience has been highly favorable to this method. It is the natural outgrowth of the use of calcium hypochlorite which, since its introduction in this country, about 1908, has had a remarkable extension. Hundreds of cities have adopted temporarily or permanently the "hypochlorite" treatment, and the amount of typhoid fever prevented by this means is certainly large. At the Fifteenth International Congress of Hygiene in 1912, foreign visitors stated that the hypochlorite method, as developed in this country, was one of the most important contributions yet made to the water supply problem.

The practical application of calcium hypochlorite, however, seems beset with difficulties. The proper adjustment of the mixing and feeding devices by which the bleaching powder solution is added to the water is one of the most serious problems. An excess of the chemical may lead to unpleasant tastes or odors, especially when the water treated contains considerable amounts of organic matter. While a bad taste is theoretically less objectionable than the continued use of a water containing live typhoid bacilli, the complaints of annoyed water consumers in several places, notably

1. Liquid Chlorin and Water Sterilization, Current Comment, THE JOURNAL A. M. A., July 25, 1914, p. 327.

in Cleveland, have led to the use of ineffective amounts of the hypochlorite. This action was taken in an attempt to avoid the criticism of angry citizens who—such is human nature — preferred to drink water that did not smell rather than water which they were assured was safe but which had a disagreeable, though faint, odor. In at least one instance, attempts to still the mutterings of dissatisfaction by reducing the amount of hypochlorite added to a water have apparently led to a disastrous typhoid epidemic.[2]

The necessity which forced many water-works superintendents to choose between ineffective sterilization and the production of a disagreeable taste is now in large part, if not entirely, obviated by the substitution of "liquid chlorin" or chlorin gas under pressure for the solution of calcium hypochlorite. The great advantage seems to be that the chlorin is added directly to the water, and the amount can be regulated simply and effectively, so that the liability of causing unpleasant tastes or odors is largely eliminated. A number of manufacturers now supply the liquefied gas in cylinders under pressure, and several devices for regulating the application of the gas have been demonstrated to be adequate. The cost of apparatus and installation is low — in one city of 12,000, for example, less than $300 — and the operating cost is moderate.

Bacterially, the efficiency of the process has been abundantly demonstrated, and there is no doubt that water chlorination prevents typhoid fever. The New York State Department of Health has recently called attention to the excellent results obtained in Lockport and North Tonawanda, two small cities taking their supply from the Niagara River, which receives the raw sewage of Buffalo, a few miles above. Both cities have suffered repeatedly from typhoid fever and have at times been scourged by epidemics. Within a year, both cities have installed chlorination plants, with the result that typhoid fever within their limits has almost disappeared. Reports from other sources on the use of liquid chlorin are equally satisfactory. In Milwaukee, where the use of hypochlorite resulted in the reduction of typhoid to the lowest rate in the history of the city, there was, nevertheless, complaint of taste and odor in the winter months. The recent substitution of liquid chlorin for the hypochlorite is said to be yielding results that are hygienically just as good, while the process is at the same time more economical and more pleasing from the point of view of palatability. Buffalo is also numbered among the large cities which have recently placed in use a liquid chlorination plant. As an emergency measure and as an adjunct to filtration, the use of liquid chlorin seems to leave little to be desired on the hygienic side. It does not, however, remove turbidity or color from water, and cannot be regarded as serving all purposes of water purification.

2. Jordan, E. O.: Jour. Infect. Dis., 1913, xiii, 16.

Current Comment

LIQUID PETROLATUM AND ITS TRADE-MARKED NAMES

Recently[1] we called attention to the handicap imposed on medical progress by the multiplicity of names for the same therapeutic substance, as well as by unnecessary non-descriptive names. An illustration of the absurd extent to which the multiplication of names can go is furnished in the list of trade appellations given to liquid petrolatum since Sir W. Arbuthnot Lane advocated this product as a remedy for intestinal stasis. About a year ago we published a partial list of names, new and old, for liquid petrolatum.[2] Since then many more new ones have come to notice, among them Bakurol, Interol, Med-O-Lin, Muthol, Semprolin, Whiteruss, Nujol and Stanolax. Nujol is put up by the Standard Oil Company of New Jersey and Stanolax by the Standard Oil Company of Indiana. Probably before long each of the other Standard Oil companies will have its own name for liquid petrolatum — that is, if physicians will tolerate it. Proprietary names are coined to sustain the impression, created by advertising, that, in each case, the particular product is superior to all others; exaggerated claims would not be made for the same product under an official title. The clinical investigation conducted under the auspices of the Council on Pharmacy and Chemistry and reported on by Dr. Bastedo[3] showed that the therapeutic results from light and heavy, and from Russian and American liquid petrolatum, are indistinguishable; that the selection of a light or a heavy variety is a matter of individual preference, and that the prime consideration should be to secure a practically odorless and tasteless product. There is no excuse whatever for special brands so far as the medical profession and the public are concerned, but it is otherwise with those who supply the products: More can be charged for a product sold under a trademarked name, for thereby it is possible to make the buyer think that he is getting something better than the official liquid petrolatum. Not a few of those who put out such products under proprietary titles are simply placing their names on liquid petrolatum bought from one of the Standard Oil companies or from some other oil-producing or oil-refining concern. If one prefers the product sold by a particular firm — as Hynson, Westcott & Co., E. R. Squibb & Sons, or any other — let the prescription read, accordingly, Liquid Petrolatum, H., W. & Co., Liquid Petrolatum, Squibb, etc. Liquid Petrolatum U. S. P. should be, and probably is, as pure a product as any on the

1. The Nomenclature of Drugs, editorial, THE JOURNAL A. M. A., May 29, 1915, p. 1853.

2. Liquid Petrolatum or "Russian Mineral Oil," Report Council Pharm. and Chem., THE JOURNAL A. M. A., May 30, 1914, p. 1740. Adepsine Oil, Amalie, Atoleine, Atolin, Blandine, Crysmalin, Deeline, Glyco, Glycolin, Glymol, Heavy petroleum oil, Liquid Albolene, Liquid Petrolatum, Liquid Saxoline, Mineral Glycerin, Mineral Oil, Neutralol, Olo, Paraffin Oil, Parolinc, Petralol, Petro, Petrolax, Petrolia, Petronol, Petrosio, Rock Oil, Russian Liquid Petrolatum, Russian Mineral Oil, Russian paraffin oil, Russol, Saxol, Terraline, Terralbolia, Usoline, Water-white mineral oil, White liquid vaseline, White paraffin oil.

3. Bastedo, W. A.: Clinical Experience with Liquid Paraffin (Liquid Petrolatum), THE JOURNAL A. M. A., March 6, 1915, p. 808.

market. If a given pharmacist does not keep it or if the product he keeps is not practically odorless and tasteless, then physicians should insist that he get a product that conforms to these requirements — or patronize a pharmacist who will do this.

THE PRACTICAL DISINFECTION OF SWIMMING POOLS

The danger of the transmission of disease in swimming pools is becoming realized more prominently with the growing popularity of these institutions.[1] The management of public baths in such a way as to guarantee a satisfactory degree of sanitary safety has raised a series of questions involving construction, equipment, water source and supply and personal hygiene. Calcium hypochlorite has been highly recommended for disinfecting, and has been adopted for many pools. Its potential efficiency as a disinfectant for the water is not doubted. The use of the hypochlorite, however, is frequently accompanied by complaints regarding the disagreeable odor attending it. This fact has led to much experimentation in search of an equally efficient and inoffensive substitute. The difficulties here referred to are decidedly greater in connection with swimming pools than with public water supplies. For the treatment of the latter, more than two parts per million of hypochlorite are seldom necessary. Even with this small proportion, aeration of the drinking water is necessary to overcome the objectionable taste and odor. In the case of the swimming pool, this feature is aggravated by the fact that, according to trustworthy bacteriologists, three parts of the hypochlorite per million are necessary to sterilize the water. Aeration in such cases merely serves to release the odor from the water into the enclosed room surrounding the pool. In tests conducted recently at the Taylor Gymnasium pool at Lehigh University, South Bethlehem, Pa., S. T. Thomas[2] has obtained encouraging results by the employment of copper sulphate in place of calcium hypochlorite. The possibilities of the application of copper sulphate as an algicide and disinfectant in polluted water are not new.[3] The results recorded by Thomas are sufficiently promising to deserve further consideration by hygienists. He has summarized what he regards as the advantages of copper sulphate over calcium hypochlorite as a disinfectant for swimming pools as follows: It is more effective because it does not undergo chemical change readily. Hypochlorite owes its power to the chemical reactions involved in liberating chlorin, whereby it is converted into a useless product. Copper sulphate is not irritating to the eyes and mucous membranes, as the hypochlorite may be when used in germicidal quantities. It is cheaper and has no odor. If all other conditions were equal, the last fact alone would prove to be a great advantage.

1. The Sanitation of Swimming Pools, editorial, THE JOURNAL A. M. A., April 24, 1915, p. 1427.

2. Thomas, S. T.: The Use of Copper Sulphate in the Purification of Swimming Pools, Jour. Indust. and Eng. Chem., 1915, vii, 496.

3. Moore, G. T., and Kellerman, K. F.: A Method of Destroying or Preventing the Growth of Algae and Certain Pathogenic Bacteria in Water Supplies, Bull. 64, U. S. Dept. Agric., Bur. Plant Industry, 1904; Copper as an Algicide and Disinfectant in Water Supplies, Bull. 76, 1905.

DETROIT IN 1916

As was noted in the minutes published last week, the place for the 1916 session of the Association is Detroit, Michigan. Judging from the telegrams and letters accompanying the invitation received from that city, the Association may look for a hearty welcome and a most enjoyable time. It was announced semi-officially that no one would have to walk while in Detroit, and that every one would be presented with a Ford car as a watch charm. However this may be, Detroit is a central point, easily accessible to the whole country, and the attendance will be large.

SAN FRANCISCO SESSION

The reports of the proceedings of the Annual Session of the Association, held at San Francisco, which appeared in THE JOURNAL last week, are gratifying evidence of the work being done by the organization. The attendance was fully as large as the most optimistic expected. The number who registered from the Pacific Coast States proved the interest of the profession in that territory. The minutes of the House of Delegates show the efforts of the Association in advancing the usefulness of the profession in serving the public. The exhaustive study of the relations which physicians must meet in the sociologic conditions which prevail, especially in the development of workmen's compensation legislation, as they are presented in that portion of the report of the Judicial Council devoted to this subject, merits special attention. The action of the House in directing that this subject be brought to the notice of the different branches of the organization shows the policy of the Association: that the medical profession shall seek to advance the betterment of conditions under which the people live and labor. This is but one evidence of the earnest thought which is being given to the problems which come before the House of Delegates. The number of important measures which were considered and wisely determined can be appreciated only by a careful reading of the records. The work of the Scientific Assembly — the sections — was good. The programs were excellent, most of the meetings were fairly well attended, and interest was manifested in the papers presented and discussed. The Scientific Exhibit, as always, commanded the interest of the Fellows; not only the excellence of the work displayed but also its practical value to the profession and the clear demonstrations made by those who contributed were frequently commended. The Commercial Exhibit was most creditable and fully deserved the interest manifested by those who visited the booths of the exhibitors. The social events were well planned and carried out. Especially were the excursions enjoyed by those who were able to take advantage of them. The success of Commemoration Day has already been noted. The exposition did not detract from the interest in the work of the Association as might have been expected, but was always available whenever leisure time permitted the Fellows or their ladies to visit it. The members of the local

profession exerted themselves with true California hospitality to provide for the comfort and pleasure of the visitors and are to be congratulated on their conduct of the convention. The San Francisco Session was a great success.

ELECTRIC LIGHT AS A "PATENT MEDICINE"

Many and varied are the ways of publicity. Yet, it has apparently remained for a medical book publisher to utilize the public service corporations as a cheap and easy method of advertising his wares. The Medico Press is the name of a Chicago publishing concern which puts out a book on "Beauty and Motherhood." This book, it seems, devotes no small amount of space to the self-treatment of disease by means of light. "Use Electric Light Instead of Medicine," says a leaflet. "The ordinary electric light of the home, if used properly, can cure many diseases, acute and chronic, and relieve pain promptly." Electric light, besides being "very effective," is also warranted to "never harm." Treatment by electric light, it appears, has been simplified to a degree achieved in the past only by the "patent medicine" fraternity. "No skill or experience is required. Just follow the simple directions given in 'Beauty and Motherhood.'" Thus runs a leaflet sent out by the Medico Press, which has solved the problem of bringing to public attention the virtues of phototherapy. The publishers of "Beauty and Motherhood" write, to those public service corporations which furnish electric light, to the effect that they can show these corporations how they "may increase the sale of electricity 33⅓ per cent. or more — without cost to you — by opening a new, large field for the consumption of electric current." With the letter is enclosed the leaflet already described. Following up the argument in true "patent medicine" style, the letter from the Medico Press continues:

"With the people's interest in light treatments aroused a new, vast field for the use of electricity is opened with unlimited possibilities for you. Thus, Mrs. A. J. . . ., of Chicago, after reading 'Beauty and Motherhood,' procured a 250-candle-power bulb, and is using it ever since. Her light bills average DOUBLE the former figures. Besides, she is recommending the light enthusiastically to friends and neighbors.

"This is but one of the many instances in which 'Beauty and Motherhood' either doubled or tripled the light bill of old customers, or forced Electric Light into new houses."

Still further unfolding the scheme by which the electric light companies can notify their customers of the existence of this new cure-all, the letter continues: "The Point is to Get This Book 'Beauty and Motherhood' into the Homes of Your City." To do this the Medico Press is willing to furnish advertising leaflets, which may be included with the "next outgoing monthly bills." Query: How many electric light companies will swallow the bait?

Scientific Information Bureau for Italy.—Italy has now joined France and Germany in providing an information bureau for all kinds of scientific data, even including bibliographic references. It is operated in connection with the public library at Milan, via Ugo Foscolo 5.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

New Free Dispensary.—Work on the university free dispensary building, Birmingham, which is to cost $50,000, has commenced and the building will be completed in October.

Site Offered for Blind School.—Dupont Thompson of Birmingham has offered a tract of land near Hale Springs, as a site for the proposed State School for Manual Training for the Blind, which the legislature has been called on to construct and endow. The site offered is about 8 miles from Birmingham.

Medical Journal Headquarters Changed.—The *Southern Medical Journal*, the official organ of the Southern Medical Association, heretofore published at Mobile, will in the future be published in Birmingham, the headquarters of the association and Dr. Seale Harris, editor of the journal, will also move to Birmingham.

Mental Hygiene Society Organized.—The Alabama Society for Mental Hygiene was organized at the Alabama State Hospital, Tuscaloosa, June 21, and the following permanent officers were elected: president, Dr. John W. Abercrombie; vice presidents, Mrs. S. B. Locey, and Prof. Charles A. Brown; secretary, Mrs. R. D. Thompson, Birmingham, and treasurer, Dr. William D. Partlow, Tuscaloosa.

Mobile Alumni Hold Meeting.—At the annual meeting of the School of Medicine of the University of Alabama, Mobile, June 8, the following officers were elected: president, Dr. Marion J. Bancroft, Mobile; vice presidents, Drs. Lamartine O. Hicks, Jackson, and J. A. Ussery, Roanoke; secretary, Dr. Percy J. Howard, Mobile (reelected), and orator, Dr. E. W. Cawthorn, Mobile. The annual oration was delivered by R. C. Macy, Bayou la Batre.

Personal.—Dr. William F. R. Phillips has resigned the professorship of anatomy in University of Alabama, Mobile, and has accepted the same chair in the Medical College of the State of South Carolina, Charleston.——Dr. W. Earle Drennen, Birmingham, has been designated to take charge of the war hospital of Mrs. Harry Payne Whitney at Juilly, France, to succeed Dr. Brewer, New York City. Dr. and Mrs. Drennen sail for France, July 10.——Dr. Russell A. Smith, Brewton, has been appointed medical member of the state board of convict inspectors, succeeding Dr. James M. Austin, Wetumpka, and Dr. Austin has been made resident physician at the Wetumpka Penitentiary, succeeding Dr. James T. Fowler.——Dr. Nimrod T. Underwood, Russellville, is under treatment at the South Highland Infirmary, Birmingham.——At the twentieth annual meeting of the Association of Surgeons of the Southern Railway, held at Asheville, June 2 to 4, the committee awarded the first prize to Dr. W. Earle Drennen, Birmingham, for his paper on "Compound Infected Fractures."——Dr. Percy I. Price, Florence, has been appointed physician to the state convict camp employed at the Thorley-Phillips Stove Works, Florence.

ARIZONA

New State Officers.—At the annual meeting of the Arizona State Medical Association, held at Prescott, the following officers were elected: president, Dr. Roy E. Thomas, Phoenix; vice presidents, Drs. Harry T. Southworth, Prescott; James E. Drane, Jr., Mesa, and Albert W. Waneman, Douglas; secretary, Dr. Clarence E. Yount, Prescott (reelected); delegate to the American Medical Association, Dr. Hiram W. Fenner, Tucson; alternate, Dr. Willard Smith, Phoenix; councilor for the middle district, Dr. E. Payne Palmer, Phoenix, and for the northern district, Dr. William H. Bucher, Kingman. Phoenix was selected as the place of meeting for 1916.

CALIFORNIA

Personal.—Dr. Walter C. Chidester, San Mateo, has returned after two months in French military hospitals.——Dr. B. M. Lawrence, Los Angeles, who has been under treatment in a hospital in Los Angeles for some time, on account of an accident, is reported to be convalescent and has been taken to the home of her daughter.

Ordinance for the Employment of Municipal Visiting Tuberculosis Nurses.—An ordinance drawn up by Dr. George E. Malsbary was approved by the voters of Los Angeles at the city election, June 1, by a vote of 49,359 to 25,681. The ordinance provides for the employment of visiting tuberculosis nurses by the health commissioner in the proportion of one nurse to each one hundred cases of reported tuberculosis in the city; that these nurses shall be paid the same salary as that provided for municipal nurses; that these nurses shall visit professionally all reported cases of tuberculosis unless requested by writing not to do so; that the health commissioner be empowered to establish such supply stations as may be deemed necessary for the professional use of tuberculosis nurses; that the purchasing agent be directed to purchase all requisitions of the health commissioner, such supplies as may be deemed necessary for the professional use of tuberculosis nurses; and that the health commissioner shall divide the city into appropriate sections or districts, assigning one or more nurses to each district formed according to the number of tuberculosis cases therein.

University of California Notes.—Governor Hiram W. Johnson has declined to approve the antivivisection bill which was passed by the California Legislature at its last session. The committee on medical instruction of the regents of the University of California, the deans of the California and Stanford medical schools the biologic and agricultural investigators, the medical profession, and many other citizens had protested against the measure as an unwarrantable interference with science. In declining to approve the bill Governor Johnson announced that its provision that any humane officer should be permitted to invade any scientific laboratory without a search warrant was an unconstitutional interference with personal liberty and the rights of privacy. ——Work has begun on the new University Hospital, San Francisco. This teaching hospital, which is to be under the exclusive control of the University of California Medical School, is being built through the gift of $615,000 to the University of California by a group of a large number of different donors.——The University of California has accepted an offer of the Children's Hospital of San Francisco whereby the hospital remains independent financially and administratively, but whereby all of its resources become available for the educational purposes of the University of California Medical School.——Hahnemann Medical College of San Francisco has offered to convey all its property to the University of California, and has proposed to cease separate instruction. Instead two professorships are to be maintained in the University of California Medical School, in homeopathic materia medica and in homeopathic therapeutics, as elective studies, the financial provision therefor to be made, for the next two years, by the homeopaths. In all other respects students wishing eventually to become homeopathic practitioners will receive exactly the same instruction in the University of California Medical School as all of its other students.

DISTRICT OF COLUMBIA

New Hospital Finished.—The new Emergency Hospital and Central Dispensary, Washington, on New York Avenue, is completed and ready for occupancy. The building is nine stories in height and has a roof garden. The first floor of the new building is devoted to the emergency, dispensary and administration departments, the second and third floors contain open wards; the fourth to the seventh floors, inclusive, consist of private-room floors; the eighth floor is occupied by operating, anesthetic, Roentgen ray and laboratory rooms, and the ninth floor is devoted entirely to the culinary department of the institution.

Personal.—Medical Director Frank Anderson, U. S. N., was elected president, and Col. Charles Richard, M. C., U. S. A., vice president of the Washington Alumni Association of the College of the City of New York, at its meeting in Washington, June 25.——Dr. Joseph M. Heller, Washington, who has been seriously ill at the Union Protestant Infirmary in Baltimore, has returned home convalescent.——Dr. Ethan Flagg Butler, Washington, has started from Saloniki on his return to the United States.——Fred A. Fenning and Walter B. Guy have been appointed by the district commissioners, members of the board of medical supervisors of the district, succeeding B. F. Leighton and L. Cabell Williamson, resigned.——Dr. Roy D. Adams has been appointed a member of the regular Board of Medical Examiners of the District, succeeding Dr. George C. Ober, resigned.

IDAHO

Personal.—Dr. Charles A. Dettman, Burke, has been elected secretary of the Idaho State Board of Medical Examiners. ——Asst. Surg. Liston Paine, U. S. P. H. S., addressed the Cache Valley Medical Association at Preston, June 22, reviewing the work being done in Idaho and Montana by the United States Public Health Service for the extermination of Rocky Mountain spotted fever. The lecture was illustrated with pictures of spotted fever patients and specimens showing the causative factor, the wood tick, in its various stages of development.

ILLINOIS

Prize Awarded Open-Air School.—Trustees of the Elizabeth McCormick Memorial Fund have been notified that their open-air school exhibit at the Panama-Pacific Exposition has been awarded the grand prize for school hygiene, a medal of honor and a gold badge in education.

Personal.—Dr. John K. Reticker has been added to the staff of Blessing Hospital, Quincy.——Dr. Royal L. Eddington, Lacon, was operated on recently for appendicitis at the Proctor Hospital, Peoria, and is reported to be doing well.——Dr. Franklin J. Drake, president of Lombard College, Galesburg, has resigned and will reenter the practice of medicine.——Dr. John Dill Robertson, Chicago, has been appointed a member of the board of trustees of the Chicago Municipal Tuberculosis Sanatorium, succeeding Dr. George B. Young.

Chicago

Daily News Sanatorium Open.—The *Daily News* Fresh Air Fund Sanatorium in Lincoln Park, Chicago, opened for its twenty-ninth annual season on June 28.

Baby Saving Week.—Mayor Thompson has issued a proclamation that the week of July 17 to 24 is to be Baby Welfare Week. He urges on the citizens of Chicago the importance of the undertaking and asks that all civic and philanthropic organizations lend their aid and cooperation.

Cooperation of Health, Police and Street Departments.—A plan is being worked out between the health, police and street departments whereby the patrolmen of the police department will assist the health department in keeping the city clean and improving sanitary conditions generally. It is intended that the police officers shall keep watch on the sanitary condition of streets, alleys and back yards on their respective beats, and shall pay special attention to manure piles and the manner of keeping garbage. Derelict householders will be notified and if improvement is not made, reports will be made to the department. It is expected that the fly nuisance will be kept at the lowest possible point by this means and that there will be improvement in sanitation generally. At present the inspectors of the health department are kept busy investigating complaints and have no time to make systematic surveys of any given section of the city.

INDIANA

Mission for Sick Children Opened.—The Summer Mission for Sick Children, Indianapolis, was opened July 1 for the season of 1915.

Sanitary Survey Commenced.—A sanitary survey of Logansport was commenced by J. C. Diggs, state chemist, and four assistants, on June 21.

Flood Prevention Plans.—At a meeting of the Fort Wayne Medical Society, June 15, the organization went on record as favoring the proposed flood prevention methods and appointed a committee consisting of Henry O. Bruggeman, John H. Gilpin and Hermann A. Duemling to draft resolutions embodying the society's endorsement.

Personal.—Dr. Charles W. Fry has been appointed president of the Huntington Board of Health, vice Dr. William F. Smith, resigned.——Dr. Fred L. Bunch, Muncie, has been appointed division physician of the Logansport Division of the Pennsylvania system.——The office of Dr. Henry E. Steinman, Monroeville, was destroyed by fire, June 17.

University Notes.—Two additional full-time teachers have been added to the faculty of the medical department of the State University. B. D. Turner, B.S., Ph.D., becomes associate professor and head of the department of pharmacology and Dr. Eugenio Fernandez of the University of Chicago becomes associate in pathology. Dr. Boessinger remains in the department as instructor.——Dr. Paul Bowers of the Stae Hospital for the Criminal Insane received the degree of M.D. *cum laude* at the graduating exercises of the University; the subject of his thesis was "Insanity and Crime."

IOWA

Valley Physicians Hold Meeting.—The forty-fourth annual meeting of the Des Moines Valley Medical Association was held in Ottumwa, June 17, and the following officers were elected: president, Dr. Moses Childress, Oskaloosa; vice presidents, Drs. Martin F. Moore, Martinsburg, and James S. Gaumer, Fairfield; and secretary, Dr. Elias B. Howell, Ottumwa (reelected).

Hospital News.—The Woodbury County Hospital for Tuberculosis at Sioux City, erected at a cost of about $15,000, is nearing completion.——A special election has been set for September 9, at which Delaware County will vote on the question of raising a one-half mill tax to be applied on the erection of a county hospital to cost $50,000.—At a conference between the representatives of the Des Moines Chamber of Commerce, The United Mine Workers of America, and J. M. Griffin, Albia, the establishment in Des Moines of a hospital to be the headquarters of practically all of the 13,000 coal miners of Iowa, was assured.

MAINE

New Board Members.—The governor recently appointed Dr. Adam P. Leighton, Jr., Portland, and Eugene H. Andrews, Brunswick, members of the Board of Registration in Medicine, succeeding Dr. George H. Emerson, Bucksport, and John L. M. Willis, Eliot, whose terms of office expired July 1.

Rename Medical School.—The trustees and overseers of Bowdoin College, on June 24, voted that the Medical College of Maine, the medical department of Bowdoin College as it has been known since its establishment in 1820, will in the future bear the name of Bowdoin Medical School. In all future commencements, a medical graduate will be selected as one of the five commencement day orators.

Personal.—Dr. Carl M. Robinson, Portland, has been appointed superintendent of the Edward Mason Dispensary, Portland, succeeding Dr. Millard C. Webber, resigned.——Dr. Karl B. Sturgis, second assistant physician at the Augusta State Hospital, has resigned and will practice in Augusta. Dr. Arthur C. Wright, Gardiner, has been named second assistant physician and Dr. Harry Bass, Plymouth, Mass., third assistant physician.

MARYLAND

Personal.—Dr. Howard A. Kelly has left for Toronto, where he will remain until September 1.——Dr. Francis P. Carroll, formerly of the surgical staff of St. Agnes' Hospital, has left Baltimore to take up his new work as resident physician and surgeon of the Bridgeport Hospital, Bridgeport, Conn.——Dr. J. A. Campbell Colston, Baltimore, has been promoted to senior surgeon of the Red Cross unit at Pau, France, succeeding Dr. E. Kirby Smith, who resigned to go to Serbia to aid in the work of the extermination of typhus fever.——Dr. John C. Hemmeter, Baltimore, who has been ill with appendicitis, is reported to be improving.

MINNESOTA

Medical Corps in Charge of Emergency Hospital.—The Emergency Hospital at Minnesota State Fair, September 6 to 11, is to be placed in charge of the sanitary committee, First Field Artillery, Minn. N. G., of which Maj. Willmar C. Rutherford, St. Paul, is in command.

Campaign for Public Health.—A campaign to obtain members for the Minnesota Public Health Association was inaugurated June 22 by the executive secretary, Ignatius J. Murphy, Duluth. Application blanks for membership have been sent all over the state and it is proposed to form county public health associations and to scatter broadcast, public health letters and bulletins of information to aid in the fight against tuberculosis.

Sanatorium Notes.—The counties of Crow Wing and Aitkin have decided to unite in the establishment and maintenance of a county sanatorium for tuberculosis. The counties have also united on the proposition of levying a one mill tax. Thus a fund of about $26,000 will be raised which will be sufficient for the construction of the sanatorium, which is to be located near Cedar Lake station.——The county commissioners of Grant County have withdrawn from the proposition for the establishment of the joint tuberculosis sanatorium for Douglas, Grant, Polk and Stevens counties.——Blue Earth County has declined to be one of the eight counties to build a joint tuberculosis sanatorium at Mankato.——Bids have been asked for the construction of a tuberculosis sanatorium for the counties of Polk and Norman.

Personal.—Dr. Burton J. Merrill, Stillwater, has been appointed prison physician, succeeding Dr. W. H. Pratt.——Dr. John C. Staley, St. Paul, who has been attached to the American Ambulance Hospital, Paris, has returned to the United States.——The Minneapolis City Council, June 11, declared vacant the office of health commissioner held by Charles E. Dutton, and Dr. Harry M. Guilford was named as temporary head of the department.——Dr. Norman W. Chance was taken ill at his summer cottage at Little Falls, June 5, and brought to St. Gabriel's Hospital, Little Falls, for treatment.——Dr. Charles H. Pelton has been appointed assistant superintendent of the St. Paul City Hospital.——Dr. and Mrs. Charles M. Long, Osakis, have returned after a three months' tour of California.——Dr. Frederick A. Smartwood, Waseca, is taking a trip to the Pacific Coast.

Faculty Notes.—Dr. George D. Head, assistant professor of medicine; Drs. Peder A. Hoff, St. Paul, and Alexander R. Hall, St. Paul, instructors in medicine; Dr. James S. Gilfillan, St. Paul, assistant professor of medicine; Dr. John L. Rothrock, St. Paul, assistant professor of gynecology; Dr. Charles D. Freeman, St. Paul, instructor in dermatology and genito-urinary diseases, and Dr. Frederick E. Haynes, Minneapolis, instructor in the department of medicine, have resigned from the faculty of the University of Minnesota Medical School.——The vacancy created by the resignation of Dr. Charles L. Greene, St. Paul, head of the department of medicine in the Medical College of the University of Minnesota, has been provided for temporarily by the appointment of a committee composed of Drs. S. Marx White, Minneapolis, associate professor of medicine; Arthur S. Hamilton, Minneapolis, associate professor of nervous and mental diseases, and Julius P. Sedgwick, Minneapolis, associate professor of pediatrics, temporarily to administer the affairs of the department.

Hospital Notes.—Bids for a frame hospital to be constructed on the Fond du Lac Indian Agency Farm, west of Cloquet, will be opened in Washington July 17. The cost of the building is to be $19,500 exclusive of fixtures and plumbing. The building will have accommodations for twenty patients and will care for Indians from the various reservations of Northern Minnesota.——The Thomas Feigh Children's Hospital, Duluth, will be opened early this month. The hospital, designed to care for crippled and tuberculous children, was made possible by a donation of $35,000 by Mr. Feigh two years ago. The site for the hospital at Eighth Avenue East and Eighteenth Street, comprising 11 acres, was donated by Bishop McGolrick. Dr. Joseph R. Kuth, Duluth, will be chief surgeon of the institution. The building is of brick construction, three stories in height and will accommodate thirty patients.——Bids for the Franciscan Sisters' hospital, Little Falls, were opened June 26. The building is to be 50 by 124 feet, fireproof, and three stories and basement in height.——The Union Hospital, New Ulm, built by the Union Hospital Association, was recently dedicated. The building is 44 by 96 feet, of stone and brick construction, three stories in height and with equipment will have cost $70,000.

NEW JERSEY

For New Hospital.—On June 30 an elaborate benefit was given at Union Lake Park for the new hospital for Millville and Vineland.

State Department of Health Meeting.—The members of the State Department of Health, as it is constituted beginning July 1, held their first meeting at the State House, Trenton, June 18, and discussed the plan of organization. No decision as to the choice of director was made until after the first July meeting. The medical members of the board are Drs. Edward A. Ayers, Branchville; J. Oliver McDonald, Trenton, and Henry Spence, Jersey City.

New State Society Officers.—The one hundred and forty-ninth annual meeting of the Medical Society of New Jersey was held at Spring Lake, June 22 to 24, under the presidency of Dr. Frank D. Gray, Jersey City. Dr. Stewart Paton, Princeton, delivered an oration on "Medicine's Greatest Contributions to Humanity," and the following officers were elected: president, Dr. William J. Chandler, South Orange; vice presidents, Drs. Philipe Marvel, Atlantic City; William G. Schauffler, Lakewood, and Thomas W. Harvey, Orange; recording secretary, Dr. Thomas N. Gray, East Orange (reelected); corresponding secretary, Dr. Harry A. Stout, Wenonah (reelected); and treasurer, Dr. Archibald Mercer, Newark (reelected).

NEW YORK

Personal.—Dr. Barton McCosh Cookingham, Red Hook, returned June 18, after five months service with the Serbian Red Cross.

Antituberculosis Camp Opened.—The Olean Tuberculosis Society opened its open air camp on the Bullis farm, June 28. The camp will accommodate twenty patients.

Hospital Appropriation Increased.—The supervisors of Cattaraugus County have increased the appropriation for the County Tuberculosis Hospital from $18,000 to $30,000. The hospital, which will accommodate forty patients, will be ready for occupancy in the fall.

New York City

Personal.—Dr. and Mrs. T. R. Turnure have returned from Europe, and Dr. Elizabeth J. Van Slyke has sailed for Europe.——Dr. W. J. Maloney, who has been serving as a surgeons with the Dardanelles expeditionary force, is in a hospital in Alexandria, Egypt, as the result of a gunshot wound of the wrist and injury to his right leg.——Dr. H. Sheridan Baketel has been elected head of the Department of Hygiene and Public Health in Long Island College Hospital.

Rockefeller Institute Appointments.—The board of scientific directors of the Rockefeller Institute for Medical Research announces the following appointments and promotions: Dr. James B. Murphy, hitherto an associate in the department of pathology and bacteriology, has been made an associate member. The following have been made associates: Dr. Carrol G. Bull, pathology and bacteriology; Dr. Frederick S. Jones, pathology and bacteriology; Dr. Clarence J. West, chemistry; Dr. Michael Heidelberger, chemistry; Dr. Frederick M. Allen, medicine; Dr. Oswald T. Avery, bacteriology; Miss Angelia M. Courtney, chemistry; Dr. Eduard Uhlenhuth, experimental biology. The following have been made assistants: Dr. Harold K. Faber, pathology and bacteriology; Mr. Chester H. Allen, chemistry; Mr. James K. Senior, chemistry; Mr. Glenn E. Cullen, chemistry; Miss Mariam Vinograd, chemistry. The following new appointments are announced: Dr. R. Werner Marchand, assistant in the department of animal pathology; Dr. Carl Ten Broeck, associate in the department of animal pathology; Dr. Herbert D. Taylor, assistant in pathology and bacteriology; Dr. Oswald H. Robertson, assistant in pathology and bacteriology; Mr. Ernest A. Wildman, fellow in chemistry; Dr. Reginald Fitz, assistant in medicine and assistant resident physician, and Dr. Arthur L. Meyer, assistant in physiology and pharmacology.

NORTH CAROLINA

Sanatorium Charter Amended.—The secretary of the state announces the amendment of the charter incorporating the Pittman Sanatorium, Tarboro, so as to provide for the capitalization of $50,000. It is stated that a new building to cost $15,000 will shortly be added. (Way)

Personal.—Dr. Roswell E. Flack, Spray, formerly associated with Dr. Karl Von Ruck, Asheville, and recently health officer of Spray, N. C., will spend the summer in the laboratory of Dr. William H. Welch, Baltimore, and will then assume the duties of professor of pathology and bacteriology in the Wake Forest College, vice Dr. Herbert D. Taylor, resigned to accept service with the Rockefeller Institute, New York City.——Col. S. Westray Battle, Asheville, for several years surgeon-general of the National Guard of the state, has been retired with the rank of brigadier-general. ——Dr. Hugh W. McCaie has been elected city physician of High Point, vice Dr. David A. Stanton, resigned.

Reorganization of Bureau.—The State Hookworm Bureau terminated with that of the Rockefeller Commission, May 1, 1915, and was reorganized as the Bureau of Rural Sanitation, which bureau purposes actively to continue a portion of the work formerly performed, in addition to making local county health work the unit basis of all health work. Resolutions were adopted expressing the state's appreciation of the assistance of the Rockefeller Sanitary Commission. Dr. Fletcher R. Harris, Henderson, was elected to fill the unexpired term caused by the resignation of Dr. Alfred A. Kent, Lenoir, to accept a seat in the state legislature. Dr. Watson S. Rankin, Raleigh, was unanimously elected to succeed himself as secretary-treasurer for a term of six years. A contract was let for the immediate erection of the new building at the State Sanitarium for Tuberculosis.

Lists of Licensed Practitioners.—The Medical Society of the State of North Carolina at its recent session authorized its secretary to cooperate with the collectors of internal revenue in the furnishing of corrected lists of licensed practitioners of medicine in the state to the federal authorities. The legislature of the state recently authorized the attorney general to prosecute illegal practitioners of medicine on the advisement of the Board of Medical Examiners. Still more recently, June 15, 1915, the collectors announce under a recent federal treasury ruling that all physicians, when applying for their July 1, 1915, renewal of their permits to dispense narcotics under the Harrison Narcotic Law, must make affidavit they are legal practitioners. With this combination of fortuitous circumstances, apparently, the possibilities of anyone continuing to practice medicine illegally in North Carolina are decidedly small if the officials charged with these various responsibilities merely perform their duty.

OHIO

Sanatorium Notes.—Bamford Hills Camp, maintained by the antituberculosis workers of Cincinnati on the Little Miami River, is opened for the season and has about fifty anemic children in residence at present.——The contract for the new Butler County Tuberculosis Hospital has been awarded for $2,029.50.

Resolutions Regarding Dr. Stevenson.—The Ohio State Commission for the Blind, Columbus, at a recent meeting, by resolution, showed its appreciation of the late Dr. Mark D. Stevenson, Akron, a member of the first group of ophthalmologists to serve the state as a member of the advisory committee to assist in the campaign for preventing blindness, and paid tribute to Dr. Stevenson's unselfishness and brilliant success in his profession and extended to his family the sincere sympathy of the commission on account of his untimely death.

Personal.—Dr. Robert C. Longfellow, Toledo, announces that during his visit to the West, Hawaii, China and Japan, between July 8 to October 10, inclusive, the Toledo clinical laboratories will be closed.——Dr. John M. Adams, Cincinnati, has been elected medical director of the forty-ninth annual encampment of the department of Ohio, G. A. R.——Dr. Francis Dowling, Cincinnati, has been given the decoration of the legion of honor by the president of the French Republic on account of valuable contributions to French medical literature.——Dr. Edgar C. Steinharter has been appointed junior surgeon in the department of gynecology of the Cincinnati General Hospital.——Dr. Roland E. Skeel, Cleveland, had conferred on him by the University of Michigan, June 24, the honorary degree of Master of Arts. ——Dr. Louis L. Syman, Springfield, superintendent of the medical department of the Detroit, Toledo and Ironton Railway, who was operated on at the City Hospital for appendicitis, June 11, has returned home convalescent.—— Dr. Morton W. Bland, Bellevue, state registrar of vital statistics, is reported to be seriously ill in Grant Hospital, Columbus.——Dr. John V. Gallagher has been appointed chief of staff of the new St. John's Hospital, Cleveland. Dr. Gallagher also had conferred on him the honorary degree of LL.D. by Niagara University, Buffalo, June 15.

PENNSYLVANIA

Baby Clinics Resumed.—The baby clinics at Allentown, which were a feature of the Social Service work at the River Front Park last year, are to be conducted again, and opened July 1.

Summer Course in Anatomy.—The department of anatomy, University of Pittsburgh, will give six courses in anatomy as follows: Gross anatomy, cytology, histology, splanchnology, homatology, embryology, neurology and also anatomy of the eye, ear, nose and throat. The course will extend from July 5 to August 28, inclusive.

Memorial Laboratory.—A four-story memorial laboratory, to be operated in connection with the Allegheny Hospital is being built at Sandusky Street and Park Way, Pittsburgh, as a memorial to the late Dr. William H. Singer, by his three children. The construction, equipment and endowment for maintenance amounts to $385,000. The first floor will be equipped for the development and production of medical photography; the second, museum, library and clinical necropsy, the third for studies in pathology, bacteriology and immunity, and the fourth for porters and employees. Dr. G. R. Lacy has been secured as bacteriologist.

Personal.—Dr. William J. Hanlon, Mt. Carmel, is reported to be critically ill in the Medico-Chirurgical Hospital, Philadelphia.——Dr. William W. Jenkins, Olyphant, was seriously

injured in a collision between his motorcycle and a railway train near Archbald, June 21.——Dr. Samuel P. Heilman of Lebanon has been elected a trustee of Franklin and Marshall College.——Dr. Robert Kilduffe, Jr., has been elected director of the pathologic department of the Chester Hospital.——Drs. Theodore B. Appel and John L. Atlee, Lancaster, were given the honorary degree of Sc.D. by Franklin and Marshall College, at its recent commencement.——Dr. Samuel A. Silk, for two and a half years a member of the staff of the State Sanitorium at Mount Alto, has resigned and will parctice in Sharon.——Dr. Walter H. Brown, formerly of Richlandtown, has been appointed district health inspector of Essex District, Mass.

Philadelphia

Personal.—Dr. Ella B. Everett has recently been appointed president of Wilson College, Chambersburg.

Nurses' Home Opened.—The new home for nurses of the Germantown Hospital, the gift of Mrs. William G. Warden, as a memorial to her husband was formerly opened June 29. The new building contains sixty single bedrooms for nurses and is opposite the main hospital building. It is constructed of red brick with terra cotta trimmings.

SOUTH CAROLINA

Pellagra Colony.—Spartanburg County, S. C., has appropriated $4,000 for maintenance of a pellagra colony which opened June 1 at the county home.

State Sanatorium Opened.—The tuberculosis committee of the South Carolina State Board of Health announces the opening at State Park, eight miles from Columbia, of the State Sanatorium for the Treatment of Incipient Tuberculosis, and the custody of two patients from each congressional district and two additional from the state at large are invited. Application blanks for admission of patients are to be had of Dr. Ernest Cooper, Supt., Columbia, S. C.

Personal.—Dr. John R. Martin, biochemist at the Pellagra Hospital of the United States Public Health Service, Spartanburg, has declined the permanent position of biochemist at the institution and has returned to New York City.——Dr. James Woods Babcock, Columbia, has been elected professor of psychiatry in the Medical College of the State of South Carolina, Charleston, and Dr. John L. Dawson has resigned as professor of the principles and practice of medicine and has been elected emeritus professor of medicine.——Capt. Alexander Moultrea Brailsford, M.C., S.C.N.G., Mullins, has been appointed major, medical corps, and assigned to duty as chief surgeon of the national guard of the state.

Medicomilitary Correspondence Course.—On the recommendation of the inspector-instructor of sanitary troops, concurred in by the chief surgeon, the War Department has extended the time for the completion of the medical correspondence course which is being given the medical officers of the national guard of South Carolina to September 1. The order extending the time for the surgeons to complete their reports of study also states: "Unless a medical officer shows an inclination to perform his full military duty and answers at least one of the bulletins of the medical correspondence course, he will not be assigned to camp duty this summer." All examination papers are to be sent to Dr. Alexander M. Brailsford, Jr., Chief Surgeon S. C. N. G. Mullins, who will mark them for Maj. Henry Page, Jr., M.C., U. S. Army, Fort Moultrie, while the latter is absent on leave during the summer.

TEXAS

Department of Medicine Closed.—The Southern Methodist University, Dallas, has closed its medical department, and the faculty of the department was officially suspended at a meeting of the faculty called by the executive committee of the board of trustees. June 10.

Sanitary Surveys.—A sanitary survey of Harris County was inaugurated by Dr. Michael V. Moth, Houston, assistant county health officer, in June. Dr. Moth devoted his attention particularly to the sewerage disposal, the nearness of sewers to artesian wells, to drainage and to soil pollution.

Postgraduate School for Dallas.—A meeting of physicians was held in Dallas, June 8, to form plans for the establishment of the Dallas postgraduate medical school. A committee of nine was named to formulate the organization of the school. Of this committee, Dr. Wiliam C. Swain, Dallas, is chairman.

Health Boards Organize.—Temporary organization of the Texas Association of Health Boards for the purpose of cooperating with the State Board of Health in enforcing the health laws of the state, was made effective at Austin, June 15. Dr. William B. Collins, Austin, state health officer, was elected president; Dr. William E. Spivey, Belton, vice president, and Dr. William A. Davis, Jr., Jourdantown, secretary of the Board of Health of Austin, secretary.

Personal.—Drs. William J. Calvert and Clarence M. Grigsby have resigned as members of the Board of Health of Dallas.——The Mexican Provincial Government has commissioned Dr. Manton M. Garrick, Dallas, to conduct a clean-up campaign in Mexico similar to that which he has been carrying on in Texas during the last two years.——Dr. Jesse L. Womack, Lolita, fell from a moving train near Lolita, June 14, and fractured his arm.

Health for Houston's Babies.—At a meeting held in Houston, June 22, a baby-saving campaign for the city was launched. The Houston Foundation provides the funds and the city health department furnishes the list of beneficiaries on the recommendation of the visiting nurses who find babies in need of nourishment; reliable sanitary distribution stations will be established in the city and the Nurses' Association and Child Welfare League will cooperate.

Training School for Health Officers.—The University of Texas has established a summer school for the benefit of county and city health officers of the state. The course extended over three weeks, beginning June 14, and the program consisted of lectures on municipal health, organization and administration of public health, public health laws, vital statistics, antinarcotic law, both state and federal; human carriers of disease, epidemiology, purification of water supply, plumbing and sewers, septic tanks and incinerators, vaccination, rabies and its treatment, infant feeding, baby welfare, sex hygiene, the clinical laboratory and its work, method of collecting specimens for bacteriologist, soil pollution, laboratory diagnosis, medical supervision in public schools, serums and bacterins, rural homes, school hygiene and sanitation, rural health problems and pure food. At the close of each day's session there were round table talks on subjects lectured on during the day or any other subjects chosen by those attending these lectures. There were no fees charged for this summer health course by the university, and the Texas State Board of Health asked the county and city governments to provide sufficient funds for their respective health officers to attend this meeting.

CANADA

University News.—Principal Sir William Peterson of McGill University, Montreal, announced at a recent meeting of the board of governors that the degree of LL.D. had been conferred upon King Albert of the Belgians. The following appointments were also announced in the medical faculty: assistant professor of chemistry, Dr. F. W. Skirrow; assistant professor in physiology, Dr. J. A. Gray; associate professor in pathology, Dr. Horst Oertel; assistant lecturer in physiology, Dr. T. P. Shaw; lecturers in immunology, Drs. J. C. Meakins and Fraser B. Gurd; lecturer in hygiene, Dr. R. St. J. Macdonald; lecturer in biology, Dr. F. S. Jackson, and associate professor of physics, Dr. L. V. King.

Hospital News.—The faculty of Laval University, Montreal, has decided to abandon the project of raising a general hospital for active service. Laval University offered the Canadian militia department a hospital of 520 beds. The department accepted the offer, but raised it to one of 1,040 beds. Now the university authorities have found that medical men have made their arrangements for the summer and that it would be impossible for them to raise and equip a hospital of that size.——On the commission just appointed by the Canadian government to deal with the care of Canadian wounded arriving home, appear the names of Lieut.-Colonel Thomas Walker, M.D., St. John, N. B., and Surgeon-General Carleton Jones, M.D., director-general of the Canadian Medical Services.

Personal.—Dr. J. N. Elliott Brown, who has just been appointed superintendent of the Henry Ford General Hospital, Detroit, was formerly superintendent of the Toronto General Hospital and for some time general secretary of the Ontario Medical Association.——Dr. Howard A. Kelly, Baltimore, is the guest in Toronto of Dr. Newton A. Powell. Dr. Kelly spoke in the Markham Street Tabernacle on the evening of July 4 on "Responsibilities of Christian Citizenship." A large number of medical men were present to hear the address.——Lieut.-Colonel Robert D. Rudolf, M.D., professor of therapeutics in the University of Toronto, who has

been in command of No. 2 Base Hospital with the first Canadian Expeditionary Force, is home on sick leave.——Dr. V. E. Henderson, professor of pharmacy and pharmacology in the University of Toronto, has volunteered for service in the Canadian militia and has been placed in charge of the detention camp at Kapuskasing, Ontario.——Surgeon-General Carleton Jones of the Canadian militia has returned to London, England, after a visit of inspection to the Canadian divisional medical services at the front. The Canadian wounded are distributed in nearly 200 different hospitals in the United Kingdom.

Annual Meeting of Ontario Medical Council.—Not for many years has the Ontario Medical Council held such an important meeting as that held during the week ending July 3 in Toronto. The president, Dr. James McArthur, London, Ont., having died in the interim, Dr. Herbert S. Griffin, Hamilton, vice-president, conducted the meeting, and was elected to the presidency for the ensuing year. Dr. Edmund E. King, Toronto, was elected vice-president. Through ill health the registrar, Dr. John L. Bray, was obliged to tender his resignation. Dr. Bray will be allowed an honorarium during life. Dr. H. Wilberforce Aikens, Toronto, the treasurer for many years, was elected to the combined office of registrar-treasurer.——One of the chief items of discussion was the passing of a resolution pledging the council to sign an agreement with the General Medical Council of Great Britain for reciprocity in licenses. The Canadian provinces now having this reciprocal arrangement with the mother land are Prince Edward Island, Nova Scotia, New Brunswick, Quebec and Ontario.——A resolution was also adopted calling on the Ontario government to dispatch doctors at once to England to care for wounded Canadian soldiers suffering from impaired mentality from the results of warfare. It was recommended that physicians and nurses from the provincial hospitals for the insane be appointed to this duty.——Quacks, in the shape of osteopaths, chiropractors, etc., are to have their activities inquired into and toward this end a sum of $2,000 was voted to defray the expenses of representatives of the council to visit these so-called institutions of medical education, to gather information to lay before the proposed Commision on Medical Education to be appointed some time by the Ontario government. ——The council voted $2,000 to the fund in aid of the Belgian doctors and pharmacists.——The council will also ask the Ontario government to provide for lectures on farm sanitation in rural districts.

GENERAL

Correction.—In The Journal for July 3, 1915, p. 49, the last word in the discussion of Dr. Wilhelm's paper should be "episiotomy," not "pubiotomy."

Mississippi Valley Conference on Tuberculosis.—The Mississippi Valley Conference on Tuberculosis will be held in Indianapolis, September 29 to October 1, inclusive.

New Director of Health.—Surgeon John D. Long, U. S. P. H. S., has been made Director of Health of the Philippine Islands, a position created under the new Philippine health laws which became operative July 1.

Hospital Association Officers.—At the annual meeting of the American Hospital Association in San Francisco, June 26, Philadelphia was selected as the place of meeting for next year. Dr. Winford H. Smith, superintendent of Johns Hopkins Hospital, Baltimore, was elected president, and Mr. Asa Bacon of the Presbyterian Hospital, Chicago, was reelected treasurer.

Coke Oven Accidents.—A compilation of the coke oven accidents in the United States for the calendar years 1913 and 1914 made by Albert H. Fay of the Bureau of Mines, shows that there were ninety-one men killed, 644 seriously injured and 4,059 slightly injured. This covers the accidents in 275 active plants in 1913 and 253 in 1914. There were a number of idle plants in both years. The coke plants employed 24,345 men in 1913 and 22,313 in 1914. It is said that the occupational hazard of the coke industry compares favorably with that of the quarry industry or that of the surface works of the metal mines.

Will Study Chinese Medical Situation.—Rev. Dr. Wallace Butterick, executive secretary of the General Education Board of the Rockefeller Foundation, Dr. Simon Flexner and Dr. William H. Welch leave shortly for China, in behalf of the China Medical Board of the Rockefeller Foundation. The object of the commission is to study medical schools and hospitals connected with the missions. This work is supplemental to the previous commission, which was composed of President Judson, Francis Peabody and Mr. Roger Green. Dr. Welch is now in San Francisco and will sail for Hawaii on July 17 to meet the other commissioners there and proceed to Japan and China.

Physicians' Study Travels.—The American Society for Physicians' Study Travels announces a tour starting about September 11, to Philadelphia, Old Point Comfort, Va., Richmond, White Sulphur Springs and Virginia Hot Springs, and return in time to attend the meeting of the Medical Society of Pennsylvania. There will be interesting demonstrations and lectures at Johns Hopkins Hospital, Virginia Hot Springs, White Sulphur Springs, and Hotel Chamberlain, Old Point Comfort. Those who intend to make this tour should communicate with Dr. Albert Bernheim, 1225 Spruce Street, Philadelphia.

Pellagra.—It is reported that 1,299 cases of pellagra were reported to the Mississippi State Health Board in April. At Jackson the colored physicians and colored citizens petitioned the state charity hospital asking that the institution be opened for the treatment of pellagra patients. It is said the hospital is full of emergency cases, but the petition will call attention to the need of a separate hospital for this rapidly increasing disease. The government pellagra hospital in Spartanburg, S. C., has already received over 100 pellagra patients, and on account of the numerous applications arrangements have been made to enlarge the hospital. The Italian physicians who have heretofore participated in the triennial conventions of the National Association for the Study of Pellagra have notified Dr. J. W. Babcock, secretary, that they will not be able to be present this year on account of the war.

Bequests and Donations.—The following bequests and donations have recently been announced:

Presbyterian Hospital, Philadelphia, $5,000, to endow a bed in memory of William S. Brown, by the will of his sister, Phebe A. Brown.

University Hospital, Baltimore, $2,500, by the will of Dr. St. Clair Spruill.

Montefiore Home, New York City, $2,500; Association for the Improvement of Deaf Mutes, Hebrew Orphan Asylum, Mt. Siani Hospital, Hebrew Infant Asylum, each $500, by the will of Julius Saul.

Chicago Lying-in Hospital, Wesley Hospital, Mercy Hospital, Visiting Nurses' Association, Presbyterian Hospital, and Home for the Destitute Crippled Children, Chicago, each $5,000; Helen Swift Morris for Infant Welfare Society and Chicago Winfield Tuberculosis Institute, each $10,000, by the will of Edward Morris.

Chicago Lying-in Hospital Endowment Fund, $10,000, donation by J. Ogden Armour.

Maine Eye and Ear Infirmary and Maine General Hospital, Portland, large bequests by the will of J. R. Martin, Portland.

The Academy of Natural Science, Philadelphia; Library of Scientific Works, and Microscopic Research and Lantern Slides, by Dr. Henry Sharpe.

FOREIGN

Mexican Situation.—The food situation in the Durango district is rapidly growing worse and the supply of food will not last until later than the middle of July.——The food supply is very scanty in Topie and San Pedro.——Consul-General Shanklin and C. J. O'Connor, Pacific directors of the American Red Cross, left Tepexcan, June 30, for Mexico City, with light boxes of medicines, leaving heavier boxes to be brought on later.——Great quantities of clothing, new and second hand, will be needed in Monterey during the fall and winter.

WAR NOTES

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending July 3, 1915, lists the following contributions:

Stamford Medical Association, Stamford, Conn.	$ 25.00
Buchanan County Medical Society, St. Joseph, Mo.	27.34
Capt. W. H. Allen, M. C., U. S. A., Manila, P. I.	10.00
Yakima County Medical Society, North Yakima, Wash.	25.00
Receipts for the week ending July 3	$ 87.34
Previously reported receipts	7,457.00
Total receipts	$7,544.34
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
353 standard boxes of food at 2.28	804.84
Total disbursements	7,310.04
Balance	$ 234.30

F. F. Simpson, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

Red Cross Activities.—The American Red Cross has shipped on the Holland-American steamer *Richard* two large lots of medical and surgical supplies, mostly assigned to the German and Austrian Red Cross societies. The German shipment is valued at $96,000 and weighs about 26,000 pounds, and the Austrian shipment is valued at $16,000 and weighs

11,203 pounds.——On the steamer *Auchendale* of the Atlantic Transport Line, the American Red Cross has sent to Dr. Antoine Depage, surgeon-general of the Belgian Red Cross at Calais, France, another Ford ambulance.——The donations secured through the American Red Cross have enabled the inquiry department of the wounded and missing of the British Red Cross Society to open branches at Malta and Alexandria, and to assist two new branches recently opened in France.——Miss Helen Scott Hay, formerly of Chicago and for the last ten months supervising nurse in the American Red Cross contingent at Kiev, Russia, has arrived in Sofia, Bulgaria, to aid Queen Eleanor in establishing a training school for nurses.——In response to an urgent appeal to the American Red Cross from Van, Turkey, for financial assistance in carrying on this work, the American Red Cross has transmitted through the state department, $1,000 to the American consul at Tiflis.

PARIS LETTER

PARIS, June 17, 1915.

The War

THE ACADEMY OF SCIENCES IN THE WAR

I mentioned in a previous letter (THE JOURNAL, Sept. 19, 1914, p. 1044) that at its session of Aug. 4, 1914, when mobilization had only begun, the Académie des sciences placed itself at the disposal of the government for the study of all questions bearing on the national defense with which it was competent to deal. A short time ago M. Albert Thomas, assistant secretary in the war department, offered to designate, as assistants to the various technical committees of the academy, officers who are well acquainted with the needs of the war. These officers, to be selected among those who have returned from the front, are to call to the attention of the committees, according to their specialties, the questions an immediate solution of which is imperative. By means of the competent advice of the academy or that of the specialists designated to act for it, the minister will be able to make a suitable decision without delay in each case. The proposition of the assistant secretary was unanimously accepted by the academy.

PYOCULTURE AND THE TREATMENT OF WOUNDS OF WAR

Dr. Pierre Delbet, professor of clinical surgery at the Faculté de médecine de Paris, in two interesting papers before the Académie des sciences and the Académie de médecine, shows that the evolution of an infected wound may be foreseen and followed by means of pyoculture—that is, by the cultivation of the microbes in the pus itself. Positive pyoculture—that is, a more abundant growth in the pus than in bouillon—is in general a sign indicating a very serious prognosis and consequently calling for free opening of the wound. Pyoculture characterized by absence of growth in the pus and by growth in the bouillon indicates a struggle that needs the aid of therapeutics. Negative pyoculture, that is, bacteriolysis of the microbes in the pus, indicates that the patient's forces have the upper hand and that no intervention is needed.

Pyoculture, moreover, furnishes indications of the value of the usual therapy of wounds of war. Delbet has become convinced that iodoform, irrigations and ether dressings do not modify the microbial flora of a wound. Irrigations with a 1:1,000 solution of silver nitrate have even produced an increase in the number and the vitality of the bacteria. Powdered lactose deodorizes but apparently does not disinfect. Hydrogen peroxid used for irrigation does not prevent the development even of anaerobic bacteria; when injected into the cellular tissue to arrest gaseous gangrene it is injurious. In short, these various antiseptics seem to have more disadvantages than advantages. They attack the bacteria but kill the tissue cells. Delbet therefore thinks that asepsis should replace antisepsis, not only with respect to normal tissues but also in the treatment of infected wounds. It is especially important to respect the natural defenses, no matter how weakened they may be. Only solutions of molecular concentration equal to that of the blood serum and having no chemical action on the cells should be used. Delbet advises opening a wound to the air and the light, which is one of the most powerful means of disinfection of wounds. Under this treatment, one often sees a positive pyoculture improve or even become negative in forty-eight hours.

STATISTICS OF CASES OF NEUROSIS DUE TO THE WAR

Dr. Paul Sollier has just presented before the Académie de médecine a paper on this subject showing that whether from the point of view of the absolute number of cases of war neurosis or from the point of view of their increase, the number of cases of neurosis due to the war is small—almost negligible in comparison with the number of the wounded of all classes and especially of those with wounds affecting the nervous system. It is reassuring that the number tends to remain stationary if not to decrease.

PROGNOSIS OF WOUNDS OF THE SPINAL CORD

Dr. Pierre Marie, professor of pathologic anatomy at the Faculté de médecine de Paris, opposes the general opinion that in wounds of the spinal cord death is almost certain to occur within a period of seven or eight weeks. In his service at the Salpêtrière, out of eighteen patients wounded in the spinal cord five or six months ago, only five have died. Pierre Marie showed before the Académie de médecine five soldiers who were struck by projectiles in the region of the cervical vertebrae. In all five the wound caused an immediate and persistent paralysis of the four limbs followed by sphincter troubles. At the end of some weeks or months, a progressive improvement occurred and the patients regained the use of their limbs to such a degree that all were able to dress and feed themselves and several can not only walk but run. The prognosis is then by no means desperate in wounds of the spinal cord, especially in the cervical region, and as such patients are well able to endure travel their chances of recovery are improved by removal, within twenty-four hours, to the nearest neurologic clinic.

RESECTION OF THE KNEE IN PLACE OF AMPUTATION OF THE THIGH FOR SERIOUS WOUNDS OF THE KNEE BY PROJECTILES

Generally, in lesions of the knee by fragments of shells, shrapnel or even by bullets, when the patella and the condyles of the femur are fractured, a purulent arthritis develops which may be cured by ankylosis after long treatment but which may also be complicated by such serious septicemia that amputation of the thigh may seem necessary to save the patient's life. Such complications are frequent, for, out of 508 amputations made by Dr. Tuffier, agrégé and surgeon of the hospitals of Paris, 200 have been amputations of the thigh, and of these thirty were necessitated by bullet wounds of the knee, which, however, are by far the most benign. The situation with respect to amputations of the thigh is very different from that of amputations of the lower leg. The mortality shown by present statistics for amputations of the thigh is frightful. Tuffier therefore advises in such cases resection of the knee, which gives a very useful limb, instead of amputation of the thigh.

RAPID WHITENING OF THE HAIR AFTER THE EXPLOSION OF A MINE

At one of the recent sessions of the Société médicale des hôpitaux de Paris, Dr. Lebar reported the case of a soldier, aged 33, who, having been blown up into the air by the explosion of a mine, next day had locks of white hair on the left side of the head. The decoloration of the hairs is complete from the base to the extremity. The longest as well as the shortest hairs are white and there is not a brown one among them. All the hairs which have become suddenly white are still firmly implanted. It would seem that the general nervous shock caused by the explosion of the mine had set in motion the medullary cells of the hair, the pigmentophagic rôle of which has been made clear by the works of Metchnikoff.

MEDICAL SERVICE AUTOMOBILES

In a letter to the minister of war M. Boussenot, a deputy, demands that the question of automobiles for the medical service at the front be solved as rapidly as possible. While Paris and the great cities of France still possess so many automobiles for the military service, men who are seriously wounded and whose chances of recovery would be improved by rapid removal in ambulances ought not to have to spend long hours on the way in horse-drawn vehicles not always well hung and extremely slow in pace. According to information that M. Boussenot has collected on the spot, from four to six of these automobiles would be amply sufficient for an army corps.

SANITATION OF MILITARY QUARTERS AND BATTLEFIELDS

Dr. Bordas, substitute professor at the Collège de France, has made to the Académie des sciences a communication proposing the sanitation of cantonments, trenches occupied by troops and battlefields by the use of copious spraying with petroleum made into an emulsion in water by means of a suitable amount of rosin soap.

LONDON LETTER

London, June 18, 1915.

The War

THE BRITISH CASUALTIES

The total British casualties of the expeditionary forces in France and the Mediterranean, including the Indian contingent, now amount to 247,114 killed, wounded and missing noncommissioned officers and men, and 10,955 officers. Of these, 47,015 men and 3,327 officers have been killed. It is to be noted that these casualties do not include those of the navy or those of the other expeditionary forces operating in the Persian Gulf, Africa and China. Thus in the two main theaters of war we have had over a quarter of a million casualties, and yet the war has only begun as far as the British army is concerned!

THE MOBILIZATION OF THE MEDICAL PROFESSION

The figures given above, and the still greater ones which they foreshadow, show the difficulty of the problem mentioned in my previous letters of providing sufficient medical service for the enormously expanded British army. Before the war we had no army in the continental sense. It has been possible to convert a large number of civilians into soldiers in six months, but the training of a physician takes as many years. Hence the difficulty. The patriotism of the medical profession is as great as that of any class, and everything possible has been done to enable physicians engaged in civil practice to join the army in as large numbers as possible, or enable those who cannot do so to give part-time service. The British Medical Association is collecting and collating information by means of its machinery, which extends all over the kingdom, for the benefit of the War Office. The interests of the army are made paramount to everything else in this emergency. A detailed register of the whole profession capable of giving help is being prepared. At the same time a system is being elaborated by which the practices of those who join the army will be conserved by their colleagues.

THE STANDARDIZATION OF THE TREATMENT OF THE WOUNDED

In an important communication to the Royal Society of Medicine on the treatment of wounds, Sir Almroth Wright pointed out that army surgeons are not able to follow their cases, the patients being moved from hospital to hospital, and thus cannot profit much by experience. He therefore advocated that the higher officers should collect and collate information and draw conclusions and issue them in the form of instructions. At Rouen, where there are a large number of British hospitals, a system of this kind is already in force. There is a council formed by the surgical specialists attached to the hospitals, of which Colonel Gray, the Aberdeen surgeon, who is the consultant for the whole area, is the president. This council advises from time to time what line of treatment should be followed in respect of different classes of injury, and the members individually use their influence to insure that the hospitals to which they are attached fall into line, so as to give the treatment a fair trial as quickly and on as large a scale as possible. A series of pamphlets describing the treatments at present in use and the grounds for their adoption has been issued. Each pamphlet originated in a paper read by request before a branch of the British Medical Association which was inaugurated at Rouen and holds fortnightly meetings. Such papers were first discussed in general conclave of the branch and then rediscussed and revised by the council of specialists in the light of the criticism received. It is intended to issue a leaflet giving the gist of any fresh experience that has been obtained.

THE SPA TREATMENT OF WOUNDED SOLDIERS

Dr. Fortescue Fox, an authority on balneology, gave an interesting lecture at the Royal Society of Medicine on "British Health Resorts: Their Uses Civil and Military." He said that there were records in very early times of the wounded going up to hot springs, and the custom had continued in Europe without interruption from the Roman period. Certain health resorts in particular obtained considerable celebrity as "soldiers' spas." It was found that bathing in these waters allayed the pain of wounds and injuries, promoted healing, and restored the use of stiff and swollen limbs. The governments of France and Germany had established many military bath hospitals, and others had been founded in Italy, Russia, America and Japan. There are many instances of soldiers after the Boer War receiving much benefit at the British spas. This agrees with the experience of other countries that suitable bath treatments give results not otherwise obtainable for war invalids, for whom all that was possible has been done by surgery and hospital treatment. A committee on the subject was formed early in the year, on which the War Office was represented. Local committees and representatives were forthwith appointed at all the health resorts, and the facilities for treatment and accommodation organized. A widespread absence of information was encountered, and a pamphlet was therefore prepared, setting forth the conditions for which waters and baths were appropriate, together with a schedule of places and treatments offered. This was circulated by the War Office to the military hospitals. The health resorts throughout the country everywhere responded, and have done splendid work, many thousands of free baths having been given to soldiers suffering from wounds, neuritis, rheumatism, shock and disorders of circulation. A system of case record cards has been established, and 7,000 already issued for use at the British spas, which will form a part of the government records, and promote the efficiency of the treatment given.

PRECAUTIONS AGAINST AIR RAIDS

The bombs dropped by the German airships on London and other British towns are of two kinds, explosive and incendiary. The fires caused by the latter in some instances have led to loss of life, mostly of children and old persons. The London police have issued the following advice to the public: In all probability, if an air raid is made, it will take place at a time when most persons are in bed, and the only intimation will probably be the reports of the antiaircraft guns, or the noise of falling bombs. People are advised not to go into the street, where they might be struck by falling missiles; moreover, the streets, being required for the passage of fire engines, etc., should not be obstructed by pedestrians. In many houses there are no facilities for procuring water on the upper floors. It is suggested, therefore, that a supply of water and sand might be kept there, so that any fire breaking out on a small scale can at once be dealt with. Every one should know the position of the fire-alarm post nearest to his house. All windows and doors on the lower floor should be closed to prevent the admission of noxious gases. An indication that poison gas is being used will be that a peculiar and irritating smell may be noticed following on the dropping of the bomb. Many inquiries have been made as to the best respirator, but no satisfactory answer can be given until the specific poison used is known. There are many forms of respirator on the market for which special advantages are claimed, but experts say that probably a pad of cotton-waste contained in gauze to tie round the head and saturated with a strong solution of washing soda would be effective as a filtering medium for noxious gases, and could be improvized at home at trifling cost. It should be dampened for use, and must protect the nose as well as the mouth, the gauze being adjusted to protect the eyes.

TRANSFERENCE FROM COMBATANT RANKS TO ARMY MEDICAL CORPS

The need for the reorganization of both our military and our industrial resources so that every person will be able to render to the country those services which he is most fitted to give in this great crisis has only gradually been appreciated. But unpreparedness for war has always been characteristic of this country, as regards its army, at any rate. The navy is a different story; indeed, it is to complete confidence in it to prevent invasion that the unpreparedness of the army can be partly traced. In their keenness for military service some physicians who were already in the combatant ranks of the territorial army went to the war in this capacity. The shortage of army surgeons has caused the government to issue instructions to the effect that physicians in the combatant ranks may obtain immediate transfer to the Army Medical Corps.

THE MORTALITY AMONG PHYSICIANS IN SERBIA

The heavy mortality, principally from typhus fever, of American and British physicians and nurses who went to the aid of Serbia has been referred to in a previous letter. The well-known surgeon, Mr. James Berry, who is at the head of a British hospital mission at Vrnjachka Banya, has collected from official sources figures which show that ninety-three Serbian physicians have died out of a total of 387 alive at the beginning of the war. Of these, no fewer than eighty-two succumbed to typhus fever, and only one was killed in battle. These figures contrast remarkably with those of the recent Turkish war in which Serbia lost only two physicians. Of the foreign physicians who have come to her aid in this war, thirty-five have died from typhus or typhoid fever. They include three British, four American, two Belgian, several Greeks, and six Austrians who are practicing in the Serbian hospitals. In addition, there is the heavy mortality among

medical students, nurses and other helpers in the Serbian hospitals.

PRECAUTIONS IN LONDON AGAINST THE IMPORTATION OF CHOLERA

The flood of Belgian refugees into this country has necessitated precautions against the importation of disease. Only a comparatively small proportion of them arrived by the port of London—13,389 up to the end of last year. All were medically examined for infectious diseases. Cholera was prevalent in several towns of Galicia last autumn, and also occurred among Austrian troops who returned to Vienna. Cases have been reported in Belgium, though there is no confirmation of this. On the other hand, it is known that Austrian troops have been fighting on the western front, and the possibility that they might introduce the disease into that part of Europe has to be considered. The health officer of the port of London thinks that cholera may occur in the course of the summer, and therefore is keeping a careful watch, so as to isolate the first suspected cases. Arrangements have been made for bacteriologic examinations in order to minimize the detention and inconvenience to persons arriving at London. Over 2,500 rats have been examined bacteriologically during the year, but no evidence of plague has been found in any of them. This is most satisfactory, as, during the previous five years, rats infected with plague were found on several occasions.

The Cost of National Insurance Estimate Much Exceeded

Experts have calculated that national insurance for the current year will cost the state $30,300,000, which is no less than $7,500,000 more than that originally anticipated by the government. This excess is not primarily due to inaccuracy in the first estimates, though to some extent the expectation of sickness among women has been falsified by experience, but arises principally from subsequent additions to the benefits—particularly the medical and sanatorium benefits—and from the concessions granted to contributors falling into arrears with their payments on account of unemployment. The total cost to the state on account of national health insurance for the year is $37,000,000. It must be remembered that this is quite apart from the contributions payable by the insured persons themselves and their employers. Accounts do not yet show the amounts received in contributions, but it is probable that the total sum will not be much less than $92,000,000 for the year in question. On this assumption, the total cost to the nation for the national insurance scheme is no less than $130,000,000.

Pharmacists Desire Easier Access to the Medical Profession

In view of the shortage of physicians, the Pharmaceutical Society brought a request before the General Medical Council for the recognition, for the purpose of admission to the Students' Register, of the certificates attesting the preliminary examination of qualified pharmacists desirous of attaining a license in medicine, and for the recognition in the medical curriculum of the classes taken and examination in medical subjects passed by qualified pharmacists in their special course of instruction. The Education Committee of the Council, in reporting on this request, pointed out that the society had no preliminary examination of its own, and that among the examinations which it recognized there were many which were not accepted by the council on the ground that their standard was not sufficiently high. The question was one which did not seem to call for any action on the part of the council, as machinery already existed in the Students' Registration Committee under which candidates whose preliminary examination was in any respect incomplete might have *pro tanto* recognition extended to those portions which were satisfactory. So far as the recognition of the professional course was concerned, the committee considered that the matter was primarily one for the consideration of the licensing bodies, who had power to recognize any courses of study or examination other than the final or qualifying examination, which in their opinion was equivalent to the course of study and examination prescribed for the medical curriculum. The council approves of this report.

French Honor for Sir Almroth Wright

The Osiris prize of $20,000, which the Institute of France gives every three years as a reward for the most remarkable work or discovery in science, art, letters or industry, was awarded jointly to Professors Widal and Chantemesse and Dr. Vincent, whose names are connected with the development of antityphoid inoculation. As the Osiris prize can be given only to Frenchmen, the institute decided to award a special prize to Sir Almroth Wright, who invented the serum.

Association News

MEMBERS OF HOUSE OF DELEGATES IN ATTENDANCE AT THE SAN FRANCISCO SESSION

[The figures indicate the number of delegates to which the state is entitled].

ALABAMA—3
W. E. Drennen.....Birmingham

ARIZONA—1
H. W. Fenner.....Tucson

ARKANSAS—2
Robert Caldwell.....Little Rock

CALIFORNIA—3
H. Bert Ellis.....Los Angeles
George Hare.....Fresno
V. G. Vecki.....San Francisco

COLORADO—2
L. H. McKinnie.Colorado Springs
H. R. McGraw.....Denver

CONNECTICUT—2
E. J. McKnight.....Hartford

DELAWARE—1

DISTRICT OF COLUMBIA—1
G. Wythe Cook.....Washington

FLORIDA—1
John McDiarmid.....De Land

GEORGIA—3
E. C. Davis.....Atlanta

HAWAII—1
C. B. Cooper.....Honolulu

IDAHO—1

ILLINOIS—9
G. L. Armstrong.....Taylorville
J. W. Hamilton.....Mt. Vernon
R. R. Ferguson.....Chicago
W. L. Noble.....Chicago
C. P. Caldwell.....Chicago
George Bell.....Chicago
Charles J. Whalen.....Chicago
Charles E. Humiston....Chicago
J. M. Pfeiffenberger.....Alton

INDIANA—4
J. Rilus Eastman....Indianapolis
Charles N. Combs...Terre Haute
C. H. Good.....Huntington
Miles F. Porter.....Fort Wayne

IOWA—3
L. W. Littig.....Davenport
M. N. Voldeng.....Woodward
J. C. Rockafellow...Des Moines

ISTHMIAN CANAL ZONE—1

KANSAS—2
M. F. Jarrett.....Fort Scott

KENTUCKY—4
Frank Boyd.....Paducah
M. E. Alderson.....Russellville
Milton Board.....Louisville

LOUISIANA—2
William H. Seeman.New Orleans

MAINE—1

MARYLAND—2
Alexius McGlannan....Baltimore
Curtis F. Burnam.....Baltimore

MASSACHUSETTS—5
Gilman Osgood.....Rockland
Lyman A. Jones...North Adams
J. Forrest Burnham....Lawrence
Hugh Cabot.....Boston

MICHIGAN—4
E. W. Haass.....Detroit
A. E. W. Yale.....Pigeon
L. J. Hirschman.....Detroit
H. E. Randall.....Flint

MINNESOTA—2

MISSISSIPPI—2
L. C. Feemster.....Tupelo
James M. Guthrie.....Meridian

MISSOURI—5
A. W. McAlester, Jr..Kansas City
E. J. Goodwin.....St. Louis
Robert M. Funkhouser..St. Louis

MONTANA—1
LeRoy Southmayd....Great Falls

NEBRASKA—2
A. R. Mitchell.....Lincoln

NEVADA—1
M. R. Walker.....Reno

NEW HAMPSHIRE—1
D. E. Sullivan.....Concord

NEW JERSEY—3
Linn Emerson.....Orange
William S. Lalor.....Trenton

NEW MEXICO—1
Samuel D. Swope.....Deming

NEW YORK—11
Dwight H. Murray.....Syracuse
Wendell C. Phillips....New York
James W. Fleming.....Brooklyn
J. C. MacEvitt.....Brooklyn
Emil Heuel.....New York
George A. Peck....New Rochelle
William F. Campbell...Brooklyn
M. M. Lucid.....Cortland
John William Draper..New York
John O. Polak.....Brooklyn
Floyd M. Crandall.....New York

NORTH CAROLINA—2
J. P. Munroe.....Charlotte
A. J. Crowell.....Charlotte

NORTH DAKOTA—1
C. S. Crane.....Grand Forks

OHIO—6
J. C. M. Floyd.....Steubenville
A. B. Walker.....Canton

OKLAHOMA—2
W. Albert Cook.....Tulsa
Walter Penquite.....Chickasha

OREGON—1
Walter T. Williamson...Portland

PENNSYLVANIA—9
John B. Carrell.....Hatboro
Herbert B. Gibby...Wilkes-Barre
E. E. Montgomery...Philadelphia
L. W. Gates.....Scranton
Jefferson H. Wilson.....Beaver

PHILIPPINE ISLANDS—1

PORTO RICO—1

RHODE ISLAND—1

SOUTH CAROLINA—1
E. A. Hines.....Seneca

SOUTH DAKOTA—1
L. G. Hill.....Watertown

TENNESSEE—2
Perry Bromberg.....Nashville
Jere L. Crook.....Jackson

TEXAS—5
C. E. Cantrell.....Greenville
Marvin L. Graves.....Galveston
A. B. Small.....Dallas
Edward H. Cary.....Dallas
W. B. Russ.....San Antonio

UTAH—1
Sol G. Kahn.....Salt Lake City

VERMONT—1

VIRGINIA—3

WASHINGTON—2
G. S. Peterkin.....Seattle
E. A. Rich .....Tacoma

WEST VIRGINIA—1

WISCONSIN—3
A. H. Levings.....Milwaukee
Daniel Hopkinson.....Milwaukee

WYOMING—1

Delegates from the Sections

PRACTICE OF MEDICINE
Richard C. Cabot.....Boston

SURGERY, GENERAL AND ABDOMINAL
Dean Lewis.....Chicago

OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY

OPHTHALMOLOGY
Walter R. Parker.....Detroit

LARYNGOLOGY, OTOLOGY AND RHINOLOGY

DISEASES OF CHILDREN
T. C. McCleave...Berkeley, Calif.

PHARMACOLOGY AND THERAPEUTICS
Ray L. Wilbur....San Francisco

PATHOLOGY AND PHYSIOLOGY

STOMATOLOGY
G. V. I. Brown.....Milwaukee

NERVOUS AND MENTAL DISEASES
J. H. McBride....Pasadena, Calif.

DERMATOLOGY
E. D. Chipman....San Francisco

PREVENTIVE MEDICINE AND PUBLIC HEALTH

GENITO-URINARY DISEASES
F. M. McCallum....Kansas City

HOSPITALS

ORTHOPEDIC SURGERY
John Ridlon.....Chicago

Delegates from Government Services

Wm. H. Arthur.....
.....United States Army
Frank E. McCullough.....
.....United States Navy
J. W. Kerr.....
....U. S. Public Health Service

SECTION ON OPHTHALMOLOGY

Tuesday, June 22—Afternoon

The Chairman, Dr. Edward C. Ellett, called the meeting to order at 2:25 p. m.

Dr. John A. Donovan, Butte, Mont., Vice-Chairman, was called to the chair while Dr. Ellett read his Chairman's address. No discussion.

Dr. Edward Jackson, Denver, read a paper on "Blastomycosis of the Eyelids, with Report of Cases." Discussed by Drs. Robert Fagin, Memphis, Tenn.; Harold Gifford, Omaha; John A. Donovan, Butte, Mont.; George S. Derby, Boston; E. C. Ellett, Memphis, Tenn., and Edward Jackson, Denver.

The Chairman appointed Drs. Edward Jackson, Denver, and G. C. Savage, Nashville, Tenn., to serve in place of absentees on the Executive Committee.

Dr. Meyer Wiener, St. Louis, read a paper by himself and Dr. Henry L. Wolfner on "A Reaction of the Pupil Strongly Suggestive of Arteriosclerosis with Increased Blood Pressure." Discussed by Drs. Walter S. Franklin, San Francisco; Edward Jackson, Denver, and Meyer Wiener, St. Louis.

Dr. Clifford B. Walker, Boston, read a paper on "A Contribution to the Study of Bitemporal Hemianopsia (Lantern Demonstration)." Discussed by Drs. W. F. Blake, San Francisco; J. A. Donovan, Butte, Mont., and C. B. Walker, Boston.

Dr. Nelson M. Black, Milwaukee, gave a lantern demonstration of the various colored glasses on the market.

The Chairman announced that Dr. Will Walter of Chicago would not be present to read his paper. The Chairman said that Dr. G. C. Savage, Nashville, Tenn., had given much time to the preparation of the discussion of Dr. Walter's paper and that if no objection was made he would call for discussion on the subject which Dr. Walter was to introduce, "Clinical Pathology of Ocular Muscle Paralysis. A Study of the Control of Ocular Muscles."

Dr. G. C. Savage, Nashville, Tenn., then discussed the paper of Dr. Walter, illustrating his discussion with charts.

SECTION ON OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY

Tuesday, June 22—Afternoon

The section was called to order at 2 p. m. by Dr. Alfred B. Spalding, San Francisco.

On account of the illness of the chairman, Dr. Thomas S. Cullen, Baltimore, and vice chairman, Dr. George B. Somers, San Francisco, the section unanimously elected Dr. S. H. Buteau, Oakland, Calif., to act as chairman, and Dr. Spalding was elected secretary.

The address of the chairman, Dr. Thomas S. Cullen, Baltimore, entitled "The Relation of Surgery, Gynecology and Obstetrics to the Public," was read by Dr. Horace G. Wetherill, Denver. No discussion.

Dr. J. Morris Slemons, San Francisco, read a paper on "Placental Bacteremia." Discussed by Drs. E. E. Montgomery of Philadelphia, and Henry O. Marcy, Boston.

Dr. E. E. Montgomery, Philadelphia, read a paper on "Abortion." Discussed by Drs. Alfred B. Spalding, San Francisco; John Osborn Polak, Brooklyn; O. Walton Hall, Kansas City, Mo.; S. M. Clark, New Orleans, and Horace G. Wetherill, Denver.

Dr. Henry O. Marcy, Boston, read a paper on "The Histogenesis of the Reproductive Processes in Mammals." Discussed by Dr. E. E. Montgomery, Philadelphia.

The following papers were read as a symposium on anesthesia in labor:

Dr. Carl H. Davis, Chicago: "Advantages of Nitrous Oxid Analgesia in Obstetrics over the Freiburg Method."

Dr. John Osborn Polak, Brooklyn: "The Appreciation and Limitations of Morphin-Scopolamin Amnesia in Obstetrics."

These two papers were discussed by Drs. Walter E. Libby, San Francisco; W. Francis B. Wakefield, San Francisco; J. C. Litzenberg, Minneapolis; C. G. Parsons, Denver; Carl L. Hoag, San Francisco; L. I. Breitstein, San Francisco; M. W. Kapp, San José, Calif.; E. M. Lazard, Los Angeles; L. M. Gates, Scranton, Pa.; Hugh S. Mount, Oregon City, Ore., and Livingston.

Thursday, June 24—Morning

The following officers were elected: chairman, Dr. Edward S. Reynolds, Boston; vice chairman, Dr. Alfred B. Spalding, San Francisco; secretary, Dr. Brooke M. Anspach, Philadelphia; member of the House of Delegates, Dr. P. Brookes Bland, Philadelphia.

Dr. Howard Canning Taylor, New York, read a paper on "Tuberculosis of the Uterine Appendages." Discussed by Drs. Philemon E. Truesdale, Fall River, Mass.; Engstad, Minneapolis; O. W. Hall, Kansas City, Mo.; E. E. Montgomery, Philadelphia, and S. M. D. Clark, New Orleans.

Dr. W. D. Haggard, Nashville, Tenn., read a paper on "Application of Various Theories in the Practical Management of Peritonitis." Discussed by Drs. W. B. Brinsmade, Brooklyn; J. O. Polak, Brooklyn; Petil, Boston; Edward Reynolds, Boston; Joseph B. DeLee, Chicago, and H. O. Pantzer, Indianapolis.

Dr. L. G. Bowers, Dayton, Ohio, read a paper on "Pelvic Infection and the Application of Drainage." Discussed by Drs. S. M. D. Clark, New Orleans, and H. W. Gibbons, San Francisco.

Dr. Alfred B. Spalding, San Francisco, read a paper on "Relative Frequency of Ectopic Gestation." Discussed by Dr. Joseph B. DeLee, Chicago.

Dr. Edward Reynolds, Boston, read a paper on "The Prognosis of Sterility." Discussed by Drs. J. O. Polak, Brooklyn; Joseph B. DeLee, Chicago, and H. O. Pantzer, Indianapolis.

The following papers were read as a symposium on the treatment of cancer of the uterus and rectum by radium:

Dr. Henry Schmitz, Chicago: "Primary Results of Radium Therapy on Uterine and Rectal Cancers."

Drs. Curtis F. Burnam and Howard A. Kelly, Baltimore: "Radium in the Treatment of Carcinomas of the Cervix Uteri and Vagina."

These two papers were discussed by Drs. J. F. Percy, Galesburg, Ill., and S. M. D. Clark, New Orleans.

Dr. Horace G. Wetherill, Denver, read a paper on "Sub-

Thursday, June 24—Afternoon

infection from Foci in the Pelvis and Abdomen." Discussed by Drs. Carl H. Davis, Chicago, and Alfred B. Spalding, San Francisco.

Dr. W. Wayne Babcock, Philadelphia, read a paper on "Cholecystectomy and Cholecystic Toxemia." Discussed by Dr. Robert C. Coffey, Portland, Ore.

Dr. P. E. Truesdale, Fall River, Mass., read a paper on "The Pylorus: Observations Noted in Association with Gastro-Intestinal Lesions." Discussed by Drs. Frederick Murphy, St. Louis, and Max Einhorn, New York.

Dr. Robert C. Coffey, Portland, Ore., read a paper on "The Significance of the Fixation of Certain Abdominal Organs in the Human Body." Discussed by Drs. Max Einhorn, New York; Albert Goldspohn, Chicago; A. N. Creadick, Portland, Ore., and H. O. Pantzer, Indianapolis.

Alexius McGlannan, Baltimore, read a paper on "Intestinal Obstruction." Discussed by Dr. Draper, New York.

On motion of Dr. Wetherill, duly seconded, the secretary was requested to express to Dr. George B. Somers, San Francisco, the regret of the section at his inability to attend the meeting.

On motion of Dr. Wetherill, duly seconded, the section expressed its appreciation, by rising vote, to Dr. Buteau in acting as chairman, and Dr. Spalding, as secretary, and for the very able manner in which they had performed these duties.

Marriages

HUMBERT A. GIOVANNETTI, M.D., Bay Bulls, Belle Isle, N. F., to KATHERYN T. DRISCOLL, M.D., of Medford Hillside, Mass., June 17.

FORREST GRIMM SCHAEFFER, M.D., Allentown, Pa., to Miss Grace Wright Willis of Philadelphia, in New York City, June 21.

MARTIN KRANZ, M.D., Mandan, N. D., to Miss Balbina Marcella Hess of Glen Ullin, N. D., in Terre Haute, Ind., June 14.

JOHN C. KOCH, M.D., Blackduek, Minn., to Miss Gladys Weingart of Baudette, Minn., in Iowa, June 10.

GEORGE DOREMUS STILSON, M.D., to Miss Amanda E. Garwick, both of Niagara Falls, N. Y., June 24.

HOMER ATKINSON RAMSDELL, M.D., to Miss Charlotte Sweetnam, both of Manistee, Mich., June 30.

CLEVELAND FOLSOM BROOKS, M.D., Platte, S. D., to Miss Esther Beebe of Lake Andes, S. D., June 8.

ARTHUR ALBERT WOHLRABE, M.D., Mankato, Minn., to Miss Elsye Ellen Cabot of Minneapolis, June 12.

LYSTON D. HOWE, M.D., Streator, Ill., to Miss Lillian Monroe of Joliet, Ill., in Chicago, June 16.

MOSES HAVEN BAKER, M.D., Pittsburgh, to Miss Nita M. Cashman of New Oxford, Pa., June 24.

WALTER PALMER ANDERSON, M.D., to Miss Ethel Kingsland, both of New York City, June 24.

CARL LAWRENCE LUTZ, M.D., Avalon, Pa., to Miss Kathryn Esther McNeal of Pittsburgh, June 24.

FRANCIS A. MALONE, M.D., Waterford, Wis., to Miss Marie C. Scholl of Pewaukee, Wis., June 19.

JAMES MONTGOMERY NIXON, M.D., to Miss Iris Genoa Boyer, both of Millville, Fla., June 8.

HENRY ALBERT GEIB, M.D., to Miss Mary E. O'Conner, both of New York City, February 25.

EMERSON MEGRAIL, M.D., to Miss Margaret Ethel Reed, both of Wheeling, W. Va., June 23.

FRED MCV. TOWLES, M.D., Fort Wayne, Ind., to Miss Lillian Tappan of Helena, Ark., June 9.

JOHN IRWIN MCGIRR, M.D., Beatrice, Minn., to Miss Myrtle Evelyn Gue of Denver, June 22.

BENJAMIN H. HOLMES, M.D., to Miss Esther M. Tyrrell, both of Delavan, Wis., June 24.

JOSEPH WEBSTER HORTON, M.D., to Miss Florence Clift, both of Chattanooga, June 20.

CHARLES W. JENNINGS, M.D., to Miss Katharine Shuman, both of Pittsburgh, June 16.

SAMUEL D. ROSENTHAL, M.D., to Miss Tubie Greenspahn, both of Chicago, July 4.

HENRY M. RUBEL, M.D., to Miss Minnie S. Adler, both of Louisville, Ky., June 14.

CHARLES W. NORRIS, M.D., to Miss Juliet M. Klein, both of Lexington, Ky., June 17.

Deaths

St. Clair Spruill, M.D. University of Maryland, Baltimore, 1890; aged 49; a Fellow of the American Medical Association; First Lieutenant, Medical Reserve Corps, U. S. Army; clinical professor of surgery in his alma mater; from 1892 to 1898 superintendent of the Lying-In Hospital of the University of Maryland; surgeon to the University and Hebrew hospitals; attending surgeon to the Maryland General Hospital, Baltimore; and the Emergency Hospital, Annapolis, Md.; chief surgeon to the Washington, Baltimore and Annapolis Railway, and consulting surgeon to the Baltimore and Ohio System; from 1902 to 1904, major and surgeon, Maryland N. G., assigned Fifth Infantry; died at his home in Baltimore, June 24, from septic bronchitis following influenza.

Faneuil Dunkin Weisse, M.D. New York University, New York City, 1864; aged 73; of New York City; a Fellow of the American Medical Association and of the New York Academy of Medicine; a member of the American Association of Anatomists and New York Dermatological Society; a member of the anatomic teaching force of his alma mater from 1864 to 1889; professor of anatomy in and dean of the New York College of Dentistry; president of the American Veterinary College; acting assistant surgeon, U. S. Army, during the Civil War; author of *Weisse's Practical Human Anatomy*, the first edition of which appeared in 1886; died at his country home in Gedney Farms, June 22.

Thomas Hewson Bradford, M.D. Jefferson Medical College, 1874; aged 66; a member of the Medical Society of the State of Pennsylvania and a Fellow of the College of Physicians of Philadelphia; medical director of the Philadelphia Life Insurance Company and United Security Life and Trust Company; district physician to the Philadelphia Dispensary; physician to the Charity, Howard and St. Christopher's hospitals and the Children's Hospital Dispensary; gynecologist to the outpatient department of Pennsylvania Hospital; assistant accoucheur to the State Hospital for Women; an officer of the Medical Corps of the National Guard of Pennsylvania, from 1880 to 1883; died at his home in Philadelphia, June 25.

Frederick Weills Byers, M.D. Rush Medical College, 1863; aged 78; Lieutenant and Assistant Surgeon of the Ninety-Sixth Illinois Volunteer Infantry during the Civil War; Brigadier-General and Surgeon-General (retired) of the Wisconsin National Guard; a member of the Association of Military Surgeons of the United States and National Association of Railway Surgeons; for many years local surgeon at Monroe, Wis., for the Illinois Central Railroad; a member of the Wisconsin Legislature, from 1884 to 1886; died at his home in Monroe, Wis., June 19.

William Henry Gregg, M.D. College of Physicians and Surgeons in the City of New York, 1855; aged 85; surgeon of the Sixty-Ninth New York Volunteer Infantry and subsequently of the Eighth Brigade during the Civil War; a member of the American Association for the Advancement of Science and for many years a practitioner of New York City and Port Chester, N. Y.; an expert chemist and well known as an naturalist; author of a standard history of the birds of western New York; died at St. Cloud, Fla., June 21.

Jacob Walter Bean, M.D. University of Vermont, Burlington, 1882; aged 60; a member of the Massachusetts and New Hampshire medical societies; and formerly president of the Medford Medical Society; chairman of the Medford (Mass.) Board of Health; a member of the New Hampshire Legislature, in 1889 and 1890; for twenty-five years a practitioner of West Medford; died suddenly at his home in that city, June 20, from heart disease.

Benjamin Ellis Marshall, M.D. College of Physicians and Surgeons in the City of New York, 1861; aged 85; Acting Assistant Surgeon, U. S. Navy, during the Civil War, in which he served almost entirely on the blockading squadron; from 1866 to 1890 a practitioner of San Mateo, Calif., and for ten years thereafter, until his retirement in 1900, a resident of San Francisco; died in Paterson, N. J., May 17, from senile debility.

Gustav Louis Krieger, M.D. New York University, New York City, 1877; aged 65; a Fellow of the American Medical Association; and a prominent factor in medical and educational affairs in Cincinnati; for fifteen years president of the Board of Education of Madisonville and a member of the Cincinnati board after the annexation of Madisonville; died at his home, June 25, from valvular heart disease.

Rebecca V. Combs, M.D. Ohio Medical University, Columbus, 1896; aged 62; of Columbus, Ohio; a member of the Ohio State Medical Association and a specialist on disease of children; who had suffered for a long time from neuritis and malignant disease of the face, died in the St. Clair Hospital, Columbus, June 21, from the effects of strychnin, self-administered, it is believed, while despondent on account of ill health.

Seraph Frissell, M.D. University of Michigan, Ann Arbor, 1875; aged 74; the first woman to be admitted to membership in the Berkshire County (Mass.) Medical Society; for two years lecturer on physiology and hygiene in Mt. Holyoke Seminary; a practitioner of Springfield, Pittsfield and Hinsdale, Mass., for forty years; died in the Wahconah Home for the Aged, Dalton, Mass., June 20.

Herbert C. Sperry, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1896; aged 47; a member of the Illinois State Medical Society; a practitioner and pharmacist of Hull, Ill., and also manager of the Electric Light Plant of Hull; was accidentally electrocuted, June 21, by coming in contact with an electric wire of high voltage while attempting to make repairs.

Hiram Neill, M.D. Bellevue Hospital Medical College, 1879; aged 71; a veteran of the Civil War; until 1912 a practitioner of Sibley, Ia., where he was health officer and local surgeon for the Chicago, St. Paul, Minneapolis and Omaha, and Rock Island System; died at his home in San Gabriel, Calif., June 15, from carcinoma of the stomach.

William G. Hall, M.D. Western Homeopathic Medical College, Cleveland, 1858; aged 84; surgeon-major of the Tenth Ohio Volunteer Cavalry during the Civil War; at one time a member of the Missouri State Board of Health; for nearly forty years a practitioner of St. Joseph; died at the home of his son in Kansas City, June 11.

Hiram Owen Worthen, M.D. University of Vermont, Burlington, 1869; aged 76; director and vice president of the Granite Savings Bank and Trust Company, Barre, Vt.; town representative in 1888 and state senator from Washington County in 1894; died at his home in Barre, Vt., June 13, from chronic disease of the stomach.

Walter Hilliard, M.D. Tulane University, New Orleans, 1869; aged 70; a member of the Colorado State Medical Society and for twenty-six years a practitioner of Denver, making a specialty of diseases of the eye, ear, nose and throat; died at his home in Denver, June 17, from cirrhosis of the liver.

Leon Octave Monory, M.D. Faculty of Medicine, Paris, France, 1873; aged 69; formerly a surgeon in the French army and a veteran of the Franco-German War; visiting physician to the French Hospital, New York City; died at his home in New York, June 16, from cerebral hemorrhage.

Samuel Weiss, M.D. Bellevue Hospital Medical College, 1871; aged 70; state senator from Lebanon County in 1900; attending physician to the Lebanon County Hospital and gynecologist to the Good Samaritan Hospital; died at his home in Lebanon, Pa., June 17, from chronic nephritis.

John Slick Riley, M.D. University of Ohio, Cincinnati, 1836; aged 102; a veteran of the Mexican and Civil wars, in the latter of which he served in the Confederate service; for many years a practitioner of Pilot Point, Tex.; died at the home of his daughter in Denton, Tex., June 12.

Charles Adams Stewart, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1870; aged 67; a Fellow of the American Medical Association; for more than a quarter of a century, a prominent surgeon of Duluth, Minn.; died in Minneapolis, June 22, from cerebral hemorrhage.

Mary Elizabeth Nowell, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1884; aged 72; a Fellow of the American Medical Association and the first woman to engage in general practice in Altoona, Pa.; died at her home in that city, June 25, from pneumonia.

Samuel J. Windsor, M.D. College of Physicians and Surgeons, Baltimore, 1886; aged 52; a Fellow of the American Medical Association; until two years ago a practitioner of Dames Quarter, Eastern Shore, Md.; died at his home in Baltimore, June 21, from heart disease.

Stanley George Small, M.D. Cleveland Homeopathic Medical College, 1898; aged 41; a Fellow of the American Medical Association; formerly a practitioner of Allegheny, Pa., and for five years a resident of Santa Fe, N. M.; died in Kane, Pa., June 20, from tuberculosis.

William H. Hudson, M.D. Meharry Medical College, Nashville, Tenn., 1887; aged 53; formerly a member of the Kansas Medical Society; a well-known and wealthy colored practitioner of Atchison, Kan.; died at a sanatorium in Chicago, June 20, from tuberculosis.

Robert MacDermott Langdon, M.D. University of Berlin, Germany, 1880; Illinois Medical College, Chicago, 1897; Long Island College Hospital, Brooklyn, 1898; aged 55; formerly of New York City; died at his home in Englewood Cliff, N. J., June 17.

John Aloysius Frayne, M.D. Medico-Chirurgical College of Philadelphia, 1914; aged 26; an intern at the State Hospital of the Northern Anthracite Coal Region of Pennsylvania, Scranton; died in that institution, June 17, from acute gastritis.

Charles William Prentiss, M.A. Middletown, 1896; Ph.D., Harvard University, 1900; aged 40; professor of microscopic anatomy in Northwestern University Medical School, Chicago; died in Wesley Hospital, Chicago, June 12.

Warren R. Sober, M.D. Eclectic Medical Institute, Cincinnati, 1875; aged 65; for many years a practitioner of Clare County, Mich.; died at the home of his son in Three Rivers, Mich., June 17, from disease of the kidney.

Charles Henry Earle, M.D. Bellevue Hospital Medical College, 1889; a member of the Medical Society of the State of California; formerly a resident of Providence, R. I.; died at his home in Los Angeles, June 12, aged 54.

Frantz Josef Meyer, M.D. Missouri Medical College, St. Louis, 1887; a member of the Illinois State Medical Society; died at his home in Evansville, Ill., about May 10, from carcinoma of the inferior maxilla, aged 50.

George Edens Woods, M.D. Vanderbilt University, Nashville, 1906; aged 37; formerly a practitioner of East Tennessee; then for three years a resident of Albuquerque, N. M.; died at Morristown, Tenn., June 8.

Albert William Hancock, M.D. Harvard Medical School, 1904; of Lawrence, Mass.; a Fellow of the American Medical Association; was drowned while bathing in the surf at Saulsbury Beach, Mass., June 18, aged 38.

Job Corbin, M.D. University of Vermont, Burlington, 1859; a surgeon in the Navy throughout the Civil War; for more than forty-five years a practitioner of Brooklyn; died at his home in that city, June 16, aged 80.

William W. Wilhelm, M.D. University of Pennsylvania, Philadelphia, 1876; aged 65; of Eufola, N. C.; died in a hospital at Statesville, June 20, after an operation for intestinal disease, performed the day before.

John McP. Briggs, M.D. University of Nashville, Tenn., 1859; formerly a member of the Kentucky State Medical Association; died at his home near Woodburn, Ky., June 8, from disease of the stomach, aged 78.

Herbert Oliver Forbes, M.D. Medical College of Virginia, Richmond, 1904; a member of the Medical Society of Virginia; of Burkeville; died at the home of his brother in Lynchburg, Va., June 10, aged 37.

Robert N. Ramsay, M.D. University of Pennsylvania, Philadelphia, 1875; a Fellow of the American Medical Association; died at his home in Philadelphia, June 16, from heart disease, aged 58.

Robert S. Austin, M.D. Marion-Sims College of Medicine, St. Louis, 1892; of Hallsville, Mo.; aged 54; died at the home of his daughter in Fort Smith, Ark., June 12, from a nervous breakdown.

Liberia Cornish (license, Md., 1894); said to have been the oldest colored practitioner of Baltimore; died at his home, June 9, from disease of the stomach, aged 84.

Isaac E. Wells, M.D. Central College of Physicians and Surgeons, Indianapolis, 1895; died at his home in Chalmers, Ind., June 15, from disease of the stomach, aged 51.

Paul Cheeves Gaston, M.D. Vanderbilt University, Nashville, Tenn., 1878; died at his home in New Decatur, Ala., June 16, from carcinoma of the rectum, aged 67.

A. S. Childs, M.D. Hahnemann Medical College, Chicago, 1878; of Chicago and Wilmette, Ill.; died at his home in Wilmette, about June 21.

James Clark Gillespie, M.D. Vanderbilt University, Nashville, Tenn., 1881; died recently at his home in New Decatur, Ala., from pellagra.

James N. Bridges (license, Tenn., 1889); died at his home in New Middleton, Tenn., June 12, aged 79.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

GRAY'S GLYCERINE TONIC

Report of the Council on Pharmacy and Chemistry

The Council adopted the following report and authorized its publication.

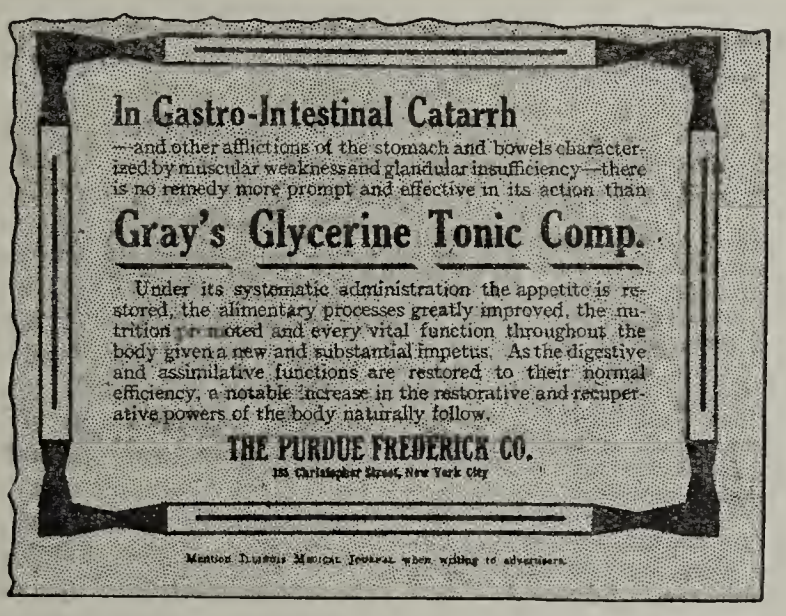
W. A. PUCKNER, Secretary.

Gray's Glycerine Tonic Comp. (Purdue Frederick Company, New York) is a mixture said to be made according to a prescription of the late Dr. John P. Gray, superintendent of the state hospital, Utica, New York. As to the composition, the following statement is furnished by the company:

"This preparation is a combination of Glycerine, Sherry Wine, Gentian, Taraxacum and Phosphoric Acid with carminatives."

The label declares the presence of 11 per cent. alcohol, and the dose is given as from two teaspoonfuls to a tablespoonful. A study of the ingredients will show that, aside from the alcohol, the mixture contains but one really active drug, gentian. Essentially, then, "Gray's Glycerine Tonic" is a mixture which, in addition to the narcotic effect of the alcohol, depends on a bitter, gentian, for whatever therapeutic action it may possess.

The bitters, of which gentian is a type, were once credited with many therapeutic virtues which time has shown they do not possess. Pharmacologic research has demonstrated that their utility consists in stimulating the appetite through their action on the taste buds. On this account they were believed also to increase the secretion of the gastric juice by a psychic impression. More recently, however, even this has been questioned—by Carlson, for instance.



This appears in a journal owned and controlled by the second largest state medical association of the country.

These facts are fully understood, presumably, by all physicians. Yet, according to the advertising circular, this "tonic," which, for all practical purposes, is merely a simple bitter, is good for thirty-two diseases ranging from amenorrhea to whooping cough!

The conditions in which Gray's Glycerine Tonic is asserted to be especially efficient are described on the label of the bottle and the outside wrapper, in popular terms, more or less typical of "patent medicine" exploitation, such as "catarrhal conditions," and "stomach derangements." Similar statements are contained in the leaflet accompanying the trade package. For instance:

"It is, therefore, an effective, reliable tonic in nervous exhaustion, general debility, impoverished conditions of the blood and nervous system, Bright's disease, diseases of the liver, disorders of the urinary organs, etc."

"It is an unexcelled restorative in that very common class of cases in which there is no positive organic disease, but the patient complains that he 'does not feel well' or 'is out of sorts.'"

Here are some of the claims made in other advertising matter:

"All stages of bronchitis . . . are rapidly improved by the use of Gray's Glycerine Tonic Comp. This remedy has a direct tonic influence upon the circulation of the respiratory mucous membrane; it relieves congestion and restores tone to weakened blood vessels."

". . . improves the appetite, gives valuable aid to the digestive and absorptive processes, and reinforces cellular nutrition in ways that insure a notable gain in vitality and strength."

Even granting that gentian may improve the appetite, how absurd it is to claim that this mixture "relieves congestion," "restores tone to weakened blood vessels," "gives aid to the absorptive processes," "reinforces cellular nutrition," or increases vitality!

Neither the composition of Gray's Glycerine Tonic nor the clinical evidence warrants the belief that it has any therapeutic value other than that due to the psychic effect of the bitter drug gentian. Physicians who have prescribed it have done so because of the advertising. This nostrum has been kept so constantly before the eyes of medical men that they think of Gray's Glycerine Tonic when they cannot remember the official drugs that may be indicated in the case. The moral is that liberal advertising will sell anything.

It is recommended that Gray's Glycerine Tonic Comp. be declared not eligible for inclusion in New and Nonofficial Remedies on account of conflict with Rules, 1, 6, 8 and 10.

[EDITORIAL NOTE.—An old practice in hospitals—happily now practically obsolete—was to have certain stock mixtures prepared in bulk. Among these there was usually a so-called tonic mixture, used in a more or less haphazard manner when nothing in particular seemed indicated. Such a stock mixture was used in the State Hospital for the Insane at Utica, N. Y., during the many years that Dr. John P. Gray was superintendent (from the early fifties to the early eighties), although it is very doubtful whether he originated the mixture. After the death of Dr. Gray—so the story runs—one of his sons, with a partner, formed the firm of Purdue Frederick Company, and began the exploitation of the elder Dr. Gray's name, in connection, presumably, with this stock preparation. As indicated in the Council's report, Gray's Glycerine Tonic Comp.—and what an absurd name!—is simply a mixture of ordinary drugs, requiring no skill whatever in compounding. If there is a physician living who can not write a prescription offhand as good as this formula, that physician should either go back to a medical school, or change his vocation. There is, and can be, no excuse for prescribing such a ready-made mixture, for every cross-roads drugstore has the ingredients and any pharmacist worthy of the name could compound it. Among the scores of nostrums that disgrace the medical profession of this country, none is more typical of all that is inimical to scientific medicine, to the medical profession and above all to the public—for, after all is said, it is the public that ultimately is humbugged.]

Correspondence

Ben Franklin's Views

To the Editor:—Dr. Shively's statement (THE JOURNAL, June 19, 1915, p. 2085) that Franklin's "early objection to alcoholic beverages was chiefly on the ground of their expensiveness" is incorrect. His argument rested chiefly on the ground that drinking was "muddling" and that one who drank was a less efficient workman than one who did not—weaker, not stronger; the expense argument appears to be secondary. This may be seen from the statement taken from Franklin's autobiography which was published in THE JOURNAL (Miscellany, June 5, 1915, p. 1933).

Franklin never used tobacco. Dr. Benjamin Rush writes of him in his diary:

He concluded that there was no great advantage in using tobacco in any way, for that he had kept company with persons who used it all

their life and no one ever advised him to use it. The doctor in the 81st year of his age declared he had never snuffed, chewed or smoked.

I must confess that Dr. Shively's estimate of Poor Richard's maxims as "homely, parsimonious . . . and archaic as the author's lightning rods and his old fur cap" somewhat rile me. Indeed, to my mind the chief thing on which rests Franklin's greatness is the fact that he enunciates sound principles which are eternally true, thus taking rank with great immortals of all time such as Socrates, Plato, Aristotle, Leonardo, Shakespeare, Sir Isaac Newton and Pasteur.

Certainly these four maxims, which I have often recalled, will be admitted by Dr. Shively as not being out of date:

Want of care does us more damage than want of knowledge.
The most exquisite folly is made of wisdom spun too fine.
What signifies knowing the names, if you know not the nature of things?
No man e'er was glorious who was not laborious.

I spent a whole summer reading all that I could find on the subject of Franklin, and published a little book in 1912 calling attention to his contribution to medicine (now out of print). Had this great man labored only in the field of medicine and done nothing else, he would have been entitled to the lasting gratitude of posterity.

Dr. Shively, however, does justice to Franklin when he states that Franklin's views as to the value of fresh air are "the equal of the most advanced views current today," although I fear this may give some of your readers the impression that this was Franklin's only contribution to medicine.

Franklin's views on the value of fresh air are even more clearly set forth in the following passage from one of his letters than in the abstract published by Dr. Shively:

Experience has convinced me of my Error. I now look upon fresh Air as a friend; I even sleep with an open Window. I am persuaded that no common Air from without is so unwholesome as the Air within a close Room, that has been often breath'd and not changed. Moist Air, too, which formerly I thought Pernicious, gives me no Apprehensions; for considering that no Dampness of Air apply'd to the Outside of my Skin can equal what is apply'd to and touches it within, my whole Body being full of Moisture, and finding that I can lie two hours in a Bath twice a Week, covered with Water, which is certainly much damper than any Air can be, and this for Years together, without catching Cold, or being in any other manner disordered by it, I no longer dread mere Moisture, either in Air or Sheets or Shirts. I find it of no Importance to the Happiness of Life the being freed from vain Terrors, especially of objects that we are every day exposed inevitably to meet with. You physicians have of late happily discovered, after a contrary Opinion had prevailed some ages, that fresh and cool Air does good to Persons in the Small-Pox and other Fevers. It is to be hoped that in another Century or two we may find out that it is not bad even for People in Health. And as to Moist Air, here I am at this present Writing in a Ship with about 40 Persons who have no other but Moist Air to Breathe for six Weeks past; everything we touch is damp and nothing dries, yet we are all as healthy as we should be on the mountains of Switzerland, whose Inhabitants are not more than those of Bermuda or St. Helena Islands. Islands on whose Rocks the Waves are dashed into Millions of Particles which fill the Air with Damp, but produce no Distemper, the Moisture being pure, unmixed with poisonous Vapours arising from Marshes and stagnant Pools, in which many Insects die and corrupt the Water. These Places only, in my Opinion (which however I submit to yours) afford unwholesome Air; and that it is not the mere Water contained in the Damp Air, but the volatile Particles of corrupted animal matter mixed with that Water, which renders such air Pernicious to those who breathe it. And I imagine it a Cause of the same kind that renders the Air in a close Room where the perspirable Matter is breathed over and over again by a number of assembled People so hurtful to Health. After being in such a Situation, many find themselves affected by the *Febricula* which the English alone call a *Cold* and perhaps from the Name imagine that they caught the malady by going out of the Room, when it was in fact by being in it.

Thus it will be seen that Franklin was an advocate of fresh air not only for sick people but also for well people; and that he clearly pointed out the contagiousness of colds and that he stated clearly every important factor concerning them, and *almost* mentions micro-organisms. He mentions the value of the prolonged bath, he having invented an arrangement by which he could rest in it and read a book. So certainly he would not be surprised today if he saw we physicians fully apprise the value of fresh air, recognize the contagiousness of colds, the importance of hydrotherapy and the value of the prolonged or continuous bath now so commonly used in the treatment of mental disease.

As is well known, Franklin invented the bifocal spectacles. He devised a flexible catheter which is of great value and he made experiments on the use of pokeweed in the treatment of cancer. He used static electricity for the relief of paralysis. He gives a most interesting account of this treatment and writes:

Some years since, when the newspapers made mention of great cures performed in Italy and Germany, by means of electricity, a number of paralytics were brought to me from different parts of Pennsylvania, and the neighboring provinces, to be electrised, which I did for them at their request. My method was to place the patient first in a chair, on an electric stool, and draw a number of strong sparks from all parts of the affected limb or side. Then I fully charged two six gallon glass jars, each of which has about three square feet of surface coated; and I sent the united shock of these through the affected limb or limbs, repeating the stroke commonly three times each day. The first thing observed, was an immediate greater sensible warmth in the lame limbs that had received the stroke, than in the others; and the next morning the patient usually related that they had in the night felt a pricking sensation in the flesh of the paralytic limbs; and would sometimes shew a number of small red spots, which they supposed were occasioned by those prickings. The limbs too, were found more capable of voluntary motion and seemed to receive strength. A man, for instance, who could not the first day lift the lame hand from off his knee, would the next day raise it four or five inches, the third day higher; and on the fifth day was able, but with feeble languid motion to take off his hat. These appearances gave great spirits to the patients and made them hope a perfect cure; but I do not remember that I ever saw any amendment after the fifth day; which the patients perceiving, and finding the shock pretty severe, they became discouraged, went home and in a short time relapsed; so that I never knew any advantage from electricity in palsies that was permanent. And how far the apparent temporary advantage might arise from the exercise in the patient's journey and coming daily to my house, or from the spirits given by the hope of success, enabling them to exert more strength in moving their limbs, I will not pretend to say.

How many physicians of the present day, employing a new or novel remedy, observe the caution shown by Franklin in this letter? The "spirits given by the hope of success," if recognized by physicians as well as it was by Franklin, would save us from many therapeutic follies. The calm, judicial manner in which Franklin gives his account of these electric experiments might well serve as an admirable pattern for the medical investigator and essayist of today.

Franklin did much to further the cause of inoculation against smallpox. In 1759 a joint pamphlet was published by Benjamin Franklin and Dr. William Heberden of London, the object of which was to diffuse in the colonies a correct understanding of inoculation and its advantages. Dr. Heberden's part of the pamphlet consisted in "Plain instructions for Inoculation in the small-pox by which any person may be enabled to perform the operation and conduct the patient through the distemper." The pamphlet was entitled: "Some account of the success of inoculation for the small-pox in England and America. Together with plain instructions by which any person may be enabled to perform the operation, and conduct the patient through the distemper."

In 1784 the king of France appointed Franklin one of the commission to investigate mesmerism. This commission consisted of four physicians, Borie, Sallin, D'Arcet and Guillotin, and five members of the Royal Academy, Franklin, Le Roy, Bailey, Beborry and Lavoisier.

The investigations of this commission were painstaking and thorough, covered a period of six months, and resulted in completely exposing Mesmer as an arch humbug and driving him finally from Paris.

Tourtourat, a pupil of Gilles de la Tourette, says that this report was pronounced by his master "a scientific work of the first order, worthy of being consulted even today by those interested in hypnotism and in diseases of the nervous system."

Franklin made investigation as to the causation of lead poisoning which is interesting and instructive and shows to great advantage Franklin's great powers of observation and clear reasoning and should be read by every physician.

Franklin's rules of health and long life and his rules of finding out "a fit measurer of meat and drink" may today be used as a guide by the laity. As is well known, he took a great interest in swimming and became an expert swimmer himself. He tells us that he once thought of making the teaching of swimming his life work. He fully recognizes the

value of outdoor exercises. These things he has written on fully, clearly and entertainingly.

But as a contributor to medicine we are chiefly indebted to Franklin for his clear recognition of the value of fresh air, the contagiousness of colds, and the value of water. These together constitute an advance and forward movement in the history of the healing art; and it may be doubted whether any physician of his time has made contributions of equal value. Please do not allow any one in the future to call Ben Franklin archaic!

Theodore Diller, M.D., Pittsburgh.

Medical Supervision of Young Persons Engaged in Athletics

To the Editor:—For months, in The Journal and other magazines, there have occasionally appeared articles dealing with the untoward and serious effects of strenuous physical exercise, especially in regard to the heart of the adolescent boy who indulges in such games as basketball, football, etc. Cases have been cited to prove these statements, and thus naturally lead the uninitiated to regard those engaged in the supervision of such games as not using ordinary care and intelligence in safeguarding our young men and boys from overtaxing their peculiar cardiovascular systems.

The Public Athletic League of Baltimore examines as a routine the young men and women who partake of its activities, noting especially the heart condition of those who follow the most active sports. In 8,656 young men (with duplications) examined during the last twenty months, eighty-six, or 0.97 per cent., showed an organic cardiac defect sufficient to exclude them from the more vigorous games. Their parents were notified of their condition, and referred to the family physician or dispensary for further advice and treatment. From time to time an occasional individual is found who has signs of anemia, hemic heart, or transient dilatation with tachycardia. Such as these are barred temporarily from active work. What appears to be of paramount importance is the fact that 93.02 per cent. of the defective hearts were discovered in youths at their first examination. Young men who have been active in from one to ten indoor seasons of basketball showed the other 6.98 per cent. defective. Of the four cases found, one had a history of recent gonorrheal infection, another of recent rheumatic fever, and the other two were individuals who had come to us from local preparatory schools where there are no physicians to examine the boys who play on their football, basketball, baseball, crew or track teams. Can we say that an earlier examination of the last two would not have shown a cardiac lesion?

The cases cited in the papers which have come to my attention seem to be sporadic and occur in those individuals who are not under the ordinary supervision of physicians specializing in this phase of their profession.

In consideration of the facts noted above, I believe that the hard, fighting games of youth do not inflict organic conditions on those who are in ordinary physical condition; that the cases noted appear in youths who are not under proper medical supervision, and that it is a serious blunder to allow young persons to indulge in physical exercise without proper assurance from a physician that they are organically fit to follow their athletic inclinations.

Alfred W. Brown, M.D., Baltimore.
Medical Supervisor, Public Athletic League.

Our Former Great Men

To the Editor:—I had occasion some days since to call attention to the use of the word which served to perpetuate the name of Captain Shaddock for our commonly called grapefruit. Now your reporter, noting the recent meeting here of the Massachusetts Medical Society, calls the lecture delivered annually in honor of Prof. George Cheyne Shattuck "the Shadduck Lecture" (The Journal, June 26, 1915, p. 2146).

The other day I also called to mind the advice of Professor Bowditch to open the abdomen of one suspected of "typhoenteritis." He who did thoracentesis without *asepsis*. This generation should be reminded of our former great men!

Edmund D. Spear, M.D., Boston.

Value of the Luetin Test

To the Editor:—I was glad to read your editorial on this subject in The Journal, June 19, 1915, p. 2068. It is very timely. Mention, however, was not made of the fact that the sensitiveness of this test is materially enhanced by first subjecting the patient to a week or ten days of mixed treatment. When this is done it is more valuable in late tertiary and hereditary cases than the most sensitive Wassermann.

Henry Farnum Stoll, M.D., Hartford, Conn.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TYPHOID VACCINES AND SERUMS FOR TREATMENT

To the Editor:—Is the use of typhoid serums as advertised by our commercial biologic laboratories in the treatment of acute typhoid fever justified by experience? I know that typhoid immunization is an established fact and I accept that.

W. W. Jarrell, M.D., Thomasville, Ga.

Answer.—The Council on Pharmacy and Chemistry holds that experience has failed to show the value of serums in the therapy of typhoid (Reports of the Council on Pharmacy and Chemistry, 1914, p. 135), and no longer includes these in New and Nonofficial Remedies.

New and Nonofficial Remedies states that, while typhoid vaccine is of recognized utility in the prevention of typhoid fever and is also of service in the treatment of typhoid carriers, "the use of vaccine in the treatment [curative as distinguished from prophylactic] of typhoid fever has given very inconclusive results. No positive evidence of harm resulting from its use has been recorded. Many clinicians, however, believe that the giving of an additional amount of the toxin of the disease may turn the balance against recovery in states characterized by marked toxemia."

A recent review of the subject in The Journal (June 26, 1915, p. 2139) discussed the clinical trials with various typhoid vaccines. This indicated that typhoid vaccines often favorably influence the course of the disease, and that, used with discretion, they do no harm.

HEART BLOCK

To the Editor:—What are the cardinal symptoms of heart block? What is the etiology and what treatment is most generally recommended?

C. A. L.

Answer.—Complete heart block is due to pathologic changes affecting the system of fibers whose function it is to convey from the auricles the stimulus which causes normal ventricular contraction. Gummas, calcified plaques, or tumors may press on or invade that part of the auriculoventricular conducting system known as the bundle of His. Fibrosis, fatty degeneration, infarcts and inflammatory changes occurring in the bundle of His and perhaps other portions of the conducting system may also produce heart block. Incomplete heart block, in which the relation of auricular to ventricular rhythm is partially retained, may be due to less extensive changes in the auriculoventricular system, resulting from acute infections such as pneumonia, diphtheria, rheumatism, typhoid fever or sepsis; from lesions of the medulla oblongata or vagus, and from overdosage with digitalis. It is probable that many deaths in acute infections are due to some form of heart block, and are caused by inflammatory swelling of the fibers of the auriculoventricular system.

Patients with heart block may present no symptoms except slow pulse and independent rhythm of auricles and ventricles. This difference in rhythm is determined by comparing the number of pulsations of the jugular veins per minute, as

observed in the neck, with the radial pulse or the ventricular beat as made out at the heart. Syncopal attacks, completing the picture of the Adams-Stokes syndrome, may occur at the onset of complete heart block or at any time after this condition has become established.

If during a syncopal attack, the ventricles remain inactive for from fifteen to twenty seconds, muscular twitchings simulating an epileptiform seizure occur. If the ventricles are inactive for much longer than twenty seconds, death generally results. In some cases of complete heart block in which the ventricles beat with their own slow rhythm, independently of the auricles, the syncopal attacks may be absent for many years.

Antisyphilitic treatment will greatly improve or cure those cases of heart block which are syphilitic in origin, in which the conducting system has not been completely destroyed. A Wassermann test should, therefore, always be made. In cases due to other causes, drug treatment offers relatively little. Digitalis, since it tends to slow still further the ventricular rate, should be withheld except in cases of long standing which have become decompensated owing to myocardial disease. Atropin may be used in the attack, but many who have given special study to the action of drugs in these cases question its value. Rest is important, especially in the cases occurring during acute infections.

FORMATION OF VAGINA OUT OF RECTUM

To the Editor:—In THE JOURNAL, July 18, 1914, p. 285, there is an abstract of an article on "Formation of Vagina out of Rectum." Cases of closed vagina are not infrequent here. They are often the result of the patient having put in Chinese medicine; sometimes they result from the handling they get from the native midwives, and occasionally they are congenital. I should be very glad if the technic of the operation could be printed in THE JOURNAL. Have American gynecologists done it much, and with good results?

CATHERINE C. YOUNG, M.D., Manchuria, China.

ANSWER.—The following is a list of articles on this subject:

Halban, J.: Formation of Vagina Out of Small Intestine, *Wien. klin. Wchnschr.*, Dec. 7, 1911.

Stoeckel, W.: Improved Technic for Making Vagina from Loop of Ileum, *Zentralbl. f. Gynök.*, Jan. 6, 1912; abstr., THE JOURNAL, Feb. 10, 1912, p. 451.

Schubert, G.: Formation of Vagina Out of Part of Rectum, Second and Third Cases, *Zentralbl. f. Gynök.*, Feb. 17, 1912.

De Bons, R.: Formation of Artificial Vagina from Loop of Intestine, *Semaine méd.*, April 3, 1912; abstr., THE JOURNAL, May 4, 1912, p. 1404.

Flöel: Formation of Artificial Vagina, *Zentralbl. f. Gynäk.*, June 15, 1912.

Juvara, E.: Technic for Making Artificial Vagina, *Rev. de gynec.*, May, 1912; abstr., THE JOURNAL, July 13, 1912, p. 150.

Schubert, G.: Artificial Vagina Made from Rectum, *Zentralbl. f. Gynäk.*, Aug. 24, 1912.

Henkel, M.: Formation of Vagina Out of Small Intestine: Two Cases, *Deutsch. med. Wchnschr.*, Nov. 21, 1912.

Gregoire, R.: Technics for Formation of New Vagina, *Arch. gén. de chir.*, December, 1912.

Tucker, E. F.: Case of Absence of Vagina and its Reconstruction, *Northwest Med.*, January, 1913.

Quénu, E., and Schwartz, A.: Formation of Vagina, *Rev. de chir.*, June, 1913.

Bonney, V.: Formation of Artificial Vagina by Transplantation of Portion of Ileum (Baldwin's Operation), *Lancet*, London, Oct. 11, 1913.

Ruge, E.: Formation of New Vagina from Sigmoid Loop, *Deutsch. med. Wchnschr.*, Jan. 15, 1914.

Anderes, E.: Formation of Artificial Vagina, *Beitr. z. Geburtsh. u. Gynök.*, 1914, xix, No. 2.

Boldt, H. J.: Two Cases of Formation of Artificial Vagina by Intestinal Transplantation, *Am. Jour. Obst.*, March, 1914.

Strassmann, P.: Formation of Vagina Out of Rectum, *Ztschr. f. Geburtsh. u. Gynäk.*, 1914, lxxvi, No. 1; abstr., THE JOURNAL, July 18, 1914, p. 285.

Schubert, G.: Concerning Formation of New Vagina in Case of Congenital Vaginal Malformation, *Surg., Gynec. and Obst.*, September, 1914.

SABOURAUD'S GLUCOSE AGAR

To the Editor:—In THE JOURNAL, June 5, 1915, p. 1894, in an article on the "Relation of the Genus 'Monilia' to Certain Fermentative Conditions of the Intestinal Tract in Porto Rico," Ashford says, "Up to the present, since October, 1914, I have made cultures in Sabouraud's glucose agar, 4 per cent., plus 2." How is this reagent made?

THOMAS TRUELSEN, M.D., Tampa, Fla.

ANSWER.—Sabouraud's glucose agar has the following formula:

Water	1,000 c.c.
Peptone	10 gm.
Crude glucose	40 gm.
Agar	18 gm.

This mixture is prepared in the usual way, and is adjusted so that it has an acidity of 2 + for the usage such as Ashford describes.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

CONNECTICUT: New Haven, July 13. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven; Eclectic: New Haven, July 13. Sec., Dr. T. S. Hodge, 19 Main St., Torrington; Homeopathic: New Haven, July 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Washington, July 13. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

INDIANA: Indianapolis, July 13-15. Sec., Dr. W. T. Gott, 120 State House, Indianapolis.

MASSACHUSETTS: Boston, July 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

NEW MEXICO: Santa Fe, July 12. Sec., Dr. W. E. Kaser, East Las Vegas.

OKLAHOMA: Oklahoma City, July 13. Sec., Dr. Ralph B. Smith, 502 Daniel Bldg., Tulsa.

SOUTH DAKOTA: Pierre, July 12. Sec., Dr. Park B. Jenkins, Waubay.

New Mexico April Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports the written examination held at Santa Fé, April 12-13, 1915. The total number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 3, all of whom passed. One candidate was licensed through reciprocity and 8 on satisfactory credentials. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Barnes Medical College	(1911)	78.7
Chattanooga Medical College	(1899)	78.8
Southwestern University	(1910)	80.7

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Chattanooga Medical College	(1906)	Tennessee

College	Year Grad.	Total No. Licensed
LICENSED ON CREDENTIALS		
Denver and Gross College of Medicine	(1904)	1
Hahnemann Medical Coll. and Hosp., Chicago	(1912)	1
Keokuk Medical College	(1906)	1
Univ. of Michigan, Dept. of Med. and Surg.	(1910)	1
St. Louis College of Physicians and Surgeons	(1905)	1
Vanderbilt University	(1893)	1
National School of Medicine, Mexico	(1911)	2

Massachusetts May Report

Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, May 11-13, 1915. The total number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 60, of whom 30 passed, including 5 nongraduates and 1 osteopath, and 30 failed, including 17 nongraduates and 3 osteopaths. The following colleges were represented:

College	Year Grad.	Per Cent.
LICENSED ON CREDENTIALS PASSED		
Yale Medical School	(1913)	79.6
Georgetown University	(1912) 75; (1914)	76.9
Baltimore Medical College	(1911)	77.1
College of Physicians and Surgeons, Baltimore	(1914)	75
Johns Hopkins University	(1911)	78.3
College of Physicians and Surgeons, Boston	(1913)	76.5
Harvard University	(1908) 80.9; (1912) 76; (1913) 78.9; (1914)	76.5, 80.6, 81.6
Tufts College Medical School	(1912) 75; (1913) 75; (1914)	78.9
Jefferson Medical College	(1912)	80.3
Temple University	(1911)	78.8
University of Pennsylvania	(1912)	81.9
University of Vermont	(1910) 79.5; (1914)	75.7
University of Paris	(1914)	77.5
Royal Hungarian Franz-Joseph University	(1894)	75
Imperial Kasanskij University, Kazan, Russia	(1906)	77.1
Nongraduates	82.5, 80.7, 80.4,	75, 75
FAILED		
Maryland Medical College	(1912) 65.9; (1913) 64.7,	64.9, 71.7
Eastern University*	(1914)	61.6
College of Physicians and Surgeons, Boston	(1911)	66.9
Tufts College Medical School	(1913)	70.2
Jefferson Medical College	(1912)	†

University of the South.....(1902) 63.3
University of West Tennessee.....(1913) 62.5
Nongraduates 73.4, 72.7, 72, 71.2,
70.9, 70.3, 70.2, 70, 68.7, 68.2, 61.7, 59.3, 56.3, 51.9, 49.3, 47.5, 42.9

* This college is officially reported as not recognized by the Maryland State Board of Medical Examiners.

† Examination not completed.

Maryland Homeopathic June Report

Dr. O. N. Duvall, secretary of the Maryland Homeopathic Board of Medical Examiners, reports that at the written examination held in Baltimore, June 14-15, one candidate, a graduate of the New York Homeopathic Medical College and Flower Hospital, 1914, passed with an average of 81.4. One candidate, a graduate of the Pulte Medical College, 1897, was licensed through reciprocity with Ohio.

Book Notices

DOCTORS VERSUS FOLKS. By Robert T. Morris, M.D. To-Morrow's Topics Series. Cloth. Price, $2 net. Pp. 365. Garden City, N. Y.: Doubleday Page & Co., 1915.

MICROBES AND MEN. By Robert T. Morris, M.D. To-Morrow's Topics Series. Cloth. Price, $2 net. Pp. 539. Garden City, N. Y.: Doubleday Page & Co., 1915.

A SURGEON'S PHILOSOPHY. By Robert T. Morris, M.D. To-Morrow's Topics Series. Cloth. Price, $2. Pp. 591. Garden City, N. Y.: Doubleday Page & Co., 1915.

These books contain a number of thoughts which have been expressed on various occasions by the author. The work is essentially philosophic in nature; in fact, it must be considered as expressing the observations of a modern medical onlooker of the passing show. The observations seem to follow no definite outline, but leap here and there, touching art, literature, science or economy, as the author's attention has been diverted from one social subject to another. The books are entertaining. In books of such character, it is obvious that no reader will be in complete agreement with all the sentiments of the author, who seems given to the formulation of epigrams. The motto of the books is, "When men smile and agree, progress weeps."

UEBER DIE BILDUNG DER HARN- UND GALLENSTEINE. Von Professor Dr. L. Lichtwitz. Paper. Price, 3.60 marks. Pp. 81 with 26 illustrations. Berlin: Julius Springer, 1914.

This monograph opens with a concise discussion of the physical and chemical principles which determine the solution and precipitation of those substances which form urinary and biliary calculi. There then follows a discussion of the same principles as applied to the special cases of urinary and biliary calculi. Particular emphasis is laid on the importance of the colloid substances which form the framework of the calculi, and which are maintained to be fundamentally active in both their origin and growth. The colloids presumably concentrate on the surface of any nucleus present, until they form a veritable membrane, which becomes saturated with salts; this new layer provides another surface on which colloid concentration occurs, and so the calculus is formed of laminae. As the title indicates, only the formation of calculi is discussed: their results and treatment are not considered. There are excellent illustrations, and the monograph constitutes an important contribution in the field which it covers.

FIELD HOSPITAL AND FLYING COLUMN. Being the Journal of an English Nursing Sister in Belgium and Russia. By Violetta Thurstan. Cloth. Price, $1. Pp. 183. New York: G. P. Putnam's Sons, 1915.

This is an entertaining narrative by an English nurse of her experience as a nurse in Belgium at the outbreak of the European war, as a German prisoner of war, and later with the Russian Red Cross in East Prussia and Russian Poland. Naturally there is some bias, but the author tells her story clearly and well, and gives excellent pen pictures of her work, companions and environment.

Miscellany

Improved Water Supply and Typhoid

Previous to September, 1913, Cumberland, Md., had an unusually high typhoid rate, running in 1910 to 568 and in 1913 to 472. In the latter year after the installation of a new water supply improvement began immediately, and in 1914 the number of cases had fallen to sixty-one in spite of the fact that suburbs had been annexed to the city in which the new water supply was not available and cisterns and wells were still in use. The water formerly had been taken from the Potomac river, and the growth of population above the intake and the increase in manufacturing plants had rendered the water unfit for use. Writers in the *Engineering News* for May 20 describe the new water plant of the city and show the radical reduction in typhoid fever after its installation. The water is now taken from Lake Gordon, formed by the damming of Evitts creek, and is first treated with hypochlorite, and with alumina when necessary to clear it, and then passed through six gravity mechanical filters made up of coarse gravel and then fine gravel or sand and lastly 5 feet of broken-up anthracite coal. After the adoption of the commission form of city government and the appointment of a full-time health officer in 1910 efforts were started to improve the health conditions of the city, the installation of the water plant with the drop in the death rate from typhoid being only one of the measures producing gratifying results. The general death rate has also steadily declined from 19.05 in 1910 to 13.45 in 1914.

Defense of Spain Against Yellow Fever

The *Medicina Contemporanea* says that the Spanish authorities have at last found out the reason why some vessels arriving with yellow fever cases on board become sources of infection while others do not. This discovery is the result of study of the mosquitoes frequenting the various ports where the vessels land. It was found that the quarantine station and hospital at Vigo seems to be entirely free from the *Stegomyia fasciata,* the yellow fever mosquito, while numerous specimens were found at Mahon, the other quarantine station. More than once there have been a number of cases of yellow fever among the personnel at the latter quarantine station, following the arrival of ships with cases on board. Henceforth all ships subject to sanitary measures on account of yellow fever are to be directed to the quarantine station at Vigo and not be allowed to proceed to Port Mahon. The latter is on one of the Balearic islands, southeast of the mainland of Spain, while Vigo is in the northwestern corner of Spain, not far north of Portugal.

Society Proceedings

COMING MEETINGS

Montana State Medical Association, Bozeman, July 14-15.
Washington State Medical Association, Tacoma, July 20-22.

ASSOCIATION OF AMERICAN PHYSICIANS

Thirtieth Annual Meeting, held at Washington, D. C., May 11-13, 1915

(*Concluded from page 134*)

Condition of Patients After Partial or Complete Resection of the Colon

DR. J. C. BLOODGOOD, Baltimore: As to immediate results: in resection for local disease, the patients are apt to have diarrhea for a few months; in resection for the general condition (the remaining colon being abnormal), there is no diarrhea. In local disease cases, bladder irritation accompanies the diarrhea and disappears with it. Bladder irritation does not occur after resection in the atonic cases. Cases in

which the operation was done for local disease have never come for secondary operation. When resection was undertaken for the atonic disease, the same technic which had been satisfactory formerly was chosen in the first cases. Out of twenty-eight cases of the atonic type, sixteen patients are well. They have gained weight, require no cathartics, and have no indigestion, no adhesion pains, etc. The convalescence is slow (it is rapid after ulcer and cancer cases), and may require two years. The majority of the patients are women, and are able to do their own housework. After four years' observation of resection in cases of atonic disease, and seven years' observation of local disease cases, it is evident that removing the right colon does no harm. Of the atonic cases, seven were failures in that they had postoperative discomfort and pain. Reoperated cases indicate that the failures were due to the use of side-to-side anastomosis; the two blind extremities become tense and painful diverticuli; this does not happen in ulcer and cancer cases. In the last three cases, end-to-end anastomosis has been employed. That resection has an effect on the atony is shown by a case in which there was vomiting, with food retention in the stomach and stasis in the colon; eighteen months after the operation there was no vomiting, and there was hypermotility of stomach and colon. All of the atonic cases had been referred by medical colleagues; all had been treated thoroughly; all other means of relief had been tried and had failed. All of the sixteen successful cases are much improved; but the patients are not robust. Their atony is a terminal condition which might have been prevented by proper medical treatment.

DISCUSSION

Dr. Walter B. Cannon, Boston: The material coming from the small intestine to the colon is almost wholly water and waste. The colon may be regarded as a waste receptacle. The bulk of the waste is reduced by the removal of water and is accomplished by reversed peristalsis, the water being thrown back into the caput coli, where it is absorbed. Material in the upper colon is nearly as dry as that in the rectum. This reversed peristalsis may also be seen in the left colon, being excitable there by the presence of soft material. Hardening of the feces excites peristalsis toward the rectum. So far as the physiologic functions of the right colon are concerned, they can be assumed by the transverse and left colon. Animals that are weak and toneless as to skeletal muscles have an equal tonelessness of the smooth muscles. Was the atonic state of the colon in Dr. Bloodgood's patients an expression of a general tonelessness of the body?

Dr. S. J. Meltzer, New York: We do not yet know all about the colon. We do not know enough about the eliminative power of the colon, and we do not know yet that it has no function beyond carrying away waste material.

Dr. A. Jacobi, New York: I have always seen that atony of the colon is due to chronic constipation with colitis, thickening and local dilatations. Surgeons will find these changes if they will examine the colon low down.

Dr. J. C. Bloodgood, Baltimore: The patients of the atonic group were very toneless throughout the whole body. Eight cases had local disease of the colon, posttyphoid or postappendical. None of them had exophthalmic goiter; none had rheumatoid arthritis; two had tuberculosis of the lungs; none had heart disease; it may be seen, therefore, that the operation was not done for these conditions. I have excluded colitis from the group. In none of the cases was there a history of mucous diarrhea or dysentery, and proctoscopy showed the left colon to be normal. These cases have very thin colon walls, instantly recognizable from the dilated colon above the cancer and from Hirschsprung's disease. I believe that this atonic state is a terminal preventable disease. We can remove only part of the enormous dilated sac of the colon; a big incision is necessary to remove the cecum.

Fate of Fats in the Blood Stream

Dr. William Charles White, Pittsburgh: Light fats were injected into the blood stream in an effort to learn why tubercle bacilli lodge preferably in the upper lobes of the lungs. Cream was injected into the ear vein of rabbits. It is rapidly set aside into the lymphatics and concentrated in the cisterna chyli. There was no evidence that any of the fat was conveyed into any of the organs by the blood vessels. All of the fat is held up in the pulmonary circulation, and it does not get out again into the peripheral circulation. It is found later not only in the depots of fat but also outside the central veins in the lobules of the liver. Suggestion is made of a lymphatic circulation in the liver connected with the cisterna chyli.

Unusual Type of Pulmonary Mycosis

Drs. Thomas R. Boggs and M. C. Pincoffs, Baltimore: The case was one of a mycotic lung infection not heretofore reported in the United States. A native American girl, a corn scraper in a canning factory, sought relief for a boil-like lesion under the arm. She was found to have cancer of the breast on the same side; there were weakness, numbness and tingling of the arm, and evidences of circulatory obstruction in the axilla. Operation for breast cancer and the axillary condition was done; no evidence of pulmonary disease was noticed. Later she entered the city hospital febrile, prostrated and with profuse expectoration of sputum resembling that from liver abscess. In the sputum were found mycelium and spores. The course was rapidly downward; on the fifth day hemoptysis occurred, cough ceased and later hemorrhage from the axillary sinus marked the end. Necropsy revealed a cavity communicating with the pleura and sinus; the lung was in organized gray hepatization. The organism grew abundantly on culturing and was found to be a moniliform yeast. It is pathogenic to animals when inoculated and when given intratracheally, but not when given by mouth. It is easily overlooked in the sputum by ordinary staining methods; it is necessary to culture by the plate method to recover the organism.

The Alleged Relation Between Vaccine Virus and Postvaccination Tetanus

Dr. John F. Anderson, Washington, D. C.: Since 1902, the Public Health Service has supervised the manufacture of and commerce in biologic products. Among other things, it has conducted an investigation of the occurrence of tetanus following vaccination. Since 1904, I have studied this subject. There were four lines of study: 1. Study of actual cases, by personal investigation or by a delegated officer, with collection of data on incubation period, kind and source of virus used, collateral circumstances, etc. Forty-one cases of postvaccination tetanus were studied. In no cases were tetanus spores found in virus from the same stock as that used for the vaccinations. The incubation time was from nine to twenty days: the mortality was about 75 per cent. The mortality was less in cases with incubation time of ten days. 2. The incidence of tetanus among large groups vaccinated at the same time: army, navy, etc. 3. Examination of commercial vaccines for the presence of tetanus bacilli or spores. Examination was made of enough virus to vaccinate in 200,000 cases. In no single instance was tetanus found. Among 385,000 persons vaccinated in U. S. Army there were six cases of tetanus, none of which had any relation to the vaccination. Among 200,000 persons vaccinated in U. S. Navy there were two cases of tetanus having no relation to vaccination. 4. Laboratory observations on animals vaccinated with virus infected with tetanus. Animals were vaccinated with virus containing large numbers of tetanus spores. Rhesus monkeys and guinea-pigs, animals susceptible to both vaccine and tetanus. All escaped tetanus, although the vaccination crusts sometimes contained spores. This fact leads to the belief that there is no danger even if virus does contain spores. The following conclusions may be made: 1. Vaccine virus on the market does not contain tetanus spores. 2. Tetanus following vaccination depends on accidental infection at the time of crust formation.

Child Labor Legislation.—Nearly every state in the Union has on its statute books today a mass of legislation for the welfare of children. Some of it is archaic; some is extreme; and not a little contradictory and unenforceable.—Clupper.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

June, XXXVI, No. 6, pp. 267-316

1 Wassermann Reaction. W. B. Stone, Schenectady.
2 Technic of Lindeman's Blood Transfusion. A. Krida, Albany.
3 Definition of Insanity. C. Stover, Amsterdam.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

June, LXXI, No. 6, pp. 881-1055

4 *Clinical Observations on Treatment of Acute Pelvic Inflammations. G. G. Ward, Jr., New York.
5 *Serum Studies in Pregnancy. J. A. Kolmer and P. F. Williams, Philadelphia.
6 Gynecology; Past, Present and Future. W. D. Fullerton, Cleveland.
7 *Fortuitous Origin of Departures from Normal Period of Gestation in Man. T. B. Robertson, Berkeley, Calif.
8 Prolapsus of Uterus. H. J. Boldt, New York.
9 Series of Placenta Praevia Cases. W. E. Caldwell, New York.
10 Value of Modern Functional Kidney Tests to Clinician. F. E. Sondern, New York.
11 *Observations on Two Hundred Twenty-Seven Cases of Ectopic Pregnancy. J. O. Polak, Brooklyn.
12 Case of Ureteral Injury and Its Treatment. W. A. Jewett, Brooklyn.

4. Treatment of Acute Pelvic Inflammations.—Ward made a study of 39 cases of pelvic abscess showing indications for operation. There were 4 deaths. Two cases were failures (that is, they required a subsequent radical abdominal operation, owing to the failure of simple incision and drainage to effect a cure); 1 patient is still convalescing in the hospital; 8 were discharged as cured, but have not been heard from. Thirty-eight of the patients were treated by posterior colpotomy and drainage, and 1 patient was operated on by an extraperitoneal incision above Poupart's ligament, with thorough drainage to the vagina. Tube drainage was employed in 30 cases, and gauze drainage in 9 cases.

Of 7 cases in which pus developed, requiring colpotomy and drainage secondary to an operation, 3 followed extensive abdominal operations for dense adhesions and old purulent adnexa; 2 were due to infection of a blood clot, the result of extensive oozing after operation; 1 followed a trachelorrhaphy performed by a physician in the home under non-aseptic conditions; and one was infected as a result of puncture of the uterus during a curettage. Three patients required a secondary colpotomy owing to the incision being allowed to close too soon. There has been no mortality among the last 24 cases, the 4 deaths occurring among the first 15. All 4 of these cases were profoundly septic when brought to the hospital, as a result of prolonged infection, and the patients died of a general septicemia shortly after the operation. One patient developed multiple abscesses of the lungs, as proved by an necropsy. Pregnancy is known to have occurred in 3 patients since operation.

Ward condemns the too ready resort to the curet, or to other intra-uterine manipulations, as giving rise to uterine infection, and advises that incision and drainage should not be employed until the indications of a localized collection of pus are well defined and associated with evidences of septic absorption. The selection of the proper form of drainage applicable to each case is important. Rubber tubing or gauze should be chosen according to the conditions found at the operation. Failure to cure a pelvic abscess by colpotomy and drainage is nearly always due to neglect in not keeping the incision open sufficiently long. In acute pelvic suppurations, when the indications for interference are present, the operation of choice should be a simple incision and ample drainage, with the object of conserving the organs.

5. Serum Studies in Pregnancy.—A placentin (No. 1) prepared by concentration of expressed placental juice, preserved with 1 per cent. glycerin and 0.5 per cent. tricresol and injected intracutaneously yielded skin reactions characterized by erythema, infiltration and pain, in 87 per cent. of pregnant and recently delivered women, and in 66 per cent. of women who had borne children, but who were not pregnant at the time these tests were made. This extract also caused 20 per cent. of the men tested to react slightly. When diluted 1:10 with normal salt solution this extract yielded 80 per cent. positive reactions among pregnant or recently delivered women, and 50 per cent. positive among women who had borne children. A placentin (No. 4) prepared in the same manner as the first extract except that glycerin was not used in its preparation or preservation, yielded 40 per cent. positive reactions among pregnant or recently delivered women, and 14 per cent. positive reactions among women who had borne children. It is probable that glycerin itself acts as an irritant, especially in the hypersensitive skin of pregnant women.

A placentin (No. 2) prepared from the residue resulting from the concentration of expressed placental juice, yielded 55 per cent. positive reactions among women who were pregnant or recently delivered. This placentin produced slightly positive results in 20 per cent. of the men tested. A glycerin extract (placentin No. 5) on cutaneous inoculation yielded 50 per cent. positive reactions among pregnant and recently delivered women. Of several multiparous and nulliparous women tested, all reacted negatively. Extracts of human male and female kidney (nephrins) prepared in the same manner as the placentins, produced a number of positive reactions. The most marked reactions were observed with the extract of human female kidney. The intracutaneous injections of a 1 per cent. solution of a placental peptone did not produce reactions among pregnant and recently delivered women.

7. Normal Period of Gestation in Man.—From a statistical investigation of 511 normal confinements of South Australian females, comprising 247 confinements yielding male infants and 264 confinements yielding female infants, it is concluded by Robertson that the mean length of periods of gestation yielding males is 282.5 days with a probable error of ± 0.55 days and a variability of 4.47 per cent. The mean length of periods of gestation yielding females is 284.5 days with a probable error of ± 0.57 days and a variability of 4.85 per cent. The probability of the truth of the conclusion, based on the above estimates, that the periods of gestation yielding females are longer than those yielding males is 142:1.

There is only one period, the "normal" period at which the percentage of infants delivered by normal mothers attains a maximum. Subsequent to a very early period in the development of the fetus, there is no evidence of a "critical period" in the intra-uterine growth of man such as occurs in the intra-uterine growth of guinea-pigs. The deviation of normal periods of gestation from the mean are fortuitous in origin. The chances are a million to one against a male child being delivered at the termination of an otherwise normal pregnancy before 224 days or of a female child before 222 days after the onset of the last menstruation. Hence all 7-months children (210 days) may legitimately be regarded as the fruit of pathologic pregnancies. The length of the period of gestation is very much less variable in normal females, than the weight of the infant which is delivered. From this fact it is inferred that the length of the period of gestation in normal females is primarily determined, not by the fetal development, but by a maternal cycle of events which is to a considerable extent independent of the stage of developments attained by the fetus.

11. Observations on Cases of Ectopic Pregnancy.—An analysis of these 227 cases forced Polak to the conclusion that properly diagnosticated ectopics should never reach the tragic stage, for there is no question that an early diagnosis is possible in a great majority of instances. The histories of these cases show that ectopics occur in three classes of women: First, those in which pregnancy has been preceded by a varying period of sterility, in a woman who has been previously the subject of a dysmennorrhea, due to congenital uterine anomaly, with no history of infection; second, in women in whom the tubal lumen has been disturbed by a previous infective process, giving a history since marriage of chronic pelvic inflammatory trouble; and third, in women

who are subjects of rapidly recurring and repeated pregnancies, as may be found among our foreign population, particularly the Jews, Italians and Irish. The largest number of Polak's cases fall within the last two classes. Two hundred and twenty-two of these women presented some menstrual anomaly, as a period of amenorrhea, prolongation of the normal period, anomalous character of the bloody discharge, or an anticipated period followed by an intermittent or continuous metrorrhagia. This vaginal discharge, which is irregular in occurrence and amount, has presented definite characteristics, it is brownish red blood, mixed with mucus, which does not clot, its quantity is increased from time to time, coincident with the painful paroxysms. Pelvic pain was absent in only one patient.

The attacks of pain may be general, abdominal colic, or sharp, colicky pains, referred to the region of the fruit sac, followed by intervals of hours or days of complete remission. Abdominal sensitiveness following the paroxysms of pain has been noted in every one of the cases observed. An analysis of these histories shows that metrorrhagia or menstrual anomalies with pain were constantly present in over 98 per cent. of the cases before final rupture, hence Polak feels that with certain pelvic signs, which are always more or less available to establish the presence or absence of a pregnancy, that it is possible for a diagnosis to be made. The signs he refers to are: The dusky hue of the cervix, the slight softening of the cervix, and the enlargement of the uterus without any of the characteristic changes in shape and consistency found in normal pregnancy. A mass or tumor was present in every instance. It was found either on one or the other side of or in front or behind the uterus, always displacing it to some degree. This mass had more or less definite characteristics. It was tense, tender and the pulsation of the uterine artery on the side corresponding to the mass was always more marked.

Arizona Medical Journal, Phoenix

May, III, No. 5, pp. 6-16

13 Electrotherapeutics in Tuberculosis. W. W. Wilkinson, Phoenix.

Arkansas Medical Society Journal, Little Rock

June, XII, No. 1, pp. 1-33

14 Green Fly (Lucilia Caesar) as Universal Destroyer of Motor Function and of Life. E. W. Saunders, St. Louis.

Boston Medical and Surgical Journal

June 24, CLXXII, No. 25, pp. 925-956

15 Water Drinking. E. G. Cutler, Boston.
16 Endorsement of Starvation Method vs. Gradual Carbohydrate Reduction as Time Saver in Treatment of Diabetes. H. A. Christian, Boston.
17 Psychopathic Hospitals and Prophylaxis. F. E. Williams, Boston.
18 Program and Directions for Mental Examination of Asocial, Psychopathic and Doubtful Subjects. R. S. Hardwick, Boston.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

June, VII, No. 12, pp. 167-189

19 Treatment of Infantile Paralysis. R. W. Lovett, Boston.

California State Journal of Medicine, San Francisco

June, XIII, No. 6, pp. 211-250

20 Morphin-Scopolamin Anesthesia in Obstetrics. L. I. Breitstein, San Francisco.
21 Possible Explanation of Conflicting Reports on Twilight Sleep. S. Lehr, Berkeley.
22 Observations on Dammerschlaf or Twilight Sleep. B. F. Sandow, Oakland.
23 Silver Iodid Emulsion in Pyelography. L. J. Roth, Los Angeles.
24 Case of Sympathetic Ophthalmia. C. S. G. Nagel, San Francisco.
25 *Some Experimental Data on Morestin Treatment of Peritonitis. S. Pope, San Francisco.
26 Streptococcic Infections. J. L. Robinson, Reno, Nev.

25. **Data on Morestin Treatment of Peritonitis.**—To determine the value of this method experimentally, a series of twelve rabbits were used by Pope, two of which were controls. Eight were treated as follows: Under general anesthesia the animal was laparotomized, the colon drawn out, an inch incision made in the viscus, a portion of its contents smeared over the peritoneum. The intestinal wound was closed with silk, the peritoneum gently swabbed with sponges soaked in ether, a dram of ether poured into the cavity, the colon returned, and the abdominal incision closed with silk. All of these rabbits developed a vicious peritonitis marked by hemorrhagic plastic deposits, purulent exudate and agglutination of the intestinal loops. Six died within a few days —from sepsis or obstruction. Two remain at the end of ten days in fair health, but show multiple peritoneal adhesions. Two other rabbits were opened, a dram of ether poured in the abdomen and the wound closed. Each developed a purulent peritonitis, one died the third day, the other died from a secondary anesthesia, at which time cultures were made and proved positive to *Staphylococcus aureus*. This shows that a sterile abdominal cavity, insulted by an irritant such as ether, is not capable of defense against its own intestinal flora. Two control rabbits were laparotomized, had their peritoneums soiled by a colotomy wound, were washed with salt solution and closed. These made an uneventful recovery and at necropsy presented a fairly normal peritoneum. These few experiments show rather conclusively that for rabbits, at any rate, whether or not the peritoneum be infected, to treat it with ether is a highly improper procedure.

Colorado Medicine, Denver

June, XII, No. 6, pp. 137-170

27 Vomiting of Infants. H. P. Kirtley, Salt Lake City.
28 Infant Feeding by Simple Dilutions. G. M. Anderson, Denver.
29 Congenital Stenosis of Pylorus. F. N. Cochems and A. J. Bender, Salida.
30 Creosotal in Treatment of Pneumonia. H. B. Whitney, Denver.
31 Irritative States of Gastric Motility. J. L. Mortimer, Denver.
32 Eczema of Auricle Due to Excess of Carbohydrates in Diet. W. C. Bane, Denver.
33 Pleurisy with Purulent Effusion in Infant (Two Months Old). F. B. Stephenson, Marble.
34 Heredity and Defectives. C. T. Knuckey, Lamar.

Florida Medical Association Journal, Jacksonville

June, I, No. 12, pp. 353-382

35 Surgery of Today; Its Ideals and Its Activities. G. R. Holden, Jacksonville.

Journal of Biological Chemistry, Baltimore

June, XXI, No. 2, pp. 223-509

36 Influence of Balanced and Non-Balanced Salt Solutions on Osmotic Pressure of Body Liquids of Fundulus. J. Loeb and H. Wasteneys, New York.
37 *Relation of Quality of Proteins to Milk Production. E. B. Hart and G. C. Humphrey, Madison, Wis.
38 Estimation of Phosphorus in Biologic Material and Standardization of Solutions of Molybdenum. A. E. Taylor and C. W. Miller, Philadelphia.
39 Basal Metabolism and Body Surface. J. H. Means, Boston.
40 Formation of Fats from Proteins in Eggs of Fish and Amphibians. J. F. McClendon, Minneapolis.
41 Oxidizing Power of Oxyhemoglobin and Erythrocytes. J. F. McClendon, Minneapolis.
42 Composition and Physiologic Activity of Pituitary Body of Hogs and Cattle. F. Fenger, Chicago.
43 *Determination of Hippuric and Benzoic Acids in Blood and Tissue. F. B. Kingsbury, Minneapolis.
44 Synthesis of Hippuric Acid in Nephrectomized Dogs. F. B. Kingsbury and E. T. Bell, Minneapolis.
45 Studies on Reductase of Liver and Kidney. Influence of Heat, Light and Radium Radiations on Activity of Reductase. D. F. Harris and H. J. M. Creighton, Halifax, Canada.
46 Relation of Diet to Transmissible Tumors. J. E. Sweet, E. P. Corson-White and G. J. Saxon, Philadelphia.
47 Researches on Purins. New Synthesis of Alkylamino-Purins. On 2-Oxy-8-Thiopurin, 2-Oxy-8-Methylmercapto-Purin, 2-Oxy-8-Methylamino-Purin and 2-Oxy-6, 9-Dimethyl-8-Thiopurin. C. O. Johns, New Haven, Conn.
48 Vividiffusion Experiments on Ammonia of Circulating Blood. A. Rhode, Baltimore.
49 Synthesis of Hippuric Acid in Animal Organism and Occurrence of Free Benzoic Acid in Urine. G. W. Raiziss and H. Dubin, Philadelphia.
50 Walden Rearrangement in Hexoses. P. A. Levene and F. B. La Forge, New York.
51 Xylohexosaminic Acid, Its Derivatives and Their Bearing on Configuration of Isosaccharic and Epi-Isosaccharic Acids. P. A. Levene and F. B. La Forge, New York.
52 *Method for Determination of Chlorids in Small Amounts of Body Fluids. F. C. McLean and D. D. Van Slyke, New York.
53 *Influence of Salicylates on Uric Acid Concentration of Blood. M. S. Fine and A. F. Chace, New York.
54 Metabolism of Creatin and Creatinin. Fate of Creatin When Administered to Man. V. C. Myers and M. S. Fine, New York.
55 Id. Presence of Creatinin in Muscle. V. C. Myers and M. S. Fine, New York.
56 Id. Creatin Content of Muscle of Rats Fed on Isolated Proteins. V. C. Myers and M. S. Fine, New York.

57 Changes in Fat Content of Feces Preserved by Freezing Without Addition of Preservative. C. A. Smith, R. J. Miller and P. B. Hawk, Philadelphia.
58 Quaternary Salts of Hexamethylene Tetramine. Monohalogenacetyl Derivatives of Amino-Alcohols and Hexamethylene-Tetraminium Salts Derived Therefrom. W. A. Jacobs and M. Heidelberger, New York.
59 Id. Halogenethyl Ethers and Esters and Their Hexamethylene-Tetraminium Salts. W. A. Jacobs and M. Heidelberger, New York.
60 Id. W-Halogen Derivatives of Aliphatic-Aromatic Ketones and Their Hexamethylene-Tetraminium Salts. W. A. Jacobs and M. Heidelberger, New York.
61 Id. Miscellaneous Substances Containing Aliphatically Bound Halogen and Hexamethylene-Tetraminium Salts Derived Therefrom. W. A. Jacobs and M. Heidelberger, New York.
62 *Tissue Fibrinolysins. M. S. Fleisher and L. Loeb, St. Louis.
63 Nature of Sugars Found in Tubers of Sweet Potatoes. K. Miyake, Japan.
64 Nuclein Bases Found in Shoots of Aralia Cordata. K. Miyake, Japan.

37. **Quality of Proteins for Milk Production.**—Data are presented by Hart and Humphrey on the comparative efficiency of the proteins of milk, corn and wheat grain for milk production. On a nutritive ratio of 1:8, equivalent to about 7 per cent. of digestible protein and 9 to 10 per cent. of total protein, positive nitrogen balances were maintained with milk proteins for the production of as high as 35 pounds of milk per day, but negative balances resulted when the proteins were derived from the corn or wheat grain. During the negative nitrogen balances increased tissue autolysis resulted, and for a brief time at least there was no decrease in the milk protein or milk solids elaborated. The results indicate clearly that the quality of the proteins is an important factor in maintenance and production and that the synthetic powers of the mammary gland will not compensate for deficiencies in protein structure. The fact that negative balances were observed on the 1:8 nutritive ratio of corn or wheat proteins explains the results of experience which has wisely dictated a narrow nutritive ratio for milk production. It was found that milk proteins had an efficiency for milk production and tissue restoration of about 60 per cent., while the corn and wheat grain proteins showed an efficiency of 40 and 36 per cent., respectively. These results were obtained under experimental conditions requiring a roughage of low nitrogen content.

43. **Hippuric and Benzoic Acids.**—Quantitative methods based on those of Folin and Flanders for the determination of hippuric and benzoic acids have been applied by Kingsbury to blood and tissue analysis. By means of these methods small quantities of these two acids were estimated.

52. **Chlorids in Body Fluids.**—The authors recently published an iodometric method for determination of halids in general which permits the titration of as little as 5 c.c. of tenth normal halid solution with an accuracy of 1 part per thousand. The present paper gives the conditions for the application of this method to body fluids. As the concentration of chlorid in blood plasma is about tenth normal, it is possible to titrate the amount in 0.5 c.c. with an accuracy of 1 part per hundred. The titration is applicable to urine, ascitic fluid, pleural exudates, gastric juice, etc. The determination requires two steps: (1) removal of proteins by coagulation or by ignition and (2) titration of chlorids. The procedure is described in detail.

53. **Salicylates and Uric Acid.**—The data obtained by Fine and Chace point to the close resemblance between the action of atophan and salicylates on the uric acid concentration of the blood. In several instances the effect of the latter drug has, if anything, been more pronounced, twice causing an almost complete disappearance of uric acid from the blood, an observation which they have been unable to make in the case of atophan. The authors also made a few observations on the influence of certain other drugs on the uric acid concentration of the blood. In two cases treated with 5.3 gm. of theobromin sodium salicylate daily (one for eleven days and the other for two days) there was, if anything, a slight increase in the concentration of blood uric acid. The same may be said with regard to quinin hydrochlorid (2 gm. per day for two days in one case), and for colchicum (maximum doses in two cases).

62. **Tissue Fibrinolysins.**—Fleisher and Loeb found that certain organ systems, especially the genito-urinary and nervous systems contain fibrinolysins. Heating organs to 56 C. (132.8 F.) for thirty minutes renders them inactive. Various species of animals differ in the fibrinolytic power of their organs; there also exist great variations in the solubility of different kinds of blood. The liver counteracts the effect of the fibrinolysins. The substances found in certain organs, which inhibit the coagulation of the blood, are perhaps identical with the fibrinolysins. The fibrinolysins have a considerable biologic significance in preventing growth processes; they are antagonistic to the tissue coagulins which promote growth processes. The fibrinolysins do not seem to be identical with those splitting ferments which produce autolysis.

Journal of Outdoor Life, New York

May, XII, No. 5, pp. 148-179

65 Fresh Air in Light of Recent Research. C. E. A. Winslow, New York.
66 Smoke in Its Relation to Health. W. L. Holman, Pittsburgh.
67 Admitting Patients to State Sanatorium; Method of Instructing Physicians in Tuberculosis Problem. H. L. Barnes, Wallum Lake, R. I.
68 To Which Type Do You Belong? D. W. Whynes, Edgewater, Colo.
69 Too Late: Who Is Responsible for Delayed Diagnosis of Pulmonary Tuberculosis? C. H. Cocke, Asheville, N. C.

June, X, No. 6, pp. 181-211

70 Instructions to Tuberculosis Patient. E. Cummings, Hinton, W. Va.
71 It Pays to Fight and Win. W. E. Whitt, Abingdon, Va.
72 Coming Back. R. G. Lindstrom, Denver.
73 Our Duty. L. E. Williams, Oak Forest, Ill.
74 What Backbone Did For Me. P. Reldas.

Kansas Medical Society Journal, Topeka

June, XV, No. 6, pp. 171-202

75 Mechanism of Pelvic Support. F. A. Harper, Pittsburg.
76 Parenteral Protein Digestion — Its Relation to Infectious Diseases. (To be continued.) S. A. Matthews, Lawrence.

Lancet-Clinic, Cincinnati

June 5, CXIII, No. 23, pp. 617-644

77 Tracheotomy. L. D. Brose, Evansville, Ind.
78 Medical and Surgical Fees. T. M. Stewart, Cincinnati.
79 Cause of Arterial Hypertension with Report of Its Treatment. T. A. Williams, Washington, D. C.
80 Surgery of Thyroid Gland Experimental and Applied. J. R. Wathen, Louisville, Ky.
81 Hospitals — History of Their Development. C. R. Holmes, Cincinnati.

June 12, No. 24, pp. 645-672

82 Goiter and Life Expectancy. C. H. Mayo and H. S. Plummer, Rochester, Minn.
83 Some Work Seen in Europe Just Before the War. J. Y. Welborn, Evansville, Ind.
84 Treatment of Pellagra. J. Aulde, Philadelphia.
85 Newer Antitoxin Treatment of Diphtheria. C. A. Stammel, Jr., Cincinnati.
86 Medicine and Politics in Ohio. H. S. Pritchett, New York.

Medical Record, New York

June 26, LXXXVII, No. 26, pp. 1051-1110

87 Recent Advances in Dermatology and Syphilography. C. M. Williams, New York.
88 Effects of Radioactivity on Nasopharyngeal Fibroma. D. B. Delavan, New York.
89 Present Status of Diagnosis of Cancer of Stomach. W. J. Mallory, Washington, D. C.
90 Progress in Use of Standard Salvarsanized Serum Intraspinally. H. S. Ogilvie, New York.
91 *Gluteal Myositis. Condition Not Heretofore Described. N. Sharpe and P. W. Roberts, New York.
92 *Case of Jacksonian Epilepsy. V. E. Watkins, U. S. Army.
93 Suggestion Narcosis. A. L. Beck and A. W. Hoyt, New Rochelle.

91. **Gluteal Myositis.**—The type of myositis Sharpe and Roberts describe is sharply localized, being usually limited to the gluteus medius and tensor fascia femoris, and sometimes involving the gluteus minimus and the gluteus maximus to a slight extent. The pain and tenderness is circumscribed with no involvement of other muscles of the body. In none of their cases did the authors find any induration. Compared with the same tissues of the opposite side, the affected muscles felt normal, except for occasional tension and the presence of pain and tenderness. In several cases palpation disclosed prominences in the body of the muscle

that might easily be mistaken for inflammatory indurations. These could be made to disappear, however, by pressure of the fingers and were due to temporary spasm of the muscle fibers. None of the causes usually mentioned in connection with myositis, with the possible exception of autointoxication from gastro-intestinal disturbances, seems to have been operative. Influenza, tonsillitis, pharyngitis and gout were excluded by the histories of the cases. Many of the cases showed evidences of gastro-intestinal indigestion, such as coated tongue, dry, reddened throat and constipation. The condition is not fatal, but merely more or less disabling. The authors have seen sixteen cases.

92. **Case of Jacksonian Epilepsy.**—The case of jacksonian epilepsy reported by Watkins presents some unusual features, particularly with reference to the acute onset of the condition, the steadily increasing frequency and severity of the convulsions, and the prompt disappearance of all symptoms on removal of the cortical irritation due to a cyst about the size of a small hen's egg located approximately at the lower end of the precentral gyrus.

Military Surgeon, Chicago

June, XXXVI, No. 6, pp. 505-618

94 Question of Synonomy. C. S. Ludlow.
95 Suppurative Otitis Media, and Its Complications. G. B. Trible, U. S. Navy.
96 Operative Perforation of Nasal Septum. W. R. Eastman, U. S. Army.
97 Rope in Bread in Field Bakery, U. S. Army. G. L. Qualls, U. S. Army.
98 Antiseptic Iodin Solution. H. W. Yemans, U. S. Army.
99 Antityphoid Inoculation of National Guard. C. B. Walls, Ill. N. G.

New Jersey Medical Society Journal, Orange

June, XII, No. 6, pp. 261-312

100 Lung Complications of Cardiac Disease. H. Brooks, New York.
101 Nitrous Oxid and Oxygen Anesthesia. C. J. Larkey, Bayonne.
102 Visual Acuity and Its Significance. I. F. P. Turner, Trenton.
103 Eye Strain. E. Blackwell, Trenton.
104 Plea for Routine Rectal Examination. D. A. Kraker, Newark.
105 Child and Tuberculosis Problem. G. K. Dickinson, Jersey City.
106 Legislative and Public Health Committees. J. S. Yates, Paterson.

New York Medical Journal

June 26, CI, No. 26, pp. 1301-1360

107 *Prognostic Significance of Tuberculous Cavities in Lungs. M. Fishberg, New York.
108 Empyema of Nasal Accessory Sinuses. H. Smith, New York.
109 Secretin and Its Therapeutic Possibilities. J. W. Beveridge, New York.
110 Foreign Body in Esophagus. A. Jablons and M. M. Banowitch, New York.
111 Liver Abscess of Doubtful Etiology. J. G. Townsend, Louisville.
112 First Aid Kits for Factories. G. M. Price, New York.
113 Some Disorders of Foot Simulating Weak Foot. E. S. Geist, Minneapolis.
114 Cerebral Trauma and Acute Dilatation of Stomach. H. A. Haubold, New York.
115 Parathyroids and Tetany. E. L. Hanes, Rochester.
116 Benzol in Treatment of Myelogenous Leukemia. O. H. Petty, Philadelphia.

107. **Tuberculous Cavities in Lungs.**—The significance of tuberculous excavations of the lungs Fishberg states is estimated by the consideration of two factors: The acuteness of the underlying process, and the time it took for the production of the cavity. In very acute forms of tuberculosis cavitation is exceedingly rare. The prognosis is gloomy with or without localized destruction of pulmonary tissue. In adults such cases are rare, but in infants rapid cavity formation is seen at times and the termination is almost invariably fatal. In subacute forms of phthisis, in which excavations are apt to form very rapidly, the prognosis is unfavorable, unless the cavity is rather small. In the latter case the disease may be attenuated and subsequently pursue a chronic course with the sequestration and expulsion of the affected area. Excavation is then the first step toward a diminution of the acuteness of the tuberculous process in the lung. The general symptoms may be ameliorated, as after the evacuation of an abscess.

In chronic phthisis, excavations, even when extensive, are compatible with a long and efficient life. These cavities are surrounded by a more or less dense fibrous capsule which limits their extension and are drained through a fistulous tract communicating with a bronchus. As long as the secretions are eliminated by expectoration, the patient may feel quite comfortable for years. Because they expectorate large numbers of tubercle bacilli, they are often sources of infection to a greater extent than many patients without excavations. Pulmonary cavities may heal. When small, they may be obliterated by granulations or by calcification of their contents. Larger excavations may shrink, or, even when remaining of large dimensions, they may become altogether benign after the necrotic tissue has been expelled. They are, however, a constant source of danger for metastatic autoinfection. On the whole, cavities are an indication of chronicity of the tuberculous process in the lung, showing that the resisting forces are active and as such are less dangerous than many cases which have by common consent been considered incipient and curable.

New York State Journal of Medicine

May, XV, No. 5, pp. 167-204

117 General Principles and Mechanism of Infection and Immunity. V. C. Vaughan, Ann Arbor, Mich.
118 World War and Maritime Commerce. J. J. O'Connell, Rosebank.

June, No. 6, pp. 205-249

119 Report on Rollier Treatment for So-Called Surgical Tuberculosis. J. H. Pryor, Buffalo.
120 Pollinosis (Hay-Fever) Consideration of Its Treatment by Active Immunization. S. Oppenheimer and M. J. Gottlieb, New York.
121 Vaccine and Serum Therapy. W. D. Alsever, Syracuse.
122 Infected Colon and Its Surgical Therapy. J. M. Lynch and J. W. Draper, New York.
123 Glioma of Spinal Cord. R. S. Fowler, Brooklyn.
124 *Immunization Against Measles. C. Herrman, New York.
125 Case of Lead Poisoning. W. A. Groat, Syracuse.

124. **Immunization Against Measles.**—The material for inoculation was obtained by Herrman from otherwise healthy children, taken twenty-four hours before the measles eruption appeared. The mucus from the nose was taken. This was collected on swabs of cotton and kept in small glass vials. A moist chamber was improvised by placing a moistened piece of blotting paper at the bottom. Only perfectly healthy infants under 5 months were inoculated. The first were tested with the cutaneous tuberculin test, but when it was found that ten consecutive cases gave a negative reaction, the test was deemed unnecessary. The inoculations were made by applying the swab gently to the nasal mucus membrane. Up to the present time forty infants have been inoculated at the following ages: One at 2½ months, four at 3 months, three at 3½ months, six at 4 months, fifteen at 4½ months and eleven at 5 months. The inoculations were made by preference between the fourth and fifth month because, as the immunity was not absolute at that time, it seemed more likely that the organism would react with the formation of antibodies.

The majority of the infants showed no distinct reaction: fifteen had a slight rise of temperature, from 100 to 101.5 F., varying in the time of its appearance from the eighth to the fourteenth day. In a few instances a small number of spots were noted on the face or body, varying from the fourteenth to the eighteenth day, but these were so few and indistinct that they would ordinarily have escaped detection. No oral manifestations were present. Of the forty cases inoculated four have since come in intimate contact with cases of measles and have not contracted the disease. In addition, having satisfied himself that those who were inoculated were really immune, two of the cases were reinoculated by Herrman at the age of 21 and 23 months, respectively. In both cases the result was negative. In view of the fact that the virus of measles has been shown to be filterable, it would seem preferable to use the filtrate. Herrman therefore prepared a filtrate by thoroughly mixing the mucus with a normal saline solution and passing it through a Berkefeld candle. However, from some experimental work which he has done, Herrman believes that the filtrate is usually nonvirulent and could not be depended on for the purposes of immunization.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

May, XX, No. 5, pp. 253-313

126 Trachoma and Its Relation to Public Health. T. Clark, U. S. P. H. Service.
127 Use of Scopolamin-Morphin in Surgery and Obstetrics — Twilight Sleep. A. Brenizer, Charlotte, N. C.
128 The Physician. R. H. Garthright, Vinton.
129 Mediastinal Tumor. J. M. Hutcheson, Richmond.
130 Spasmophilic Diathesis. R. S. Preston, Richmond.
131 Appendicitis in Children. W. L. Peple, Richmond.

South Carolina Medical Association Journal, Anderson

May, XI, No. 5, pp. 137-170

132 Early Diagnosis of Typhoid by Use of Blood Cultures Taken Into Ox Bile. R. L. McCrady, Montreal, Canada.

Surgery, Gynecology and Obstetrics, Chicago

June, XX, No. 6, pp. 631-750

133 *Some Observations on Bone Transplantation. D. Lewis, Chicago.
134 *Empyema of Thorax. A. O. Wilensky, New York.
135 Nephrectomy During Pregnancy; Report of Case. A. H. Harrigan, New York.
136 *Repair of Fractures. I. Cohn and G. Mann, New Orleans.
137 Reconstruction and Repair of Abdominal Organs with Intestinal Grafting. A. L. Soresi, New York.
138 Team-Work. B. B. Davis, Omaha.
139 *Origin and Fate of Osteoclasts. C. W. Prentiss, Chicago.
140 Alkalescence, Acidity, Anesthesia. G. W. Crile, Cleveland.
141 Acquired Megacolon; Report of Case. I. Abell, Louisville.
142 Pancreatic Cysts; Report of Case. A. M. Willis and S. W. Budd, Richmond, Va.
143 Ovarian Fibroids; Report of Six Cases. A. M. Hellman, New York.
144 *Massive Umbilical and Ventral Hernias. A. McGlannan, Baltimore.
145 Plea for Higher Hospital Efficiency and Standardization. H. G. Wetherill, Denver.
146 Vivisection of Nation. G. W. Crile, Cleveland.
147 Science Has Perfected Art of Killing — Why Not of Saving? A. Carrel, New York.
148 Scientific Control of Field Service. A. Wright, London.
149 Practical Problems from Viewpoint of Field Inspector. T. Tuffier, Paris.
150 Military Surgery from Viewpoint of Field Consultant. B. Moynihan, Leeds, England.
151 *Ten Commandments for Military Surgeon. F. von Eiselsberg, Vienna, Austria.
152 Case of Temporosphenoidal Abscess, Discovered by Exploration Through Multiple Small Incisions in Dura, Drained and Cured. J. R. Page, New York.
153 *New Position for Proctoscopic Examinations. H. Crouse, El Paso, Tex.
154 Prostatic Surgery in Light of Recent Progress. H. Packard, Boston.
155 Orthopedic Technic. J. K. Young, Philadelphia.
156 Tarnier Axis Traction Rods Applied to Simpson Obstetric Forceps. F. C. Irving, Boston.
157 Resection of Bone for Protrusion of Mandible. T. L. Gilmer, Chicago.
158 *Simplicity of Blood Transfusion by Means of Kimpton-Brown Tube. J. M. Mason, Birmingham, Ala.

133. **Bone Transplantation.** — Experimental and clinical work has demonstrated to Lewis that the compact bone in a bone graft is gradually absorbed, that it is replaced by new bone formed from the periosteum and endosteum of the graft. The periosteum of bone into which the graft is inserted also plays an important rôle and should be saved and brought in contact with the periosteum of the transplant or over the ends of the same. This is now admitted by Barth, who first stated that a bone graft had merely an osteoconductive function. The viability of bone grafts is especially well indicated by their reaction to infection, for involucrum and sequestrum formation occurs in infected grafts or in those placed in infected areas as it does in normal bone. Bone grafts placed in cavities, resulting from curettage of central giant-cell sarcomas or fibrous osteitis, will not survive in most cases, for the hematoma which occurs within the cavity prevents vascularization of the graft. The cavities can be closed most satisfactorily by a bone plug of some kind The inlay graft in the treatment of old ununited or recent fractures is more satisfactory than the intramedullary splint, for the endosteum of the graft comes in contact with the endosteum of the bone and the periosteum of the bone can be sutured to the periosteum of the graft. In the intramedullary splint considerable endosteum is destroyed in preparing the medullary cavity for the reception of the graft, and the endosteum is one of the important factors in bone repair. Compact bone dies in the graft because of its physical properties, which do not permit of rapid permeation of serum. The best bone graft contains enough compact bone to give form and maintain fixation and also contains periosteum and endosteum from which the compact bone is substituted. Grafts taken from the anteromedial surface of the tibia are to be preferred to those taken from the crest.

134. **Empyema of Thorax.**—A critical study of eighty-two cases of chronic empyema sinus of the chest was made by Wilensky. In 75 per cent. of the patients the cause for the formation of the chronic sinus was present from the very inception of the disease. These can be grouped as follows: (*a*) In 52 per cent. there were uncollapsible cavities; (*b*) in 7 per cent. lung abscesses or bronchopulmonary fistulae occurred, or both; (*c*) in 15 per cent. the origin was tuberculous. Excluding the tuberculous cases, which present a special problem—that of the cause of tuberculous infection —60 per cent. of the patients owed their chronic sinuses to conditions which were present and were not remedied at the primary operation. The method of operating for acute empyema must permit of a thorough examination of conditions in the chest and the removal or correction of any lesion which tends to the formation of chronic sinuses. The remaining 25 per cent. of the patients owed their chronic sinuses to faults in the after-treatment, which with good care can and should be eliminated.

136. **Repair of Fractures.**—A study of vigorously growing embryonic bone or bone in which increased activity has been called for by injury shows that bone will respond in two ways: 1. Either by an exceedingly active subperiosteal (nothing to do with the periosteum) proliferation of osteoblasts, in consequence of which the new bone is much richer in bone corpuscles than bone growing more leisurely, this newly formed bone will form a distinct cortical layer and will push the periosteum before it. 2. When, as a result of a more severe injury the nutrition has been interfered with, by rupturing the blood vessels of the haversian systems, bone cells adapt themselves to the new conditions by undergoing a chemical change, in consequence of which they gradually become converted into cartilage. The latter having acted for a time as a bond of union between the two adjacent fractured ends of bone will in the end be invaded by an extension of medullary spaces. This cartilage also serves as a scaffold for the deposit of true bone on its surface. In some instances the proliferation of the osteogenous cartilage is so vigorous as to invade the haversian systems, in which case these canals will be lined by cartilage. The periosteum seems to react only in some cases by proliferating vigorously and becomes included passively, as Sharpey's fibers by the enveloping bone. From a clinical point of view, the main result of Cohn and Mann's investigation is that even without periosteum a very firm union of bone may be obtained, a phenomenon readily explained on the assumption that the union is brought about by special modification of the bone itself, and is not due to any activity on the part of the periosteum.

139. **Origin and Fate of Osteoclasts.**—Prentiss summarizes his articles as follows: Osteoclasts may be formed in early stages of bone development from the reticular cells of bone marrow, in later stages from osteoblasts which have ceased to deposit bone and constitute a syncytium. The numerous nuclei of large osteoclasts are derived (*a*) from the constituent osteoblasts of the cell, (*b*) from bone cells which are ingested as the bone matrix is resorbed. It is probable that the osteoclasts are the active agents in bone resorption, but there is no direct evidence at present that they produce free acid or a digestive ferment. Eventually the osteoclasts either atrophy and disappear or are resolved into the reticulum of the bone marrow. It is not probable that they again form bone matrix.

144. Abstracted in THE JOURNAL, Jan. 30, 1915, p. 465.

151. **Ten Commandments for Military Surgeon.**—According to von Eiselsberg these are: 1. The fresh wound must not

be touched with the finger and no antiseptics must be applied to it. As soon as possible the fresh wound is covered with a piece of dressing, without the wound or the tissues around it being washed or irrigated. 2. The treatment of primary hemorrhage, if local compression with dressings is not sufficient, is to be accomplished with elastic bandages or Knebel's tourniquet. 3. The canal of the bullet should not be probed either with a sound or with the finger, nor should it be tamponed with a piece of dressing, even if it is sterile. 4. Fractures should be immobilized by fixing both the neighboring joints. 5. The extraction of projectiles is a pressing operation only in very rare cases, and even secondarily should only be performed when there is some special indication for it, as when the bullet is causing serious symptoms or can be felt immediately under the skin. 6. In all painful operations, even painful changing of dressings, in which injection of morphin is not sufficient, ether should be resorted to. 7. In suppuration the secretion should be emptied out by incision and counterincision along the dressing forceps introduced into the wound, and then, always under anesthesia, a drainage tube inserted. Tamponing of the opening should always be avoided. 8. In every swelling that is at first diffuse, then gives the impression of an abscess and causes fever, one should think of the possibility of an arterial hematoma, aneurysm. 9. For the sake of maintaining asepsis at every stage in the treatment of wounds, the use of strong rubber gloves that can be easily washed without any especial care is earnestly recommended. 10. Extensive operations should, so far as possible, be put off until the hospital is reached, where all aseptic precautions can be rigidly carried out and the patient can be kept for after-care. The most important of these ten commandments is: Dressings must be aseptic and military surgery as conservative as possible.

153. **New Position for Proctoscopic Examinations.**—Crouse places the patient face downward on an ordinary examining or operating table, the leaf of the latter being dropped; two chairs or stools padded with pillows or sheets to serve as a shoulder bushing are placed so as to permit the head of the patient to pass easily between them, the shoulders being supported by the separated chairs or stools. While bending over the end of the table, the patient is supported by the nurse or surgeon, the torso clearing the table far enough to avoid pressure by its edge on the lower abdomen.

158. Abstracted in The Journal, Jan. 23, 1915, p. 365.

Wisconsin Medical Journal, Milwaukee

May, XIII, No. 12, pp. 463-504

159 Relation of State University to Medical Profession. C. R. Bardeen, Madison.
160 Pathology of Repair of Fractures; Pathology of Delayed and Nonunion. H. F. Derge, Eau Claire.
161 Open Treatment of Fractures. J. F. Smith, Wausau.
162 Formaldehyd Fumigation Failure. G. C. Ruhland, Milwaukee.
163 Two Cases of Exophthalmic Goiter with Ocular Muscle Complications. L. M. Willard, Wausau.
164 Modified Muscular Advancement Operation Applicable in all Cases and Easy of Execution. J. A. Bach, Milwaukee.
165 Ninety-Day Clause in Workmen's Compensation Act. W. F. Zierath, Sheboygan.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

June, XX, No. 1, pp. 1-40

1 Inhibitive Effect of Roentgen Rays on Malignant Growths. C. Kempster.
2 Treatment of Non-Malignant Growths by Diathermy. E. P. Cumberbatch.
3 Modification of Occipitofrontal Position in Roentgenography of Accessory Nasal Sinuses. C. A. Waters.
4 Stone in Submaxillary Gland. C. T. Holland.
5 Congenital Malformation of Both Hands and Forearms. J. Metcalfe.

British Medical Journal, London

June 12, I, No. 2841, pp. 993-1032

6 Ureteral Stone. J. H. Watson.
7 *Mortality of Appendicitis. G. G. Turner.
8 Case of Cerebrospinal Fever Simulating Acute Nephritis with Uremic Convulsions. E. H. Roberts and A. P. Ford.
9 Acute Gonorrhea Treated by Electrolysis. C. Russ.
10 Surgical Work at Military Hospital, Cairo. J. C. Jefferson and O. H. Blacklay.
11 Temperature in Case of Advanced Pulmonary Tuberculosis. J. C. Voigt.

7. **Mortality of Appendicitis.**—During the last ten years there have been treated in the wards of the Newcastle-on-Tyne Royal Infirmary a total of 3,951 cases of appendicitis, with an over-all mortality of 5.41 per cent. When cases of acute appendicitis are operated on before infection of the peritoneum has become extensive (389 cases with ten deaths), Turner says, it is possible to keep the mortality as low as 2.57 per cent.

Dublin Journal of Medical Science

June, III, No. 522, pp. 401-479

12 Cases of Landry's Paralysis; Myasthenia Gravis; Automatism. J. A. Lindsay.
13 Urinary Concretions and Their Modes of Genesis. W. G. Smith.
14 Account of Irish Medical Periodicals. T. P. C. Kirkpatrick.

Indian Medical Gazette, Calcutta

May, L, No. 5, pp. 161-200

15 Treatment of Cataract in India. H. Smith.
16 Treatment of Kala-Azar with Special Reference to Leukocyte Increasing Methods, Spleen Tabloids and Alkalies. L. Rogers.
17 Charges of Rape. W. D. Sutherland.
18 Studies in Malaria. H. Stott.
19 Inoculation Against Plague and Pneumonia and Experimental Study of Therapeutic Methods. (To be concluded.) W. M. Haffkine.
20 Two Cases of Ruptured Bladder, Recovery. A. Neve.

Journal of Laryngology, Rhinology and Otology, London

June, XXX, No. 6, pp. 209-264

21 Tuberculosis of Middle-Ear Cleft in Children. A. L. Turner and J. S. Fraser.

Journal of Tropical Medicine and Hygiene, London

June 1, XVIII, No. 11, pp. 121-132

22 Animal Inoculations of Trichophyton Discoides Sabouraud, 1909. A. J. Chalmers and N. Macdonald.
23 Differential Diagnosis of Verruga Peruviana. R. P. Strong, E. E. Tyzzer and A. W. Sellards.

Lancet, London

June 12, I, No. 4789, pp. 1217-1274

24 Some Congenital Lesions of Small Intestine. J. H. Evans.
25 *Bacterial Flora of Wounds Produced During Present War. L. S. Dudgeon, A. D. Gardner and F. Bawtree.
26 Naval Medical Committee and Wounds in War. J. G. Saner.
27 Diversity of Opinion Concerning Diagnosis of Tuberculosis. G. H. Dart.
28 Some Principles of Dietetics. J. S. Wallace.
29 *Sterilization of Albuminous Culture Media by Ether. P. Fildes and L. W. Rajchman.

25. **Bacterial Flora of Wounds.**—The authors emphasize the value of the liquid egg and veal medium of Besredka and the advantages this medium offers both for the cultivation of the aerobes and anaerobes; in fact, without it they should have failed on many occasions to detect the anaerobic bacteria in the infected tissues. Twenty-one wounds in all yielded cultures either of *B. tetani* or of *B. aerogenes capsulatus*, or of both. The majority of these wounds entailed considerable damage to the tissues, but they were of all varieties, ranging from a trivial skin wound to a severe and extensive compound fracture of a long bone—in fact, there was no special feature of clinical interest to suggest the importance of the bacteriologic findings. With a single exception every wound was infected with aerobic bacteria in association with the anaerobes. The exceptional case was that of a superficial shrapnel wound in the neighborhood of the knee joint; the joint cavity was infected, although the synovial membrane was intact. From the pus which was evacuated from the interior of the joint a pure culture of *B. aerogenes capsulatus* was obtained, and here it was evidently behaving as a simple pyogenic bacterium. The after-history of this case gave nothing to suggest to those in charge that they had been dealing with suppuration produced by the common organism of gas gangrene. Guinea-pigs inoculated with a culture of this organism died within twenty-four hours, from a rapidly spreading gangrene of the tissues.

In every other case the authors found either a staphylococcus, *B. coli*, or *B. proteus* in the wound. The frequency with which *B. coli* appears with *B. tetani* suggests that its presence may be particularly favorable for the survival of this anaerobe. Of eleven patients in whose wounds the bacillus of tetanus was found, nine had been treated prophylactically with tetanus antitoxin at an early date, and at no time did any one of these exhibit any symptoms of tetanus. Two had not received any prophylactic injection, and of these one developed the disease and the other did not. The last mentioned case demonstrates that a wound may become infected with *B. tetani* without tetanus resulting, and that quite apart from the question of antitoxin. There was, however, no reason to doubt that the prophylactic injection of antitoxin has been the means of saving the majority of these patients from the most serious disease arising from wound infection. It is therefore of considerable importance to realize that a wounded man may be acting as a carrier of these dangerous bacilli for at least two months after the date of the wound, and probably for a much longer period, without any reason on clinical grounds to suggest that these bacteria are present in the tissues.

29. **Culture Media Sterilized by Ether.**—Fildes and Rajchman have applied the Ori method in the following way: 1. The serum or ascitic fluid is collected without any particular aseptic precautions and enclosed in a well-stoppered glass bottle. In the case of the ascitic fluid, which varies greatly in reaction, acid or alkali is added to render it neutral to phenolphthalein, and, if necessary, it is filtered through paper. 2. Ordinary methylated ether is added to 3 per cent. and the stopper tied in. 3. The bottle is then placed in a water bath at 45 C. for one hour or longer to ensure that the serum is actually heated for the full time. 4. At the end of this time the fluid is found to be sterile and is stored for use. 5. When required a sample is removed from the bottle and placed in a sterile test tube or other vessel. The test tube is then thoroughly agitated in a water bath at about 55 C. and the ether will boil rapidly. When the ebullition has ceased the material will be ready for use. The ether will not boil unless the tube is shaken, and it must not be allowed to remain in the bath long enough for the serum to become thoroughly heated. If the blood corpuscles have not been entirely separated from the serum before sterilization they will be completely laked by the hot ether, and the resulting medium will be more or less deeply stained with hemoglobin, but nevertheless quite transparent. No precipitation or cloudiness appears during the process; on the contrary, the fluids are rendered unusually clear. Within their experience this method has never failed to sterilize either ascitic fluid or serum.

Practitioner, London

June, XCIV, No. 6, pp. 775-910

30 Insufficiency of Quadriceps. J. E. Adams.
31 *Heart Perfusion with Alcohol. D. T. Barry.
32 Treatment of Nasal Accessory Sinus Disease. W. S. Syme.
33 *Preventive Treatment of Catarrhal Deafness. M. Yearsley.
34 Work in Gynecology. F. J. McCann.
35 Syphilis in Differential Diagnosis of Tuberculosis. A. S. MacNalty.
36 Cerebrospinal Fever. E. Milligan.
37 Work on Children's Diseases. H. Thursfield.
38 *Should Vasoconstrictors (Epinephrin, Pituitrin Extract) Be Used in Emergencies, Especially Surgical Shock? J. D. Mortimer.
39 Tuberculosis in India. C. Muthu.
40 Work on Dental Surgery. J. G. Turner.
41 Case of Mastoiditis. L. C. V. Hardwicke.

31. **Heart Perfusion with Alcohol.**—The method adopted by Barry was similar to that described by Mines. The cannula is tied into the inferior vena cava below the liver, an operation which requires some little care. The aortae are cut across, and if it be desired to pass the fluid through more rapidly than from 1.5 to 2 c.c. per minute the auricle must be slit. The alcohol is mixed with Ringer's solution, and in small percentages the perfusion mixture is nearly isotonic with the tissues. A 2.5 per cent. solution of ethyl alcohol in Ringer's solution caused a gradual diminution in force and rate of the auricle, while the ventricle was diminished in rate only, and the heart recovered spontaneously on shutting off the drug. The auricle fades off more quickly than the ventricle, both chambers ultimately coming to a full stop. Perfusion with Ringer's solution was begun a few seconds later, and continued to the end of the record. During several minutes the heart remained quiescent, and numerous stimuli applied to the heart muscle during the greater part of this interval showed irritability or contractility lost (muscle paralysis). Later on, single stimuli gave rise to single contractions, and finally a single stimulus started a continuous rhythmic beat with the ventricle showing a little initial tonus. Alcohol affects muscle and nerve.

33. **Treatment of Catarrhal Deafness.**—The proper course to pursue in dealing with these cases, according to Yearsley, is: First, to make a complete physical and functional examination of the ear, so that its exact condition as regards tympanum, eustachian tube and hearing is recognized; secondly, to examine the nasopharynx and nasal cavities to ascertain their condition and causative relation to the affected ear or ears; and thirdly, to adapt treatment judiciously to the individual case, always bearing in mind that the removal of the cause is of paramount importance.

38. **Vasoconstrictors.**—In cases of shock when there has been no great loss of blood, Mortimer advises the use of vasodilators such as ether (open), nitrite of amyl and brandy, with the customary application of hot-water bottles, etc. To these may be added artificial respiration, with oxygen, and massage of the heart when occasion requires. When there has been much loss of blood with or without shock, it is conceivable that vasoconstrictors by filling up the heart and diverting blood to coronary and intracranial systems may be beneficial, but their action is so difficult to regulate, and the condition so critical and complicated, that even then their use seems hazardous. If there is shock, it may be that too much suprarenalin has already been secreted. Saline infusion, raising of the limbs, lowering of the head, and, when possible, pressure on the abdomen are well tried and hopeful methods. Mortimer believes that any benefit which has followed injection of a vasoconstrictor in saline solution should be credited to the vehicle and not to the drug.

Bulletin de l'Académie de Médecine, Paris

May 18, LXXIII, No. 20, pp. 587-618

42 Indirect Injury of the Eye from Projectiles or from Concussion of the Air from Exploding Shell. (Des désordres oculaires médiats ou indirects par les armes à feu.) Lagrange.
43 *To Minimize Injury from Wounds of Spinal Cord. P. Marie and G. Roussy.
44 *Transmission of Disease by Fomites. (Des conditions de transport des germes morbides par les vêtements et les objets.) A. Trillat.
45 Improved Artificial Leg. (Appareil prothétique à mouvements coordonnés pour amputés de cuisse.) P. Delbet.
46 The Tremor in Typhoid. R. Mercier and R. Meunier.
47 Destructive Action on Lice of Methylphenylether. (Destruction des poux et traitement des phtiriases.) H. Labbé.

43. **Wounds of the Spinal Cord.**—Marie and Roussy think that much can be done to minimize the evil effects of a gunshot wound of the spinal cord. The prognosis is by no means inevitably grave; paraplegias may retrogress. The paraplegia from the direct injury prevents the patient from changing his position, so that he lies constantly on the same parts, thus interfering with the circulation at these points while the prolonged pressure on them invites decubitus. The loss of sensibility contributes to the trouble as the normal inclination to change the position is lacking. A dry eschar forms at these points and, on account of the loss of sphincter control, the eschar is liable to get soaked with urine and become infected. The old idea that the decubitus is directly connected with the injury to the spinal cord must be abandoned; if constant pressure and soiling with excreta can be avoided there will be no sores of this kind. For all these reasons he urges that a man with a wound of the spinal cord should have the sphincters examined at once and a retention catheter introduced to take care of the urine, while the bowels should be locked up with opium to keep the man constipated. The skin at the pressure points should be dusted with powder or greased. If all this is done in the field hospital, the man will reach the base hospital in comparatively

good condition. In the further course of the case, the attendants must be impressed with the necessity for changing the patient's position every hour during the day and every two hours at night.

44. **Transmission of Disease Germs by Clothing and Other Articles.**—Trillat presents evidence that disease germs on clothing, etc., proliferate actively if there is moisture. The exhalations and moisture from the skin are often sufficient for this, so that contagion may occur not only from the germs that alighted on the clothing but also from succeeding generations developing there. Humidity and the gases in the exhalations are necessary for this, while all but exceptionally resistant germs are speedily killed off by spreading the clothing in the sunshine or heating in any other way. Science thus brings the explanation for empiric facts.

Presse Médicale, Paris

May 27, No. 23, XXIII, pp. 177-184

48 *Neuropsychic Disturbances in the War. (Les troubles psychiques et neuro-psychiques de la guerre.) E. Régis.
49 *Acute Infectious Diseases Among the Soldiers. J. L. Valensi.

May 31, No. 24, pp. 185-188

50 What France Has Contributed to the Medical Sciences in the Last Fifty Years: Physiology and Experimental Pathology. H. Roger; Pathologic Anatomy. C. Achard.

June 3, No. 25, pp. 189-196

51 *Wounds of the Lungs in War. (Le syndrome hémo-pleuro-pneumonique.) M. Piéry.
52 *An Epidemic of Diphtheria. Guiart and Fortineau.
53 *Purulent Arthritis from Wounds in War. Chaput.

48. **Neuropsychic Disturbances Among Combatants.**—Régis says that the lessons learned from the Russo-Japanese War had been discussed in France so that the French authorities early in August made special arrangements for centers for psychiatric treatment for the combatants. He was placed in charge of the center at Bordeaux, his home, and here reviews his experience with 450 cases of psychic derangement developing among the men at the front. Neurasthenia was comparatively frequent, especially among the officers. Many of those affected had been serving in the colonies and they were on the verge of a nervous breakdown when the war began. Hysteria, alone or associated with neurasthenia, dominated the stage and the manifestations were diverse and strange beyond belief. The psychic disturbances were nearly all of the type of mental confusion or hallucinatory onirism. By the latter term he means that the man dreams such a vivid dream that he starts up to act in it. The *rêve vécu* is usually the living over again of the circumstances of some special emotional and physical shock. These nightmares usually disappeared by the end of two weeks as also the mental confusion and amnesia. The amnesia following the stress of a battle was usually complete, the men forgetting even their name and all their previous life. Some of them had no memory of anything except the emotional shock of the battle, and this they kept living over again, night and day. These battle psychoses affected those without any predisposition to mental diseases but who were inclined to be emotional, and they were especially tenacious in those debilitated by malaria or other cause. The psychic storm gradually subsided and the men were all able to resume their duties at the front. This confirms the importance of specialist psychiatrist treatment, as under other conditions many of the men might have been regarded as hopelessly insane and have been sent to an asylum. Régis urges that every base hospital should have quarters for these *shockés* where they can be kept under specialist supervision, their trouble diagnosed, and the actually insane sent to an asylum. He adds that quite a number of men were sent to him as suffering from mental derangement which proved to be the delirium of typhoid fever or of meningitis.

49. **Acute Infectious Diseases Among the Soldiers.**—Valensi relates a number of cases of various acute infectious diseases with certain peculiarities in their course, such as erysipelas simulating mumps for five days before the skin lesions developed. In another case with symptoms of acute meningitis, this and the facial paralysis disappeared under treatment for syphilis. In some cases of supposed bronchitis the temperature was very high and the sputum contained large amounts of albumin. About the fifth day the sputum became rusty, and other signs then showed that the disease was pneumonia.

51. **Bullet Wounds of the Lungs.**—Piéry has encountered over a hundred cases of this kind and had opportunity to follow the course in fifty-three of them. With a simple wound of the lung there is merely a pneumonic process accompanied by a hemothorax. The Roentgen picture simulates that of a small pleural effusion, with congestion of the lung laved by it. Exploratory puncture reveals intrapleural extravasation of blood. There was hemoptysis only in a little more than half the cases. When the sputum becomes blood stained after the first day, the temperature generally rises on account of the pneumonic process. All of his twenty-five patients with an uncomplicated wound of the lung recovered. Treatment requires merely revulsion, with ipecac and digitalis to combat the hemorrhagic pneumonia. Abstention from operative measures, leaving the hemothorax entirely alone, is imperative. Extraction of the projectile from the wall should be left till later. Convalescence should be guarded with special care.

52. **Diphtheria.**—In reviewing a group of 100 cases of diphtheria last winter, it was noticed that the long diphtheria bacilli were invariably associated with the more virulent type of the disease. When the short bacillus was found in the throats of carriers, no infection resulted. The long bacillus generally disappears from the throat in five weeks, the short in three. About 125 carriers were found among 640 inmates of the hospital but only one carrier developed diphtheria, even when they were in contact with diphtheria patients.

53. **Purulent Arthritis from Wounds.**—Chaput discusses the proper treatment for each of the large joints in turn after a bullet or shell wound, describing the special syndrome and indications for each and the various steps of operative intervention.

Beiträge zur klinischen Chirurgie, Tübingen

XCVI, No. 2, pp. 181-276. Last indexed May 8, p. 1619

54 *Surgery in War. (Chirurgie im Kriegslazarett.) Von Rothe and M. von Brunn.
55 Surgery in the Field Hospital. Goebel.
56 *Abdominal Wounds in War. (Stich- und Schussverletzungen des Bauches.) S. Basdekis.
57 Asepsis and Antisepsis in the Base Hospital. (Im Reservelazarett.) Meissner.
58 Advantages of Nail Extension in Treatment of Fracture of Femur in War. (Schussfrakturen des Oberschenkels.) F. Hohmeier.

54. **Surgery in War.**—Rothe comments on the two sayings one hears now on all sides, namely, that military surgery is not peace surgery, and that military surgery must be conservative. Yet infinite harm will result if they are not properly interpreted. He reviews his several months of experience at the front, and draws a number of conclusions, emphasizing in particular the importance of immobilization in treatment, and reiterating anew that the fate of the wounded depends in large measure on the way the wound is first tended.

56. **Abdominal Wounds.**—Basdekis' article is based on cases of abdominal wounds in the last Balkan War and on sixty-three cases at the Freiburg surgical clinic since 1901. He compares this material and the lessons drawn from it with experiences in preceding wars. The details of twenty cases from the clinic are given.

Berliner klinische Wochenschrift

May 24, LII, No. 21, pp. 537-568

59 *Prophylaxis of Typhoid in Places Occupied by the Troops. (Typhusbekämpfung im Felde, speziell beim Stellungskampf.) Goldscheider.
60 *Air Found in Lungs of Fetus with Intact Bag of Waters. (Zur Bewertung der Lungenschwimmprobe.) S. Schönberg.
61 *Measures to Reduce Infant Death Rate. (Entwicklung, Erfahrungen und praktische Arbeit des Kaiserin Auguste Victoria Hauses zur Bekämpfung der Säuglingssterblichkeit im Deutschen Reiche.) L. Langstein. Commenced in No. 20.

62 Mathematical Principles for Roentgen Localization of Foreign Bodies. (Fremdkörperlokalisation.) L. Katz and W. Salow.
63 Action of Dumdum Bullets. (Zur Frage der Dum-Dum-Geschosse und ihrer Wirkungen.) B. Valentin.
64 *Flushing the Chest for Purulent Pleurisy. (Behandlung der Brustfelleiterung mit Spüldrainage.) E. Leschke.
65 Caustic Action of Certain Remedies Against Vermin. Löhe and Priess.
66 Necessity for Caution in Estimating Results of Treatment of Syphilis. M. von Zeissl.

59. **Typhoid at the Front.**—Goldscheider comments on the frequently atypical picture presented by typhoid in the troops at the front. Often it was so mild that the men thought they were merely tired. A number of wounded brought to the hospital were found in the midst of typhoid. In other cases the first symptom was sciatica or other neuralgia, cholecystitis, cystitis, tonsillitis or deafness. As bronchitis was present in nearly 60 per cent. of all cases, while diarrhea was far from constant, the assumption of influenza often seemed plausible. One patient had no symptoms but hoarseness; others presented apparently typical acute articular rheumatism. In differentiation it is of the greatest assistance to know of other cases of typhoid in the vicinity, but army doctors are not always posted as to what is going on around their own particular domain; the consultant internist visiting the different troops should remedy this by a system of prompt dissemination of news in regard to sickness, without waiting for official reports. To permit early bacteriologic differentiation it is necessary to have the laboratory close at hand. It has been found very convenient to collect in central quarters close to the front those with or suspected of having typhoid. The observation ward must be repeatedly cleared out and the men not kept there for treatment.

60. **Immersion Test of Fetal Lungs.**—Schönberg reports a case which shakes the foundations of the medicolegal test as to whether the child had lived after birth. He found air in the expanded lungs of a seven-months fetus which he had taken out himself from the still intact membranes, the mother having died from pulmonary tuberculosis. No attempt at artificial respiration had been made nor operative measures of any kind applied. No signs of gas-producing infection or putrefaction could be detected. Although such a case is a great rarity, yet the occurrence of even one case of expanded, air-containing lungs in a fetus dying in the uterus with intact bag of waters, detracts materially from the reliability of the immersion test from the forensic standpoint.

61. **The Infant Death Rate.**—Langstein here describes the development, the experiences and the practical work of the central institution, the headquarters of the organized efforts to reduce the infant death rate throughout the German empire. Among the many points emphasized is that whooping cough is unquestionably the most dangerous of all the acute infectious diseases that get into an institution in which there are infants. At the same time his experience has demonstrated that it is generally possible to bring the children through by protecting against secondary infection, and feeding concentrated food, with plenty of water. He is convinced that nervousness in an infant is not an innate tendency as a rule, but is an acquired evil. There are comparatively few actually neuropathic infants in comparison to the number rendered nervous by the fidgeting care of people in their environment. Where no one has any time to keep lavishing attentions on the infants, the little ones develop without being nervous. Rebellious constipation was never encountered among the infants in the institution while bad habits of training render this so common in private families. He has noticed that children of tuberculous parents and in families where a number of the children have died, succumb particularly easily. Even being left a few hours after birth with a tuberculous mother was enough to seal the doom of the child in all the cases in this group. The only certain protection against tuberculosis is to separate the child from the mother as soon as the umbilical cord is severed.

Breast milk is available in the institution to such an extent that outsiders can be supplied. The institution has its own cows; the number of germs in the milk ranges from 900 to 3,000. A year's training is given to prepare a nurse to care for an infant in the home and two years for institutional work, six months of which have to be spent in hospital nursing to learn the general care of the sick. The service in the observation ward requires special reliability, aseptic care and great powers of observation. There is one day nurse for each four or five sick children; one for three in the observation ward.

Girls from high schools and schools of domestic science are given courses of practical training in the care of healthy infants, and this is considered one of the most useful and promising phases of the work of the institution. The number of those who want to make the care of infants their life work is large and constantly increasing. More than a thousand applications are received during the year for this training. Three German cities now give diplomas for trained infant nurses. A dispensary and consultation for infants and small children and a policlinic supplement the above and afford opportunity for continued supervision and training in observation. Practical pediatric courses for physicians are given once or twice a year, and other courses are given to mothers and others and a host of pamphlets and circulars have been published. a museum of infant welfare work installed and a special periodical, the *Zeitschrift für Säuglingsschutz*, is issued by the institution, while an advisory department confers with those seeking advice on any subject connected with infant welfare.

64. **Rinsing and Draining in Purulent Pleurisy.**—Two catheters are used, one bringing fluid from the irrigator the other draining it away. Empyema heals without deformity, as the chest is thus cleared completely and kept cleared of pus, while the expansion of the lung is not interfered with. Two cases are described by Leschke, with illustrations. The inflow of fluids is graduated so that no compression of the lung is allowed. It is kept up until the fluid comes away entirely clear. He used physiologic salt solution; as much as 5 liters was required at first. In severe cases continuous irrigation might be advisable and possibly addition of some disinfectant to the fluid. He was content with from two to four thorough rinsings during the day. After the flushing is over, one or both of the catheters can be left open for siphon aspiration. By this method there are no fluctuations in pressure in the chest as with other technics, while the functioning of the lungs proceeds undisturbed. It is important to guard against the outflow becoming obstructed while the inflow continues. The drawback to the method is the necessity for extreme care in the after-treatment.

Correspondenz-Blatt für Schweizer Aerzte, Basel

May 15, XLV, No. 20, pp. 609-640

67 Antitetanus Serum in Prophylaxis. J. Dubs.
68 *Cardiovascular Disturbances in the Soldiers. (Krankheiten der Kreislauforgane und der Krieg.) G. Galli.
69 Eruption and Pruritus after Atophan. (Pruritus cutaneus universalis mit urticariellem und scharlachähnlichem Exanthem nach Atophangebrauch.) G. H. Pestalozzi.

May 22, No. 21, pp. 641-672

70 *The Dangers of Iodin Treatment. (Gefahren der Jodbehandlung.) A. Oswald.
71 Effects of Gases at Explosions in Peace and in War. (Katastrophenmedizin, II.) H. Zangger.

68. **Cardiovascular Disturbances and the War.**—Galli thinks it an extremely significant fact that nervous cardiovascular disturbances are observed particularly when the men are talking about especially serious times they had been through in the war. This is evident when the man is making an official report on the events in question, thus demonstrating anew not only the psychic origin of heart neuroses, but the necessity of treatment based on this fact. Galli reiterates that one can never emphasize too much the importance of the workings of the mind for the functioning of the circulation organs. A memory, an impression, in short, any psychic process—it may even be below the threshold of consciousness—may influence the heart action and drive the pulse up to 120 or 140, with sudden sweating and all the other phenomena which Grober has described as encountered now

among the soldiers. The psychic condition may affect not only the heart, but the course of material affections. The prognosis of cardiac neuroses is, of course, favorable; the outcome depends on the ability of the physician to influence the patient's mind, as it is here that the trouble lies. He relates a number of instances to show how excitement may sweep a man out of himself and a supposed organic heart affection vanish completely under the physical and emotional stress of a campaign. As an instance of the remarkable resisting powers of the organism, he cites the case of a farmer who during the last great earthquake in Italy was buried under the ruins for twenty-five days, with nothing to eat or drink except rain water that trickled through the ruins. His psychic condition may be estimated from his first remark when rescued: he asked whether his cattle had been saved.

70. **Dangers of Iodin Treatment.**—Oswald refers particularly to regions where goiter is endemic, as at Zurich where he practices. He estimates that 90 per cent. of the entire population of Switzerland, outside of the Jura region, have more or less pronounced enlargement of the thyroid. When there is a tendency to goiter, iodin is liable to entail severe disturbances, all in the line of symptoms of hyperthyroidism. He explains this as the effect of mobilizing the secretions stored up in the gland. The iodin routs them out, and, as they flood the circulation, the symptoms from excessive thyroid functioning become apparent. The iodin also combines with the secretion to form the even more toxic iodothyreoglobulin. In some of the eight severe and typical cases he describes in detail the patients had previously taken iodin without harm. He has also encountered three other cases, so that his study of the subject is based on the literature and eleven personal cases.

Deutsche medizinische Wochenschrift, Berlin

May 20, XLI, No. 21, pp. 605-636

72 *Improvement under Vaccine Therapy of Typhoid. E. Peiper.
73 Technic for Culture Medium. (Der vollwertige Ersatz von Liebigs Fleischextrakt im Typhusnährboden nach v. Drigalski und H. Conradi.) A. Hirschbruch and F. Diehl.
74 Early Surgical Treatment of Wounds of the Skull. (Schädelschüsse.) G. Hosemann.
75 Radiotherapy with Ultra-Hard Roentgen Rays. J. Rosenthal.
76 *Torsion of Pedicle of Undescended Testicle. (Zur Stieltorsion des Leistenhodens.) M. Jastram.
77 Favorable Experiences with Apparatus for Inhaling Mercury. (Erfahrungen mit dem Frankensteinschen Quecksilber-Inhalierverfahren.) G. Stümpke.
78 Technic of Breast Nursing. (Natürliche Ernährung und Gewichtsverhältnisse von 100 Säuglingen der Osnabrücker Hebammenlehranstalt.) Schute.
79 *Chlorinated Lime and Bolus Alba as Dressing for Wounds. (Wundstreupulver Chlorkalk-Bolus alba.) M. Edel.

72. **Vaccine Therapy of Typhoid.**—Peiper's experimental research in this line dates back to 1887, and his clinical experience to 1891. Although he never applied the vaccine treatment on a large scale, he was always impressed by the improvement in the general condition, the shortening of the disease process and the absence of any untoward by-effects.

76. **Torsion of Pedicle of Undescended Testicle.**—The patient was the father of six children and had never noticed that there was but one testicle in the scrotum. The torsion was announced by sudden violent pain one morning in bed. The operation two days later comprised the removal of the ectopic testicle.

79. **Chlorinated Lime and Bolus as Dressing for Wounds.**—Edel dusts the wound with a powder consisting of one part bleaching powder in nine parts bolus alba or fullers' earth. It seems to be entirely harmless, he says, while it deodorizes, reduces secretion and stimulates tissue repair, is accessible anywhere and very inexpensive.

Deutsche Zeitschrift für Chirurgie, Leipzig

April, CXXXIII, No. 2, pp. 113-231

80 Wounds in War 1870 and 1914. (Kriegserinnerungen.) Riedel.
81 Wounds of the Vagus in War, with Reflex Contracture. (Direkte Verletzung der Vagusgruppe, eine Kriegsverletzung.) H. Gross.
82 *Operative Treatment of Fractured Bones. (Blutige Vereinigung von Knochenbrüchen.) E. Lexer.

82. **Operative Reduction of Fractures.**—At present Lexer is consultant surgeon at the Navy Hospital at Hamburg, and he here gives twenty-six illustrations of conditions in twenty cases of fracture in which he wired the stumps together, with or without a living bone support. He describes the technic to meet various conditions that may be encountered, and emphasizes the gratifying results in his cases.

Medizinische Klinik, Berlin

May 16, XI, No. 20, pp. 553-580

83 *Wounds of the Eyes in War. (Kriegsverletzungen des Auges.) A. Elschnig.
84 *Hygiene in the Field. P. Kuhn and B. Möllers. Commenced in No. 16.
85 *Localization of Bullets and Scraps of Shells with Roentgen Rays. (Ein halbes Jahr röntgenologische Projektillokalisation.) H. Wachtel.
86 Petrolatum in Bullets. (Ueber angebliche Giftwirkung eines Dumdumgeschosses.) O. Bujwid.
87 Small Metal Vial of Iodin for First-Aid Packet. (Wundantisepsis unmittelbar nach der Kriegsverletzung.) W. H. Dreuw.
88 Indications and Technic for Diathermy. F. Kraus.

83. **Wounds of the Eyes.**—Elschnig writes from Prague to comment on the remarkable variety of the injuries of the eyes among the soldiers, regretting that there is no time or opportunity to study and record all this ophthalmologic material. The first surprise was the discovery that in such a large proportion of cases the eyes had been defective to begin with. In 2 cases choked disk from a tumor in the brain was found in men who had been serving for weeks on the firing line. Only 36 cases of severe destructive injuries of the eyes reached his clinic, including 3 in which the bullet had passed through both temples, entailing total blindness. He has applied in 3 cases his method of substitution of the vitreous body in treatment of hemorrhage in the vitreous body, and the results were most gratifying. If this were done regularly and early, vision might often be saved or at least the shape of the eyeball retained in many cases otherwise doomed. He reiterates in conclusion that specialist examination and care are particularly necessary in the minor injuries of the eyes, especially from a passing projectile or minute foreign body in the eye. He encountered a host of injuries of this kind which were easily recognized, and vision was saved by proper treatment, but he also had many cases of the kind in which the time for proper treatment had long passed before they reached an ophthalmologist, and irreparable lesions and blindness were the consequence. The necessity for a consultant ophthalmologist at all the stationary hospitals near the front is apparent from these experiences. He even suggests that the management of the hospital might be held responsible for damages for blindness resulting from omission of the necessary minor ophthalmologic measures required.

84. **Hygiene at the Front.**—Kuhn and Möllers took notes of the clothing of the men in the bathing establishment, and a number of facts were thus learned by correlating the garments, etc., worn and the morbidity. The feet were found in the best condition when the footgear consisted of large high boots and one pair of quite thick woolen stockings. The footcloth had been discarded by 420 of 500 men thus examined, and only five of the others wore the footcloth without stockings.

The amount of bread actually consumed by the men per capita during a given period was found to be 640 gm. The daily ration of bread allowed is 750 gm. This instalment closes this long report of actual experiences at the western front during the nine months of the war, by the medical hygiene official and the physician in charge of the hospital service, both given unprecedented facilities, and authority for making the most of the opportunities at their disposal for hygiene of the troops and native populace in the regions occupied by the German army.

85. **Roentgenologic Localization of Projectiles.**—This communication issues from the central roentgenologic laboratory at Vienna, in charge of Holzknecht, where from 400 to 650 wounded men have been examined each month since the war began. In a third of the cases a foreign body was thus

revealed in the tissues. The part being examined is slowly revolved under the rays to determine the point on the skin nearest to the foreign body and the nearest point on the bone. A device for displacing the tube a trifle for a second exposure on the same plate, the *Schwebemarkenlokalisator*, was found extremely useful, saving much time and trouble.

Monatsschrift für Kinderheilkunde, Berlin

XIII, No. 8, pp. 359-392

89 *Importance of "Extractives" in the Diet. (Bedeutung von Extraktstoffen für die Ernährung.) H. Aron.
90 *Camphor Abscesses. H. Vogt.
91 *The Sagittal Sinus in Infants as Site for Intravenous Injection. (Zur Technik der diagnostischen Blutentnahme und der intravenösen Injektion beim Säugling.) L. Tobler.

89. **Importance of "Extractives" in the Diet.**—Aron's article issues from the university children's clinic at Breslau, and reports extensive research on young rats fed abundantly on casein, butter, wheat, starch and salts, with or without the supplement of an extract of wheat bran. The bran extract was given like a medicine, separately from the food, and under this the animals thrived and constantly increased in weight, while without it they failed to thrive and finally succumbed. The food was exactly alike in all the experiments. A number of curves are given showing how the animals' weight ran up in every instance in a few days after the bran extract had been given. He tried to keep the technic of his experiments like that of Osborne and Mendel, for purposes of comparison. The extractive was given separately from the food to exclude direct appetite-increasing action from it. With it the animals developed normally; without it they failed to increase normally in weight, grew thin and finally died. The same results were obtained with an extract of malt, only that its action was slower in becoming apparent. Some tests on six children were inconclusive, as the bran added to the food was repugnant to the children and made them vomit. Aron regards the results of his experimental research, however, as opening new perspectives and throwing light on many empiric observations.

90. **Camphor Abscesses.**—Vogt has encountered a number of cases of abscess formation at the point where camphorated oil had been injected under the skin of sick infants. The abscesses were sterile in some cases and in others staphylococci were found, possibly a metastatic infection, as the scrupulous care in the technic practically excluded contamination during the injection. The injection of other stimulants, caffein, etc., was very seldom followed by an abscess, suggesting that the oil was responsible for the damage. It is possible also that the debilitated organism may be incapable of transforming the camphor into harmless compounds, and it may thus have a toxic action. This seems to be particularly liable in cases of severe nutritional disturbance. One case is illustrated, showing the two large abscesses on the thigh. Even when absolutely sterile, the abscess is liable to open outward.

91. **The Sagittal Sinus in Infants as Site for Intravenous Injection.**—Tobler explains that the largest superficial vein in infants, the superior sagittal sinus, is the most accessible and most conveniently reached, while its anatomic position is always the same, and is readily located by the surrounding bones. It is further peculiarly adapted by its structure, which differs from that of other veins, in that the wall is so stout that it cannot collapse nor be easily perforated. Another advantage is that the curve of the skull presents the point for puncture in the most convenient position, and that the skull can be steadied for the purpose more readily than other parts. Tobler experimented on cadavers, injecting a stain into this sinus, and found that the injection always proceeded ideally, as also aspiration of blood from the sinus. Even when the needle did not puncture the lumen, or punctured too deep and injured the opposite wall, no injury therefrom could be detected. After practice on the cadaver, he applied the method in the clinic in fifty cases. If the infant screamed this increased the pressure in the sinus and facilitated the already simple technic. The blood thus obtained was always found sterile. Therapeutic injections of diphtheria antitoxin, normal serum or a preparation of gold proceeded without by-effects at the time or later. He always made the puncture at the rear corner of the greater fontanel if the sagittal suture was closed; if it was still open, he punctured about half way between the fontanels. Marfan utilized the sinus for saline infusion in 1898, and Blechmann commented on his technic as "simple and harmless."

Münchener medizinische Wochenschrift, Berlin

May 11, LXII, No. 19, pp. 641-672

92 Improved Technic for Deep Roentgenotherapy. (Tiefenbestrahlung von Karzinomen mittels Röntgenmaschinen.) E. v. Seuffert.
93 Light Modifies Albumin, Rendering It Less Soluble. (Wirkungen des Lichtes auf die lebende Zelle.) F. Schanz.
94 Traumatic Aneurysms. A. Ploeger.
95 Advantage of Prompt Operative Treatment of Wounds of the Heart. (Herzwunden.) A. Schäfer.
96 *Treatment of Herpes Tonsurans. A. Salinger.
97 Wounds of the Spinal Cord. (Rückenmarkschüsse.) O. Rumpel.
98 Traumatic Myelitis. W. Mayer.
99 Abdominal Wounds. (Bauchschüsse.) H. Koetzle.
100 Fatal Gas Embolism During Injection of Oxygen; Three Cases. (Gasembolie bei Sauerstoffinjektion.) M. Simmonds. (Luftembolie nach subkutaner Sauerstoffapplikation bei Gasgangrän.) L. Frankenthal.
101 Prolonged Chemical Action from Contents of Shells. (Zur chemischen Einwirkung von Geschossfüllungen auf Wunden.) J. Volkmann.
102 Improvised Sanitary Arrangements in the Field. G. F. R. Kramer.
103 *Bloodless Lacing Up of Wounds. (Die Miedernaht.) A. Noder. (Anwendung eines Gummizugverbandes bei grossen Hautwunden.) R. Mühlhaus.
104 Improvised Extension Devices for Fractured Limbs. A. Ritschl and Others.

96. **Treatment of Herpes Tonsurans.**—Salinger has found tincture of iodin useful in treating herpes tonsurans; if more rapid action is necessary, he uses a salve containing 8 parts salicylic acid; 5 parts beta naphthol; 4 parts resorcin and 100 parts lanolin. With very deep herpes he soaks off the crust with a mixture of 3 parts salicylic acid and 7 parts creosote with olive oil to 100 parts. Then he wipes the surface with a 1:2,000 alcoholic solution of mercuric chlorid and then applies the naphthol salve, repeating daily. These measures proved successful in all but one case which continued a tenaciously progressive chronic course until an intercurrent erysipelas developed. As the latter subsided the herpes disappeared also. He suggests that inoculation with erysipelas might prove useful as a therapeutic measure for the last resort in similar cases.

103. **The Lacing Suture.**—Noder gives an illustration of a method of suturing which is proving extremely convenient under certain circumstances. He has a row of the metal hooks used in lacing a bodice sewed along the edge of a strip of cotton cloth. A strip of this kind is glued with a varnish along each side of the incision or wound. The lips can then be easily drawn together by lacing the sides together just as a bodice is laced up. Mühlhaus applies much the same idea, only he does the lacing with elastic cord, using safety pins instead of hooks. The pins are worked into strips of stout adhesive plaster edging the wound, with radiating reenforcing strips. An illustration is given of each method.

Therapeutische Monatshefte, Berlin

May, XXIX, No. 5, pp. 237-292

105 *Bronchial Affections. L. Hofbauer.
106 The Food of the Populace During the War from the Pediatrist and Internist Standpoints. (Die Volksernährung im Kriege in ihrer Bedeutung für die Diätetik des Kindes und Krankenernährung.) L. Langstein.
107 Electric Treatment of Lead Poisoning. (Zur Behandlung Bleikranker im galvanischen Zweizellenbad.) Schnitter.
108 Camphor for Dressing Wounds. (Kampferwein in der Wundbehandlung.) R. Koch.
109 *Asphyxia Neonatorum. (Behandlung des Scheintodes bei Neugeborenen.) R. Volland.
110 Pharmacologic Study of Extract of Capsella Bursa Pastoris. (Bursal.) A. Gröber.

105. **Bronchial Affections.**—Singer's method of treating chronic bronchial affections by restricting the intake of fluid is regarded by Hofbauer as having established its efficacy, especially when associated with calcium preparations. It is

contraindicated, he says, only with concomitant kidney trouble or suspicion of tuberculosis. All intake of water, soups, coffee and other fluids is restricted, gradually reducing to as little as 300 or 400 c.c. of fluids a day. After three days of restrictions he allows the patient to drink freely each fourth day. The patients bear this restriction of fluids with remarkably little discomfort. Thirst is relieved with slices of oranges or lemons. In most cases the patient increases 22 or 24 pounds or more in the course of this restriction of fluids over several weeks. The small amounts of fluid permitted may be given in the form of wine. Breathing through the mouth is an important factor in maintaining chronic bronchitis and this practice must be broken up. Tying up the jaw at night he regards as annoying and merely symptomatic. It is necessary to enforce a course of training in breathing with the mouth closed, and he advocates a little apparatus to train in nose-breathing; a light flares up whenever any air enters through the lips. Iodin preparations may be required to soften up the dried secretions in this mouth-breather type of bronchitis.

Epinephrin in bronchial asthma relaxes the spasm of the bronchial muscles, but has scarcely any action on normal bronchi. Meyer has commented on this as a striking instance of the variability in the action of a drug according to the state of the organ involved. Calcium reduces the irritability of the nervous system. Meyer has reported excellent results in thirteen of fifteen patients with bronchial asthma given every two hours a tablespoonful in milk of a mixture of 20 parts calcium chlorid; 40 parts simple syrup and distilled water to 200 parts, the prescription to be renewed only once.

Training the patient to breathe with emphasis on the expiration has usually a decided effect in reducing the irritability of the vagus innervation of the lungs, and thus is a causal treatment of asthma. Löwy and others have shown that the irritability of the lung vagus is directly proportional to the amount of air in the lungs. Reducing this irritability by lesser expansion of the lung, and keeping the air passages moist by breathing exclusively through the nose, are important and causal factors in the cure, especially when supplemented by what he calls *Summtherapie*, "humming therapy," which he has been applying for eight years. Its results have been permanent in the numerous cases in which he has applied it, regardless of complications. An apparatus to promote expiration is used with it at first, the "expirator." He does not describe the technic for his *Summtherapie*.

109. **Revival of the Asphyxiated Newly Born.**—Volland repeats here his description of a method for this purpose which he published in 1909. (Summarized in The Journal, Oct. 2, 1909, p. 1140.) Before cutting the cord he grasped the child as for the Schultze swinging, but left the child with its back leaning against the inside of the mother's thigh. He then lifted the child until its whole weight hung from his hands (the index finger in the axilla on each side, the other fingers on the back and the thumbs on the chest above the clavicles). Then the child was allowed to sink down again, while with the thumbs the chest was pressed back against the support of the mother's thigh to induce expiration. The child began to breathe naturally after a very few repetitions of this maneuver.

Wiener klinische Wochenschrift, Vienna

May 6, XXVIII, No. 18, pp. 463-490

111 Typhus. E. Wiener. Commenced in No. 17.
112 *Successful Operations for Tumors of the Spinal Cord. The "Compression Syndrome" in the Spinal Fluid. H. Schlesinger.
113 Operations on Tendons After Wounds of the Hands. (Sekundäre Sehnennaht und Sehnenplastik bei Schussverletzungen der Hand.) K. Wagner.
114 Vaccine Therapy of Ozena. S. Mazza.
115 *Importance of Bacteriologic Control in Epidemic Meningitis. (Genickstarre im Pustertal.) A. von Kutschera.
116 *War Aneurysms. (Kriegsaneurysmen, mit bes. Berücksichtigung der Gefässnaht.) H. v. Haberer. Commenced in No. 17.

May 13, No. 19, pp. 491-518

117 Efficacy of Neosalvarsan in Relapsing Fever. (Rückfallfieber.) K. Walko.
118 *Ergotism and Tetany. A. Fuchs.
119 Disease of the Cauda Equina. J. Gerstmann.
120 Determination of Oxyproteic Acid in the Urine as Sign of Cancer. (Diagnostische Verwertbarkeit der Oxyproteinsäurebestimmung bei Karzinom.) M. Damask.
121 Muscular Exercises in Aftertreatment of the Wounded. (Muskelmechanische Bemerkungen.) R. Fick. (Physikalisch-mechanische Nachbehandlung.) F. Wachter.
122 Denists' Formaldehyd—Cresol Mixture for Dressing Gangrenous Wounds. A. Leonhardt.

112. **The "Compression Syndrome" of the Cerebrospinal Fluid.**—Schlesinger refers by this term to the changes in color and in albumin and cell content of the cerebrospinal fluid when there is a tumor compressing the spinal cord. In a recent case a previously healthy man of 32 developed, in 1912, intense pain in the back, increased by movements. After several weeks of the pain, it subsided under wet cups. Several months later, paresthesia and weakness in the legs came on. After a few months he was free from symptoms for three months. Then a syndrome developed with spastic paralysis and other signs of a spinal tumor; the spinal fluid was a clear lemon yellow, with considerable albumin but few cells. An unusually large extradural tumor was easily removed and practically complete restitution followed. In another case a healthy man of 35 had severe pains, suggesting neuritis in the thighs, radiating down to the feet and worse at night. For a year or so the trouble had been ascribed to neuritis, but finally sphincter disturbances and flaccid paralysis testified to a spinal tumor. In this and in several other cases, the aggravation of the pains on reclining in the ventral decubitus was a notable symptom. The tumor or inflammatory process with this was generally on the ventral side of the spine and sacrum. The spinal fluid in this second case showed xanthochroma, much albumin and spontaneous coagulation but few cells. An angiosarcoma was found in the cauda equina, and it proved impossible to remove it entirely. The condition was somewhat improved by the incomplete operation, but some of the symptoms persisted.

115. **Epidemic Meningitis.**—Von Kutschera relates the details of a number of cases occurring in series among the troops in the Tyrol which emphasize the importance of bacteriologic control of epidemics and especially of epidemic meningitis. The part played by healthy carriers was especially significant in this epidemic. Intraspinal injection of antimeningococcus serum displayed marked efficiency. It was repeated as often as necessary.

116. **War Aneurysms.**—In the thirteen cases of gunshot aneurysms treated by von Haberer by suturing the injured vessels, recovery was prompt and complete in all, and there have been no complications since. This was the case likewise in twenty-five of twenty-nine cases in which the vessel was ligated, but in two others amputation was required later, and two others died from hemorrhage from an erosion. The circulation proceeds in all the cured cases with nothing to suggest that the men are not quite normal. Von Haberer's experience has demonstrated that while it makes the operation a little more difficult if the blood is not shut off, yet the information to be thus obtained far outbalances this.

118. **Ergotism and Tetany.**—Fuchs relates that a young soldier developed severe tetany and his hospital card was inscribed "tetany and frost-bite." He entered Fuchs' service the fifteenth day after the tetany had developed, and it was learned that the discoloration of the toes had not been noticed until several days after the tetany had been well under way. Examination of the stools confirmed Fuchs' assumption that the whole syndrome, tetany and all, was the result of poisoning from ergot. Large amounts of ergot were found in the stools and in the bread the man had been eating, before the tetany had developed. With Wasicki's fluorescence microscope method, ergot in flour is readily detected. Fuchs two years ago pointed out the resemblance between the clinical picture of ergot poisoning and of endemic tetany in Austria. He noticed in sifting the literature that those describing ergot poisoning never seemed to have encountered a case of endemic tetany, and those describing the latter had never seen a case of ergotism, and consequently no one before had thought of comparing them. Endemic tetany prevails in the spring as a rule, many dozens of cases being usually

found then in the Vienna hospitals, but this year he has known of only one case. He ascribes this to the fact that the cereals were taken charge of by the government after the war began, and the large mills doing the grinding are less liable to permit admixture of ergot than is the case under ordinary circumstances.

Zeitschrift für Geburtshülfe und Gynäkologie, Stuttgart

LXXVII, No. 1, pp. 1-278. Last indexed April 3, p. 1201

123 Prolapse of Uterus and Rectum in Newly Born Child with Spina Bifida. F. Ebeler and F. Duncker.
124 *Action of Salvarsan Taken by the Mother on Congenital Syphilis of the Fetus. E. Meyer.
125 *Influence of Transplantation of Ovaries. (Beitrag zur Entstehung der Osteomalacie.) Author's name omitted.
126 Intensive Mesothorium Treatment of Gynecologic Carcinomas. S. Aschheim and S. Meidner.
127 *Functioning of the Kidneys During Pregnancy. (Nierensuffizienz und -insuffizienz in der Schwangerschaft.) E. Holzbach.
128 Action of Roentgen Rays on the Ovaries. (Interstitielle Drüse und Röntgenkastration.) P. Hüssy and J. Wallart.
129 Experimental Research on Action of Synthetic Hydrastis Preparations on the Uterus. H. Wendling.
130 Angioma in the Placenta. H. Ribbert.

124. **Salvarsan in Pregnancy.**—This article includes reports of both clinical and experimental experience, with a cursory review of work done by others in this line. The findings in forty-three cases during the pregnancy and afterward in both mothers and children are tabulated under various headings. It does not seem possible for arsenic to traverse the sound placenta, and the undoubted benefit from salvarsan treatment of the pregnant woman must be indirect, the result of the improvement of the mother under the salvarsan. It probably also renders the placenta less permeable for the syphilitic toxins. The drug was borne well by the women; there never was hemorrhage or abortion after intravenous injection of the salvarsan, and none of the fetuses died on account of the medication. Of the thirty-seven women given an adequate course of the salvarsan treatment, 86 per cent. of their children were living ten days after birth; 15.8 per cent. of the children had a positive Wassermann at birth.

125. **Ovary Implants.**—This communication issues anonymously from the gynecologic clinic at Halle in charge of Veit. The work was done on sixty-two rabbits, and the details in nineteen are here related, with one colored plate. The connection between the ovaries and osteomalacia is emphasized by the results observed, confirming that osteomalacia is an affection for which some functional disturbance in the organs of internal secretion is manifestly responsible. When there is excessive functioning of the ovaries, the elimination of calcium is accelerated, while its assimilation seems to be interfered with more or less. This throws light on the action of epinephrin in treatment of osteomalacia, as it has an antagonistic action to that of the ovaries.

127. **Clinical Importance of the Condition of Kidney Functioning During Pregnancy.**—In Holzbach's long article he points out a number of points by the aid of which we can estimate how the kidneys are behaving, and recognize when they lag too far behind normal functioning. He sounds the alarm that insufficiency on the part of the kidneys is of more fateful import for the fetus than has been appreciated hitherto. The fetus, being more sensitive, suffers earlier and more intensely from the retained toxic elements of the urine than the maternal organism. With the aid of the functional tests now at our command, we can tell exactly what the kidney is capable of at a given moment, and this at a time when symptoms from deficient kidney functioning have not yet become apparent. He regards this as of far-reaching importance in obstetrics. Instead of placidly waiting to learn by the outcome whether the kidney symptoms observed are the result of organic disease or of merely "pregnancy kidney," we can now differentiate them at once. We know that a pregnancy almost invariably has an aggravating influence on nephritic kidneys.

In the fifty-seven cases of pregnancy kidney here described, sixteen of the fetuses died, that is, more than 28 per cent. In Baisch's 226 cases, 21 per cent. of the children were born dead and 19 per cent. were premature births. In 55 per cent. obstetric interference was required, which further endangers the child. These figures show how Nature strives to interrupt the pregnancy with pregnancy kidney—a condition that obstetricians have never regarded as a call to hasten the evacuation of the uterus. With our functional tests we are now able to recognize insufficiency of the kidneys, and when it reaches a certain degree he declares that we must regard this as an urgent call to interrupt the pregnancy. The most important sign of absolutely incompetent kidneys is the lowering of the freezing point of the blood, as this shows retention of the elements of the urine. The freezing point and specific gravity of the urine and the elimination of sodium chlorid are further important criteria. When these tests give unfavorable findings, the pregnancy should be interrupted in the interests of both mother and child. He reiterates that the fetus is more sensitive than the maternal organism, and feels the effect of the retained toxic substances sooner, and it is better for it to be prematurely delivered than left to suffer from the retained elements of the urine which act like poisons on it.

Gazzetta degli Ospedali e delle Cliniche, Milan

May 16, XXXVI, No. 39, pp. 609-624

131 *Echinococcus Cysts in the Kidneys. (Cisti da echinococco del rene, ripetutamente svuotatasi per le vie naturali, coincidente con aborti.) L. Carta-Mulas.

May 20, No. 40, pp. 625-640

132 Treatment of Tetanus in the Present War. A. Bertolini.

131. **Echinococcus Cysts in the Kidneys.**—The spontaneous rupture of the cyst in the kidney in the case described led to such severe kidney colic and muscular contractions that the muscular throes involved the uterus and caused the expulsion of a fetus. This occurred on three separate occasions in the course of two years, the renal colic and expulsion of daughter cysts in the urine being followed each time by an abortion, while the tumor previously palpated in the right kidney region could no longer be felt. The pain during the emission of the daughter cysts was atrocious, and blood in the urine showed injury of the walls of the urinary passages. If the cyst forms again and ruptures, he will advise a course of intensive neosalvarsan treatment; the patient refuses to permit an operation. As to the frequency of ecchinococcus disease of the kidney, it was found in 2 among 63 cases of echinococcus disease during the last ten years in the Cagliari province in Italy where Mulas practices; Davaine has reported 31 in 367 cases of echinococcus disease; Neisser 80 in 983, and Madelung 7 in 196. Manasse compiled from the literature 51 cases with spontaneous rupture of the cyst in the kidney pelvis, and a spontaneous cure followed in the majority.

Riforma Medica, Naples

May 15, XXXI, No. 20, pp. 533-560

133 *Microchemical Color Reaction in the Blood Corpuscles. (Alcuni caratteri morfologici, strutturali e funzionali degli elementi figurati del sangue rilevati mediante una "reazione cromogena.") C. Rubino.
134 Syphilitic Changes in the Heart. F. Soprana and C. Piazza. Concluded in No. 22.

May 22, No. 21, pp. 561-588

135 *Retention Stomach Tube for Continuous Study of Stomach Functioning. (Sulla esplorazione continuata del chimismo gastrico mediante il sondaggio a permanenza.) L. R. Lanza.

133. **Chemical Color Reaction in the Blood Corpuscles.**—Rubino has been applying in microscopic examination of the blood some of the reagents used in tests for occult blood, etc. He found benzidin superior to guaiac for the purpose. The figured elements of the blood, treated with it, assume different colors, none like that of the benzidin solution itself, and hence he thinks we can regard them as true chemical color reactions. He analyzes the responses in the different types of cells and shows how they correspond to the known laws of biology, and may serve in differential diagnosis. He applies the reagent to blood freshly drawn and allowed to evaporate in the air. The reagent is the ordinary 10 per cent. filtered alcoholic solution of benzidin to which is added, just before using, 1 drop of hydrogen dioxid for each 25 drops of the benzidin solution. The reagent thus prepared is

poured on the stratum of blood and left in contact for three minutes. Then the reagent is washed off in alcohol and then in running water and the specimen is mounted in neutral balsam.

135. **Retention Stomach Tube in Study of Gastric Chemistry.**—Lanza expatiates on the important information that can be obtained by examining the stomach contents every ten or fifteen minutes after a test meal, leaving the stomach tube in place for several hours. A very fine tube is used for the purpose and it is not introduced until after the meal, so it does not in itself stimulate the stomach to extra secretion or peristalsis. Comparative tests with other technics confirmed the indifference of the stomach to this method and demonstrated its reliability. Fifteen charts are given to show the curves representing gastric functioning in persons with normal stomachs or with various affections involving the stomach more or less directly. The findings are obviously far more instructive than when the stomach content is examined only once after an arbitrary interval. In chlorosis he detected by this technic tardy hyperacidity which would have escaped ordinary methods of examination. He never left the tube in place for more than two hours at a time.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

May 22, I, No. 21, pp. 1767-1846

136 *The Changes in the Blood Picture with Disturbance in the Internal Secretions (De afwijkingen in het bloedbeeld der ziekten met inwendige afscheiding.) M. W. Scheltema.

137 *Creatin as Index of Pregnancy Intoxication. (Kreatine als aanwijzer van zwangerschapsvergiftiging.) C. J. C. Van Hoogenhuijze.

138 *Absence of Knee-Jerk as Sign of Hysteria or Degeneracy. (Het verschijnsel van Westphal als stigma degenerationis en bij hysterie.) G. C. Bolten.

136. **The Blood Picture with Various Affections of the Ductless Glands.**—Scheltema tabulates the findings in regard to the blood count and other details of 100 patients, including 5 with exophthalmic goiter; 4 with hyperthyroidism; 3 with myxedema; 3 with simple goiter; 3 with chronic rheumatism; 4 with enuresis or spastic constipation; 10 with the thymic-lymphatic status; 2 with adiposogenital dystrophy; 6 with diabetes; 10 with obesity; 8 with various nervous affections; 11 with asthenia, including 2 with vagotony, and 4 specimens of infantilism. Comparison of all this material shows that derangement of any of the glands with an internal secretion, and also the status thymicolymphaticus seem to be accompanied by a relative and also often an absolute lymphocytosis, but more generally a mononucleosis. Less frequently there is leukopeny and eosinophilia. When this blood picture accompanies symptoms suggesting disturbance in any special ductless gland, he regards it as an indication for treatment with the extract of the gland in question.

137. **Creatin as Index of Pregnancy Intoxication.**—Van Hoogenhuijze reports experiences which apparently indicate that in a normal pregnancy the proportion of creatin in the urine is always below 20 per cent. of the total creatinin. A figure above 20 per cent. shows that toxic influences are at work, and it may thus warn of impending eclampsia or other serious upset. The findings in fifteen cases are compared, including two cases of eclampsia. The proportion of creatin ranged from 19.1 to 44.6 in one case, averaging 28.1 per cent.; in the other the range was from 29.1 to 38.6 per cent. This latter patient had had four normal pregnancies, then one with puerperal eclampsia, and then the present pregnancy in which eclampsia developed even before delivery. In another case eclampsia seemed to be impending, but was warded off; the range of creatin in this case was 36.9 and 28.3; in a fourth case it averaged 25 per cent.; In all these cases the urine had been examined for creatin before delivery. In six other cases there were unmistakable signs of pregnancy intoxication, and the creatin ranged from 20.7 to 44.5 per cent. The range in one woman with hydramnion and albumin, leukocytes and tube casts in the urine was from 40.7 to 45.4 per cent. The highest percentage, 49.9, was in a case of hydatidiform mole. In two other cases, with slight albuminuria, the range was from 10 to 19 per cent., and the course of the cases was entirely normal. Some of the women had been examined before the pregnancy and no creatin had been found. During the first month of the pregnancy the proportion was 5.8 per cent., and by the third month it was 18.9 and the eighth month 15.1 per cent. These findings suggest that the discovery of creatin might reenforce the diagnosis of pregnancy in dubious cases, after exclusion of other sources for the creatin in the urine.

138. **Loss of Reflexes Without Organic Disease.**—Bolten reports the case of an apparently healthy young man who has not a trace of the knee jerk or Achilles tendon reflex on either side. The discovery of this areflexia, as he calls it, was made while the man was taking the physical examination for the police force. The plantar reflex could be elicited but sluggishly, and the abdominal and cremaster reflexes not at all. Absolutely nothing otherwise could be found in the robust young man to suggest organic disease, and Bolten has been unable to find an analogous case in the literature.

Brazil-Medico, Rio de Janeiro

April 15, XXIX, No. 15, pp. 113-120

139 Brazilian Protozoon. (Tropidomonas rotans n. g. e n. sp.) A. M. Da Cunha.

April 22, No. 16, pp. 121-128

140 Chilomastix Bittencourti Found in Cecum of Rats. (Sobre os flagellados dos mammiferos do Brazil.) O. O. R. da Fonseca.

Semana Medica, Buenos Aires

April 15, XXII, No. 15, pp. 473-508

141 Lead Lined Cabinet to Avoid Injury in Roentgen Work. (Profilaxis medica de los rayos X.) C. Heuser.

142 *Excessive Gastric Functioning. (Hiperestenias gastricas primitivas.) T. Martini. Concluded in No. 16.

143 Prevailing Systems of Infant Feeding. (Alimentacion del niño.) P. Rueda.

April 22, No. 16, pp. 509-540

144 Analysis of Milk. (Analisis de la leche.) P. J. Pando.

April 29, No. 17, pp. 541-556

145 The Innervation of the Stomach. (Enfermedades funcionales del estomago. IV.) T. Martini.

146 *Pyonephrosis; Two Cases. D. Talens.

142. **Gastric Hyperfunctioning.**—Martini's study of primary functional disturbances of the stomach is for the benefit of the general practitioner; it describes the methods in vogue for obtaining and analyzing the stomach content and interpreting the findings. He also gives some diagrams to fill out in the individual case to facilitate classification, and hence determine the indications for treatment. He gives seven distinguishing characteristics for each of the principal groups of functional stomach disturbances: the acute paroxysmal with sensory or with motor or with secretory symptoms predominating; the intermittent acute, and the chronic.

146. **Pyonephrosis.**—Talens' two cases were notable mainly on account of the difficulty in the differential diagnosis, nothing in either case having ever called attention to the urinary apparatus, and there being no pathologic antecedents liable to entail such. The two patients were married women in the thirties, and the disturbances commenced with a sudden onset, intense pain in the right kidney region spreading down into the leg, with fever and headache. The pains seemed to be localized most in the abdomen in one case, and there were chills and fever and vomiting, but no disturbances at micturition. There was a lull in the symptoms in one case for two days, and then they returned severer than before. An appendicitic abscess was assumed and an incision released 3 or 4 liters of pus; the fistula continued to secrete pus for three months, with recurring attacks of intense pain, but no fever nor vomiting. The attacks kept returning every month or week until by the end of a year the primary focus in the kidney was recognized. The kidney was found bathed in pus, and a complete cure followed nephrectomy. In the other case the pains and a tumor in the kidney region led to nephrectomy the fourth month, with complete recovery. In neither case had there been any disturbance at micturition and the urine was limpid. The outlet of the diseased kidney had evidently been obstructed in each case.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 3 CHICAGO, ILLINOIS JULY 17, 1915

INTRASPINAL THERAPY IN SYPHILIS OF THE CENTRAL NERVOUS SYSTEM *

HOMER F. SWIFT, M.D.

NEW YORK

In discussing the subject of local therapy of syphilis of the central nervous system, it is timely to recall some of the problems which are presented in the various phases of this disease. While all the types are due to the activity of the *Spirochaeta pallida,* the amount and kind of treatment are largely determined by a consideration of the localization of the lesion, whether in the cortex, cord, meninges or blood vessels, by the difference in the nature of the response of the various tissues, and by the stage of the disease. The recently introduced laboratory aids in the diagnosis of syphilis of the cerebrospinal axis have allowed us to lose sight of the necessity of making these anatomic distinctions, and there has been a tendency to consider all cases the same when undertaking their treatment.

In the early stages of syphilis we have learned, by means of frequent lumbar punctures, that there are often slight pathologic alterations of the cerebrospinal fluid during the time of the outbreak of the first cutaneous eruption. This does not necessarily mean that there has been a deep involvement of the nervous system, but rather supports our conception that at this early period of the disease there is practically a universal distribution of the virus—that there is a rash on the meninges much the same as on the skin and mucous membranes, which usually responds quite readily to treatment. Although in the second or third year of the disease, alterations in the fluid of a similar degree have a much more serious portent, still in the early stage there may be an extensive meningitis and profound functional disturbance which may require the most heroic treatment to eradicate. The functional cure in this stage is, however, more complete than is usually attained with a late lesion of the same extent. This is probably due to the fact that the early lesions are usually meningeal, are exudative, and are not ordinarily attended by actual destruction of nervous elements.

The demonstration of the *Spirochaeta pallida* in paretic brains has resulted in a new classification of the later nervous lesions into (1) interstitial types, which include the lesions previously classified under cerebrospinal syphilis, and (2) parenchymatous types, which include the diseases previously known as parasyphilis. There is also a third type, in which the lesion is essentially vascular and the secondary nervous disturbances are similar to the changes seen in cerebral arterial sclerosis. These are the cases of pure endarteritis syphilitica in which the cerebrospinal fluid shows slight, if any, alteration, and the improvement under treatment depends not on the resolution of a syphilitic exudate in the meninges or nervous tissue, but on the extent to which the endarteritis can be favorably influenced.

In judging the results of treatment, we must consider both functional improvement and improvement in the laboratory findings. In the interstitial forms, which include meningitis, meningo-arteritis and gummas, the disturbance in function is due to edema and pressure of the tumors on nerve tracts or centers, as well as to actual destruction of the nervous tissue. Resolution of the exudate will often result in remarkable functional cures, but if the tracts or centers are actually destroyed, the consequent loss of function cannot be fully restored. In the parenchymatous types, irritation and destruction of nervous elements seem to be the essential features. If the irritative symptoms are due to active inflammatory processes, adequate treatment will probably relieve them; but here also one would not expect the loss in function which had resulted from destruction of neurons to be completely restored. Certainly we see more complete functional recovery in the interstitial types than in tabes and paresis. The abnormal elements in the cerebrospinal fluid also disappear more rapidly under treatment in the former types than in the latter.

While tabes and paresis have been classed together as a distinct type, there are many striking differences in the two diseases. Tabes often responds readily to treatment, both as to arrest of the degeneration and in marked diminution or disappearance of pathologic elements in the cerebrospinal fluid, while it is most difficult to obtain a favorable response in the fluid of paretics in spite of energetic treatment. This may be due to differences in accessibility of the essential lesion. In paretic brains, the spirochete and the round cell infiltration are found scattered through the cerebral cortex, while in tabetic cords spirochetes have not been demonstrated, nor is the essential syphilitic exudate often seen in the most noticeably degenerated areas, namely, the columns of Goll and Burdach. Active inflammatory changes are more often found in the region of the radicular nerves, and the tract degeneration seems to be largely secondary to the radiculitis. The separateness of the dorsal roots may result in greater accessibility to the remedial agent, and it is conceivable that if all the radicular nerves and dorsal ganglia were gathered in one area as in the cerebral cortex, the arrest of tabes might be as unsatisfactory as is the treatment of paresis. Other more essential

* From the Medical Clinic of the Presbyterian Hospital, Columbia University.

* Read before the Section on Syphilis, one hundred and ninth annual meeting of the Medical Society of New York State, Buffalo, April 29, 1915.

differences may exist between tabes and paresis, as is indicated by the different types of curves in the gold reaction.

We should not lose sight of the similarity of the various lesions in lues of the central nervous system, but emphasize the differences, because they apparently have been disregarded in some of the criticisms of the different methods of treatment. To say that all treatment of parenchymatous syphilis is unsatisfactory because paresis has not responded to our efforts, or to declare that because some cases of tabes respond satisfactorily to salvarsan intravenously, intraspinal injections are therefore useless, or because some cases of tabes respond well to intraspinal treatment, all cases of cerebrospinal syphilis should therefore be treated in this way, is illogical; and such an attitude will do much to impede advance in our knowledge of these conditions.

With the demonstration that salvarsan could be safely used in the treatment of lues of the central nervous system, and the biologic proof that all forms of this disease were actually syphilitic in nature, it was hoped that the treatment of all forms of the disease would be quite satisfactory. The desirability of a more effective treatment than mercury and iodids was acknowledged by all, and the liability of cerebrospinal syphilis to relapse after treatment with these drugs was well known. It is unfortunate that we did not have the biologic standards to measure the efficacy of mercury treatment long before the introduction of salvarsan, for today the combined salvarsan and mercury treatment used by almost all physicians has made it difficult to estimate accurately the comparative value of the two drugs. Clinical improvement is of little comparative value, for the majority of patients show improvement under either drug. The large number of relapses after mercury certainly showed the desirability of another remedy, and the rather slow biologic response of many cases under combined salvarsan and mercury treatment has impressed many competent observers with the desirability of some additional method of treatment. The peculiar anatomy of the subarachnoid space, the physiology of the choroid plexus and the cerebrospinal fluid, the pathology of cerebrospinal syphilis, as well as the proof that in acute infections of the meninges, local specific therapy was necessary, all pointed to a probable benefit from some form of subarachnoid application of our therapeutic agents. The problem was to find some substances which could be repeatedly injected without injury to the cord or brain. I wish to emphasize "repeatedly injected" because, if in the treatment of such an acute condition as epidemic cerebrospinal meningitis, several injections of antimeningitis serum are necessary, how much more is prolonged treatment required in a chronic condition like cerebrospinal syphilis.

SUBARACHNOID THERAPY

With the object of finding such substances, Dr. Ellis and I[1] studied the effect of injecting intraspinally the serum of patients who had previously received intravenous injections of salvarsan. Independently Marinesco[2] and Robertson[3] carried on similar investigations. The former reported only one or two treatments without careful observations as to the results; the latter treated some paretics with slight improvement. Since that time, numerous modifications have been suggested and tried. The whole subject of subarachnoid therapy may be outlined as follows:

I. Substances injected:
   - (*a*) Neosalvarsan dissolved in water, normal saline or cerebrospinal fluid.
   - (*b*) Serum—salvarsanized in vivo:
     1. Human serum.
     2. Serum of animals.
   - (*c*) Serum salvarsanized in vitro:
     1. With salvarsan.
     2. With neosalvarsan.
   - (*d*) Mercury:
     1. Mercuric chlorid lavage of subarachnoid space.
     2. Mercuric cyanid dissolved in saline.
     3. Mercurialized serum.

II. Mode of application:
   - (*a*) Into spinal subarachnoid space by lumbar puncture.
   - (*b*) Into cranial subarachnoid space through trephine opening:
     1. Subdurally.
     2. Into third ventricle.
   - (*c*) Into large basal subarachnoid cistern through sphenoidal fissure.

(*a*) *Neosalvarsan.*—Wechselmann[4] was the first to inject dilute solutions of neosalvarsan intraspinally. Infants with congenital syphilis and paretics were treated, no ill effects being noted. Marinesco[5] reported bladder paralysis in eight out of thirteen patients who received 5 mg. of neosalvarsan intraspinally, and strongly objected to application of the drug in this manner. Ravaut[6] stated that these injurious effects were due to the hypotonic solution in which the neosalvarsan was injected, and hence recommended from 1 to 4 drops of a 6 per cent. solution, each drop containing 3 mg. of the drug. While he states that he had no unfavorable sequelae in sixty-three injections, in his conclusions he warns against increasing the dose if a patient shows bladder symptoms after an injection. Schubert[7] devised a method of dissolving 0.045 gm. of neosalvarsan in 3 c.c. of cerebrospinal fluid and mixing 0.1 or 0.2 c.c. with 5 c.c. of cerebrospinal fluid which had been allowed to flow into a funnel that was connected with the lumbar puncture needle. Gennerich,[8] in discussing Schubert's technic, says that intraspinal injections carried out in this way are less irritating than when the drug is dissolved in saline. He reports cases in which the patients received from four to six injections of from 4 to 8 c.c. of a one-half pro mille solution in normal saline and developed anesthesias over the buttocks, glans penis and legs and weakness of the vesical rectal sphincters after the fifth or sixth injections. He considers that the previous injections had rendered the cord more sensitive to subsequent injections, and specificially warns against using more than 2 mg. of neosalvarsan intraspinally. In this country, following Wile's[9] enthusiastic endorsement of Ravaut's technic, intraspinal injections of neosalvarsan have been extensively given with a number of unfortunate sequelae. In Wile's[10] own detailed report of fifteen cases, severe symptoms followed the treatment in eight cases. These symptoms consisted of bladder paralysis six times, intestinal atony once, pain in the abdo-

1. Swift, H. F., and Ellis, A. W. M.: New York Med. Jour., 1912, xcvi, 53; The Treatment of Syphilitic Affections of the Central Nervous System, with Especial Reference to the Use of Intraspinous Injections, Arch. Int. Med., September, 1913, p. 331; München. med. Wchnschr., 1913, lx, 1977.
2. Marinesco, G.: Presse méd., 1911, xix, 65.
3. Roberison, G. M.: Edinburgh Med. Jour., 1913, ix, 428.
4. Wechselmann, W.: Deutsch. med. Wchnschr., 1912, xxxviii, 1446.
5. Marinesco, G.: Ztschr. f. diät. u. phys. Therap., 1913, xvii, 194.
6. Ravaut, P.: Bull. et mém. Soc. méd. d. hôp. de Paris, 1913, xxxvi, 752.
7. Schubert, E.: München. med. Wchnschr., 1914, lxi, 823.
8. Gennerich, W.: München. med. Wchnschr., 1914, lxi, 823.
9. Wile, U. J.: The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System, a Preliminary Report, THE JOURNAL A. M. A., April 11, 1914, p. 1165.
10. Wile, U. J.: The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System, Report of Cases, THE JOURNAL A. M. A., July 11, 1914, p. 137.

men once, marked pain in the legs three times, marked ataxia twice, decubitus twice and two deaths following cystitis. The author evidently considered that the picture of increased cord irritation and degeneration which followed the treatments were due to syphilis, when in fact the picture is quite characteristic of the degeneration which not infrequently follows intraspinal injections of both neosalvarsan and salvarsan when more than from 0.5 to 1 mg. is used. Corbus[11] reports that four out of seven patients treated with Ravaut's technic developed bladder paralysis. Gordon[12] reports a fatal case which followed 6 mg. intraspinally. Sachs, Strauss and Kaliski[13] report two deaths in paretics treated in this way, the first followed an injection of 6 mg.; in the second, five injections were borne well; the sixth was followed in three weeks by an acute ascending paralysis of the Landry type. The authors conclude, "In view of these facts we have of late hesitated to urge any form of intraspinous treatment."

The clinical picture following intraspinal injections of neosalvarsan consists in the milder cases of various degrees of urinary retention, and incontinence, rectal paralysis, paresthesias and numbness of buttocks and legs, ataxia in legs, girdle pains, and occasionally trophic ulcers; in the more severe cases, of complete paralysis of the lower part of the body, and death from infection of the urinary tract. Unfortunately a given dose may be well tolerated several times but later be followed by severe symptoms; other patients suffer from their first injection, and some escape injury. Because of the uncertainty of the sequelae, intraspinal injections of neosalvarsan should be given with extreme caution, if at all, and the dose should never exceed 0.5 mg.

(*b*) *Serum Salvarsanized in Vivo.*—1. Serum of patients who have intravenous injections of salvarsan or neosalvarsan. Reference to this method has already been made; the results will be discussed later. In passing I may state that with this method we have never seen the permanent unpleasant sequelae which follow the direct injection of neosalvarsan.

2. Serum of animals which had received large doses of neosalvarsan. This method was suggested by Marie and Levaditi,[14] who hoped to introduce thus larger quantities of the drug. The repeated injection of a foreign protein would, however, produce a most undesirable, if not dangerous, condition of hypersensitiveness. The same criticism applies also to the use of mercurialized horse serum.

(*c*) *Serum Salvarsanized in Vitro.*—1. With salvarsan. Ogilvie[15] has devised a method of adding a small amount of faintly alkalinized salvarsan to human serum, incubating forty-five minutes, and then heating at 56 C. (132.8 F.) for half an hour. The object in this method was to give a known dose of the drug, instead of the uncertain dosage in "serum salvarsanized in vivo." The results in the fifteen cases reported were most encouraging, but the author had three cases with temporary bladder disturbance following the injection of from 2.5 to 4 mg., and emphasizes the necessity of never using more than 1 mg. Draper[16] reports that several of his patients treated with 1 mg. of salvarsan added to serum developed some transient numbness of the legs, in contrast to a lack of these late unfavorable symptoms following injections of the patient's own serum. Fordyce[17] also warns against the addition of more than 0.5 mg., but this year has treated many patients with smaller amounts of salvarsan added to serum without the unpleasant sequelae. Lately I have studied the spirochcticidal effect of serum salvarsanized in vitro and found it superior to serum obtained from patients after salvarsan intravenously. Evidently Ogilvie's modification is an advance in the preparation of serum for intraspinal injection.

2. With neosalvarsan. Marinesco and Minea[18] report on the subarachnoid injection of inactivated serum to which from 6 to 12 mg. of neosalvarsan were added. Two out of ninetcen patients treated intraspinally with this serum developed severe bladder disturbances, but the authors make the interesting observation that neosalvarsan can be given much more safely in serum than in saline. In our first communication on intraspinal injections, we reported on the addition of from 0.5 to 1 mg. of neosalvarsan to the serum, but discontinued this form of treatment after the appearance of unpleasant symptoms similar to those noted above.

To review briefly, the subarachnoid injection of neosalvarsan or salvarsan often is followed by characteristic symptoms of irritation and degeneration. These symptoms are more constant when the drug is dissolved in saline than in solutions in human serum. However, it seems safe to inject repeatedly doses of from 0.1 to 0.25 mg. of salvarsan dissolved in human serum, especially if the salvarsan solution is not too alkaline. The ability to estimate the dose of the drug in this way would appear to be of value, although the whole benefit from intraspinal injections does not depend on the salvarsan introduced, as will be later discussed.

(*d*) *Mercury.*—1. Subarachnoid lavage with mercuric chlorid solutions was suggested by Sir Victor Horsley,[19] but on account of the severity of the operative procedure, has not been carried out to any extent.

2. Sicard[20] has recommended a solution of 0.1 mg. mercuric cyanid and novocain in 0.5 per cent. saline for intraspinal injections. He states that he does not attribute the beneficial effects following the injection of this mixture to the mercury but to the increase in permeability of the meninges resulting from the irritation which follows the subarachnoid injection. No detailed reports are available to show the relative value of this form of subarachnoid therapy.

3. Mercurialized serum. Byrnes[21] reports on the use of an albuminate of mercury solution which he prepares by mixing from 1.3 to 2.6 mg. of mercuric chlorid with 12 c.c. of human serum, adding 18 c.c. of normal saline and inactivating at 56 C. This mixture is clear, and apparently can be injected repeatedly without producing any more severe symptoms than are incident to the injection of normal serum. The clinical results, and improvement in the laboratory findings following this treatment seem to have been very good. The desirability of a local application of mercury is apparent, and the method of Byrnes is deserving of careful study. Perhaps alternate injections of mercurialized and salvarsanized serum combined with vigorous general therapy will give better results than any of the methods so far applied.

ROUTE OF SUBARACHNOID INJECTION

The facility with which lumbar punctures may be performed is a great advantage over the intracranial injections.

Marinesco and Minea[18] have used the Neisser-Polock puncture for intracranial injection of neosalvarsanized serum. Sicard and Reilly[22] injected neosalvarsan or mercuric cyanid

11. Corbus, B. C.: Cerebrospinal Examinations in "Cured" Syphilis, THE JOURNAL A. M. A., Aug. 15, 1914, p. 550.
12. Gordon, Alfred: Unfavorable Complications Following an Intradural Injection of Neosalvarsan, THE JOURNAL A. M. A., Nov. 21, 1914, p. 1851.
13. Sachs, Strauss and Kaliski: Am. Jour. Med. Sc., 1914, cxlviii, 693.
14. Levaditi, Marie and de Martel: Compt. rend. Soc. de biol., 1913, lxxvi, 567.
15. Ogilvie, H. S.: The Intraspinal Treatment of Syphilis of the Central Nervous System with Salvarsanized Serum of Standard Strength, THE JOURNAL A. M. A., Nov. 28, 1914, p. 1936.
16. Draper, George: Effect of Intravenous and Intraspinal Treatments on Cerebrospinal Syphilis, Arch. Int. Med., January, 1915, p. 16.
17. Fordyce, J. A.: The Treatment of Syphilis of the Nervous System, THE JOURNAL A. M. A., Aug. 15, 1914, p. 552.
18. Marinesco and Minea: Rev. neurol., 1914, No. 5.
19. Horsley, Sir Victor: Neurol. Centralbl., 1910, xxix, 1170.
20. Sicard, J. A.: Bull. et mém. Soc. méd. d. hôp. de Paris, 1913, xxxvi, 681.
21. Byrnes, C. M.: The Intradural Administration of Mercurialized Serums in the Treatment of Cerebrospinal Syphilis, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2182.
22. Sicard and Reilly: Bull. et mém. Soc. méd. d. hôp. de Paris, 1913, xxxvi, 861.

under the dura in the temporofrontal region, hoping to increase the permeability of this portion of the brain for salvarsan which was subsequently injected intravenously. Berriel[23] injected salvarsanized serum through the sphenoidal fissure into the large basal subarachnoid cistern. Ballance[24] injected as much as 90 c.c. of salvarsanized serum into the lateral ventricles by passing a blunt trocar and cannula through a trephine opening and the cerebral cortex, into the ventricle. The intracranial method has been used for the treatment of paretics, because it was thought that substances introduced into the spinal subarachnoid space did not come into contact with the cerebral cortex. Dandy and Blackfan[25] have shown, however, that there is a rapid diffusion of solutions through the whole spinal and cranial subarachnoid space. Phenolsulphonephthalein introduced into the ventricles appeared in the spinal fluid in from one to seven minutes, and when introduced intraspinally, appeared in the fluid drawn from the ventricles almost as soon. When India ink or lampblack granules were introduced into the subarachnoid space of dogs, at the end of from one to three hours, there was a uniform distribution of the granules throughout the entire cerebral and spinal subarachnoid space. These experiments clearly indicate that intracranial injections have little if any advantage over intraspinal injections, so far as the distribution of solutions is concerned. Therefore, the difference in the ease of operation makes the intraspinal route the one of choice.

OBJECTIONS TO INTRASPINAL THERAPY

Within the past year, some objections as to the value of intraspinal treatment have been raised. These objections may be placed under the following headings:

1. Intravenous methods alone yield equally good results.

2. The difficulty in the technic, the pain from intraspinal injections and the unfortunate results which follow intraspinal injections of neosalvarsan make all intraspinal treatment undesirable.

3. The cerebrospinal fluid sometimes contains arsenic after intravenous injections of salvarsan.

4. The blood serum withdrawn one hour after intravenous injections of salvarsan does not contain sufficient arsenic to render it of any value for intraspinal injection.

1. While it is evident that intravenous injections of salvarsan are of great benefit in the treatment of syphilis of the central nervous system, and in many instances are sufficient to effect a functional cure or arrest of degeneration and change the cerebrospinal fluid to normal, still in other cases the conditions are apparently stationary under vigorous general treatment but yield when intraspinal therapy is instituted. The literature contains many such examples. Fordyce[17] gives in detail several such cases. Eskuchen[26] says, "It is remarkable that cases showed rapid and noticeable improvement after combined intraspinal and intravenous therapy where other treatment had been fruitless." Ayer[27] made similar observations. Furthermore, the numerous modifications of subarachnoid methods are striking proof of the apparent desirability of local therapy.

2. Although the technic of intraspinal injections is more difficult than that of intravenous injection, this difficulty is not insurmountable and in many instances the additional effort is justified. The pains following injections of human serum are transitory, and only occasionally are they severe enough to make this form of treatment impossible. A few cases of severe aseptic meningitis have been reported following intraspinal injections of human serum, but these accidents are not frequent enough to cause the method to be discarded. The unfavorable sequelae which follow intraspinal injections of 1 mg. or more of neosalvarsan are sufficient to make injections of this substance questionable, but should not interdict all forms of intraspinal therapy.

3. Numerous workers have shown the relative or absolute impermeability of the choroid plexus for most inorganic substances, and all are agreed that but few drugs which can be demonstrated in the blood after administration by mouth, subcutaneously or intravenously, can be demonstrated in the cerebrospinal fluid. Hall[28] has reviewed the literature on the subject of arsenic excretion, and shown how relatively infrequently has this substance been demonstrated in the fluid after intravenous injection of salvarsan. In his own cases it was not demonstrable following neosalvarsan in five cases, and in only two out of six cases after salvarsan. He calls attention to the importance of having the lumbar puncture needle specially cleaned. With the special technic for arsenic estimation noted below, we have tested pooled fluids up to 100 c.c., which were withdrawn the day following intravenous injections of salvarsan, and obtained almost uniformly negative results, and when arsenic was present the quantities were too small to estimate. In view of all these negative results, the constant positive findings of Sachs, Strauss and Kaliski[13] are hard to explain. It may be that they were fortunate enough to test the fluid from cases in which the permeability of the meninges or choroid plexus was markedly impaired by the syphilitic process.

4. The low arsenic content of the serum seems to have been the chief point of attack by those who have objected to intraspinal treatment. It may be noted in passing that the question is not alone a chemical one but is also biologic in nature. Nevertheless, we have made a number of observations of the salvarsan content of the serum. Repeated tests with the Abelin diazo reaction have shown the presence of the organic radical, and the application of the Ehrlich-Berthenn paradimethylamidobenzaldehyd test has shown that arsenic is present in the form of salvarsan. The arsenic content of the serum has also been estimated by a method which Dr. Vinograd[29] elaborated for this special purpose. This method depends for its accuracy on the oxidation of the organic matter in a sealed bomb so that during the incineration at high temperatures none of the arsenic escapes. In fifteen different patients, twenty-five intravenous injections of 0.5 gm. salvarsan each were given, the blood was withdrawn after one hour, and the serum separated and tested for arsenic content. The accompanying table shows the content per cubic centimeter in terms of salvarsan.

Sixteen of the serums contained 0.01 mg. or more, which would yield at least 0.12 mg. if 12 c.c. were injected, or 0.2 mg. if 20 c.c., the amount now recommended, were injected; and stronger serums yield even more. Benedict[30] found between 0.04 and 0.1 mg. of metallic arsenic in 20 c.c. of whole blood furnished him by Sachs, Strauss and Kaliski. As salvarsan is

23. Berriel, M. L.: Bull. et mém. Soc. méd. d. hôp. de Paris, 1914, xxxvi, 986.
24. Ballance, C. A.: Lancet, London, 1914, i, 1525.
25. Dandy, W. E., and Blackfan, K. D.: Internal Hydrocephalus, Am. Jour. Dis. Child., December, 1914, p. 406.
26. Eskuchen, K.: München. med. Wchnschr., 1914, lxi, 747.
27. Ayer, J.: Boston Med. and Surg. Jour., 1914, clxx, 452.
28. Hall, G. W.: The Presence of Arsenic in the Spinal Fluid, THE JOURNAL A. M. A., April 24, 1915, p. 1384.
29. Vinograd: Jour. Am. Chem. Soc., 1914, xxvi, 1548.
30. Benedict, cited by Sachs, Strauss and Kaliski (Footnote 13).

about one third arsenic, his results in terms of salvarsan were 0.12 to 0.3 mg., figures closely approximating our own for equal quantities of serum. Fordyce and Ogilvie have shown that it is unsafe to add more than from 0.25 to 0.5 mg. to serum for repeated intraspinal injection, and that the injection of these small quantities in serum is followed by decided improvement. Analysis of many of the serums from patients shows that in from 12 to 20 c.c. this amount of salvarsan is often

ARSENIC CONTENT OF SERUM IN TERMS OF SALVARSAN

Number of serums	Salvarsan per cubic centimeter
	mg.
1	0.05
1	0.04
3	0.03
2	0.025
4	0.02
5	0.01
4	0.006
2	0.005
3	0.004
Total 25	Average 0.016

present, so the objection that the serum is useless because of the low salvarsan content seems invalid. Its variability in salvarsan content is a valid objection, and can be obviated by adding definite quantities of the drug in vitro.

ACTION OF INTRASPINAL INJECTIONS OF SERUM

As we have proved that in certain cases of tabes it was possible to reduce the cell count of the cerebrospinal fluid to normal and cause the positive Wassermann reaction to disappear and at the same time to have marked clinical improvement under intraspinal injections of "autosalvarsanized serum" alone, it seemed that the value of such treatments was demonstrated. Moreover, the addition of intraspinal injections to intravenous treatment has apparently hastened the improvement in many cases. The action of the serum may be due to one or several factors.

1. The serum is spirocheticidal.
2. It may contain syphilitic antibodies.
3. The local irritation may increase the permeability of the meninges.
4. The acute irritation produced by the serum may exert a beneficial effect on the chronic inflammatory process.
5. The normal serum may contain substances which, when brought into contact with the syphilitic exudate, cause it to resolve.

1. We[31] have demonstrated that the "autosalvarsanized serum" has a definite spirocheticidal effect which is increased by heating, and Stuhmer[32] has shown it to have similar action on trypanosomes. Although the actual salvarsan content may be small, by subarachnoid injection we bring a definite spirocheticidal substance into close contact with the etiologic agent, a contact which is much more intimate than when the drug is circulating in the blood stream.

2. Although the syphilitic antibodies are not directly demonstrable, it is reasonable to suppose that they exist. It has been demonstrated that the serum of salvarsan-treated patients has a curative effect when injected subcutaneously into infants with congenital syphilis, or into the subjects of acquired syphilis. This curative effect is supposed to be due to an increase in antibodies excited by the salvarsan.

3. Sicard[20] has suggested that the local irritation produced by foreign substances which are injected into the subarachnoid space increases the permeability of the tissues locally, and thus salvarsan injected intravenously is brought into more intimate contact with the diseased tissues; in other words, that the normal barrier between the subarachnoid space and blood stream is partially broken down. Stillman and I[33] have investigated this point experimentally, and have shown that after intravenous injections of salvarsan no more arsenic is demonstrable in the cord or brain of cats that received intraspinal injections of normal saline, normal serum, salvarsanized serum or mercuric cyanid, than in the cord and brains of animals that received no subarachnoid injections. We have also treated patients intraspinally with normal serum, one hour later have given an intravenous injection of salvarsan, and the following day have withdrawn the cerebrospinal fluid and tested it for arsenic, but found that it contained no more arsenic than did the fluid of controls who had not received a previous intraspinal injection. Thus both directly and indirectly it has been proved that the local irritation of the meninges does not apparently increase their permeability for salvarsan which is circulating in the blood.

4. The beneficial effect of acute congestion on chronic inflammatory processes is the well-known theory on which Bier's hyperemic treatment is founded. After intraspinal injections of serum, there is a transitory aseptic irritation which may be of benefit as a local therapeutic measure.

5. The interesting improvement following injections of normal serum in the treatment of psoriasis, dermatitis herpetiformis and other skin diseases suggests that the normal balance of the various substances in the serum may be disturbed by the coagulation of the blood outside the body, thus resulting in the elaboration of some substance having therapeutic value. The subarachnoid injection of this substance might be of benefit. I realize that the last two possibilities are hypothetic; still they are the only explanations for the interesting fact that a number of patients have shown more or less tendency of the cerebrospinal fluid to approximate the normal, and clinical improvement results under the intraspinal injection of their own or normal serum.[34] Nine cases were studied. Two of them showed practically no change in the fluid following repeated lumbar punctures, and the withdrawal of large amounts of fluid. In one, the fluid became normal after six injections of normal serum; in another the Wassermann reaction became negative after six injections of the patient's own serum. Two showed only slight changes under six and seven injections, respectively, of normal serum, but distinct change under injections of salvarsanized serum. Two showed well-marked improvement under eleven and seventeen injections of their own serum, and a third patient only slight change after twelve injections of his own serum. In all of the patients who received injections of their own or normal serum, there was some improvement in one or more of the abnormal elements, in four of them marked diminution in both pleocytosis and Wassermann reaction. Two who were slow in responding to normal serum showed more marked improvement from salvarsanized serum. When we recall that during the period of observation none of the patients received any other antisyphilitic treatment, it is evident that injections of nonsalvarsanized serum were

31. Swift and Ellis: Jour. Exper. Med., 1913, xviii, 435.
32. Stuhmer, A.: München. med. Wchnschr., 1914, lxi, 745.
33. Stillman and Swift: Jour. Exper. Med., to be published.
34. Detailed report of these cases will be given in our complete studies, Rockefeller Institute Monographs.

beneficial. The use of serum as a vehicle for spirocheticidal substances seems, therefore, to be established on a rational basis.

The value of any method of treatment depends in the final analysis on the end-result. I am convinced that our aim should be to bring the cerebrospinal fluid to normal, at least so far as pleocytosis and Wassermann reaction are concerned. Obviously, one should not forget the patient and that treatment should be individualized, but in following both the clinical condition and spinal fluid of a series of patients for several years we have been struck with many instances of parallelism between condition of fluid and general condition of the patient. Our results in thirty-four patients with tabes, in whom observations have extended over at least a year, and some of them nearly five years, three of whom received intraspinal treatment alone, the remainder intravenous and intraspinal injections, are as follows: At the time of the last examination, twenty-five cases, or 73 per cent., had negative reactions with 1 c.c. of fluid. Among these, fourteen cases, or 41 per cent. of the total, had negative reactions with 2 c.c. of fluid, an amount which is double the maximum recommended by Hauptmann and Hoessli. In eight cases the reaction was negative with 1 c.c., but positive with 2 c.c. Three others were not tested with 2 c.c. One case that was negative with 2 c.c. relapsed to positive with this large amount of fluid. One that was positive only with 2 c.c. relapsed to negative with 0.6 c.c. One that was positive with 1 c.c. has relapsed to positive with 0.8 c.c. A number have had negative reactions for from one and a half to two and a half years. The few patients with paresis and taboparesis whom we have treated have not responded so well. Two out of three paretics are dead, the fluid being little affected. A third paretic has responded well both clinically and biologically while under treatment, but had relapsed twice when treatment was discontinued. One taboparetic has responded only slightly, the other better, but has relapsed after treatment was stopped. On the whole, our experience with the few paretics has been discouraging as compared with the satisfactory results in tabetics.

CONCLUSION

We feel that intraspinal injections of "autosalvarsanized serum," or serum to which a small amount of salvarsan or mercury is added, is of distinct help in certain cases of tabes and cerebrospinal syphilis. Not all patients with these diseases require intraspinal treatment. Many of them respond well to intravenous injections of salvarsan combined with mercury and iodids properly administered. In other cases, the symptoms and abnormal cerebrospinal fluids are not controlled by general therapy, and it is in this class that we believe the addition of intraspinal therapy to be of value. Both the clinical side and laboratory evidences of active disease should be considered, and any treatment controlled by repeated examinations of the blood and cerebrospinal fluid. Although the treatment of these diseases should be systematic, it should not be so rigid that individual indications should be disregarded. Not infrequently one sees improvement only after active treatment has been discontinued. Others seem to require constant treatment until all evidences of active disease have disappeared. Only by considering all these factors can consistent beneficial results be obtained.

A REACTION OF THE PUPIL, STRONGLY SUGGESTIVE OF ARTERIOSCLEROSIS WITH INCREASED BLOOD PRESSURE*

MEYER WIENER, M.D.

AND

HENRY L. WOLFNER, M.D.

ST. LOUIS

About six years ago we began to observe a condition of the pupil which seemed always to be associated with patients registering a high blood pressure. A review of the literature and a careful clinical study of a large series of patients seem to confirm our original deductions as to the clinical significance of this sign, which is herein described. Patients afflicted with fundus disease, or with any condition which might interfere in any way with the reaction of the pupil, were not included in our notations.

This pupil is found to be larger than the average normal pupil, with a usual minimum size of 4.5 mm. to 5.0 mm. in width, contracts promptly to light stimulus, but immediately returns to the original size and there remains, without the light stimulus having been changed.

While it is not claimed that this reaction is pathognomonic of arteriosclerosis with high blood pressure, we maintain that its association with arteriosclerosis with high blood pressure is so nearly constant as to make of it a sign that is at least strongly suggestive, and therefore of undoubted clinical value.

CASE REPORTS

The following is a brief summary of a few selected cases from several hundred observations:

Mr. F. C. B., aged 34. Typical arteriosclerotic pupil, with high blood pressure. Examination by Dr. J. S. Myer showed B. P. 170, with thickened arteries. One month later, B. P. 130, and pupil not nearly so typical.

Mr. H. F. H., aged 40. Typical arteriosclerotic pupil, with high blood pressure. B. P. 160.

Mr. R. D. H., aged 54. Typical arteriosclerotic pupil, with high blood pressure. Examination by Dr. R. Tilles who found lues and nephritis, with B. P. 195.

Miss L. L., aged 47. Typical arteriosclerotic pupil, with high blood pressure. B. P. 130.

Mrs. M. A. P., aged 47. Typical arteriosclerotic pupil, with high blood pressure. Examined by Dr. Pendleton. B. P. 162.

Mrs. W. M., aged 56. Typical arteriosclerotic pupil, with high blood pressure. B. P. 250. Later the patient developed albuminuric retinitis.

Mrs. I. D., aged 72. Typical arteriosclerotic pupil, with high blood pressure. B. P. only 125 to 130.

Mrs. J. E. W., aged 67. Typical arteriosclerotic pupil, with high blood pressure. B. P. 145, with indications of hardened arteries.

Mrs. G., aged 69. Typical arteriosclerotic pupil, with high blood pressure. B. P. 150.

Mr. J. W. F., aged 58. Typical arteriosclerotic pupil, with high blood pressure. Examination by Dr. J. S. Myer showed B. P. 170. Later retinal hemorrhages and death from apoplexy.

M. B., aged 69. Typical arteriosclerotic pupil, with high blood pressure. B. P. 170. Later retinal hemorrhages. Death from apoplexy.

---

* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

It will be seen that a few patients showing the significant pupil revealed a relatively low or normal blood pressure. This we have been unable to explain. On the other hand, when it is reflected that the average age of the above cited patients is nearly 50 years, whereas the pupil around the age of 50 or above is notably smaller than at an earlier period of life, the large size of this pupil is especially significant.

We know, according to experiments of Schlesinger[1] and others, that under repeated stimuli of light, the sphincter pupillae becomes exhausted, and the pupil slowly returns to its original, or nearly original, size. He also found that the reflex time, or time between the impact of the light wave and contraction, increases with each new illumination. This fact must be borne in mind in making tests for the pupillary reaction.

Again, we must not confuse this with the enlarged pupil described by Oppenheim,[2] which contracts to daylight but does not respond to sudden illumination from a pocket flashlight. Oppenheim explains this failure to respond as being due to the fact that fright causes an emotional dilatation, which compensates the normal contraction.

A rebound pupil has been described by Fry,[3] to which he ascribed no particular clinical significance, except that he found it associated with cases of syphilis and neurasthenia.

A myotonic pupillary reaction similar to our own, but which is characterized by a slow recovery from the contraction produced by either light or accommodation stimulus, is described by Saenger,[4] and considered by him to be a symptom of early tabes or general paresis.

Magitot,[5] describing a case in detail in which the pupil, after contracting, remained so for six seconds, requiring one and one-half minutes then slowly to return to the original size, believes this condition to but primary to the usual spinal miosis of tabetics.

Dilatation of the pupil occurs in melancholia, but with no change in the light reaction.

Bumke,[6] in his work on pupillary disturbances in nervous diseases, devotes a special chapter to the changes due to fatigue. He concludes, from clinical observations, that in many states of nervous exhaustion and physical fatigue, in extreme hunger, as well as in anemic patients, the pupil is often noticeably widened. He made personal observations on insane persons who had refused all nourishment, whose pupils were dilated to the maximum on entering the institution, and which, within a few days, had returned to their normal size after forced feeding. He also noticed that the pupils of attendants to insane patients were always wider on the morning after having been up the entire night with the patients, than they were in the same attendant after having slept throughout the night. The reaction to light, however, was increased. These results were confirmed in experiments made by Weiler.[7] They both consider this phenomenon to be due to increase in the sensitiveness of the gray matter rather than tiring of the sphincter, which is not apt to be strained much in a dimly lighted sleeping room. These are all undoubtedly produced by some toxic substance created by incomplete oxidation, as the symptoms all disappear with sufficient rest.

In 1899, Lewandowsky[8] called attention to the fact that intravenous injection of adrenal extract caused, among other phenomena, a dilatation of the pupil, and Weiler, in commenting on this observation, remarks that the dilatation of the pupil which we see during prolonged increased blood pressure is probably due to an overproduction of epinephrin in the blood stream, or some similar poisoning. Experiments have shown also that together with a rise in blood pressure, epinephrin causes a degeneration of the muscle layer and a consequent production of lesions resembling to some extent those of arteriosclerosis.

Some preliminary experiments on the relation of the size of the pupil to blood pressure, made in the physiologic laboratory of Washington University Medical School under the direction of Professor Erlanger and Associate Professor Garrey, seem to verify the fact of the pupillary enlargement during increased blood pressure. These experiments, however, have only just begun, and a full report will be made later.

It seems needless to remark that in making a test for this or any other reaction, the light intensity, distance, and angle of illumination should always be the same, and that the eye to be examined should always be in the same condition. The light should also be thrown in from both sides so as to eliminate hemianopic pupil.

Swanzy, in "Norris and Oliver," says, "The condition of the pupils, whether normal, contracted or dilated, is of very slight significance or value in the diagnosis either of the condition or of the kind of any intracranial lesion, and yet, slight in value as is the state of the pupil in cerebral cases, there is probably no symptom which receives more regular attention from the clinicist in his note taking." This sentence is quoted by Edward Jackson[9] in a paper on "Suggestions of the Pupil in General Disease," who adds, that "to anyone who is on the lookout for clues that he may be able to follow to a positive diagnosis, for suggestions of a possible explanation of the case before him, the pupil is enormously suggestive."

We feel, therefore, that in presenting this hitherto undescribed, as we believe, reaction of the pupil for further consideration, we have at least added a *clue,* or something *enormously suggestive,* in reaching out for a diagnosis.

ABSTRACT OF DISCUSSION

DR. WALTER S. FRANKLIN, San Francisco: The authors of this paper are to be complimented on presenting a sign in ophthalmology which may be of help in arriving at a diagnosis of the patient's general condition. To use their term, this reaction may be "enormously suggestive." Ordinarily the value of the pupillary reaction is greatly overestimated. Our knowledge of the globe itself and condition of its nerves is more readily gained through the use of the ophthalmoscope,

1. Schlesinger, E.: On the Threshold Value of the Pupillary Reaction and Extent of Pupillomotor Area of the Retina, Deutsch. Ztschr. d. Nervenh., 1912, xlv, 351.
2. Oppenheim, H.: Remarks on Testing the Pupillary Reaction, Neurol. Centralbl., 1911, xxx, 362.
3. Fry, F.: The Rebounding Pupil, Jour. Nerv. and Ment. Dis., 1913, xl, 437.
Stieren, E.: The Pupil in Health and Disease, Pennsylvania Med. Jour., 1911-1912, xv, 686.
4. Saenger, O.: A New Pupillary Reaction, Neurol. Centralbl., 1896, p. 1007.
5. Magitot, A.: Rec. d'opthal., May, 1911, p. 151. Bach, L.: Pupillenlehre, S. Karger, Berlin, 1908.
6. Bumke, O.: New Investigations Regarding Diagnostic Significance of Pupillary Symptoms, München. med. Wchnschr., 1907, liv, 2315; Pupillary Disturbances in Insane and Nervous Patients, G. Fischer, Jena, 1904.
7. Weiler: Examination of the Pupil and Iris Movements, Ztschr. f. Gesammt. Neurol. u. Psychol., 1910, ii, 101.
8. Lewandowsky, M.: Effect of Adrenalin on Smooth Muscles, in Particular the Eye, Arch. f. Anat. u. Physiol. (Physiol Abt.), 1899, p. 360.
9. Jackson, E.: Suggestions of the Pupil in General Disease, Am. Jour. Med. Sc., 1908, cxxxvi, 556.

the testing of central and peripheral vision—the color sense and minimal light sense. The majority of pupillary reactions and reflexes are not sufficiently constant to be more than suggestive. A number of reflex dilatations or pain reactions have been described, due to thermic and physical irritation of the skin, the conjunctiva and the cornea. Others mention fear, pain, crying, etc., as psychical examples. Haab calls attention to a psychical reaction due to suggestion of light.

Since receiving the reprint of this paper I have observed 100 cases of acknowledged blood pressure. The ages ranged from 40 to 70 years and the blood pressure averaged 180. In 65 cases the pupils were larger than average pupils of this age. In but 54 cases could I demonstrate the high blood-pressure reaction which has been described. On the other hand, I examined the pupils of 100 people ranging from 40 to 70 years of age who had apparently normal blood pressure for their time of life. It is interesting to note that here also numerous cases presented with larger than normal pupils, namely, 29 per cent. In 12 per cent. the higher blood-pressure reaction could be demonstrated. This gave a difference of 36 per cent. having larger pupils, in favor of those having high blood pressure. Also 42 per cent. more gave the high blood-pressure reaction than there were without it. While this shows some value of the symptom, it was by no means constant or nearly so.

The method of examining the pupillary reactions is of importance. I note that the authors do not state their procedure. The refraction of the eye somewhat determines the pupillary reaction. Our cases were examined in a dark room having but one source of illumination, namely, an electric lamp, and the patients sat at a uniform distance and were told to fix the light steadily. The observer repeated the tests six times on each patient so as to get an average and reduce to a minimum the psychic dilatation of fatigue, fright, etc., described by the authors. It is likely that different methods of examination will bring out discrepancies.

DR. EDWARD JACKSON, Denver: After reading Dr. Wiener's paper I looked for the sign in the few cases of high blood pressure encountered and found it in about two-thirds of them. The reaction, I took it, might be to some extent an indication of the lack of endurance, similar to the quick contraction and then quick and rather marked redilatation seen in asthenic conditions, the pupil soon returning to its original size. The authors of the paper have not attempted any explanation, but it occurs to me that the large pupil might be associated with changes in the vessel walls of the iris. If that is the case it may be the sign of arteriosclerosis, a point of value. The vascular lesions seen with the ophthalmoscope are found to be of more importance than the readings of the sphygmomanometer. The upper limit of normal blood pressure is often put too low. I use the rough rule of adding 100 to the patient's age as the probable upper normal limit of blood pressure. But high blood pressure shown by the sphygmomanometer is not regarded by me as of the greatest importance. Changes in the retinal vessels are more to be depended on. Changes in the vessels of the iris as indicated by this sign may have the same significance and value as those seen in the retina.

DR. MEYER WIENER, St. Louis: Regarding our method of examining the pupils, in reply to Dr. Franklin's questions, the tests were always made in a dark room, except in hospital cases. The light was thrown in from a mirror from first one side and then the other, from every direction. We always tried to eliminate the accommodation as far as possible. As to the effect of fatigue on pupillary reaction when light is thrown into the eye a given number of times, each time the pupil reacts more slowly and must be allowed to rest after the test is repeated a number of times. In hospital wards we generally have used a small electric light and flashed that in the eyes we were testing, also eliminating accommodation. The association of high blood pressure with pupillary reaction has been given special attention in the medical department of Washington University, and they have found that very regularly the enlarged pupils were associated with high blood pressure. The cause may be due to the holding power of the iris, or possibly due to the increased amount of adrenal principle in the blood. This was suggested to me by Dr. Dock of Washington University, and we expect to experiment along this line in the future. Dr. Franklin, however, has not found the two symptoms associated nearly as constantly as we have found them. Possibly the reason is that his tests were made with a fixed light; otherwise he has not eliminated the accommodating power, if I understand it rightly.

IMMEDIATE RESULTS OF SPLENECTOMY IN PERNICIOUS ANEMIA*

ROGER I. LEE, M.D.
BETH VINCENT, M.D.
AND
OSWALD H. ROBERTSON, M.D.
BOSTON

Recently splenectomy has been advocated as a therapeutic procedure in pernicious anemia. Eppinger,[1] Moffitt,[2] von Decastello[3] and others have discussed the theoretical and experimental evidence for the assumption that the etiologic factor of pernicious anemia resides in the spleen. Isolated case reports of splenectomy in pernicious anemia have appeared in the American and English literature.

We desire to present five out of seven cases of typical pernicious anemia which were admitted to the West Medical Service during a period of approximately two months, extending from Nov. 12, 1914, to Jan. 9, 1915. Of the two cases in which operation was not performed, one patient was moribund at admission and died in three days, in spite of transfusion. The second was in very poor condition with a red count of 500,000, and died before a donor could be procured for transfusion. Thus it can be fairly said that the series of cases in which operation was performed was in no way a selected one.

The remaining five patients operated on were all men between the ages of 31 and 54 years showing varying grades of anemia. In two cases the anemia was so great that transfusion was performed before splenectomy. With one exception they had been able to do very little or no work for a year or more.

It was carefully explained to each patient that splenectomy in pernicious anemia was an experimental procedure. No definite hope of cure was offered. The operation was not urged. It can be fairly stated that the patients accepted operation with full appreciation of its danger and of our lack of definite information as to its ultimate result.

A brief history of each case will be given, together with the blood findings and other laboratory data both before and after operation.

CASE 1.—*History.*—L. N. H. (Hospital No. 198641), man, aged 43, entered the hospital for the second time Nov. 12, 1914. Family and past histories were essentially negative. The present illness began two and a half years ago, during which time he has had six attacks of pallor, weakness and dyspnea lasting from two to three months and followed by definite remissions. The attacks have become increasingly severe, and the last one was accompanied by diarrhea. The patient was in the hospital during the fourth attack, at which

---

* From the West Medical Service, Massachusetts General Hospital, Dr. Richard C. Cabot, Chief of Service.

1. Eppinger, H.: Berl. klin. Wchnschr., 1913, 1, 1509.
2. Moffitt, H. C.: Am. Jour. Med. Sc., 1914, clxxv, 817.
3. Von Decastello, A.: Deutsch. med. Wchnschr., 1914, xl, 692.

time he had a red count of 852,000, hemoglobin was 25 per cent. and the spleen was palpable. Previous treatment had consisted in Fowler's solution over a period of months, also one dose of salvarsan intravenously two months ago.

Physical examination in this, his sixth attack, was negative except for lemon-yellowish tint to skin and blood. Red count, 2,525,000; hemoglobin, 60 per cent.; white count, 5,000; neutrophils, 65 per cent.; basophils, 29 per cent.; eosinophils, 3.5 per cent.; mast cells, 2.5 per cent. The red cells showed much variation in size and shape, good color, some polychromatophilia, no blasts, platelets somewhat decreased in number. Resistance of red cells to salt solution; beginning hemolysis at 0.475 per cent., complete hemolysis at 0.30 per cent. sodium chlorid. Urobilin in stools increased. Wassermann negative.

Operation and Result.—Splenectomy was performed by Dr. Vincent, November 25. November 26, the white count was 26,400. This gradually came down to 14,000 by December 3. November 27, the blood picture showed 5 per cent. normoblasts and 2 per cent. megaloblasts (per hundred leukocytes), which increased in number for several days and then gradually diminished. Howell-Jolly bodies appeared at the same time as the blasts and persisted till discharge. The reticulated cells were not increased in number—less than 1 per cent. The platelets began to increase at the end of a week and were present in large numbers. The red count had not changed when the patient left the ward three weeks after operation, but the hemoglobin had increased to 75 per cent. and the red cells showed much less variation in size and shape. There was a white count of 8,200 with a 10 per cent. eosinophilia; neutrophils and basophils were in the same relative proportion as before. The urobilin in the stools had dropped to normal. Resistance of red cells two weeks after operation, 0.55 to 0.25. The patient felt much stronger, but weighed 13 pounds less than at entrance. Two and a half months later his physician reported that his red count was 4,000,000 and he had gained 30 pounds.

March 11, three and a half months later, he was seen; the red count was 5,028,000; white count, 9,600; no eosinophilia; hemoglobin, 80 per cent. The red cells showed a good color; the average cell was definitely larger than normal; there were many macrocytes and an occasional microcyte and poikilocyte. Howell-Jolly bodies were present in large numbers and platelets were increased over normal; there was no polychromatophilia; resistance of red cells, 0.525 to 0.25.

While he looked and seemed well and his actual blood counts were essentially within normal limits, yet he still presented an abnormal blood, not only in regard to the presence of Howell-Jolly bodies, but also in the microscopic appearance of the red cells. There was no marked distortion of the red corpuscles, yet their general appearance, large size, etc., was fairly typical of the appearance of the red corpuscles in primary pernicious anemia.

CASE 2.—*History.*—F. L. M. (Hospital No. 198718), man, aged 54, entered the hospital for the second time, Nov. 16, 1915. Family and past histories were negative. The present illness began three years ago, since when he has had two other attacks at yearly intervals, each lasting longer than the preceding one. The first two were followed by remissions. He is still suffering from the third attack, which began six months ago. There has been numbness of the hands and feet recently and a loss of 10 pounds in the past year. No gastro-intestinal symptoms except pain in epigastrium. No systematic course of treatment was followed.

Physical examination shows the characteristic coloring of the skin, a palpable spleen and marked edema of lower legs. Visceral examination negative. Blood, red count, 736,000; hemoglobin, 15 per cent.; white count, 3,000; neutrophils, 70 per cent.; basophils, 30 per cent. The red blood cells show marked variation in size and shape, polychromatophilia, no blasts, and diminished platelets. Resistance of red cells, 0.475 to 0.30. Wassermann negative. The urobilin in stools was high. He grew rapidly worse, becoming edematous and drowsy. The red count dropped to 574,000 and hemoglobin to 12 per cent. November 22, he was transfused, receiving 600 c.c. of blood. Immediately after transfusion the red count was 1,600,000, hemoglobin 50 per cent., and the blood showed many normoblasts, which persisted for two days and then disappeared. Within six days after transfusion, the red cells had reached 3,164,000, hemoglobin 60 per cent., the platelets increased to about normal. The patient improved much symptomatically. December 7, he had a sudden attack of generalized convulsions followed by coma lasting from six to eight hours, for which no cause could be found. This cleared up rapidly. By December 22 his red blood count was about 3,000,000; platelets had become much diminished and he was still in bed and quite weak.

Operation and Result.—Splenectomy was performed by Dr. Vincent; the next day the white count was 24,400; an occasional normoblast and Howell-Jolly body appeared. The reticulated cells were not increased. By the end of a week the Howell-Jolly bodies and platelets were present in large numbers, but the blasts had disappeared and the white count had fallen to 11,000. The red count showed very little change till the fifth week, when it rose to 4,160,000. However, this rise was followed by a drop during the next three weeks to 2,600,000, when the patient left the ward. In spite of this drop the quality of the blood had improved much as the red cells showed little variation in shape and much less in size than before splenectomy. Macrocytes were still frequent and Howell-Jolly bodies persisted. The hemoglobin remained at 60 per cent. and the urobilin in the stools dropped to normal and the resistance of the red cells at the time of discharge—eight weeks after splenectomy—was 0.70 to 0.225. The patient's convalescence was a rather stormy one. On the tenth day after the operation, from which he suffered very little shock, a severe diarrhea began, and within a few days he was passing pus and blood. This condition persisted for three weeks and was followed by a phlebitis, first of the left leg and later of the right. However, by the end of two months he was able to leave the hospital, feeling much better than at entrance, but weighing less. March 21, almost three months after splenectomy, the patient reported. His red count was 4,168,000; hemoglobin, 75 per cent.; white count, 15,400; lymphocytes, 64 per cent.; polynuclear leukocytes, 36 per cent. He was feeling better than at any time for several years and had gained 13 pounds since discharge. Two weeks later he was seen again and was still gaining weight. At this time the red count was 3,968,000; hemoglobin, 73 per cent. The red cells showed some variation in shape with an occasional poikilocyte and much variation in size; macrocytes were frequent. Color of cells, good; frequent polychromatophilia; blasts and Howell-Jolly bodies numerous and the platelets increased. Reticulated reds, 1 to 2 per cent.; fragility, 0.60 to 0.25. Urobilin in the stool was found to be still increased in amount although not so high as before splenectomy.

CASE 3.—*History.*—H. E. B. (Hospital No. 189666), man, aged 31, entered the hospital for the second time Dec. 21, 1914. Family history was negative. For several years preceding the present illness he has had periods of vomiting, abdominal distress and diarrhea every summer, accompanied by slight pallor. The first severe attack in the present illness occurred one and a half years ago, on which occasion he entered the hospital for the first time. Since then he has had two more attacks, each one of greater severity than the last and the subsequent remissions less well marked. The beginning of a fourth attack brought him to the hospital at this time. He has done practically no work since the beginning of his illness. Previous treatment had consisted in Fowler's solution for a short time.

Physical examination was negative except for pallor and blood. Blood, red count, 2,304,000; hemoglobin, 55 per cent.; white count, 3,800; neutrophils, 53 per cent.; basophils, 47 per cent. The red cells show considerable variation in size and shape, macrocytes frequent and average size larger than normal, good color but no polychromatophilia or stippling; platelets diminished. Urobilin in the stools was high. Wassermann negative. Resistance of red cells, 0.40 to 0.275. The patient lost ground rapidly, red count went down to

1,422,000; the hemoglobin remained at 55 per cent. January 5, he was transfused, receiving 600 c.c. of blood. Immediately after transfusion, the red cells numbered 1,648,000 and two days later, 1,920,000. There were no blasts. Frequent large markedly polychromatophilic cells were present and the platelets increased somewhat.

Operation and Result.—Splenectomy was performed January 11 by Dr. Vincent. On the following day the white count was 26,000 with no change in differential count. The blood showed an occasional Howell-Jolly body and a large number of blasts. Within four days the white count had dropped to 8,800, the blasts were still present in large numbers and the Howell-Jolly bodies very numerous. Platelets began to show a very slight increase at the end of the tenth day but increased no further. The red count stayed at about 1,600,000 but the hemoglobin dropped to 45 per cent. By the fourth week, however, the red cells reached 2,200,000 and the hemoglobin 70 per cent., at which time the patient left the hospital. The urobilin decreased markedly but did not reach normal. Fragility, 0.55 to 0.30. At discharge the patient weighed approximately the same as at admission but felt a great deal stronger. Three weeks after leaving the hospital, the patient reported that he had gained 30 pounds since getting up from bed. March 27, two and a half months after splenectomy, he returned for examination. He was looking well, had gained 40 pounds since the operation and was able to do light work all day without fatigue. His blood showed a red count of 4,112,000; hemoglobin, 77 per cent.; white count, 12,500. Red cells showed little variation in shape but marked variation in size. Many microcytes as well as macrocytes with the average size above normal; good color, no polychromatophilia or stippling; an occasional normoblast and large numbers of Howell-Jolly bodies; platelets above normal in number. Reticulated cells rare. Resistance of red cells, 0.52 to 0.25. Urobilin in the stools still considerably increased over normal, although lower than at the time of discharge.

CASE 4.—*History.*—T. D. (Hospital No. 199648), man, aged 43, entered the hospital Jan. 8, 1915. Family history was unimportant. Fifteen years ago he had to stop work for a period of nine months on account of being "run down" and feeling weak. The present illness began twenty months ago with a gradual onset of weakness, dyspnea on exertion, and later pallor. These symptoms have grown progressively worse, and recently there have also been vomiting and soreness of the mouth and tongue. No diarrhea; has lost over 40 pounds in weight. No systematic course of treatment had been followed.

Physical examination was negative except for lemon-yellow color of skin and blood. Blood, red count, 1,344,000; hemoglobin, 50 per cent.; white count, 4,400; neutrophils, 67 per cent.; basophils, 29 per cent.; eosinophils, 3 per cent.; mast cells, 1 per cent. Red cells showed marked variation in size and shape, no achromia, macrocytes frequent, occasional poikilocyte, many stippled and polychromatophilic cells. Rare normoblasts, platelets much diminished. Urobilin in the stools high. Resistance of red blood cells, 0.45 to 0.30. Wassermann negative. After eleven days in the ward the red count had dropped to 1,162,000 and the patient felt worse. A donor was procured, as it was thought transfusion would be necessary preparatory to splenectomy. However, at this time there was a shower of "blasts," 14 per cent. normoblasts and 3 per cent. megaloblasts, and within three days the red cells numbered 1,628,000 and the hemoglobin 70 per cent. The blasts soon dropped to about 2 per cent. and there was no further increase in red count or hemoglobin by the end of five days.

Operation and Result.—Splenectomy was performed January 27 by Dr. Vincent. The day following splenectomy the white count was 12,400 with 90 per cent. polynuclears. January 29, two days later, there was a shower of normoblasts, 14 per cent. A rare Howell-Jolly body was seen and the platelets showed a slight increase at the same time. The red count showed a gradual increase dating from splenectomy until discharge, Feb. 11, 1915, when it was 2,640,000. The hemoglobin remained at 70 per cent. The red cells showed considerably less variation in size and shape. The urobilin in the stools dropped to normal. Fragility, 0.425 to 0.225. The patient did not gain weight, but felt much stronger than at entrance.

March 20, approximately two months after splenectomy, the patient returned for examination. He was looking and feeling much improved, but had gained only 4 or 5 pounds since discharge. Mental disturbance was discovered at this time, which may account for the fact that the general improvement had not kept pace with the improvement in the blood picture. However, a month later the patient was seen again. At this time he was looking well, had gained 12 pounds since the last visit to the hospital and felt much stronger. The red count was 4,824,000; hemoglobin, 80 per cent.; white count, 9,800; neutrophils, 47 per cent.; lymphocytes, 50 per cent.; eosinophils, 3 per cent. The red cells showed some variation in size, chiefly in the presence of macrocytes, but very little in shape; good color but no stippling or polychromatophilia; no blasts seen, platelets numerous and Howell-Jolly bodies frequent, reticulated cells not over 1 per cent. Resistance of red cells, 0.50 to 0.27. Urobilin in stools still normal.

CASE 5.—*History.*—E. E. W. (Hospital No. 199657), man, aged 44, entered the hospital Jan. 9, 1915. Family and past histories were unimportant. The present illness began one and a half years ago with a mild attack lasting only three weeks and followed by a rather incomplete remission lasting eight or nine months. At the end of this time he began to go down hill again and has been gradually growing worse ever since, but did not stop work until shortly before admission. No gastro-intestinal symptoms. Has lost 40 pounds since onset of disease. Previous treatment consisted of some unknown medicine, probably not arsenic, for the past six months.

Physical examination shows a pale, weak and very sick looking man. Visceral examination negative. Blood, red count, 800,000; hemoglobin, 28 per cent.; white count, 2,000; neutrophils, 42 per cent.; basophils, 55 per cent.; eosinophils, 3 per cent.; red cells vary largely in size and shape, good color, many polychromatophilic cells, "blasts" very frequent, 10 megaloblasts and 15 normoblasts seen in a count of 100 whites. Platelets very few in number. Wassermann suspicious. Resistance of red cells, 0.425 to 0.30. Urobilin high. Within three days the red count had reached 2,300,000; hemoglobin, 57 per cent.; white count, 8,000; the platelets increased and the blasts had disappeared almost entirely. He felt and looked much better. This improvement did not continue, and, in fact, at the end of two weeks his red count was slightly under 2,000,000; white count, 5,000; platelets, however, were numerous.

Operation and Result.—Splenectomy, January 28 by Dr. Vincent. The next day there was an occasional Howell-Jolly body present, the white count was 10,400, with 91.7 per cent. polynuclears. This count increased to 14,800 and then dropped to its former level in three days. Blasts did not increase noticeably till the fourth day after operation. The red count eight days afterward was 2,360,000; hemoglobin, 60 per cent. These increased to 2,840,000 red cells and 70 per cent. hemoglobin by the time of discharge, February 12, two weeks after operation. The red blood cells showed slightly less variation in size and shape. Fragility, 0.475 to 0.25. The urobilin in the stools was normal. The patient was feeling much improved when he left the hospital, but his weight was the same as at entrance. He went back to work almost immediately after leaving the hospital, and has worked practically every day since, but gets tired rather easily. April 13, two months and a half after splenectomy, he reported for examination. At this time he was looking somewhat pale. His general improvement did not seem to be nearly as marked as in the other four patients; however, he was feeling stronger than at any time during the previous year and a half. Red count, 2,904,000; hemoglobin, 60 per cent.; white count, 6,000. The red cells showed considerable variation in shape with an occasional poikilocyte; much variation in size; macrocytes frequent. The majority of the cells showed good color but

many were achromic and an occasional polychromatophilic cell was seen; frequent normoblasts and large numbers of Howell-Jolly bodies present; platelets slightly diminished. Reticulated reds not increased. Resistance of red cells, 0.57 to 0.25. Urobilin in the stool increased.

PATHOLOGY OF THE SPLEENS

In two cases the spleens were larger than normal, weighing, respectively, 192 and 237 gm. The other three spleens ranged from 137 to 167 gm. Grossly, there was nothing abnormal in their appearance. Microscopically, the changes seen were slight. Two of the three showed evident congestion of the pulp with rather fewer cells in the sinuses than normal. In two, many normoblasts were seen but not in clumps. One showed a few areas of primitive erythroblasts such as are seen in the bone marrow, suggesting the possibility of blood formation in the spleen itself. There was no evidence of increased phagocytosis, no fibrosis or pigmentation. This absence of any striking pathologic change agrees in general with the findings reported by other writers. Moffitt in his recent review of the subject finds hyperemia of the pulp and thickened arteries more constantly present than was the case in this series.

SUMMARY OF THE BLOOD FINDINGS

In all the five cases, directly after splenectomy there was a marked but transient leukocytosis, a shower of blasts and the appearance of Howell-Jolly bodies. At the end of a week or ten days the platelets began to increase. In one case this increase occurred even earlier. All these findings suggested definite stimulation of the bone marrow. The red count and hemoglobin showed very little change for the first two to three weeks after operation. However, by the fourth week there was an increase of about a million red cells and a rise of from 10 to 15 per cent. in hemoglobin. The qualitative improvement in the blood during the first four weeks was in the majority of cases greater than the numerical increase, that is, the red blood cells were more regular in size and showed fewer distorted forms.

After periods of from two to three and a half months (following splenectomy) four of the cases showed a red count of between four and five million and a hemoglobin of from 73 to 80 per cent., color index of 1 or less. Nevertheless, the appearance of the red cells, particularly the presence of frequent large forms, was still characteristic of pernicious anemia blood. The fifth case showed very little change in the blood picture after the patient left the hospital, except that the color index had come down to 1. In our experience it is unusual in pernicious anemia even in the remissions to have a color index of 1 or below.

The red blood cells showed a constantly increased resistance to hypotonic salt solutions within from two to three weeks after splenectomy. In two cases, hemolysis was not complete till 0.225 per cent. was reached. There was also a tendency for hemolysis to begin above normal; in one case hemolysis began at 0.70 and was not complete till 0.225. A change in the fragility of the red blood corpuscles has been observed after experimental splenectomy in dogs, and is probably not characteristic of pernicious anemia. Howell-Jolly bodies appeared very soon after splenectomy, and were still present in large numbers when the cases were seen from two to three months later. These small, round, darkly staining bodies found in the red blood cells, and considered to be nuclear fragments, do not occur in normal human blood. They are found in the red blood cells in cases of congenital hemolytic jaundice and after splenectomy in man as well as in certain kinds of animals. The presence of these bodies seems to indicate a much increased bone marrow activity.

The number of reticulated red cells was not increased at any time. These cells occur in large numbers in congenital hemolytic jaundice, and seem to be associated in this condition with the increased bone marrow activity, since they represent a type of immature cells. Their absence in this series of cases following splenectomy is quite striking in view of the large numbers of Howell-Jolly bodies present.

The immediate decrease in the quantity of fecal urobilin[4] following splenectomy indicates that a marked diminution in the degree of blood destruction had taken place. This became normal in four cases, and in the fifth, which showed the highest output before splenectomy, there was a marked drop. The later return to an increased urobilin excretion in Cases 2 and 3 suggests that the cause or causes of excessive blood destruction had not been completely removed.

This evidence of increased blood destruction, together with the abnormal blood picture, indicates strongly that the patients are still suffering from pernicious anemia. However, a marked change has come about in the relation of blood production to blood destruction. In Cases 2 and 3, which show red counts of approximately 4,000,000, the bone marrow is apparently fairly well able to compensate for the abnormal blood destruction going on. In Case 5 the compensation is not so good. The persistence of many normoblasts in the blood of all three of these patients indicates the marked bone marrow activity present. Cases 1 and 4 show a more striking alteration still in this relationship. In these two cases the abnormal blood destruction has ceased, thus obviating the necessity of excessive blood production. The blood supports this assumption in that, with the exception of the presence of Howell-Jolly bodies, there is much less evidence of increased activity on the part of the bone marrow.

It has been suggested that the hemolymph and other glands in these long-standing cases of pernicious anemia may acquire hemolytic functions, thus accounting for the abnormal blood destruction which persists after splenectomy. We see no reason to accept this theory; but, if true, it would be an argument for operation early in the course of the disease.

Symptomatically, the improvement during the first few weeks succeeding splenectomy was much greater than the blood picture would indicate. The appetite improved, the patient gained strength, his mental attitude became much more hopeful and there was a consistent increase in weight. Later reports show that with the exception of Case 5, this improvement has continued and that the patients are in better condition now than at any time since the onset of the disease.

In deciding the question of the time of operation, the most important consideration was the direction which the disease was taking. When the patient was failing, transfusion was performed before operation. Besides increasing the number of red cells temporarily

4. A detailed study of urobilin in pernicious anemia will be given in a later communication.

and apparently checking the relapse in some cases, transfusion has often initiated a remission. The remission, it is true, may be very incomplete in nature, yet the accompanying improvement in general condition is marked. If the red count is rising or if the patient is holding his own and is in good condition, we felt that it was safe to operate with a red count of anything over 1,500,000.

The operation which was done in all five cases by one of us (Vincent) was performed through a left rectus incision without special incident. Following the operation there was surprisingly little shock or discomfort, and recovery was rapid in every case.

SUMMARY AND CONCLUSIONS

The immediate results of splenectomy in this series of five cases of pernicious anemia was a prompt postoperative recovery and a definite remission of the disease in every case.

The remissions were much more marked than is usually seen in pernicious anemia. In four of the five cases the red counts rose to from 4,000,000 to 5,000,000. The remissions occurred so constantly that we are inclined to attribute them to the operation of splenectomy.

Our study shows that in spite of marked improvement, the blood picture still exhibits the accepted characteristics of pernicious anemia with the exception of the color index, which has been altered from high to normal or low. Furthermore, in three of the five cases, evidence of increased blood destruction was present several months after splenectomy, as shown by the urobilin estimation. These facts we can interpret only as evidence that the disease is not cured. It cannot as yet be stated that the improvement brought about by this means will last longer than the remissions which come spontaneously and which may persist over a period of years. From the very nature of the disease, it will be many years before the exact value of splenectomy can be determined.

The only conclusions we may safely draw from these cases combined with the reports of other writers are:

1. Splenectomy is not a very serious operation in pernicious anemia, and it offers a definite means of inducing a remission.

2. The remission thus brought about is more marked in the majority of the cases than any other known therapeutic procedure.

The School of Bagdad.—It is not surprising then, that the school of Bagdad became celebrated. Jewish physicians seem to have been most prominent in its foundation, and the most distinguished product of it is Isaac Ben Emran, almost as celebrated as a philosopher as he is as a physician. One of his expressions with regard to the danger of a patient having two physicians whose opinions disagree with regard to his illness has been deservedly preserved for us. Zeid, an Emir of one of the chief cities of the Arabs in Barbary, fell ill of a tertian fever and called Isaac and another physician in consultation. Their opinions were so widely in disaccord that Isaac refused to prescribe anything, and when the Emir, who had great confidence in him, demanded the reason, he replied, "disagreement of two physicians is more deadly than a tertian fever." This Isaac, who is said to have died in 799, is the great Jewish physician, one of the most important members of the profession in the eighth century. His principal work was with regard to poisons and the symptoms caused by them. This is often quoted by medical writers in the after time.—Walsh, Makers of Medicine.

ROENTGEN RAY EPITHELIOMA, CURABLE BY RADIUM

AN APPARENT PARADOX *

ROBERT ABBE, M.D.
NEW YORK

At a section meeting of roentgenologists at the British Medical Association meeting two years ago I was impressed by the large proportion of this noble body of workers who had suffered from all degrees of Roentgen-ray injuries, from simple hyperkeratosis to amputation of one or more fingers, or one hand, or both.

I presented to them the possibility of curing the disease in its early stage by radium. Most of them seemed skeptical, but I found one physician from Australia who had suffered, and who had found in his own experience that radium had kept his hands well, as he had repeatedly applied it in this early type for some years. I showed photographs and spoke of cases which I will here quote.

During two years past, I have been more deeply impressed with its importance, as I have treated more cases. Logically, it is clear that if all of the vast number of senile keratoses and early epitheliomas of the face and hands can be cured with certainty by radium, then the early Roentgen-ray growths of the same type ought to yield equally well.

It is in the advanced stage of epitheliomas when the downgrowth of cells invades and envelops the squamous cell layer — followed by growth of pearls, lymphatic invasion and gland metastases — that no efficient action of radium, so far as we can yet see, is beneficial. Then, anything short of amputation or clean excision is without value. Subsequent to the early stage, however, most sacrifices of fingers and hands have taken place. It is to this point I wish to direct attention, for in the early stage I shall show that cure may be assured.

My first case so treated was in 1903. Five years after beginning the use of the Roentgen ray, the patient developed a typical epithelioma of the back of the left hand. One application of radium cured it, and there has been no recurrence after twelve years.

Three years ago a well-known maker of Roentgen-ray tubes came to me with a terrible exhibition of Roentgen-ray cancer of the chin, chest and both hands. One finger had been amputated and much useless surgery done on the other parts. Both hands had on them scores of epitheliomas of varying sizes and heights. A recurrence showed in the stump of the amputated finger with an enlarged epitrochlea lymph mass of half the size of an egg, and in the axilla and subclavian region of that side, a conglomerate mass resembling a large clenched fist. Hopeless as it all seemed, he wished me to excise the lymph and other related scar growth, and apply radium as well as possible, at least for experiment. This I reluctantly did much to his delight. During the convalescence he asked me to try what radium would do on the cutaneous epitheliomas which were, as he said, just the way the original trouble started.

I used one strong specimen of radium from my collection, and told him I had no doubt they would all

---

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

be cured by applying it from half an hour to one hour each. In thirty days every one dried up and fell off, leaving a smooth healthy soft scar beneath. Even one with a half-inch base and three-quarters of an inch in height — cornified on top and very vascular at the base — was absolutely cured in the same time. The effect of buried radium in the operated field of the large axillary cancerous masses was, as I expected, of no value. The patient lived some months and succumbed to the cancer saturation, though no recurrence of the epithelial growths took place.

Many men are living to-day, who have served their profession and the public nobly, who have hanging over them this fate, which has befallen many whom we all know. These may all share the "exhilarating sentiment of hope" through radium.

It is to these that the cases now described will appeal. Two or three examples will suffice.

One physician, illustrating a type of severe injury of the hands of one of the pioneers and foremost authorities in Roentgen-ray work, came to me two years since with both hands covered with patches of thick epitheliomas and crusted skin, cracked and sore, compelling him to use gloves and cerates for even decent comfort. During several years he had forestalled the dangerous second stage by having surgeons excise and skin graft several parts. Others had cauterized and destroyed certain considerable areas by nitric acid, with fairly smooth scars; several times he had had carbon dioxid freezing to destroy and heal: and other agents as numerous as the surgeons to whom he applied. At last he was disheartened and refused to suffer longer the pain of these treatments, the worst of which he thought was freezing. Two years ago he consulted me and I loaned him one specimen of radium to use, indicating the number of minutes for each of twenty or thirty places. The result was better, he said, than by any other surgical method he knew. A second use of it on numerous other parts so far restored his hands that he decided to marry, which the condition and prospect of his hands had wholly prevented him from considering. During the past two years he has four times borrowed my specimen to use on a few lingering places, and writes me as follows:

> The great advantage of the radium treatment, in my judgment, lies, first, in the fact that it may be applied to many situations which are not accessible to freezing, and, second, in its relative freedom from pain.
>
> I have had about three hundred and fifty or four hundred areas treated by radium, and about sixty areas treated by freezing. Many of these radium arcas could not have been reached successfully by freezing, and because of the relative freedom from pain, it has been possible to obtain truly wonderful results with radium, with far less discomfort than was experienced with the smaller amount of freezing treatments.
>
> These radium areas included both ulcers and keratoses, most of which could have been classed as precancerous.
>
> I feel that the success of the radium treatment has really changed my whole life.

Ten cases of physicians whose hands, diseased by the Roentgen ray, I have treated have all shown the happy results of radium treatment.

One enthusiastic patient over 70 years of age had the usual cure of part of his hand by radium two years after I had excised and skin grafted another area, the microscope having shown typical basal-cell cancer. A third area was then treated by radium at a later date. After the fourth week, he asked me to excise and skin graft the thick scar, as it was on his mind and worried him. It gave a good opportunity for careful microscopic demonstration that no trace of disease was left, but only the subsiding radium inflammation which would have gone in another fortnight. He remains perfectly well.

In another surgeon's hands the thick crusted and ulcerated knuckle of his disabled finger has healed after the use of radium, with a soft flexible scar.

Other surgeons, who were much handicapped in their work, report the same happy termination of their anxiety and pain.

It seems almost a paradox of radiology that the accepted use of a heavy gamma radiation from a Roentgen tube will cause a diseased condition of the skin, which a similar radiation from a tube of radium will cure. This becomes intelligible when we know that the output of the Roentgen-ray tube is almost wholly composed of hard, penetrating, irritating gamma rays. The radium discharges the beta ray in great quantity, as well as the gamma ray. It is the beta ray that has been proved beyond question to be the efficient curative power, and it is only the secondary betas generated by the gamma when striking any resisting substance, that give it its value in the Roentgen-ray tube work. Hence, we can understand that a surface lesion of morbid cell growth, be it hyperkeratosis or basal cell, is happily cured by the large output of soft beta radiation of radium.

It is not possible that, if we could gage the output of the Roentgen-ray tube in power enough to generate the curative beta rays by impact on the superficial disease, we could certainly cure it, as well as by radium, but in so doing we would have to discharge energy enough of the hard gamma variety to be highly injurious to the deeper tissue of the vessels, muscle and skeleton.

It is most fortunate, therefore, that nature has provided just the agent which can correct the superficial evil which the Roentgen tube had caused by prolonged irritation of surface impact.

Regarding the amount of radiant energy needed in such cases, it may be said that, according to what type of radium application is used, the effect which would cure ordinary papillomas or basal cell epithelioma, is competent to cure in equal time, the Roentgen-ray growths. The sequel of an application consists in ten days' latent action, ten days' activity and ten days' quiescence, followed by desquamation of the crusts from a soft healed surface. The results seem permanent. The skin has rarely been found to be irreparably damaged by disease, and afterward, the cicatrix is thin and flexible.

To sum up, I may say that no cases have presented themselves to me of chronic dermal Roentgen-ray disease in the early stage of thick patches, cracked, ulcerated and painful, or of epithelial growths of basal-cell type on the back of the left hand of those who have in past years used that hand to test the tubes, which have not yielded to radium therapy.

13 West Fiftieth Street.

Tuberculosis Carriers.—Tuberculosis is not spread by tuberculosis patients alone, but also by a great number of apparently healthy people who, bearing bacilli about with them, propagate the same by excretions of all kinds.—A. Calmette-Lille.

USE OF AUTOGENOUS RIB GRAFT IN RECONSTRUCTIVE SKULL SURGERY

ROSCOE R. KAHLE, Ph.B., M.D.
Surgeon to Grant Hospital; Instructor in Surgery, Ohio State University, College of Medicine
COLUMBUS, OHIO

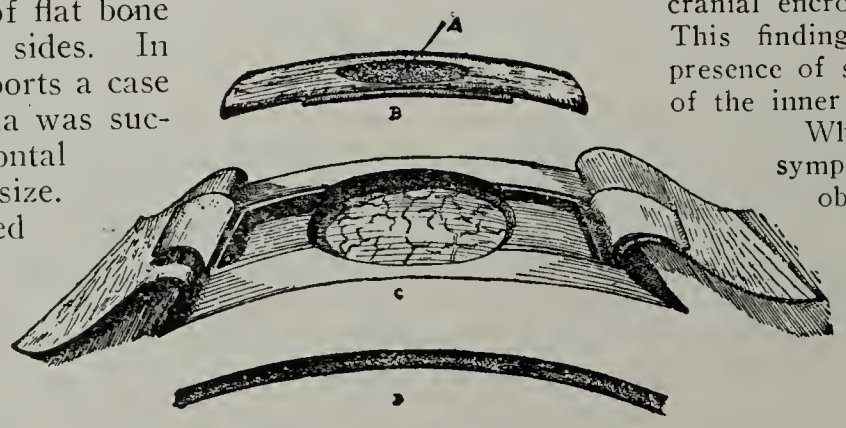
While I shall briefly review the history of reparative skull surgery in this paper, my chief object is to emphasize the fact that nature, though not lavish in the bestowal of osteogenetic properties to the bones of the skull, has yet sufficiently endowed them with reparative power to establish complete restoration when encouraged by the favorable application of a suitable transplant. If our aim in reparative skull surgery is anatomic restoration, then there can be no choice of material; it must be living bone.

In a careful search of the literature (English, French and German) we find numerous references to autoplastic and heteroplastic operations, but very few on autogenous transplantation.

Seydel was probably the first to obtain osseous closure by implantation of bone taken from another part of the body. Tibial chips with periosteum intact were utilized as a transplant.

Röpke first suggested the desirability of selecting for a transplant, a section of flat bone having periosteum on both sides. In accordance therewith, he reports a case in which a section of scapula was successfully grafted into a frontal defect 3.5 by 5 cm. in size.

Rhodes recently reported four cases of tibial graft to the cranium in which the tibial sections, cut larger than the defects, were placed over the gaps and anchored in place by chromic-gut sutures. These cases are particularly interesting because the position of the transplants does not conform to orthodox teaching, which requires end-to-end approximation.



Method of using rib graft in skull surgery: *A*, opening to provide for immediate nourishment; *B*, rib section framed to fit opening in skull shown in *C*; *C*, skull prepared to fit rib graft; *D*, cross-section showing beveled lap-joints.

Morris reports a case of total tibial graft to the left frontal bone, but states that sixteen days subsequent to his dismissal from the hospital his patient returned with a transverse fracture of the tibia at the site from which the bone graft had been removed. He had learned of four similar cases very recently and believed it important to give warning of the danger involved in the removal of a tibial segment of any considerable size.

W. J. Means cites a case in his service in which a parietal graft, including both tables, was transplanted into a frontal defect involving the outer table only.

The foregoing summary, though brief, is, I believe, representative of the autogenous procedures for skull repair hitherto reported in medical literature.

I shall now recite the case history of a skull injury and describe the operation for its repair.

REPORT OF CASE

Mr. C., aged 23, robust, married, with good family history, on Sept. 6, 1913, while walking under a derrick, was struck by a falling object which inflicted a scalp wound and fractured the left parietal bone. An infection occurred which caused bone necrosis and prevented healing.

On Oct. 28, 1913, the patient was referred to me by Dr. H. R. Neeland of Hebron, who explained that when he first saw the patient, several days after the accident, he found an accumulation of pus under the scalp at the site of the original injury. An incision was made and drainage established but the wound would not heal. On the following day, October 29, the patient was removed to Grant Hospital for operation. A scalp flap was elevated and an area of necrosed bone, involving both tables of the left parietal near the lambda, was thoroughly curetted. An autogenous vaccine, prepared at this time, was administered at intervals and probably assisted in the healing process which was complete at the end of four weeks. The patient now had a skull defect 1 inch by 1½ inch, obtrusively situated, but he did not wish to undergo a second operation for its repair. He had arranged, accordingly, to wear an aluminum shield in his cap for protection while at work. His return to former employment was prevented, however, by the appearance of a continuous and violent headache, associated with a perverted disposition so extreme that his family feared the onset of permanent mental derangement. Some measure for relief was, therefore, eagerly sought.

Careful physical and laboratory examinations revealed no other cause for the patient's symptoms than his former head injury. The cranial opening was filled in with tough fibrous tissue which did not pulsate. The headache, ever present, was aggravated by pressure on the scar. There was no choked disk. Roentgenoscopy verified the supposition of intracranial encroachment at the site of injury. This finding was made possible by the presence of some small detached fragments of the inner table.

When our patient realized that symptomatic relief could only be obtained by additional surgery, he was very anxious that cranial restoration might also follow in its wake. The suggestion of a metal plate provoked revolt because the only person he knew of, wearing a plate in his skull, resided in an insane asylum.

In viewing the skeleton, it occurred to me that the most favorable bone it had to offer for skull graft was the rib. Here was a bone curved like the skull, with two plates and cancellous bone between, surrounded by periosteum, as thick as the vertex, accessible and easy to frame up. Through the courtesy of Dr. Edward C. Buck, professor of anatomy at Ohio State University, I was provided with a liberal supply of material for dissection and experimentation. I found that it is usually practical to chisel between and separate the outer and inner tables. This may be done without danger of injury to the inner table. After chiseling up several skulls, I could secure unbroken segments of outer table 2 or 3 inches in length but not much wider than three-quarter inch. In my hands a motor-driven saw for accurate skull work is unsatisfactory. With a suitable hand-driven instrument there is greater precision and about equal speed. An adjustable guard prevents sawing too deeply. The osteogenetic properties of the diploe suggested the possible advantage in technic of a liberal surface contact between the diploe and the transplant. This was best secured by a modification of the old-fashioned lap joint.

Operation.—The patient reentered the hospital, Feb. 23, 1914. The entire scalp was carefully shaved with a sterile razor. Ether and iodin were applied, followed by a sterile gauze cap which was not removed until the patient reached the operating room the following morning. Iodin was again applied to the scalp. A strip of discarded inner tubing was used as a tourniquet and answered the purpose beautifully.

A large U-shaped scalp flap was lifted and the dense fibrous scar, filling the defect, carefully dissected away. The rough edges of the skull, which dipped in places, were evened and freshened. Periosteal flaps as large as the sections of the outer table to be removed were turned back at both ends of the skull gap. A small hand-driven saw, properly set and filed to cut well, was used to outline the sections of the outer table which were chiseled away on the bevel to form the skull side of the lap joints. The skull was now ready to receive the rib.

A section of the right sixth rib with periosteum intact and of sufficient length was now removed, and with calipers, saw and chisel was readily framed to fit the skull. To provide for immediate nourishment, an elliptical opening was made through the outer plate of the transplant. It was pressed to position, the periosteal skull flaps were replaced over the ends, the scalp flap dropped and reunited with silkworm-gut sutures. There were no deep sutures of any kind. The gauze dressing was fixed in position by a wide strip of adhesive to prevent any possible dislodgment of the transplant. Healing was by first intention throughout and convalescence was uneventful. The patient left the hospital at the end of four weeks, returning at intervals for roentgenoscopy.

In a brief report of this case before the surgical section of the state society a year ago, I said that I was anxious to see what might happen to the transplanted section of rib; whether or not it would remain rib or be replaced by fibrous tissue, or whether it would act as scaffolding for the regeneration of new bone; and should new bone be formed, would it resemble in any marked degree its parental bone, the parietal? Since the rib was somewhat narrower than the skull defect, we also wondered if the process of repair, once begun, would bridge across the marginal space on either side.

Careful study of an excellent series of roentgenograms for which I am indebted to Dr. C. F. Bowen, shows:

1. The rib transplanted to the skull acts as a scaffold for the regeneration of new bone.

2. The newly formed bone patch closely resembles the original skull, the inner table appearing identical, the remainder being slightly reduced in thickness and density.

3. A marginal gap of one-eighth to one-quarter inch is filled in by the extension of the skull to meet the rib.

4. The inner plate of rib, with periosteum intact, sharply limits the deposit of new bone.

5. There is total restoration of cranial continuity, the process of repair being complete at the end of six months.

In conclusion, I believe that the method of skull repair which I have described may legitimately be accorded the following points of vantage:

1. The curved rib, as above mentioned, possesses unique anatomic adaptability.

2. A beveled lap-joint provides a large area of end to end approximation, confers stability, and renders unnecessary the use of buried sutures.

3. The under surface of rib with its periosteum is admirably adapted for brain contact.

4. A wide defect could be closed by the use of twin transplants.

5. In the case reported, after a period of fourteen months, symptomatic relief and cranial restoration are complete.

Dr. L. L. Bigelow has very recently closed a parietal defect, 1 by 3 inches in size, by the method of rib graft which I have described. He informs me that his patient is convalescing satisfactorily, although it is too early for him to determine the fate of the transplant.

350 East State Street.

ANTEVERSION OF THE FEMORAL NECK IN THE NORMAL FEMUR

AND ITS RELATION TO CONGENITAL DISLOCATION OF THE HIP

HERBERT A. DURHAM, M.D.
Assistant Surgeon, New York Orthopaedic Dispensary and Hospital
NEW YORK

In connection with some work which has been done during the past four years at the New York Orthopaedic Hospital, on anteversion of the femoral neck, when found in connection with congenital dislocation of the hip, I recently made a study of 200 normal femora at the anatomic museum of the College of Physicians and Surgeons, with the view of determining the frequency and extent of this condition in the normal femur, and beyond what degree it might be considered an abnormality, sufficient to justify a corrective osteotomy when found complicating congenital dislocation.

The method employed in determining the angle of deformity was as follows:

A line was drawn through the center of the upper surface of the head and neck of the femur parallel to its long axis. The femur was then laid on a plain surface, resting on the posterior eminences of both condyles and the greater or lesser trochanter, whichever might be most prominent in any given specimen. The angle thus formed by the line drawn through the long axis of the femoral neck, with the plain surface, was then measured by a goniometer.

In the total number of specimens examined, the angle of anteversion varied from nothing to 35 degrees. In eighteen of the 200 specimens, there was no anteversion present. In eighty, anteversion was present from 2 to 10 degrees. In seventy-five, anteversion was present from 10 to 20 degrees. In fourteen, anteversion was present from 20 to 25 degrees. In nine specimens, anteversion was present from 25 to 28 degrees. Only two of the total 200 had more than 30 degrees' anteversion, one having 32 and the other 35 degrees.

The average taken from the individual figures of the 200 specimens was found to be 11.9, or approximately 12 degrees. It will be seen from these figures that anteversion of the femoral neck is absent entirely in only about 9 per cent. of normal individuals.

That anteversion is present in a considerable percentage of cases of congenital dislocation of the hip is a long-recognized fact. But it is very doubtful if its presence within the limits of the foregoing figures would interfere materially with the maintenance of reduction in the average case. There are, however, a large percentage of cases in which anteversion exists far beyond the normal range.

We often see children with dislocated hips who have 45 degrees of anterior torsion of the neck of the dislocated femur, and less frequently we see patients with anterior torsion to 75, and even 90 degrees. This condition is largely if not entirely

responsible for the large number of so-called anterior transpositions obtained by attempted reduction.

It is difficult to give any limit beyond which osteotomy for the correction of anteversion is justifiable, as that will depend largely on the condition of the femoral head and acetabulum and whether or not we are content to consider anterior transposition a satisfactory result. Since only a very small proportion (1 per cent.) of normal cases show anteversion beyond 30 degrees, it seems fair to consider any amount in excess of 30 degrees a potent obstacle in the way of maintaining reduction.

When this condition is found to an abnormal degree in cases with deficiency of the acetabular brim, associated with a short femoral neck, even though the femoral head be fairly well formed, osteotomy for its correction would seem to be a justifiable procedure, if it has been impossible to maintain reduction after a fair trial.

50 Central Park West.

THE VACCINE TREATMENT OF RINGWORM OF THE SCALP*

ALBERT STRICKLER, M.D.

Assistant Dermatologist, Philadelphia General and Samaritan Hospitals; Instructor in Dermatology, Philadelphia Polyclinic and College for Graduates in Medicine

PHILADELPHIA

The vaccine treatment of ringworm of the scalp rests on the fundamental fact that, in the blood of children suffering from this affection, there is a specific antibody which produces a positive complement-fixation test and gives a positive skin reaction.

Dr. Kolmer and I found 78 per cent. positive fixation tests in children suffering from tinea tonsurans. This work was done with controls, not only against various dermatologic affections, but also against syphilis, all of which controls were negative. In performing this reaction, the ringworm fungus was used as the antigen. We inject 0.05 c.c. of a suspension of dead ringworm fungus in salt solution, which has been briefly centrifuged at low speed, so that it is of about the same density as luetin. When we inject it into the superficial skin layer of the arm of children suffering from tinea tonsurans, we obtain reactions in the vast majority of patients with ringworm, and negative results in our controls. In only one instance did we obtain a slight positive result in a case of severe staphylococcic infection. The reaction occurs about twenty-four hours after injection, and a positive result consists in a central nodular area of infiltration and a surrounding reddened areola.

Having demonstrated these two fundamental phenomena, namely, the positive complement-fixation test and the occurrence of a skin reaction in ringworm of the scalp, it is felt that we have evidence beyond peradventure of a doubt that the ringworm fungus elaborates a specific substance which gets into the circulating blood of patients suffering from tinea tonsurans. The fact that there is a specific substance in the serum of these patients indicates the rationale and value of a vaccine treatment of ringworm of the scalp.

As is well known, the hair is but a specialized epidermal structure, which is situated within a hair follicle. The hair follicle is a cylindric tube which dips down into the true skin. Each hair papilla is supplied with a capillary loop, derived from the blood plexus of the cutis vera, and it is from this source that the hair receives its nourishment. There is no blood vessel which supplies the hair itself directly.

In the beginning of ringworm of the scalp, the fungus is deposited on the skin, and it grows under the surface of the horny layer. When the fungus in the stratum corneum encounters the mouth of a hair follicle, the mycelia grow into it, increase in size and form a mass around the hair. This mass grows downward toward the bulb of the hair. Some mycelial threads penetrate the hair, while others lie outside of it in the root sheaths.

It is to be seen from the foregoing that in tinea tonsurans, the fungus attacks an epidermal structure which has no blood supply of its own, its nutrition being derived from the capillary loops situated beneath the hair follicles. Still, sufficient ringworm toxin reaches the circulating blood to set up a reaction in the blood serum of patients suffering from ringworm of the scalp, and gives rise to a reagin which is capable of producing a positive complement fixation and also a positive skin test.

The first effort to produce a vaccine of ringworm was that of Plato, who in 1902 described his trichophytins. A culture of the infected hair of a patient with deep nodular ringworm of the beard was grown on a culture medium of 3 per cent. maltose bouillon for from two to three months at room temperature. The growth was ground up as much as possible with a glass rod or strong platinum wire, and filtered through sterilized filter paper, and 25 per cent. phenol (carbolic acid) added.

Von Truffi filtered his culture through Chamberland candles and boiled the filtrate. The trychophytins were found to have practically no influence on the lesions of tinea tonsurans of the ordinary type. Their chief value has been as a method of diagnosis by means of a skin reaction, in some types of ringworm.

In our first effort to make a vaccine from tinea tonsurans, suspicious hairs were obtained from the scalps of three patients. These hairs were soaked in absolute alcohol from fifteen to twenty-five minutes, and then immersed in sterile salt solution and transplanted by sterilized forceps to "French proof agar" medium contained in Erlenmeyer flasks. All the steps in this procedure were carried out under usual laboratory technic. The cotton stoppers of the flasks were paraffined, and the flasks were placed on top of the incubator and allowed to grow for twenty-four days. At the end of this period, in our first efforts, the growth was removed by a sterilized platinum spade, care being taken to remove the growth with as little of the culture medium as possible. The growth was placed in a sterile mortar and rubbed up with a definite quantity of salt solution. The process of trituration was continued for about three quarters of an hour, but the growth at that time was but slightly broken up. The suspension was then placed in a sterilized flask containing sterile glass beads and placed in a shaking machine for three hours, with but little impression on the growth. This suspension was then filtered through sterilized filter paper in order to get rid of the large masses; and when the filtrate was

---

* Read before the Second Annual Session of the American Association of Immunologists at a meeting held in Washington, May 10, 1915.

examined microscopically, only a few spores could be seen in some fields, and in others nothing at all could be seen. It was therefore concluded that it would be useless to experiment with a vaccine of such a character.

It was then suggested that crystals of sodium chlorid, chemically pure, be used to rub up the growth of the cultures, and much to our surprise, the growth, after being triturated from ten to fifteen minutes, was rubbed up so finely as to leave but a few small particles, thus eliminating the necessity of filtering the solution. To this, enough sterile distilled water was added to make normal saline solution.

It is felt that the success obtained by this method of treatment depended on the incorporation of the entire fungus growth in the vaccine; the failure of the tricophytins of Plato was probably due to the fact that the culture suspension was subjected to filtration. Too much stress cannot be laid on this point of difference, and too much emphasis cannot be placed on the necessity of thoroughly rubbing up the ringworm growth.

From the growth on an ordinary Erlenmeyer flask, about 500 c.c. of vaccine was made up. To this from 8 to 10 c.c. of chloroform was added to kill the growth, and the vaccine heated for one hour at 60 C.; the use of the chloroform was latterly discontinued.

Controls for living fungi were made on French proof agar, and for pyogenic organisms on plain agar. The vaccine was preserved by the addition of sufficient phenol to bring it up to 0.25 per cent. It was then tubed in sterile vials, and was ready for use. We have made a sensitized ringworm vaccine, using the serum of a rabbit immunized against ringworm, but we concluded that it was inferior to the ordinary vaccine, its disadvantage probably being in the second sterilization made necessary by this technic.



Fig. 1.—E. W. (Case 9) before treatment.

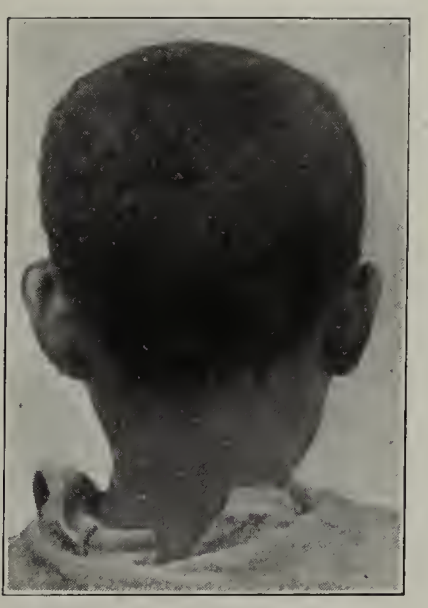


Fig. 2.—E. W. (Case 9) after treatment.

The vaccine may be employed in doses of from 0.5 up to 4 c.c. It has been found of no value to employ so large a dose as the latter, the usual dose varying between 0.5 and 2 c.c. The injections were at first given at intervals of three days, but after a more prolonged experience, it was deemed advisable to give them every five or six days. The region between the scapulae, where there is considerable loose tissue, and the buttock were the areas chosen for injection, preference being given to the former. About thirty-six hours after injection, but only after the patient has had six or seven injections, an infiltrated area develops at times at the point of injection. The infiltration may be made to disappear by discontinuing treatment and painting the area with tincture of iodin and applying a dressing of ichthyol ointment once daily.

In no instances were there any constitutional reactions following the injection.

The number of injections varied from seven in some instances to twenty-two in others. No case was considered cured until the hair from the area treated and the vicinity had been examined microscopically and found to be devoid of fungus. In a majority of instances, the hair was also submitted to Dr. J. F. Schamberg and to Dr. Kolmer, who subsequently examined it and confirmed the absence of the ringworm parasite.

The vaccine may affect the infected hair in one of two ways: First, each hair may be the seat of a follicular abscess and thus lead to the extrusion of the hair, or second, there may develop a crust over an area, as result of an inflammation beneath, and with the falling off of the crust the infected hair also go with it. While the stock vaccine suffices in the vast majority of instances, in a very limited number, an autogenous vaccine becomes necessary.

In treating a case of ringworm of the scalp, we adopt the following procedure: Hair infected with the fungus is planted on French proof agar, according to the technic previously described, both for the purpose of determining the type of infection and for the purpose of treatment.

We then inject the patient with our stock vaccine, once every five days, giving five injections, starting the first injection with 0.5 c.c. and giving 1 c.c. for the second and third doses and 2 c.c. for the fourth and fifth injections. We then advise the use of local treatment in conjunction with the vaccine. We suggest oil of cade and olive oil, equal parts, to be used twice a day for a period of two weeks, meanwhile giving 1.5 c.c. of the vaccine every six days. This local treatment is then to be followed by the use of an ointment, say, 20 grains of precipitated sulphur and 1 ounce of petrolatum, which may be applied once a day for a period of two weeks. Treatment by vaccine extending over a period of between three and four months usually suffices for a cure. If, after seven or eight injections, no improvement is noticed, the stock vaccine should be discontinued and an autogenous one employed.

Up to date, at the Philadelphia General Hospital we have treated twenty patients with ringworm of the scalp of various grades of severity, with the following results:

Cured, 14.
Markedly improved, and still under treatment, 1.
Improved, and still under treatment, 1.
Improved, but left before treatment could be completely carried out, 3.
Died from measles with an intercurrent pneumonia, 1.

All of these patients were treated with vaccine only, a weak ointment being used to stimulate hair growth in three cases, but only after repeated examinations proved the hair to be devoid of fungus. Following are the histories of patients treated with this vaccine:

Case 1.—S. S., colored boy, aged 5 years, admitted to the Philadelphia Hospital, Jan. 16, 1914, received infection four months before. The condition was generalized over the entire scalp. Infection was due to the microsporon. Treatment began April 26, 1914. No other treatment was applied to the scalp. He received vaccine injections as follows: April 26, 0.5 c.c.; April 30, 1 c.c.; May 5, 1 c.c.; May 8, 1 c.c.; May 11, 1 c.c.; May 14, 1 c.c.; May 18, 1 c.c.; at this time marked improvement was noticed. May 21, 1 c.c.; May 24, ⅔ c.c. Patient was kept under observation for six months and then discharged, cured.

Case 2.—A. M., girl, aged 9 years, white, one of three children, received infection from her brother. She had but one patch about the size of a palm and one very small patch. The microsporon was found to be the infecting fungus. Dates and doses of vaccine administrations were as follows: May 24, 1 c.c.; May 27, 1 c.c.; May 30, 1 c.c.; June 2, 1 c.c.; June 7, 1 c.c.; marked improvement resulted. June 10, 1 c.c.; June 13, 1 c.c.; June 17, 1 c.c; the patient was cured. She remained in the hospital about two weeks, and was then taken home by parents, cured.

Case 3.—J. M., boy, aged 6 years, white, was admitted to the Philadelphia Hospital, Feb. 26, 1913. No history could be obtained as to duration of affection previous to admission. He had all sorts of local treatment without avail. April 26, vaccine treatment was instituted and all local treatment discontinued. Examination of hair showed microsporon infection. April 26, 0.5 c.c.; April 30, 1 c.c.; May 5, 1.5 c.c.; May 8, 1 c.c. There was no improvement, and hair was taken for making autogenous vaccine. May 11, 1 c.c.; May 18, 1 c.c.; May 21, 1 c.c.; May 24, 1.5 c.c. Some improvement was noticed. May 27, 2.5 c.c. July 10, new vaccine was given, each cubic centimeter of which contained ⅓ c.c. of autogenous vaccine, the remaining two thirds being stock. July 10, 1 c.c.; July 14, 1.5 c.c.; July 18, 1.5 c.c.; July 22, 1.5 c.c.; July 26, 1.5 c.c.; July 30, 1.5 c.c.; August 4, 1.5 c.c.; August 8, 1.5 c.c. The patient was discharged, cured. Patient received in all seventeen injections. The hair of this patient was examined on three different occasions and reported negative. At the last examination, Drs. Schamberg and Kolmer also examined the hair, and pronounced it free of fungus. This patient had an associated seborrhea sicca, which yielded promptly to a weak sulphur ointment.



Fig. 3.—H. B. (Case 12) before treatment.



Fig. 4.—H. B. (Case 12) after treatment.

Case 4.—B. L., girl, aged 11 years, white, had had the disease one and a half years. In the latter part of December, 1913, she was given Roentgen-ray treatment by Dr. G. E. Pfahler, which failed to cure. August 12, 1914, she was admitted to Blockley. Examination of hair showed microsporon infection. Patch was limited to vertex of scalp. August 19, 1 c.c. sensitized vaccine. August 23, 1 c.c. sensitized vaccine. September 8, 1 c.c.; September 21, 1 c.c.; September 27, 1 c.c.; October 3, 1 c.c. Discharged cured after examination of hair proved absence of fungus.

Case 5.—W. H., colored boy, aged 10 years, was admitted to Blockley, Sept. 10, 1914. Diagnosis, tinea kerion. Mother says that child caught the disease in school. Had it since Christmas, 1913. Child received ten injections, from September 13 to October 17, inclusive. Discharged in latter part of November, 1914, cured.

Case 6.—J. S., boy, aged 7 years, white, had infection eight months previous to admission to Blockley, which was Aug. 18, 1914. Sister stated that the condition started on the scalp as a small scaly area and spread rapidly, involving other areas. Parents consulted the skin clinics in various hospitals without noticing any improvement in the boy's scalp. At the Pennsylvania Hospital the scalp was treated by Roentgen ray, but no cure was obtained; in short, the infection resisted all treatment. The microsporon was found in the hair. The patient received two injections of sensitized vaccine and eleven injections of ordinary ringworm vaccine. The treatment terminated November 23. Child was kept under observation for one month and was discharged cured, after an examination of the hair failed to disclose the presence of the fungus.

Case 7.—C. S., boy, aged 4, white, brother of Patient 6, admitted to Philadelphia Hospital Aug. 18, 1914, received two injections of sensitized vaccine and thirteen injections of ordinary vaccine, and was discharged cured at the same time as his brother.

Case 8.—C. L., colored boy, aged 5, was admitted to Blockley, Dec. 15, 1913, in service of Dr. Hartzell. The exact duration of the ringworm infection could not be ascertained. The infection invaded the entire scalp. Treatment with vaccine was begun April 26, 1914. The boy was given thirteen injections and was pronounced cured, but as is our custom, he was kept under observation for some time. About one month after cessation of treatment, in playing with the ringworm children, he developed a reinfection, and after twelve more injections the hair became normal again. After being kept under observation for six weeks, he was discharged cured, four different examinations of the hair having failed to show any fungus.

Case 9.—E. W., colored boy, aged 7, was admitted to Blockley April 29, 1914. Duration previous to admission was unknown. Infection of the scalp was general. The type of fungus was the microsporon. The patient received fourteen injections with marked improvement. He then developed the peculiarity of forming abscesses at the seat of injection, if he was injected more frequently than once a month. He received five injections scattered over a period of several months. His improvement continued, until now his scalp is absolutely normal, repeated examinations of his hair having failed to show the ringworm fungus.

Case 10.—C. L., colored boy, aged 6, was admitted to Blockley Aug. 2, 1914. Infection antedated his admission by six months. He had a large patch on the occipital area of his scalp about the size of two silver dollars, and several small scattered patches over his scalp. His infection was of the microsporon type. He received fifteen injections in all, and after being kept under observation for one month, and after repeated examinations of his hair failed to show the ringworm fungus, he was discharged, cured.

Case 11.—E. C., boy, aged 5, white, was admitted to the Philadelphia General Hospital Sept. 1, 1914. No previous history was obtainable. He had a microsporon infection which involved the greater part of the scalp. He received in all eighteen injections, and after three examinations of his hair, all of which proved negative as to the presence of the ringworm fungus, he was discharged, cured.

Case 12.—H. B., boy, aged 7, white, was admitted to the Philadelphia General Hospital Nov. 13, 1914. His infection antedated his admission by three months. He had a microsporon infection which involved a considerable part of the front aspect of the scalp. He received ten injections. He was kept under observation for five weeks, during which time

his hair was examined four times and each time failed to disclose the presence of the ringworm fungus.

CASE 13.—J. F., boy, aged 9, white, was admitted to the Philadelphia General Hospital Sept. 9, 1914. Infection antedated his admission by six months. An examination of his scalp disclosed the presence of tinea kerion. He received six injections and was discharged cured after the usual time of observation and three negative hair examinations.

CASE 14.—A. H., boy, aged 7, white, admitted to Blockley March 7, 1915, stated that he had the infection a long time previous to admission. Examination showed four patches, each the size of a quarter dollar, scattered over the scalp. He received eight injections, and the patches are now free of fungus, although the hair has not at present all grown in.

CONCLUSIONS

From an experience with this method of treatment extending over one year, I may conclude that tinea tonsurans is curable with vaccines beyond peradventure of a doubt. Although my record of cases is still small, I firmly believe that the vast majority of patients suffering from ringworm of the scalp can be cured by this method alone.

As Allen has aptly said, in addition to the vaccines, sufficient blood supply containing antitoxic material must reach the area of infection before we have what are considered ideal conditions for the success of this method of treatment. It is felt, therefore, that in recommending some form of local treatment after sufficient vaccine had been administered to arouse the antitoxic elements of the blood, so as to antagonize the toxin of the ringworm fungus, we establish as near as possible an ideal condition, although the results quoted in this paper were obtained by vaccines only, without the aid of local therapy, the object being to give this mode of treatment a crucial test before recommending it to the profession.

It is therefore to be seen that we have in the vaccine treatment of ringworm of the scalp a safe and efficient method of treatment, one that can be carried out at home, that is devoid of danger and that can accomplish a cure in a comparatively short space of time. The Roentgen-ray method, while efficient, can be carried out only by an expert, requires expensive apparatus, and may lead to permanent alopecia, which, in the case of a girl, would be a most distressing disfigurement. From my experiences, the Roentgen ray possesses no advantages over the vaccine method of treatment.

4037 Girard Avenue.

GASTROJEJUNAL ULCERS

THEIR ROENTGENOLOGIC AND SURGICAL ASPECTS *

RUSSELL D. CARMAN, M.D.
AND
DONALD C. BALFOUR, M.D.
ROCHESTER, MINN.

In any case in which gastro-enterostomy has been performed for symptoms due to a definite demonstrable lesion and has been followed by comfort for a varying period, and then by recurrence of certain or all the symptoms in greater or less degree, to determine the cause of the recurrence often occasions considerable perplexity. Without discussing the various possible causes, we wish to refer to the fact that the occasional disappointing result is due to the development of another ulcer in the vicinity of the gastro-enterostomy. These ulcers have been variously described as gastrojejunal and jejunal ulcers, and it is quite probable that cases of jejunal ulcer have been reported which were essentially gastrojejunal, and vice versa. Thus in reviewing the literature one is confronted with considerable difficulty in selecting cases of undoubted gastrojejunal ulcer.

Paterson[1] was one of the first to draw attention to these ulcers, and his comprehensive article refers to fifty-one other cases collected from the literature up to that time, fourteen of which were apparently true gastrojejunal ulcers. Other cases have been reported by W. J. Mayo,[2] Moynihan and Tatlow,[3] Mayo Robson[4] and Soresi.[5] From the records of our clinic we have been able to collect thirteen cases not hitherto reported. The salient facts of these are shown in Tables 1, 2 and 3.

A study of this group of thirteen cases does not enable us to state any symptoms or group of symptoms, or any physical findings which will be actually

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Paterson, H. J.: Jejunal and Gastrojejunal Ulcer Following Gastrojejunostomy, Ann. Surg., 1909, l, 367.
2. Mayo, W. J.: Gastrojejunal Ulcers (Pseudojejunal Ulcers), Surg., Gynec. and Obst., 1910, x, 227.
3. Moynihan, B. G. A., and Tatlow, E. T.: A Case of Transgastric Excision for Gastrojejunal Ulcer, Lancet, London, 1914, i, 739.
4. Robson, Mayo: Trans. Roy. Med. Chir. Soc., 1904, lxxxvii, 339.
5. Soresi, A. L.: Secondary Ulcers of the Stomach and Jejunum, Ann. Surg., 1915, lxi, 328.

TABLE 1.—CLINICAL DATA PRIOR TO SECOND OPERATION

Case Number	Period Between First and Second Operations			Period Free From Symptoms	Onset of Symptoms	Relation of Pain to Food	Location of Pain	Relief of Pain		Vomiting	Character of Vomitus	Food Retention	Tumor
								Food	Soda				
	Yr.	Mo.	Day										
12869	4	10	11	3 years	Gradual, daily past 6 months	Irregular	Epig.	0	0	+	Bitter slime	0	0
69645		8	14	3 months	Gradual	?	?	0	+	0	0	+	0
76684		10	13	6 months complete	Sudden and severe	Increased by food	Left lower abdomen	0	0	+++	Sour, bitter	+	0
101545	16			?	Weekly for years, constant 1 year	?	Right iliac fossa	0	0	++	Retained food	+	+
81306		11	23	1 month	Gradual	0	Epig.	0	?	0	0	0	0
115553*	8	2	27	1 year	Gradual	Increased by solid food	Epig., lower left abd.	0	0	++	Food remnants	+++	At second operation +
96667	1	1		3 months	Gradual	After meals	Epig.	0	+	0	0	++	0
83614	1	5	5	2 months	Gradual	3 hours after meals	To right of and below umb.	+	0	0	0	0	+
98939		10	17	3 months	Gradual	Soon p. c.	Left of umb.	+	+	0	0	0	0
50276	3	3		1 year	Intermittent, spring and fall	10 to 12 p. m.	Epig.	+	+	+	Sour water	+	+
101624	1		21	?	Gradual	3 hours p. c.	?	Milk	0	0	0	0	0
131378		3	21	?	Gradual	3 hours p. c.	Epig.	+	..	+	?	0	0
51115		10	29	3 months	Gradual	2 to 4 hours p. c.	Left hypochond.	+	+	+	Sour	0	At second operation +

* Period between second and third operations, 5 months, 22 days.

pathognomonic of these secondary ulcers. We believe, now, however, that in the patient who is quite relieved by gastro-enterostomy for a period, usually under a year, and then develops symptoms similar to those produced by the original lesion, such symptoms being persistent and unrelieved by any medication, that a

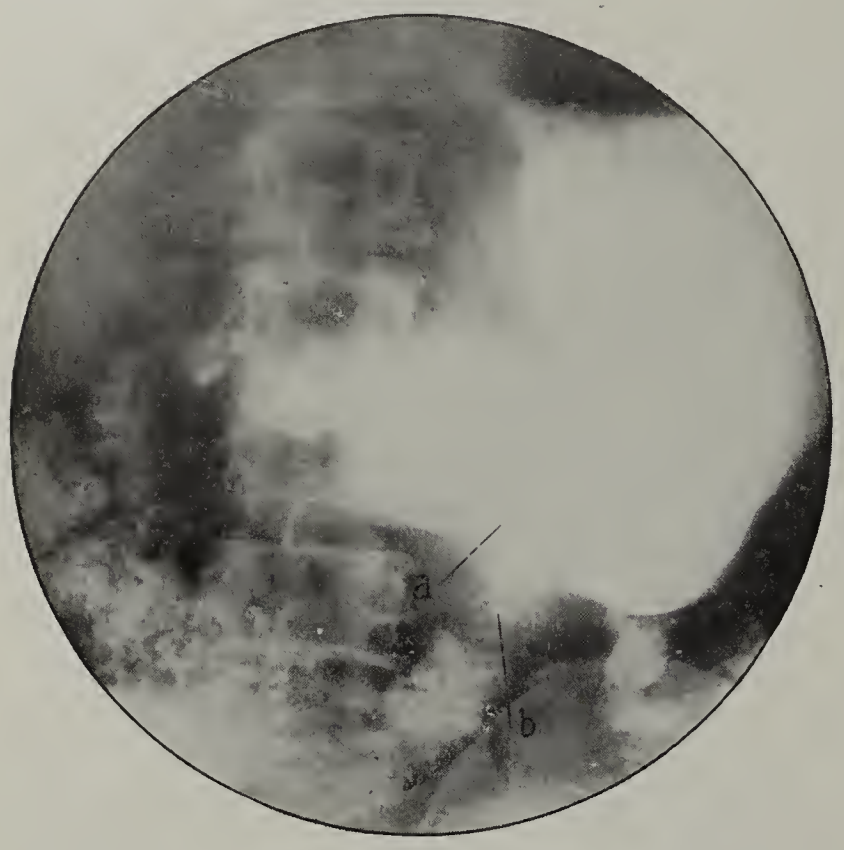


Fig. 1.—Case 69,645. Some irregularity of stoma at *a* with narrowing of jejunum, *b*.

second ulcer has occurred in the region of the anastomosis must be considered a strong possibility. It is most suggestive of a gastrojejunal ulcer if the patient complains of pain, of the same character, relationship to meals and severity, as in the previous trouble, though in a different situation, usually to the left of the midline and below the umbilicus.

Assistance from the Roentgen ray might reasonably be expected in the diagnosis of this condition, although, so far as we are able to learn, gastrojejunal ulcer has received little attention from the roentgenologic point of view. Mathieu and Savignac[6] note that in cases of jejunal ulcer perforating the colon, the Roentgen rays will show direct passage of bismuth into the colon. They state further that the colon may be narrowed by adhesions in the vicinity of the fistula, and the small intestine may be dilated in all or parts of its length. Those conditions are also susceptible of demonstration by roentgenoscopy. Their remarks seem to be based largely on some cases reported by Lion and Moreau,[7] who collected five cases of jejunocolic fistula, including two of their own. One of these was examined with the Roentgen ray by Beclere.

Those of our cases of gastrojejunal ulcer which were examined by the Roentgen ray were all of a non-fistulous type. Admitting that the patients are too few in number for any hard-and-fast conclusions to be sustained, it is perhaps worth while to relate the Roentgen-ray findings and analyze them so far as possible.

6. Mathieu, A., and Savignac, R.: Étude sur les troubles intestinaux consécutifs à la gastroentérostomie, Arch. d. mal. de l'app. digest., 1913, vii, 541.

7. Lion, G., and Moreau, Ch.: La fistule jejunocolique par ulcère peptique du jejunum à la suite de la gastroénterostomie, Rev. de Chir., 1909, xxxix, 873.

Eleven of the patients were subjected to roentgenoscopy with the following results:

CASE 1 (12,869).—First operation, Aug. 1, 1908; posterior gastro-enterostomy for perforating duodenal ulcer. Roentgenoscopy, June 6, 1913, showed the gastro-enterostomy moderately patent. A filling defect was noted in the greater curvature, pars media, at the site of the stoma. There was no retention from the six-hour meal. The stomach was of average size and peristalsis was normal. No barium was seen passing pylorus at the time of the examination.

CASE 2 (69,645).—First operation, Oct. 10, 1912; posterior gastro-enterostomy for calloused duodenal ulcer. Roentgenoscopy, June 14, 1913, showed the gastro-enterostomy patent but not freely so. Some irregularity of the stoma was not well shown in the plate. The stomach was slightly larger than the average gastro-enterostomized stomach; it was freely mobile, showing normal peristalsis. The duodenal bulb was irregular; the pylorus was free. There was no six-hour retention (Fig. 1).

CASE 3 (76,684).—First operation, Dec. 5, 1912; posterior gastro-enterostomy for perforating duodenal ulcer. Roentgenoscopy, Oct. 5, 1913, showed no retention from the six-hour meal. The stomach was larger than the average; its mobility was lessened. There was hyperperistalsis. The gastro-enterostomy was not freely patent. A marked filling defect was present on the greater curvature about the stoma. Barium in considerable quantity could be pressed through pylorus. The bulb was irregular.

CASE 4 (81,306).—First operation, March 24, 1913; posterior gastro-enterostomy for large posterior duodenal ulcer with contact ulcer. Roentgenoscopy, Feb. 5, 1914, showed the stomach quite large and mobile. Peristalsis was vigorous. There was no six-hour retention. The gastro-enterostomy was patent.

CASE 5 (115,553).—First operation in 1906; anterior gastro-enterostomy for duodenal ulcer and hour-glass stomach. First

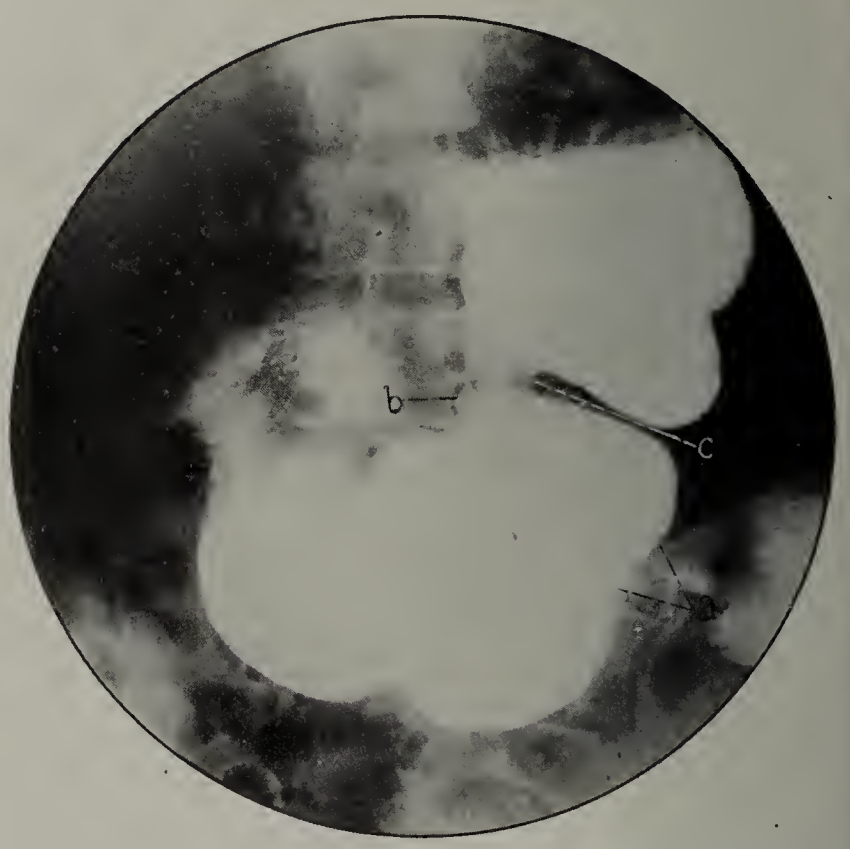


Fig. 2.—Case 115,553. (Prior to second operation.) Slight irregularity of stoma, *a*, which is not freely patent; niche of gastric ulcer on lesser curvature at *b*; hour-glass constriction at *c*.

roentgenoscopy, Sept. 21, 1914, showed retention of one-fourth the six-hour meal and a large hour-glass stomach. A niche appeared on the lesser curvature. There was hyperperistalsis. The pylorus was very patent. The gastro-enterostomy was only moderately patent, with a slight irregularity about the stoma and narrowing of the efferent jejunum (Fig. 2).

A second operation was done Sept. 26, 1914, for gastric and gastrojejunal ulcer, with excision of the gastrojejunal ulcer; posterior gastro-enterostomy.

A second roentgenoscopy, March 11, 1915, showed retention of half the six-hour meal, the residue being between the stoma and the pylorus. Notwithstanding this retention, after filling the stomach the gastro-enterostomy seemed patent.

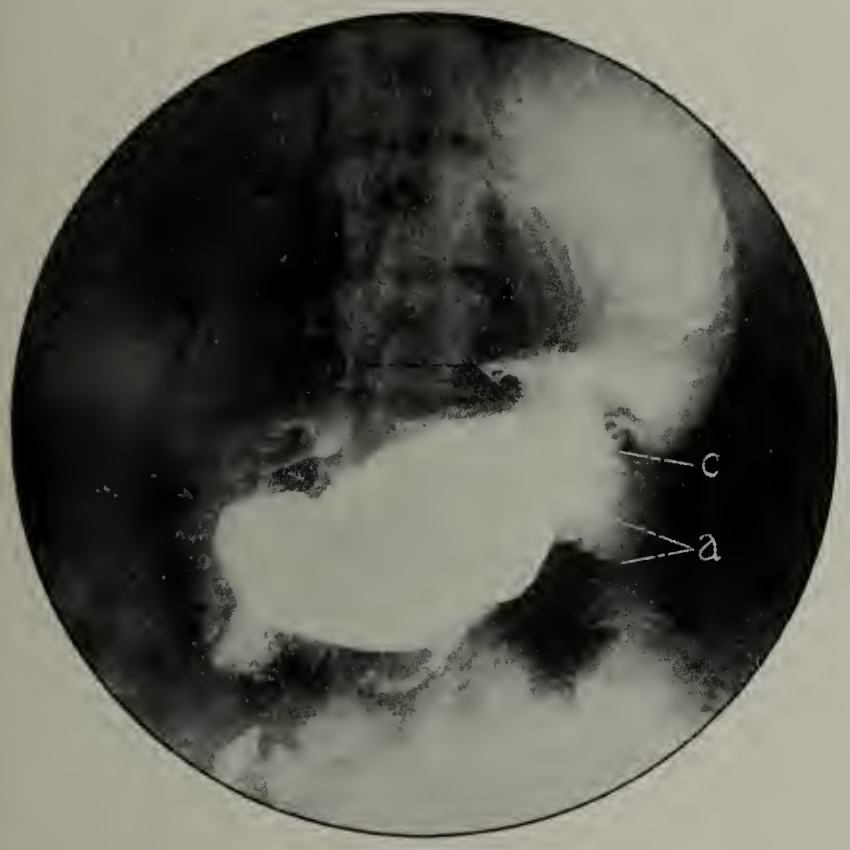


Fig. 3.—Case 115,553. (Prior to third operation.) Some irregularity of stoma and jejunum at *a*; niche of gastric ulcer on lesser curvature at *b*; hour-glass constriction at *c*.

Some irregularity was noted about the stoma. There was an hour-glass stomach. Hyperperistalsis and a niche on lesser curvature were observed (Fig. 3). A third operation was done March 18, 1915, for gastrojejunal ulcer.

CASE 6 (83,614).—First operation, May 14, 1913; anterior gastro-enterostomy for perforating duodenal ulcer. Roentgenoscopy, Oct. 13, 1914, showed the gastro-enterostomy functionating and marked spasticity of the stomach.

CASE 7 (98,939).—First operation, Feb. 10, 1914; posterior gastro-enterostomy for obstructing duodenal ulcer. Roentgenoscopy, Jan. 16, 1914, showed no retention; a stomach of moderate size with diminished mobility, and a patent gastro-enterostomy. A marked filling defect was noted on greater curvature about the stoma; also an irregularity of the first inch of the jejunum (Fig. 4).

CASE 8 (50,276).—First operation elsewhere in November, 1911; posterior gastro-enterostomy for duodenal ulcer. Roentgenoscopy, Feb. 5, 1915, showed a large stomach with retention of one fourth of the meal after six hours. Peristalsis was active; gastro-enterostomy not freely patent; pylorus free. The plates show some irregularity about the stoma. The duodenum was dilated, the jejunum narrowed (Fig. 5).

CASE 9 (101,624).—First operation, March 9, 1914; posterior gastro-enterostomy for chronic perforating duodenal ulcer. Roentgenoscopy, April 27, 1915, showed no retention, the gastro-enterostomy very high on the stomach, and functionating moderately. The pylorus was quite free, the stomach of medium size and mobile with active peristalsis. There was a slight irregularity of the greater curvature about the stoma. The jejunum was narrowed (Fig. 6).

CASE 10 (96,667).—First operation, Dec. 12, 1913; posterior gastro-enterostomy for perforating duodenal ulcer. Roentgenoscopy, Dec. 6, 1913, showed retention of half the six-hour meal. There was hyperperistalsis. The gastro-enterostomy was not freely patent; the stoma was irregular, the jejunum narrowed, the stomach large, the duodenal bulb irregular. The pylorus was free (Fig. 7).

CASE 11 (131,378).—First operation, elsewhere, Feb. 6, 1915; posterior gastro-enterostomy for reasons not known. Roentgenoscopy, May 24, 1915, showed a small gastro-enterostomized stomach with gastro-enterostomy functionating. There was no six-hour retention.

For convenient comparison, the Roentgen findings are assembled in the accompanying tabulation:

TABLE 2.—ROENTGEN FINDINGS IN ELEVEN CASES OF GASTROJEJUNAL ULCER

Roentgen-Ray Findings	Case Number										
	50276	83614	81306	76684	98939	12869	69645	96667	115553	101624	131378
Deformity about stoma	+	..	..	+	+	+	+	+	+	+	..
Exaggerated peristalsis	+	..	+	+	..	..	..	+	+	+	..
Large stomach	+	..	+	+	Mod.	Aver.	+	+	..	..	..
Gastro-enterostomy not freely patent	+	..	..	+	..	Mod.	+	+	+	Mod.	..
Retention from six-hour meal	+	..	..	..	..	..	..	+	+	..	..
Lessened mobility of stomach	..	..	..	+	+	..	..	..	..	..	..
Dilatation of duodenum	+	..	..	..	..	..	..	..	..	..	..
Spasticity of stomach	..	+	..	..	..	..	..	..	..	..	..
Irregularity of jejunum	+	..	..	..	+	..	..	+	+	+	..

Noteworthy is the fact that of the eleven patients examined ten showed abnormalities not customarily seen in the gastro-enterostomized stomach. After gastro-enterostomy the following conditions are found normally:

1. The opaque meal passes freely through the stoma. This is the rule, subject to occasional exceptions, even after the lapse of years.
2. No retention is present in the stomach from the six-hour meal.
3. The duodenum is not dilated.
4. The stomach is usually small.
5. Peristalsis is not overactive.

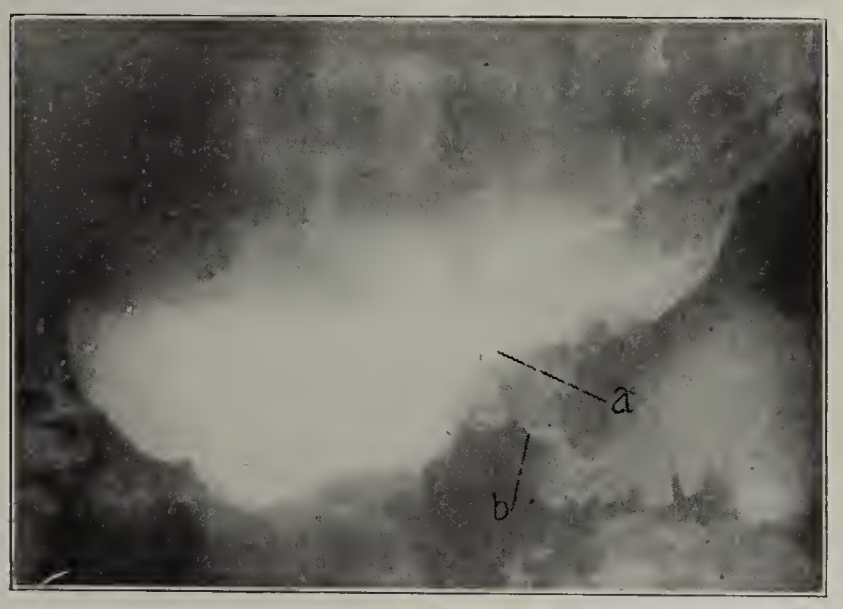


Fig. 4.—Case 98,939. Deformity about stoma at *a* and first inch of jejunum at *b*.

6. The gastric contour in the vicinity of the stoma is not usually deformed, save for a slight dimpling at that point occasionally.
7. The efferent limb of the jejunum is neither narrowed nor markedly irregular in outline.
8. Extensive adhesions about the stoma simply as a result of operation are uncommon, and the stomach is at least moderately mobile.

9. The stomach is not deformed (unless by the original lesion or its resection) and has no tendency to hour-glass form or spasticity.

Summarizing the phenomena observed in this series, we note:

Deformity of contour about stoma	8 cases
Exaggerated peristalsis	6 cases
Large stomach	5 cases
Gastro-enterostomy not freely patent	5 cases
Retention from six-hour meal	3 cases
Lessened mobility of stomach	2 cases
Irregularity of jejunal contour near stoma	5 cases
Dilatation of duodenum	1 case
Spasticity of stomach	1 case

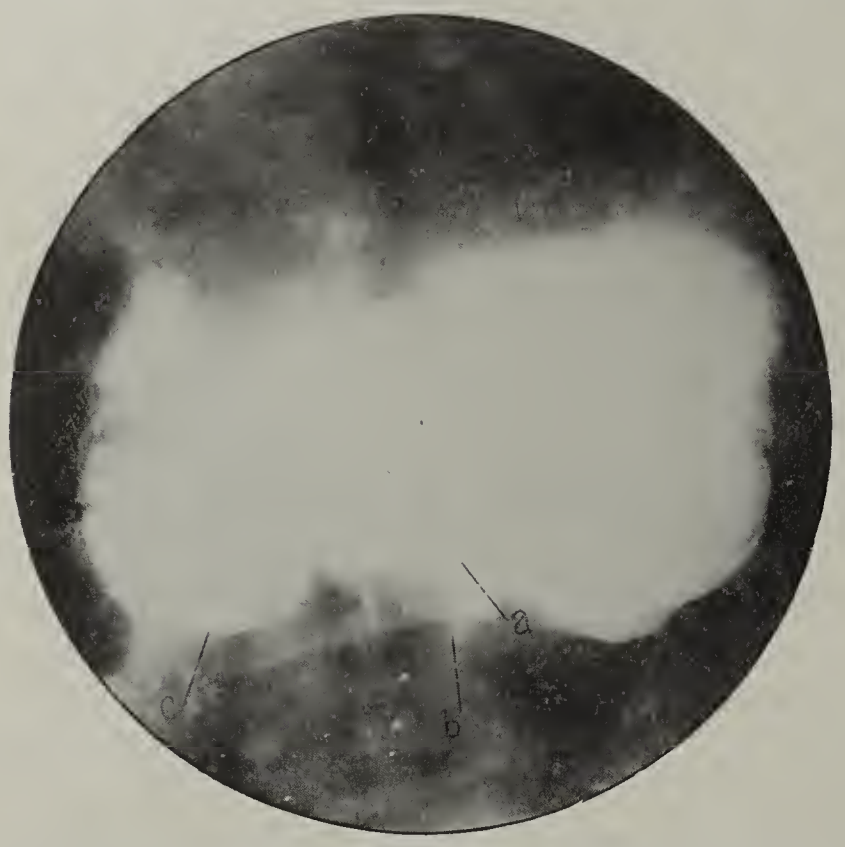


Fig. 5.—Case 50,276. Large stomach. Irregularity about stoma at *a*; jejunum, *b*, not freely patent, as shown by the small amount of barium passing through it; duodenum, *c*, dilated.



Fig. 6.—Case 101,624. Slight irregularity about stoma at *a*; narrowing of first inch of efferent jejunum, *b*.

These signs may be classified in two groups: (*a*) those indicative of secondary pathology; (*b*) more direct signs pointing to the seat of pathology.

The first group includes retention from the six-hour meal, large size of the stomach, exaggerated peristalsis, lessened mobility of the stomach and spasticity. The first three mentioned, though sometimes resulting from other conditions, are fair indications of obstruction, and of strong significance in the gastro-enterostomized stomach with its presumptively free drainage. Lessened mobility, a feature which is not often accurately determinable, can be attributed to the production of an unusual amount of adhesions. Spasticity of the stomach, which was the sole abnormality noted in one case, simply pointed to an irritable focus, either within or without the stomach, producing spasm reflexly.

The second group is of more importance in localizing the probable seat of trouble. This group comprises deformity of contour about the stoma, deficient patency of the stoma, local irregularity of the jejunal contour, and dilatation of the duodenum. Deformity about the stoma varied in degree as seen in this series but was sufficiently marked to attract attention in eight of the cases. In five instances the jejunum also showed definite irregularity near the stoma. Impaired functioning of the gastro-enterostomy with diminished discharge of the barium meal through it was found in half the cases examined. In one case considerable dilatation of the third portion of the duodenum was observed, suggestive of obstruction not far beyond.



Fig. 7.—Case 96,667. Large stomach with deformity of stoma at *a*; narrowing of jejunum at *b*; note hyperperistalsis; peristaltic waves at *c*.

The question arises: How far can the diagnosis of gastrojejunal ulcer be carried by the Roentgen ray? If this series be a sufficient basis for judgment, it would appear that in nearly all cases there are definite roentgenologic indications of an abnormal condition, and that in many instances there are more or less direct signs pointing to the location of the trouble. The most direct index of gastrojejunal ulcer noted in this series was marked deformity about the stoma. The nature of the ulcer rather precludes any

probability of visualizing its crater as a niche such as is often seen in penetrating gastric ulcer; but in eight of the eleven cases examined an unwonted deformity and irregularity of and about the stoma indicated a pathologic process in that neighborhood. At present the Roentgen ray alone seems unable to go farther than this; however, a correlation of the Roentgen findings with the clinical data should aid materially in deciding whether a gastrojejunal ulcer is probably present or not.

The gross pathologic picture in our own cases and in those reported in the literature is more or less constant. The ulcers we have observed were of considerable size, from 1 to 3 cm. in diameter. They actually involved the anastomosis, with a tendency to spread to greater extent on the jejunal than on the gastric side. Common to all and most striking is an associated marked induration of the entire line of anastomosis with firm adhesions to surrounding structures. This in three of the cases produced a palpable mass, especially prominent in the anterior gastro-enterostomy cases. Subacute perforation has been the rule, and in one case produced a fistula between the stomach and transverse colon.

Of greatest interest, in the findings, has been the discovery of strands of unabsorbed permanent suture material, in six of the thirteen cases (Figs. 8 and 9). This retained suture material may have constituted an important etiologic factor. The condition has been reported by other observers, W. J. Mayo in 1910 reporting retained linen in one of three cases of gastrojejunal ulcers; Moynihan and Tatlow one in 1914; Soresi one in 1915. So far as can be determined, Berg[8] reported the first case of retained suture material following gastro-enterostomy. The patient had had an anterior gastrojejunostomy in 1895 for pyloric stenosis. In 1898 Berg reoperated by the Roux method, and the tissue removed showed a gastrojejunal ulcer in which was a coil of retained silk suture.



Fig. 8.—Stitch attached in gastrojejunal ulcer with end hanging in jejunum. Note the scar tissue behind the ulcer causing permanent thickening and adhesions.

8. Berg: Reported by E. Key, Den kirurgiska behandlingen af ulcus ventriculi, Nord. med. Ark., 1907, vii, No. 3, 1-95.

TABLE 3.—FIRST AND SECOND OPERATIONS

Case Number	Age	Date First Opera.	First Operation	Findings First Operation	Date Second Oper.	Findings Second Operation	Probable Cause of Gastrojejunal Ulcer	Second Operation
12869	64	8/ 1/08	Post. gastro-enterostomy	Large perf. duod. uleer	6/12/13	Large gastrojejun. uleer, mostly gast.	?	Sep. of gastro-enteros.; mod. Finney
69645	55	10/10/12	Post. gastro-enterostomy	Calloused duod. ulcer...	6/24/13	Gastrojejun. uleer	Knot of linen in region of uleer	Exeis. of uleer; gastro-enter. enlarged
76684	41	12/ 5/12	Post. gastro-enterostomy	Perf. gastro-enterostomy	10/18/13	Gastrojejun. ulcer, ant. margin	Linen hanging in anastomosis	Exeis. of uleer; gastro-enter. enlarged
101545	46	1898	Ant. gastro-enterostomy; Murphy button	Pyloric obstruetion.....	3/17/14	Large gastrojejun. uleer	?	Ant. gastro-enteros.
81306	49	3/24/13	Post. gastro-enterostomy	Large post. duod. ulcer; contact ulcer	3/17/14	Gastrojejun. ulcer	Linen hanging in anastomosis	Pyl. div., gastro-enteros. enlarged
96667	51	12/12/13	Post. gastro-enterostomy	Large perf. duod. ulcer	10/12/14	Gastrojejun. uleer	Linen hanging in anastomasis	Finney on jejunum
83614	48	5/14/13	Ant. gastro-enterostomy	Large perf. duod. uleer	10/19/14	Gastrojejun. uleer, indurated	?	Gastro-enteros. eut off. Resect. Pyl. Billroth No. 1
98939	30	2/10/14	Post. gastro-enterostomy	Obst. duod. ulcer.....	1/27/15	Jejun. uleer, perf. post.	? Interrupted silk suture	Finney on duod. gastro-ent. eut off
50276	35	11/1911	Post. gastro-enterostomy elsewhere	Duod. ulcer	2/11/15	Small gastrojejun. uleer, abscess posterior	?	Gastro-enteros. eut off; Finney pyloro.
101624	40	3/ 9/14	Post. gastro-enterostomy	Chron. perf. duod. ulcer	4/30/15	Large gastrojejun. ulcer	?	Exeis. of uleer; horseshoe plastie
131378	42	2/ 6/15	Post. gastro-enterostomy elsewhere	?	6/ 2/15	No evidence of gastrie or duod. uleer; gastro-enteros. high on fundus; gastrojejun. ulcer	Long loops silk sutures	Exeised gastrojejunal uleer; closure gastro-enteros.
51115	51	4/ 1/11	Post. gastro-enterostomy	Large contracting duod. uleer	2/29/12	Large gastrojejun. uleer, mostly gast.	?	Gastro-ent. eut off; Finney for strieture of healed duod. ule.
115553*	44	6/29/06	Ant. gastro-enterostomy 2d oper., post. gastro-enterostomy; plastic tor g-j ulcer	Duodenal uleer; hour-glass stomaeh 2d oper., gastrie uleer; hour-glass stomaeh; gastrojejunal uleer	3d Oper. 3/18/15	3d oper., large gastrojejun. uleer, contraeted opening	3d operation, linen sutures in uleer	3d oper.; gastro-enteros. eut off, Finney

* Second operation 9/26/14.

Regardless of whatever associated conditions may exist which predispose to the formation of these ulcers, we must accept the retained unabsorbable suture as of immediate importance. In the Mayo clinic as a means of prevention the technic for gastro-enterostomy has been modified to the extent that (1) a few interrupted sutures of fine silk are used as stay-sutures for the serosa, and (2) running sutures of chromic catgut are used for all other purposes. Strangulation of tissue by sutures is avoided in these cases, the mucosa is carefully coapted, accurate hemostasis is sought, trauma avoided, and a sufficiently large opening, suitably placed, is made.

There is no one surgical procedure which can be adopted as an operative measure in the treatment of all gastrojejunal ulcers. The difficulties which the individual case presents are usually dependent on marked induration and inflammatory changes surrounding the anastomosis. In the presence of this induration and infection, plastic operations on the anastomosis with removal of the ulcer are associated with corresponding technical difficulties. Nevertheless, this is the general indication and proves itself to be the method of choice in the majority of cases. In some it has been possible and advisable to excise the anastomosis, close the openings in the stomach and jejunum, and do a pyloroplasty, an operation, however, which also presents difficulties on account of the scar tissue which always exists in the neighborhood of the original ulcer.

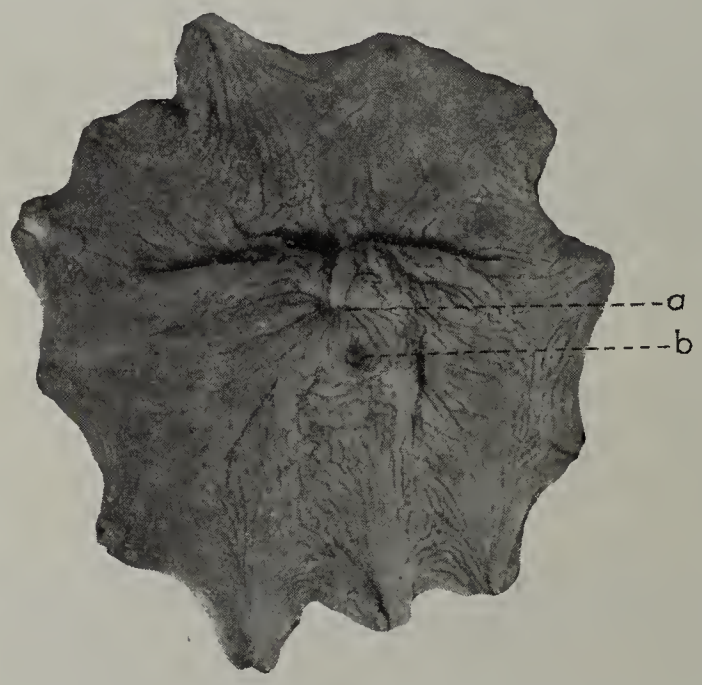


Fig. 9.—Small ulcer about 1 cm. in diameter around the suture; *a* locates the puckering of the healed mucosa; *b* is the ulcer, near the center of which is the suture.

Transgastric excision may be satisfactory in an occasional case, Moynihan reporting a good result from this method in one instance.

The general plan, therefore, in the light of our present information, is to expose the line of anastomosis by either a transgastric or transjejunal incision, search for retained suture and for the ulcer, remove both, the latter either by itself or with the entire anastomosis. If the anastomosis is constricted, and enlargement is possible and safe, such treatment is satisfactory; if, however, much induration and infection exist, excision of the anastomosis, closure of openings, and gastroduodenostomy are indicated.

It is to be expected that an operation which has developed such widespread and warranted popularity as gastro-enterostomy should occasionally be associated with results which are not satisfactory; yet the comparatively low percentage of patients who are not relieved of their symptoms by gastro-enterostomy should not deter us from investigating the causes of these few failures and attempting still further improvement in their diagnosis and prevention.

Vitality and Disease.—The diminution of vitality is, generally speaking, the cause of diseases in the human being. Especially does this condition favor the appearance of tuberculosis. If we wish to combat tuberculosis we must seek to raise the vitality, not only of the individual, but of the nation.—G. Schenker Aran.

THE ABSORPTION OF DRUGS FROM THE NASAL SUBMUCOSA OF DOGS*

J. D. PILCHER, M.D.
OMAHA

The absorption of epinephrin from the nasal submucosa of dogs was reported about a year ago.[1] When injected into the submucosa of the anterior turbinals or of the septum, the absorption is usually very rapid, occasionally approximating that of an intravenous injection. The investigation has been extended by the employment of other drugs — alkaloids, potassium iodid, nitroglycerin, etc. — and it was found that these also are usually rapidly absorbed. A few, however, were rather slowly absorbed, but the difference depends, in all probability, not so much on the nature of the drug as on the experimental difficulties of introducing the drug into like parts of the submucosa. More extended work would probably show that there was little difference in the relative rate of absorption, but from the number of successful results, this was thought to be necessary.

METHODS

Dogs were employed under morphin-ether anesthesia. Most of the drugs used have a marked action on the blood pressure, so that this was taken as an indication of the absorption of the drug; the pressure was taken from the carotid artery. The presence of the drug in the urine indicated the absorption in the case of potassium iodid and methylene blue. The drugs were injected into the submucosa of the anterior turbinals or, less frequently, into the septum from a glass-barrel syringe. The quantity injected was usually from about 0.5 to 1 c.c.; this small amount tended to prevent overdistention of the tissues, and the escape of the injected fluid. As with epinephrin, it was found that generally the absorption was more rapid when the solution was introduced under considerable pressure, although there were numerous exceptions to this statement. The dogs differed considerably in the number of successful results; in some, the majority of injections showed rapid absorption of the drug, but in others, the absorption was very slight or failed entirely. This fact probably depends on differences in the anatomic structure of the parts, for a large turbinal would probably afford a better absorbing surface; a comparison of the gross structure of the parts was not made, however. The number of injections into any one animal was somewhat limited, as repeated puncture of the tissues led to the escape of the injected fluid and to minor hemorrhage that interfered with the injection. The drugs will be discussed singly.

HISTAMIN

Histamin (beta-iminazolylethylamin hydrochlorid) was absorbed promptly in each of five experiments;

* From the Pharmacological Laboratory, College of Medicine, University of Nebraska.

1. Pilcher, J. D.: The Absorption of Epinephrin from the Nasal Submucosa, THE JOURNAL A. M. A., July 18, 1914, p. 209.

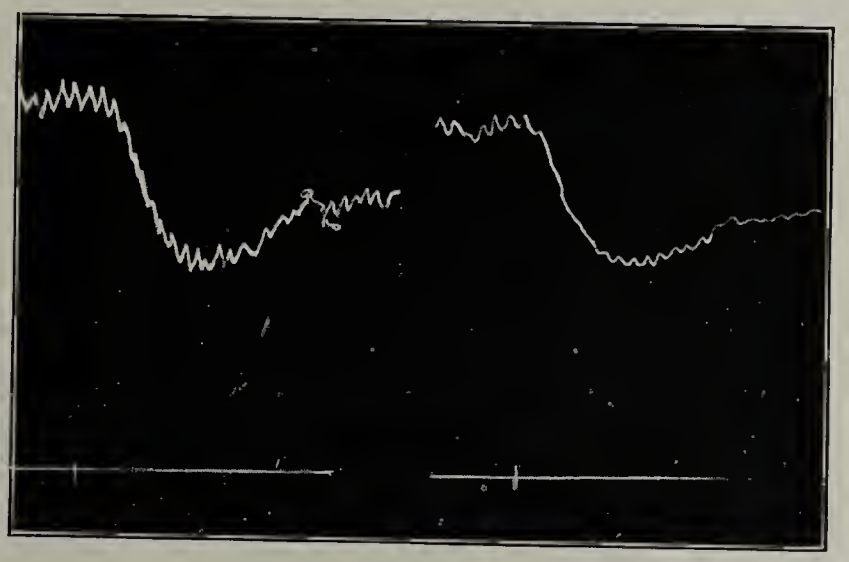
the average fall in blood pressure was from 5 to 30 mm. (as indicated in the tracings). This was considerably less than the average fall (40 mm.) in three control intravenous injections. The dose of histamin was 0.01 mg. per kilogram; somewhat larger doses in two cases gave a greater fall in pressure.

TYRAMIN

The drug was absorbed practically as well in three nasal injections as in several control experiments by vein on other animals. The maximal rise in pressure (from 32 to 50 mm.) was reached in about three minutes, and the pressure was well sustained. The initial pressure in each case was comparatively low (from 65 to 72 mm.). The dose of tyramin was from 1 to 2 mg. per kilogram.

VERATRUM VIRIDE

This drug, in doses of from 3 to 5 mg. per kilogram, was well absorbed in three experiments. In two instances the characteristic action of the veratrum was shown by considerable cardiac slowing, from vagus stimulation, with a fall in blood pressure (from 130 to 87 mm., and from 140 to 117 mm.). In the third case a previous dose of veratrum had been given, and the nasal injection caused a rise in pressure, which is characteristic of repeated dosage with this drug. The reaction in these experiments was neither quite so prompt nor so great as from similar intravenous injections into other animals.



Action on blood pressure from intravenous and nasal submucosa administration of histamin. Experiment B 1. Dog; upper curve, carotid blood pressure, mercury manometer; lower line, zero blood pressure. Left-hand tracing, histamin, about 0.01 mg. per kilogram, by vein. Right-hand tracing, histamin, about 0.01 mg. per kilogram, into the nasal turbinal. The dose by vein was slightly less than the nasal dose. The fall in pressure occurred about as promptly with the nasal administration as with the intravenous. The tracing shows that absorption may take place at low level of blood pressure (75 mm.).

NITRITES

Both sodium nitrite and nitroglycerin gave prompt vascular reactions when injected into the turbinals; thus the sodium salt gave as great a fall in blood pressure, in five injections of 5 mg. per kilogram, as a number of control animals that received the same dose by vein. The percental fall was much greater with the nasal administration, for the experiments were made at a much lower level of pressure. The average fall was 19 mm. with the nasal injection and 20 mm. by the intravenous; the percental fall, 24 and 15, respectively. Four experiments with nitroglycerin, 0.5 mg. per kilogram, gave a fall in pressure of 6 to 20 mm., which was about two thirds that of a similar number of control intravenous injections in other animals.

CHLOROFORM AND STROPHANTHUS

Neither gave much response from the nasal administration. Chloroform gave a fall in pressure (from 110 to 80 mm.) in but one of eight injections of from 0.5 to 1 c.c., while the same doses intravenously were twice fatal. It may be that chloroform coagulates the tissues into which it is injected, but there is no evidence for this statement, as the tissues were not examined. Strophanthus was negative in six of eight injections of 1 mg. per kilogram; in the exceptions, the pressure rose from 10 to 20 mm., but similar doses by vein cause a very much larger rise in pressure.

POTASSIUM IODID

Potassium iodid was absorbed rapidly in several experiments when injected into the turbinals in a saturated aqueous solution. The appearance of iodid in the urine was taken as the criterion of the absorption of the drug. In one experimeunt the iodid appeared in the urine within one and one-half minutes of the injection into the turbinal; in other cases the reaction was somewhat slower in appearing.

To insure a good flow of urine, from 60 to 100 c.c. per kilogram of five per cent. sodium sulphate (crystalline) solution was administered intravenously; the injection was started just before the administration of the iodid and was continued for some time after it. The urine was collected from cannulas fastened into the ureters at their entrance into the bladder. When the urine flow had started, approximately 0.1 gm. per kilogram of the potassium iodid, as the saturated aqueous solution, was injected into the turbinals; this quantity made about 1 c.c. of the solution in each case. The urine was then collected in fractions and examined for the presence of the iodid by treating with sulphuric acid and sodium nitrite to liberate the iodin; the bluing of starch paste or the pink color imparted to chloroform indicated the presence of iodin. Three such experiments were made. The iodid appeared in the urine within one and one-half minutes in one case and in from five to six minutes in the others. The maximum rate of excretion was reached in two or three minutes in one case, somewhat later in a second animal, and then gradually decreased during the course of twenty or thirty minutes, when the experiments terminated. In the third experiment the fraction collected at the end of six minutes only was positive, but this will be discussed later. In a few other preliminary experiments, in which the sulphate was not given and the urine was collected directly from the bladder, the urine flow was very slight, and no iodid was found in it. Two of the animals, however, displayed the depressant action of the potassium on the circulation very promptly.

Further evidence of the rapid absorption of the iodid from the turbinals is that it caused edema of the lungs and was present in the exudate from the trachea.

Excretion of the iodid by the lungs.—In the three experiments in which the large quantities of sodium sulphate were given to increase the urine flow, edema of the lungs followed, and the fluid coming from the tracheal cannula contained iodid in each instance. From the intensity of the color reaction, even in the diluted fluid, there must have been considerable iodid excreted this way. The edema followed the injection of the iodid into the turbinals in five, twenty and forty minutes, respectively, in the different experiments. It is rather striking that the animal showing the most marked and the promptest onset of the pulmonary

edema, and in which the edema fluid gave a very strong iodid reaction, excreted very little iodid by the urine, although the urine flow was good; in this animal the iodid reaction was found but once in the urine and then very faintly. Evidently the iodid was largely excreted by the respiratory tract.

METHYLENE BLUE

Methylene blue appeared, faintly, in the urine within six minutes of the injection in one of the experiments in which the sulphate was given to increase the urine flow; the reaction failed in one other instance. It was given in 1 c.c. quantities of a 1 per cent. aqueous solution. The injections were given after those of potassium iodid and other drugs when the conditions were less favorable for absorption.

ABSORPTION AT DIFFERENT LEVELS OF BLOOD PRESSURE

The absorption took place equally well at low or at higher levels of blood pressure, from 60 to 160 mm.; thus, the greatest reaction with the nitrites occurred at the low level of 60 mm. on the injection of 5 mg. per kilogram of sodium nitrite, the pressure falling from 60 to 28 mm. It was found that epinephrin passed into the circulation at even lower pressures.

COMMENT

The experiments show that the submucosa of the nasal septum and turbinals is a very good absorbing surface for a variety of substances. This phenomenon is explained by the great vascularity of the parts, which is a well-known anatomic fact; and, further, it was pointed out in the previous paper that carmin-gelatin mixtures injected into the parts were found, on histologic examination, to have penetrated into the venous sinuses.

The possible clinical dangers and uses of this absorption were also discussed in the previous paper, and need only to be mentioned at this place. It is conceivable that, in susceptible individuals at least, dangerously large quantities of epinephrin and cocain may be introduced into the turbinals or septum preliminary to operations on the parts. Inasmuch as the absorption takes place at very low pressures, stimulant drugs, notably epinephrin, could well be introduced into the circulation through this region in cases of collapse when the need is very urgent. The technic is very simple and the size of the dose readily controlled. It is, of course, much less accurate than the intravenous method, and would be of value only when the latter was not feasible. While failure is quite common, the method could be tried in urgent cases during the preparation of the patient for the intravenous administration.

CONCLUSIONS

Many substances, such as alkaloids, potassium iodid and methylene blue, are rapidly absorbed from the nasal submucosa, especially when introduced under pressure.

Immunity in Tuberculosis.—No human race can withdraw itself from the reach of tuberculosis, and no race possesses natural immunity in any degree.—A. Calmette-Lille.

PARONYCHIA: A SIMPLE METHOD OF TREATMENT

AN ANALYSIS OF THREE HUNDRED CASES *

ISADORE SEFF, M.D.
Fellow of the American College of Surgeons
AND
SAMUEL BERKOWITZ, M.D.
NEW YORK

Although paronychia is only a minor ailment, nevertheless, it is attended by pain entirely out of proportion to the comparative extent of the disease. Though many methods in use for the treatment of this condition relieve the patients of pain, the treatment is as a rule prolonged and tedious, and the result in most cases is a disfigurement of the nail and cuticle.

The method which we have used in a series of 300 cases not only relieves the pain, but also shortens the course, restores the parts to the normal and always eliminates disfigurement.

Modern textbooks of surgery fail in most instances to give detailed directions for the treatment of paronychia. The time-honored method of splitting the nail longitudinally with a pair of scissors, under local or general anesthesia, and its removal by everting the halves with an artery clamp is still in vogue.

Another method consists in making parallel incisions at the side of the nail, extending proximally the whole extent of the nail, and then reflecting a quadrangular flap. By this procedure the deformities caused by injury of the nail-bed and the matrix are avoided. The entire nail is then removed. This is a method which does not always cause disfigurement of the nail, but it is painful, and leaves scars on the finger.



Fig. 1.—Acute paronychia; pushing back the cuticle.

AUTHORS' TECHNIC

Acute and chronic cases of paronychia requiring instrumentation are treated alike. The finger is first placed flat on the table. With the eye part of a probe held at right angles to the finger nail, the cuticle is very slowly pushed backward along its entire extent until the proximal portion of the nail appears. In some, before an attempt is made to force back the cuticle, soaking the finger in hot boric acid solution facilitates this step. It is important to push backward against the cuticle and not downward against the nail, as in the acute cases the latter procedure is always painful. Now the probe is hooked under the diseased nail at the proximal portion. It is surprising to note how easily and painlessly the nail can be lifted from its bed. The edge of the nail is cut longitudinally for a distance of one-eighth inch. Each side of the cut edge is grasped with either anatomic forceps or an artery clamp, and the nail is cut transversely, special attention being paid to the complete removal of the corners. Pain is seldom produced, as owing to the formation of pus and granulation

* From the outpatient department of the Surgical Clinic, Beth Israel Hospital.

* Reported at a stated meeting of the Practitioners' Medical Society, April 2, 1915.

tissue, there is a separation of the proximal portion of the nail from its bed. Attempts to remove more than this separated portion of the nail are always extremely painful. The distal portion of the nail remains untouched, as it protects the underlying nail-bed, and is ultimately forced off by the new-growing nail. A wet dressing of boric acid solution is applied, and the patient sent home with instructions to bathe the finger, if it becomes painful, in hot boric acid solution every three or four hours.

ANALYSIS OF CASES

An analysis of the large number of cases of acute and chronic paronychia which we have treated is worthy of discussion.

1. Eighty-five per cent. of our cases were of the acute type.
2. The thumb or index finger was involved in about 60 per cent. of the cases.
3. About 10 per cent. of the cases were accompanied by extensive superficial subcutaneous infections.
4. The *Staphylococcus pyogenes* was the predominating infective organism.
5. Eighty-five per cent. had no pain during the entire operative procedure, and 15 per cent. had only a little discomfort. No anesthesia, local or general, was required in any case.
6. Dressings were entirely removed in from ten to fourteen days.



Fig. 2.—Acute paronychia; lifting the nail from its bed.

CONCLUSIONS

The method which we have described is strongly recommended. Our results in a large number of cases of paronychia lead us to the following conclusions:

1. The method is painless and requires no anesthesia.
2. The technic is simple.
3. It shortens the period of illness, and is therefore of great value from an economic standpoint.
4. It restores the parts to normal, and is therefore important from a cosmetic standpoint.

1945 Seventh Avenue—281 East Broadway.



Fig. 3. — Paronychia: *A*, acute: perfect result six months after operation; absence of deformity of nail or cuticle; *B*, chronic: seventy-two hours after the nail has been cut transversely; the last boric acid dressing removed.

Cooperation Halves Operative Shock and Period of Anesthesia.—An account in the *Lancet* describes operations at the Royal Military Hospital, Devonport, illustrating the possibility of collaboration in surgical work. "The operations were for the radical cure of bilateral inguinal hernia by Bassini's method. It is said that two operators took part, one on either side. The initial incisions were simultaneous. Both operations, though varied in technic, proceeded *pari passu*; and the last skin suture in each was inserted simultaneously to a second. The only point for discussion (that of dressings or no dressings) was harmoniously compromised, and the patient is doing well, the period of anesthesia and the shock of operation being both reduced by half. Such an illustration speaks highly for surgical collaboration. Here skill met skill, not as 'Greek meets Greek,' but as allies in a hallowed cause. No small credit, too, is due to the sister who supplied both operators synchronously and speedily with their varied armamentarium."

LEPROSY OR SYRINGOMYELIA?

G. B. HASSIN, M.D.
Attending Neurologist, Cook County Hospital
GORDON BURKE, M.D.
AND
JOHN NUZUM, M.D.
Interns at the Cook County Hospital
CHICAGO

The diagnosis of so-called nervous or anesthetic leprosy is occasionally very difficult, and numerous cases have been reported in which the diagnosis could not be made at all,[1] or could be made with some probability,[2] or in which something else, usually syringomyelia, has been diagnosed.[3] Some authors have even been led to the conclusion that leprosy and syringomyelia are identical diseases.

Erroneous though such opinion may be, cases do occur in which the similarity of these two diseases is so great that a mistaken diagnosis is fully justified, but in which a careful analysis of the morbid manifestations may lead to a proper diagnosis. In this category belongs, in our opinion, the following case:

History.—Miss A. J., aged 62, entered the orthopedic service of Dr. Charles Jacobs on account of deformities of all four limbs. She was born in the eastern part of Norway, and was well during the first eight years of her life. When 8 years old she started to feel weakness and pain in the right foot. Four years later there developed on the sole of the right great toe a painful ulcer which was slow in healing and which was gradually spreading to other toes and the metatarsal bones. Two years afterward, painful abscesses developed on the fingers of the right hand, the first and the little fingers of which became gradually "contracted," and ten years later these two fingers were cut off at the middle phalanx. Four years previously, that is, ten years after the onset of the disease, the right foot was amputated. The stumps would open and heal, but never healed permanently. Four years after this amputation, an abscess developed on the great toe of the left foot, which finally was also amputated. From that time she had a number of amputations, until all fingers of both hands were amputated. The patient cannot tell how many amputations she had. The amputation stumps would heal and be followed by abscesses, bones would come out, and then another amputation would be done. The last amputation was performed nine years ago, that is, forty-three years after the onset of the disease. The present ulcers on the stumps of the legs persisted ever since that time. They would partially heal, and break open at irregular intervals. Thirty-three years ago she began to suffer from a conjunctivitis, and ectropion of the right eye, and was partially blind in the left eye for the last ten years (cataract). Venereal diseases or any other infections she denied. Menstrua-

1. Gaussel and Lévy: Syringomyélie ou Lèpre, Nouv. Icon. de la Salpêtrière, 1906, p. 454.
2. Gilles de la Tourette and Zaguelman: Un cas de syringomyélie, Nouv. Iconogi. de la salpêtrière, 1889, p. 311; also Dojmi di Delupis: Lepra oder Syringomyelie? Wien. med. Wchnschr., 1904.
3. Milian: Semaine méd., 1899, p. 521.

tion began at the age of 19, menopause at 40. The patient was formerly a heavy whisky drinker.

Family History.—Father died at the age of 50 from a stomach disease. Mother died at the age of 58 from a throat trouble. One sister and two brothers are living and well. One brother died at the age of 50 from pulmonary tuberculosis. Two distant relatives suffered from leprosy.

Examination.—The patient is rather poorly nourished and somewhat emaciated, but not cachectic, with healthy lungs, heart, liver, etc. The skin is pale, dry and without any discoloration spots. The forearms are covered with numerous scars, mostly caused by burns with steam which she did not feel. Both hands are deprived of fingers and covered with a dense thickened skin that cannot be folded. There are no scars to be seen on the stumps, except a small scar on the right stump of the hand caused by an injury. The skin covering the stumps is white and studded on both sides with circular soft skin patches which seem to be the sole remnants of cast-off fingers (Fig. 1). The forearms show atrophy of the muscles and of the panniculus adiposus. The upper arms and the scapulohumeral region show no atrophies, and no scoliosis is present. The lower limbs show absence of feet, and terminate in large ulcers (Fig. 2) with thick pus-discharging edges surrounding plainly visible epiphyses of the bones of the legs.



Fig. 1.—Stumps of the hands.

The muscle power is good; all the movements in the upper and lower extremities, as flexion, extension, abduction, adduction and rotation, are possible, except extension and flexion of the wrists, which are drooping. Pronation is only partially possible, and adduction or abduction of the remnants of the thumbs is impossible altogether.

The eyes show normal brows, cilia and clean sclera. In the left eye there is a cataract, a conjunctivitis and an ectropion. The inner half of the right eye is sewed together, causing a smaller palpebral fissure than in the left eye. The pupillary reaction is on both sides normal as to light, accommodation and convergence. The eye closure on both sides is imperfect (lagophthalmos).



Fig. 2.—Stumps of the lower limbs.

The examination of the peripheral nerves reveals a tenderness of the median, ulnar, musculospiral and peroneal nerves, but no thickening or nodosities can be found on these nerves, or on the auricular magnus.

The examination of sensibility shows loss of pain, temperature, touch and pressure senses on both hands, forearms, lower limbs, forehead and somewhat on the chest (Fig. 3). The areas of anesthesia are symmetrical, and not limited by sharp lines, but gradually end in a normal or slightly hyperesthetic area. The anesthesia has a symmetrical distribution, involving on the arms and right leg entire segments, and on the left leg appear in the form of stripes, and on the face and chest in the form of patches. The eyelids and cornea also show a marked anesthesia.

The electrical examination does not show any abnormal changes in the muscles or the nerves, the response to the galvanic and faradic currents being normal. The upper facial gives a somewhat diminished response to the electrical stimulation. Fibrillary twitchings are absent.

The reflexes—tendon, skin and mucous—are everywhere absent. The bladder and rectal functions are normal. The blood gives a negative Wassermann, and about 4 per cent. eosinophils.

The findings can be summed up as follows: The patient has been suffering for fifty-four years from trophic disorders which resulted in a total loss of fingers, toes and feet, which disorders were preceded by felon and ulcer formation. In addition, she shows a partial upper facial paralysis, pronounced anesthesia, symmetrical in character, involving all four extremities, the forehead and partly the chest. Atrophics of the small muscles of the hands, muscular twitchings, electrical anomalies, spasticities, urinary disorders and the reflexes are absent.

Such a combination of trophic, sensory and motor disorders may occur in various nervous disturbances, as tabes, neuritis, syphilis of the nervous system, diseases of the vertebrae, etc.; but they are especially suggestive of syringomyelia, of that form which is known as Morvan's disease. It is conceded that Morvan's disease or syndrome may be also caused by a peripheral nerve lesion of leprous nature, and it is necessary, therefore, to decide in any case in which symptoms of Morvan's disease are present, if we have not before us a case of leprosy.

In favor of the latter and against syringomyelia speak the facts in our case as follows: In Morvan's disease, the trophic disorders are limited to the upper extremities, sometimes to one hand only, as in the cases of Jeanselme[4] and Charcot,[5] while in our patient both upper and lower limbs are involved. There were cases of Morvan's disease reported in which, as in Herbert's case,[6] the trophic disorders were confined to the toes only, or as in Fletcher's[7] case, in which both the fingers and the toes were affected; but such cases are so rare, so unusual, that the presence of trophic disorders on all four limbs is generally considered typical for leprosy (Schlesinger,[8] Jeanselme,[4] Schaeffer[9]). Further the anesthesia in syringomyelia usually involves the upper limbs, including the chest, trunk and, in extensive lesions, also the lower extremities, or it may involve half of the body;

4. Jeanselme: Leprosy Congress in Berlin 1897, Med. Week., 1897, p. 508.
5. Charcot: De la Maladie de Morvan, Semaine méd., 1889, p. 454.
6. Herbert: A Case of Unilateral Syringomyelia in a Child, Indiana Med. Jour., 1905, p. 85.
7. Fletcher: Syringomyelia (Morvan's Type) in a Child, Proc. Roy. Soc., London, Clinical Section, 1910, p. 98.
8. Schlesinger: Syringomyelie, Vienna and Leipzig, 1902, Ed. 2, p. 270.
9. Schaeffer and Francais: Syringomyélie à la forme lépreuse, Rev. Neurol., April 14, 1910.

is usually radicular in type, that is, it follows the course of the posterior roots, and is sharply limited by straight lines, ending abruptly.

In our patient, the anesthesia is very pronounced on the peripheral portions of the four limbs, does not end abruptly, is in the form of patches on the face and chest, and in the form of stripes on the left leg; otherwise it resembles the stocking and glove variety of anesthesia which, according to Jeanselme, is of usual occurrence in old cases of leprosy. The absence of tendon and mucous reflexes speaks against syringomeylia, which, however, may show loss of reflexes if the posterior columns of the spinal cord are the seat of the lesion. A clinical picture of tabes, then, may obtain, the so-called pseudotabes gliomatosa of Oppenheim,[10] which is in our patient absent.

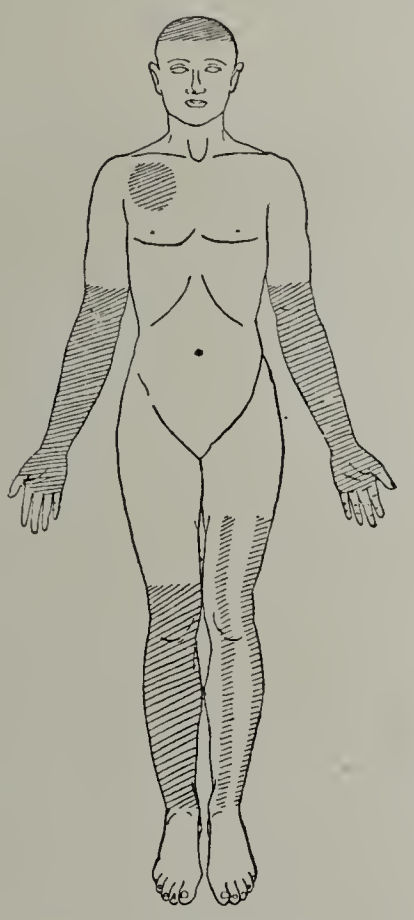


Fig. 3.—Areas of anesthesia.

Paresis of the upper branches of the facial nerve almost never occurs in syringomyelia. If the facial nerve happens to be involved in the latter, then the *lower* branches are affected (Hallopeau,[11] Laehr,[12] Schlesinger[8]). The same can be said of the ectropion which, in combination with the upper facial paresis, anesthesia of the lids, cornea, double flaccid paralysis of the hands, absence of scoliosis, of muscular twitchings, of atrophy of the small muscles of the hands, and of electrical changes, speak against syringomyelia.

There is another feature in our patient which is considered characteristic of leprosy, namely, absence of scars on the stumps of the hands and the peculiar condition of the bones as revealed by Roentgen examination (Figs. 4 and 5). The patient reports that the fingers were lost through successive amputations. If such be the case, then there ought to be some sears visible either as the result of the operations, or as that of the suppurations. Careful examinations did not show any scars, except one small scar on the tip of the right second metacarpal bone. Baëlz,[13] Sabrazès,[14] Jeanselme[4] and Harbitz[15] explain the absence of scars by the gradual absorption of the rarefied, decalcified bones of the fingers, which gradually shrink, until, with the absorption of all the phalanges, the fingers are reduced to mere remnants, deformed patches, as shown in Figure 1. The Roentgen ray shows the osteoporotic condition of the bones, lack of lime salts and the atrophied size of the shafts and epiphyses of the metacarpals. Such bone changes have been and are considered characteristic for leprosy (Goldscheider,[16] Sabrazès,[14] Jeanselme,[4] Miura,[17] Marestang,[18] Boeckman,[19] Harbitz,[15] Herrick and Earhart[20]) occurring in the early stages of this disease. In syringomyelia, the bones show no atrophy; rather do they appear hypertrophic in the shaft and epiphyseal ends, which fact was long ago pointed out by Déjerine.[21]



Fig. 4.—Roentgenogram of hand.



Fig. 5.—Roentgenogram of hand.

If all these findings strongly speak in favor of leprosy in our case, there are some points which are somewhat doubtful. We mean the nerve thickening and the presence of lepra bacilli. The thickening of the peripheral nerves is occasionally represented by local swellings, or nodules, and, according to Baëlz, are to be found on the great auricular nerve, where they can be demonstrated in 90 per cent. of leprosy cases. In other words, there are cases, especially old ones, in which the thickening is absent, and the absence of thickening does not speak against the diagnosis of leprosy.

In regard to the lepra bacilli, we wish to state that a number of frozen sections were made from the removed tissues of the legs, stained with different methods, and in only two specimens a very limited number of bacilli were found. There were no so-called lepra cells, but the bacilli closely resembled in their shape and staining properties

10. Oppenheim: Lehrbuch der Nervenkrankheiten, Berlin, 1908, i, 439.
11. Hallopeau: Leprosy Congress in Berlin, 1897, Med. Week., 1897.
12. Laehr: Lepra und Syringomyelie, Berl. klin. Wchnschr., 1897, No. 3.
13. Baëlz: Zur Lehre von der Lepra und Ihrer Behandlung, Berl. klin. Wchnschr., 1897, p. 999.
14. Sabrazès: Leprosy Congress in Berlin, 1897.
15. Harbitz, Francis: Trophoneurotic Changes in Bones and Joints in Leprosy, Arch. Int. Med., August, 1910, p. 147.
16. Goldscheider: Semaine méd., 1899, p. 111.
17. Miura: Mitt. a. d. kais. Univ., Tokio, 1898, iv, 107.
18. Marestang: Contrib. à l'étude du Diagnostic Differentiel de la Lèpre Anesthétique et de la Syringomyélie, Rev. de med., 1891, p. 781.
19. Boeckmann, Eduard: Clinical Aspect of Leprosy, THE JOURNAL A. M. A., Sept. 20, 1913, p. 946.
20. Herrick, A. B., and Earhart, T. W.: The Value of Trophic Bone Changes in the Diagnosis of Leprosy, Arch. Int. Med., June, 1911, p. 801.
21. Déjerine: Syringomyélie, Semaine méd., 1899, p. 194.

the tubercle bacilli. It is generally conceded by leprologists, like Hansen, Schlesinger, Darling,[22] Laehr, Impey[23] and others, that in chronic, old cases of leprosy neuritis, the bacilli of leprosy cannot be demonstrated, and in a case of fifty-four years' standing, like ours, it is almost impossible to demonstrate them. On the other hand, leprosy and syringomyelia may be combined, as in the case of Gerber and Matzenauer,[24] and nerve thickening may be present in unquestionable cases of syringomyelia, as in cases of Steudener[25] and Langhans,[26] which were intra vitam diagnosed as leprosy and as such interpreted. At any rate, absence of this sign, or even of leprous bacilli, cannot shake the diagnosis of leprosy, in the presence of numerous other signs, as total anesthesia of all four limbs, of the conjunctivae, absence of scars on the stumps, involvement of the upper facial nerves, absence of atrophies typical of syringomyelia, of fibrillary twitchings, of electrical changes, with the presence of typical changes in the bones.

All these negative and positive signs, their multiplicity, as Laehr[12] puts it, are very characteristic of leprosy, and are all present in our patient.

The question arises, Which of these "multiple" signs ought to be considered characteristic for leprosy?

Of bone changes we spoke already, and we should like to say a few words in regard to another sign which, in our opinion, is highly characteristic for leprosy. Here belongs the topography of the sensory disturbances, the distribution of the anesthesias. These affected, in our patient, all the four extremities, and gave a similar picture in all of the eight cases of Marestang,[18] and is pictured by Russy[27] in Marie's collective work as typical for peripheral lesions of leprous nature.

In syringomyelia, the upper limbs, as a rule, are involved, and the lower limbs only in the so-called lumbosacral form, when the cavities involve the lower portion of the spinal cord. In cases of syringomyelia in which the cavities are extensive, all along the spinal cord, medulla, etc., as in cases of Hoffman,[28] Spiller,[29] Knoblauch[30] and Steudener,[25] the anesthesia will involve not only the upper and lower limbs, but also the rest of the body. Cases of syringomyelia in which the sensory disorders resemble those in our patient, being confined to the peripheral portions of all four limbs, we did not find recorded, except one case cited by Bruhl.[31]

But the patient in this case had an ectropion, profound trophic disturbances, as perforated ulcers, etc., which facts speak rather for leprosy than syringomyelia. In fact, it would be impossible to give an anatomic reason for the presence of sensory anomalies on the four limbs only, unless we accept two cavities, one in the cervical, and the other in the lumbar region, separated by a healthy spinal cord. If such a possibility is mentioned in the literature (Bruhl), then we ought to have symptoms of the lumbosacral form of syringomyelia, as described by Schlesinger[8] and Herbert,[6] but which are absent in our patient.

Therefore, we must consider the presence of anesthesias on the four limbs typical for leprosy, especially if additional signs be present, as bone changes, upper facial paralysis, total loss of reflexes, etc. As all these signs were present in our patient, we are fully justified in diagnosing our case as anesthetic leprosy.

31 North State Street—Cook County Hospital.

22. Darling: THE JOURNAL A. M. A., September, 1910, p. 912.
23. Impey: The Noncontagious Nature of Anesthetic Leprosy, Med. Week., 1897, p. 485.
24. Matzenauer and Gerber: Lepra und Syringomyelie in Obersteiner's Arbeiten, ix, 1902.
25. Steudener: De Lepra Anesthetica sive mutilans, Halle, 1867; abstr., Virchow-Hirsh's Jahresb. ü. die Leist. u. Fortsch. d. ges. Med., 1868, p. 404.
26. Langhans: Zur Casuistik der Rückenmarkaffectionen, Virchows Arch. f. path. Anat., 1875, lxiv, 169.
27. Russy, in Pierre Marie: La Pratique Neurologique, Paris, 1911, p. 349.
28. Hoffman: Zur Lehre von der Syringomyelie, Deutsch. Ztschr. f. Nervenh., 1892, iii.
29. Spiller: Syringomyelia and Syringobulbia, Brit. Med. Jour., Oct. 20, 1906, p. 1017.
30. Knoblauch: Krankheiten des Centralnervensystems, 1909, p. 154.
31. Bruhl: Contribution à l'étude de la syringomyélie, Paris, 1890, p. 154 (Case 8).

FOREIGN BODY IN THE LUNG

REPORT OF A CASE IN WHICH THE PRIMARY DIAGNOSIS WAS SUGGESTED BY A BLOOD EXAMINATION *

GEORGE L. RICHARDS, M.D.
Otologist and Laryngologist, Union and St. Anne's Hospitals
FALL RIVER, MASS.

A man, aged 25, with negative family history, from some time in early childhood up to the time of coming under observation had occasional attacks of asthmatic breathing, bronchitis and chills. Since 1910, occasional chills followed by fever of 101 to 103 and lasting but a few hours had been the particular symptom. The intervals between the attacks had varied from a few days to a few weeks, and immediately after the attack, and also on the day following, the patient would feel perfectly well. He entered college in 1910. A lung examination by a general physician, on what date I am unable to find out, says that there was a little trouble near the right nipple line; but what this trouble was, was undetermined. He had an occasional whistle on breathing, which, during these years, was thought to be due to chronic asthma. July 12, 1913, a local physician advised that he have a blood count, which showed a white count of 16,120 with an increase of polymorphonuclears. Medicine was given at this time, but being no better, he was taken to a stomach specialist who suggested a Roentgen examination. This examination was made by the fluoroscope only, and nothing abnormal was noticed. His mother then took him to a diagnostician in Boston, who looked the boy over carefully, but could find nothing particular the matter. He thought that whatever it was, it would pass away, as in the intervals and when examined by a physician he appeared to be in good condition. The mother, supposing the fluoroscopic examination was a complete Roentgen examination, stated to the physician that the Roentgen examination was negative.

Another blood count was made, Feb. 28, 1914, when the white count was 12,200 with slight increase of polymorphonuclears. In July, 1914, the patient went to Europe, but on the way over on the steamer had two chills, and again a chill in Florence. In Florence he was taken to a physician who suggested that there might be some trouble in the right lung, but was unable to determine just what it was. These chills, as stated above, lasted from two and one-half to three hours, and were followed by a temperature of from 101 to 103, and, as before, he appeared perfectly well the day following. He was brought to me, Nov. 30,

* Presented before the Thirty-Seventh Annual Meeting of the American Laryngological Association, Niagara Falls, June 3, 1915.

1914, to find out whether he was fitted to work in a caisson in one of the New York subways, as he had been trained for engineering work. I had a blood examination made at this time, and found a leukocytosis of something over 12,000. I went over his chest and general condition and found that he had occasional twinges of pain a little below and slightly to the left of the right nipple, but did not detect anything out of the way, nor did I then suggest a Roentgen examination. I told him he could probably go on with the work desired. He went to New York to see about his place, but had a severe attack and chill the first day he was there, and immediately gave up and came home without making any attempt to get the job. He did not report to me, however, until several days later, when he appeared to be all right. He had had another attack since his return to Fall River, but less severe, and was coughing slightly. I had another blood count made, this time finding whites 12,480, with an increase of polymorphonuclears to 88 per cent. A search was also made for typhoid by the Widal reaction, and for tuberculosis from the little sputum we were able to obtain; the blood also was examined for malarial organisms, but with negative results.

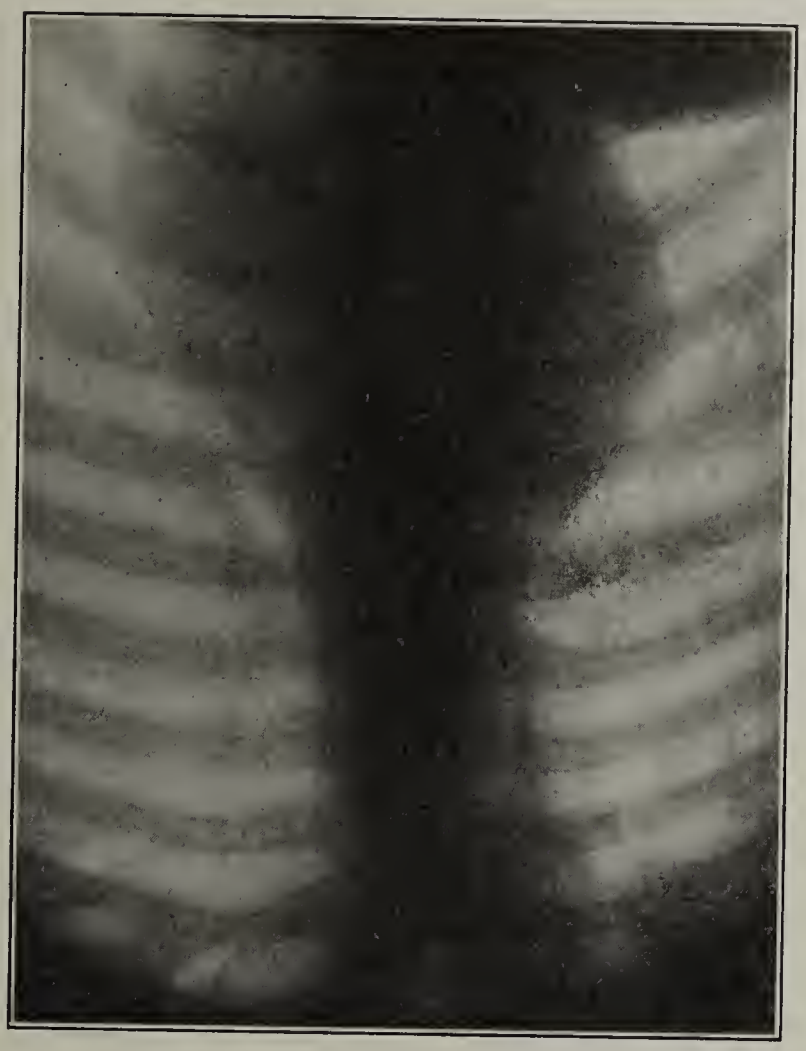


Fig. 1.—Roentgenogram, showing tack.

On thinking over the case, it struck me as being rather peculiar that we should have here an apparently healthy young man with occasional attacks of pain, occasional attacks of chills and fever of very short duration, with only a suggestion of a cough, but with a moderate steady leukocytosis and with no definite physical signs. At this moment it suddenly dawned on me for the first time that the symptoms were more suggestive of a foreign body in the right bronchus than anything else, a foreign body in a cavity which probably filled up at times, causing absorption, and then emptying itself, remaining open a longer or shorter time. I therefore had a Roentgen examination made, which disclosed a tack in the right bronchus.

There is no history as to when the tack entered the lung. The patient does not remember to have ever swallowed anything of the kind. A review of the history of the case seems to show that very likely the tack was introduced many years before, as when it was finally removed, its condition was such as to justify this supposition. I assumed that it was probably more or less encapsulated, was probably in a cavity, and that between the head of the tack and the main bronchus there might be quite a band of adhesive or inflammatory tissue, which opinion was confirmed by the hearing of an occasional whistle on auscultation. I had in mind such a case as is described in the English edition of Brünings' Book on Bronchoscopy, p. 353. I took the patient to Dr. Chevalier Jackson, Pittsburgh, to verify the diagnosis and to remove the tack.

Two roentgenograms were taken in Pittsburgh; each verified the diagnosis as to location, and as to the probable narrowing of the bronchus between its location and the main bronchus. Dr. Jackson, after previous administration of morphin and atropin, under cocain anesthesia, and with the aid of the upper lobe bronchus forceps, after dilatation of the strictured bronchus, removed the tack. At no time could it be seen by direct inspection. Dr. Jackson was able, however, so far to feel within the bronchus as to locate the tack first with a probe. After several attempts the head was grasped and removed. The point of the tack, however, was not forthcoming; the head was much eroded and covered with oxidation products. It showed the probability that it had been in this position a long time, with the result that the tack had been so far rusted away and the oxidation products cast off sufficiently to separate the point of the tack from the head. Two portions of black, ironlike débris were removed. No reaction followed, and no chill or any further trouble with the lung has occurred since.

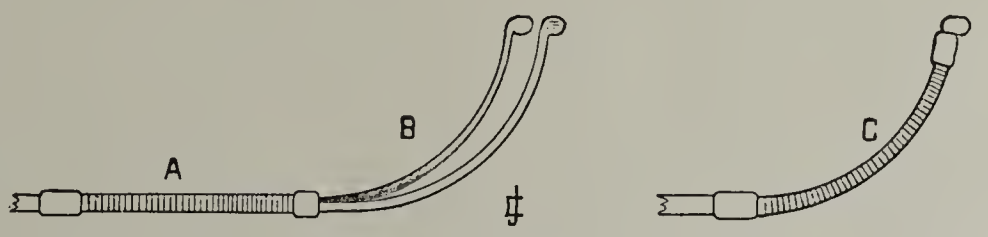


Fig. 2.—Jackson upper lobe bronchus forceps.

In the light of our present knowledge of this case, it is easy to ask why a roentgenogram was not taken, and the question is a proper one. Yet it did not occur to any one until the persistent low leukocytosis, together with the suggestion of bronchial asthma and the point of occasional pain, finally made the clinical picture so clear that I assumed there must be a foreign body, and had the roentgenogram made. The moral is, that in any case of possible trouble in the chest, abdomen or elsewhere not readily cleared up, the Roentgen ray should be used with the hope that it may aid in clearing the diagnosis. Again, foreign bodies which have been in the chest a long time and are unsuspected are probably far more common than any of us have yet ascertained.

AFRICAN TRYPANOSOMIASIS

REPORT OF A CASE

HOWARD K. TUTTLE, M.D.

SOUTH ACTON, MASS.

Patient.—I. S., No. 181943, man, negro, aged 35, native of Cape Verde Islands, was admitted to the Massachusetts State Infirmary from New Bedford, Oct. 7, 1914. The patient was unable to understand English, and as a good Portuguese interpreter was not available at the time, his history could not be obtained. He was observed for several weeks, and considered a negro of low mentality, unable to accustom himself to the changes in this country, or perhaps a beginning paretic. He spent a great part of the time in bed, but was up walking about the ward part of each day.

About this time, an intelligent negro from the Azores, who spoke Portuguese and English fluently, was admitted to the hospital, and the following history was obtained through this interpreter:

History.—Two years before coming to the United States, the patient emigrated to Portuguese Guinea, on the west coast of Africa, from the Cape Verde Islands. There he remained for a year and a half. During this time he had a fever that lasted for eight days. He also recalled being bitten by insects on several occasions. At the end of his stay in Portuguese Guinea, he returned to the Cape Verde Islands in company with a large number of African negroes. On arriving at the Cape Verde Islands, about a hundred of these African negroes were not allowed to land on account of a sickness they had, and were immediately returned to Africa. As the patient showed no sign of disease, he was passed by the health inspectors. Shortly after returning to the Cape Verde Islands, he sailed for the United States, landing at the port of Newport, R. I., April 14, 1914. From there he went directly to New Bedford. A month after coming to New Bedford he began to sleep a great part of the time, and noticed that he was gradually growing weaker.

At the time this history was obtained, he presented the following symptoms: The predominating feature was the marked apathy, the patient lying in bed with the clothes drawn up over his head. At times he would lie on the floor in front of the fire-place, and immediately drop to sleep. At other times he would sit in a chair all day, apparently asleep, only awaking to eat his meals. From this condition of lethargy he could be easily aroused, and would answer questions intelligently through an interpreter. His gait was slow and shuffling in character; he dragged the toes, and was seemingly unable to raise his feet from the floor. His appetite was good, even large at times. He was habitually constipated. It was seen that he was rapidly losing his strength. One day he told the interpreter he wished to return to Africa, where there was a medicine that would cure his sickness. Immediately atoxyl and sleeping-sickness were thought of.

Physical Examination.—This showed the following: A large, well-developed and well-nourished negro, weighing approximately 180 pounds. His face and forehead were wrinkled, giving him a pitiful expression as he looked at one with wide-open eyes. There was a fine tremor of the tongue with lateral contractions, and seeming difficulty in keeping the tongue protruded. Tremor of the face, extremities, and abdominal muscles was also noted, at times becoming coarse and exaggerated, so much so that on several occasions the nurses reported epileptiform seizures. The pupils were equal and reacted to light and distance; knee-jerks and other superficial reflexes were normal. The glands of the posterior triangle of the neck were small, shotty, and easily palpable. The skin was dry and scaly, and itched considerably. Over the abdomen a mottling was noted, caused by slightly raised and desquamating papules, which the patient stated resulted from pimples about the time he came to this country. There was a distinct hypersensitiveness to pain when the abdomen or extremities were deeply pinched. Heart and lungs, negative. Spleen palpable about one inch below the costal margin. Fundus oculi and ears, normal.

Blood Examination:

Red cell count	4,520,000	
White cell count	18,500	
Hemoglobin	70	per cent. (Tallqvist)
Differential white cell count	600	cells
Polymorphonuclears	25⅓	per cent.
Lymphocytes	35	per cent.
Large mononuclears	4⅔	per cent.
Transitionals	1⅓	per cent.
Eosinophils	33⅓	per cent.
Mast cells	⅓	per cent.

Auto-agglutination of the red cells was noted. Hanging drop and stained smears were negative for parasites. Wassermann negative. Smears from 10 c.c. citrated blood, centrifuged for fifteen minutes, the smears being taken from the leukocytic layer, showed no parasites. Smears from 10 c.c. citrated blood, centrifuged three successive times of fifteen minutes each, smears being taken from the last sediment, all were negative for parasites.

Lumbar Puncture.—About 30 c.c. of spinal fluid were obtained, slightly cloudy, pressure slightly raised, and centrifuged for thirty minutes, smears and hanging drop preparations being made from the sediment. Smears stained with Hasting's stain showed the *Trypanosoma gambiense* fairly numerous on most slides. There were also seen numerous diplococci, some encapsulated, and some resembling the diplococcus of epidemic cerebrospinal meningitis, but occurring outside the cells. Pneumococci and a diplobacillus also were noted. This was presumably a mixed microbial infection, so often reported in the terminal stages of trypanosomiasis. There was a marked preponderance of lymphocytes noted in the cells of the spinal fluid.

Subsequent Course.—The patient grew weaker gradually, becoming neglectful in his habits; when up about the ward he could be seen with his clothes half buttoned, and his shoes unlaced. He frequently complained of headache. The marked lethargy continued as the predominating feature. He soon was compelled to remain in bed most of the time, and the progressive loss of strength made it necessary for him to have assistance in going to and from the bath room. He soon became unable to walk at all, and would lie in bed with his head retracted, the thighs flexed on the abdomen, and the legs on the thighs. He became incontinent, and so weak that it was almost impossible for him to carry a piece of bread from the bedside table to his mouth. The increased tremor of the face and tongue made it difficult to swallow, and his mouth had to be frequently cleaned out while eating, to prevent him from choking. He developed an iritis of the right eye, with an accompanying photophobia. His temperature and pulse were continuously normal until four days previous to his death, when an afternoon rise to 101 F. was reached, with a corresponding increase in pulse rate. The cerebral irritation became more noticeable, as evidenced by muscular twitchings, becoming almost convulsions, and by nystagmus.

The patient was given 0.6 gm. of neosalvarsan intravenously, and this seemed to add to the cerebral irritation, as he developed convulsions, and the temperature went to 107 F. by axilla. He died the following night, Jan. 7, 1915, apparently in a convulsion. His death was rather unexpected so soon, as he had not reached the stage of emaciation and bedsores described as the terminal scene in the textbooks on tropical medicine.

Postmortem showed a body still fairly well nourished and having considerable subcutaneous fat. Rigor mortis was not especially marked. On removal of the spinal cord, the coverings were somewhat thickened, and a small amount of pus was present between the layers. Opening of the skull revealed the sinuses and vessels of the pia injected. There were adhesions of the pia mater to the brain substance. In places the membranes were thickened. There was no apparent widening of the sulci, but the cortex seemed noticeably

thin. There was no excessive fluid in the ventricles. The spleen was considerably enlarged and firm. The cortex of each kidney seemed thicker than normal, but the markings appeared distinct. The urinary bladder was filled with urine. Sections were taken from the cord, meninges, cerebrum, cerebellum, pons, medulla, spleen, kidneys, liver and small glands of the neck. From the gross postmortem findings it would have been difficult to determine the cause of death.

Microscopic examination of cut sections from the cortex, pons, medulla, cerebellum and different levels of the spinal cord showed marked perivascular infiltration with small lymphocytes and plasma cells as the predominating feature. The infiltration was noted surrounding the vessels of the covering membrane as well as the brain and cord substance. There was an apparent increase in neuroglia, shown by the increased number of cell nuclei. Capillary hemorrhage into the brain and cord tissue was common, and the eosinophilia which existed before death was evidenced by the number of eosinophils seen in the transected blood vessels. Long-continued search of many sections failed to show trypanosomes. They may have been due to the delay in obtaining permission for the necropsy.

COMMENT

African trypanosomiasis, afflicting human beings, is caused by the *Trypanosoma gambiense* and the *Trypanosoma rhodesiensi.* These parasites belong to a large family, frequently found in the blood of animals, birds and fish. Among the few pathogenic are the *Trypanosoma evansi,* causing surra, a disease of domestic animals in India; the *Trypanosoma brucei,* causing nagana, a disease very virulent among domestic animals in Africa, and the *Trypanosoma equiperdum,* causing dourine, a disease of horses in Africa, parts of Europe, and the United States.

The human trypanosomes are frequently found in the blood of domestic and wild animals of Africa, but are apparently harmless to them; however, this fact is of great importance in relation to human trypanosomiasis, as these animals serve as "reservoirs" for the parasites, which are transmitted to man by the tsetse-flies, *Glossina palpalis* and *Glossina morsitans,* sucking the blood of the animals, and then biting human beings. Thus it will be seen that these two species of tsetse-flies act as the intermediary host for human trypanosomiasis much the same as the mosquito does in malaria.

African trypanosomiasis of man is divided into two distinct phases, the first, the trypanosome fever, being characterized by a long and continuous fever, generally of an intermittent or remittent type, and accompanied by erythematous or papular skin lesions, enlargement of the lymphatic glands, localized edemas, slight anemia, enlarged spleen, with increasing debility and apathy. Thus the first stage may continue for weeks or even months, gradually merging into the second, or final stage, known as the sleeping-sickness. This stage is typically described in the case report.

Sleeping-sickness is of interest in this country mainly through its rarity. We know that it was recognized by the early slave traders as a serious affliction, for they refused to take natives with enlarged glands. Undoubtedly some patients found their way into this country in this manner, as they did into the British West Indies; but they eventually died out, and there are no records showing that the disease was ever transmitted to others, after reaching this country.

Old skippers of trading vessels touching at ports on the west coast of Africa tell of seeing the natives lying around on the decks and piers with the saliva drooling from their mouths. The skippers mistook them for lazy negroes, while in reality they were unquestionably infected with trypanosomes.

In 1901, Dutton recognized the parasite in the blood of a patient in the Gambia district, and gave it the name of *Trypanosoma gambiense.* A year later, Castellani found the same organism in the spinal fluid of natives suffering with sleeping-sickness. It was not until two years after, however, that it became clearly understood that the trypanosome fever and sleeping-sickness were different phases of the same disease, and that both were caused by the *Trypanosoma gambiense.*

This disease has become of vital importance throughout Africa, as it has rapidly spread, so that now a large part of tropical Africa is infected, and, owing to the high mortality, certain areas have become completely depopulated.

Various methods of treatment are being tried, including the arsenic preparations and antimony which perhaps give the best results, prophylactic measures, tending to destroy the tsetse-flies and their breeding places, isolation of infected persons, and removal of those not infected away from the fly districts. Whether or not the disease could get a foothold in other tropical countries where it is now unknown would depend entirely as to whether a suitable intermediary host to act the rôle of the tsetse-fly was found. Chagas has found a trypanosome, most commonly infecting young children, endemic in parts of the state of Minas Geraes, Brazil, and transmitted by a species of bug, *Lamus megistus.* Other allied species apparently have the power to transmit the infection.

Questioning Cape Verde Islanders, it was found that very few of them took the trip to the African mainland, and that sleeping-sickness was unknown to them on their native islands.

A peculiar feature of the case reported is the entire absence of signs and symptoms of the early stage of the infection, unless we are willing to accept the eight days' fever the patient admitted having in Africa as such. Short fevers in tropical countries are rather vague and may be due to various causes. A few differences to the usual picture of these cases are noted. Instead of a mononuclear increase of the white cells, we had a marked and persistent eosinophilia. There was a scarcity of trypanosomes in the blood, repeated searching of centrifuged specimens failing to reveal them. The smallness of the glands made it impossible to aspirate gland juice. During the entire stay in the hospital there was little variation of temperature or pulse from the normal until four days preceding death. The rather sudden death brought on by mixed microbial infection is in common with the cases studied postmortem by Mott.

While this case was typical from the standpoint of books on tropical medicine, it is probable that death would have been attributed to general paralysis, cerebrospinal syphillis or pellagra, had it not been the good fortune to obtain a bright, fluent interpreter at the right time. The patient's statement that he desired to go back to Africa where there was medicine to cure his sickness was the key to the situation.

Medical Advertising.—The advertising columns of the newspapers, and especially religious papers, have always been and still are the greatest enemies of honest medical practice.—Presidential Address, Edward F. Parker, M.D., *Jour. South Carolina Med. Assn.,* May, 1915.

NONSUPPURATIVE SUBPHRENIC PERITONITIS

HAROLD NEUHOF, M.D.
NEW YORK

In 1912, I described by this term a not uncommon complication of appendicitis,[1] and stated that "nonsuppurative subphrenic peritonitis complicating other conditions such as abscess of the breast, cholelithiasis, traumata, etc., has been observed and may be the subject of a future communication." The varying etiology had no striking effect on the clinical picture, and no new observations were made. Therefore the subject was not further dwelt on. The object of the present paper is, in part, a brief review of the subject in order to show that "the group of cases of subdiaphragmatic inflammation not hitherto recognized," recently described by Lee,[2] presents a clinical picture that coincides with the one already reported by me.

That a nonsuppurating subphrenic inflammation could exist appeared to have been almost entirely overlooked theretofore.[3] My paper dwelt with the condition only as a complication of appendicitis, for the latter was the most frequently observed cause. The clinical picture was characteristic, but there were some differences in physical signs and symptoms in the fifteen reported cases. The variations depended on differences in the site, intensity and the extent of the inflammation, the amount of ballooning of the diaphragm, pleural involvement, and lung compression.

To describe a typical case: Fever returns, and the patient complains of some pain in the right lower chest several days after the appendicitis operation and the subsidence of peritonitic manifestations. In the earliest stages, physical examination may reveal very slight changes; often, however, one finds intercostal tenderness near the base of the right axilla or more posteriorly, some dulness and diminished breathing in the tender area, and perihepatic friction sounds. At the height of the infection, intercostal tenderness and rigidity localized to the seventh, eighth and ninth spaces in the axillary zone (or more diffusely spread over the right lower chest) are usually pronounced. The intercostal tissues are resistant, the spaces are occasionally obliterated. The area of dulness rises to a varying elevation, sometimes reaching the level of the scapula; it is generally highest in the axilla, the upper margin of dulness curving downward from the most elevated point. The percussion note is often flat at the base. Fremitus, voice and respiratory sounds are usually diminished over the dull area, and all three may be absent at the base. The breath sounds often have a faintly tubular quality. In the later stages of the infection, pleural or perihepatic sounds are uncommon. The liver may be palpable, but is not tender. Pronounced leukocytosis, with high polynuclear percentages, is present almost invariably. The temperature curve follows a very irregular course, beginning rather abruptly and dropping gradually; chills do not occur. The duration of the symptoms and physical signs is from five to thirty days. In seven of the nine cases in which exploratory aspiration for suspected subphrenic abscess was employed, it was followed by an almost critical drop in temperature and by recession of the symptoms and physical signs. These evidences of the rapid recovery that ensued were interpreted as the unexpected therapeutic results of exploratory puncture. Severe prostration was infrequent in nonsuppurative subphrenic peritonitis. All the patients recovered and were free from complications and sequelae with one exception. There persisted, in this case, some symptoms and signs ascribed to the roentgenographically demonstrated permanent elevation of the right half of the diaphragm.

At the time my paper was published, the only actual proofs of the existence of the subphrenic inflammation were: 1. An exudate extending from the region of the ascending colon over the superior surface of the liver, seen at a laparotomy in one case. 2. Dense inflammatory tissue between the liver and the ballooned diaphragm, encountered in the exploration of the space, in another case. 3. Resistance to the aspirating needle and the withdrawal of small amounts of clear fluid, in several cases. Since then I have had the opportunity[4] to observe the postmortem examination made on a patient who died some time after a subphrenic peritonitis. The latter had no bearing on the cause of death. The diseased gallbladder, containing several calculi, was the evident source of the subphrenic infection. Dense fibrous adhesions spread from the gallbladder to the duodenum; in the opposite direction, to the subphrenic space, in a broad area adherent to the superior surface of the liver. The adhesions were less dense in the highest part of the subphrenic space. The diaphragm was also involved here, the opposed hepatic and diaphragmatic surfaces being firmly bound together. There were no changes under the capsule of the liver to suggest that it was the source of the infection, and no findings to indicate that suppuration had existed in the subphrenic space.

Turning to the description of the group of four cases reported by Lee, the close parallel in clinical picture and course is at once evident. There was the same considerable variation in the manifestations, but the general conformation to a definite type. The infection was ushered in by fever and, in two cases, by cough and pain in the right chest. The physical signs were dulness over the right axilla or more posteriorly, merging into flatness at the base. The dulness sometimes extended to the level of the scapula, its upper border following the curved line of Ellis. Lee observed two constant characteristics of the area of dulness. By light percussion its upper level was several inches higher than by deep percussion. The zone of dulness (and of flatness) descended with inspiration. In addition, the Grocco sign was invariably present. Fremitus, voice and breathing were diminished over the dull area, and were absent at the base in several instances. Friction sounds were heard in three cases. In one case there was considerable bulging of the lateral chest wall over the liver, and the intercostal spaces were obliterated. Roentgenoscopic examinations always showed an abnormal elevation of the right half of the diaphragm, persisting in two cases after the infection had cleared up. The temperature always ran an irregular course, tending to fall by lysis; its duration was from eight days to four weeks. None of the patients had chills. Blood examinations showed an active leukocytosis (reaching 55,000 in one case) with high polynuclear percentages.

1. Neuhof, Harold: Surg., Gynec. and Obst., March, 1912.
2. Lee, R. I.: Subdiaphragmatic Inflammation, THE JOURNAL A. M. A., April 17, 1915, p. 1307.
3. Previous suggestive observations are reviewed in my paper.
4. At the Krankenhaus Friedrichshain, Berlin, through the courtesy of Prof. Ludwig Pick.

All the patients recovered spontaneously. Lee states that the etiology of the subphrenic infection was unknown, in his series of cases, although he points to its development after an operation for incarcerated hernia, in one case. In another case there was a possible association between the subphrenic infection and a prolonged diarrhea.

From the foregoing, it can be said that Lee's contribution is of distinct value in the presentation of more clean-cut physical signs of nonsuppurative subphrenic peritonitis and in the demonstration that more obscure foci than a diseased appendix, gallbladder, etc., may be the source of the infection. In all respects, however, the clinical pictures of the groups of cases reported by Lee and, previously, by myself, are identical. The existence of the lesion is finally established by the reported postmortem examination.

1275 Madison Avenue.

OTITIC PNEUMOCOCCIC BACTEREMIA*

ARTHUR S. TENNER, M.D.
NEW YORK

Cases of simple otitis media with bacteremia are sufficiently rare, or are so seldom recorded in the literature, as to warrant the report of the following case:

B. S., girl, aged 9, was taken ill, March 5, 1915, with fever and malaise. A saline cathartic was administered, and, March 7, the temperature dropped to 99, but rose during the night, accompanied by severe pain in the left ear. I saw the patient for the first time on the following day, that is, on the fourth day of the illness, and found the temperature 102.6, pulse 110, respirations 24. The patient complained of pain in the left ear. The throat was normal, turbinates congested, right ear normal, left tympanum bulging and deeply congested. An immediate myringotomy was done. Despite the fact that there was a copious bloody serous discharge, the temperature rose that night to 105 and remained the following day between 103 and 104. The right ear drum was pale and normal. There was no pain in the left ear. During the night there was pain in the right ear, and the following morning the right ear drum was found to be bulging, deeply congested, and almost black. A liberal incision in the drum was made. Again the temperature rose during the night to 105. The following day, March 11, there were no pain and no mastoid tenderness; both ears drained freely with bloody serous discharge, and the temperature ranged from 102 to 105. Smears from the ears showed the pneumococcus.

March 12, Dr. E. Libman examined the patient; he could find no lung, meningeal or other complication. A blood culture was taken. The temperature at that time was 101.6, but rose during the night to 106. The patient was somewhat delirious. Leukocytes, 14,000. Polymorphonuclears, 61 per cent.

March 13, blood cultures as yet showed no growth. The temperature fluctuated between 102.5 and 105.8. Discharge from the left ear was almost nil, and the membrane was becoming pale. The right ear was discharging freely. Despite the continued high temperature, I felt reasonably sure that there was no mastoiditis. There were no chills at any time, the patient was withstanding the high temperature very well, and I felt justified in waiting another day.

March 14, the ninth day of illness, the temperature in the morning was 98.4. There had been a steady drop during the night from 105.8. My delight was somewhat clouded by a report that the blood culture showed a growth of pneumococcus, but it was slight, only one colony. This was thirty-six hours after blood had been withdrawn. The temperature rose in the afternoon to 102.6. The left ear was healed. From the right ear there was a slight discharge which later became purulent and continued for two weeks. The patient had no more high temperatures after this.

Recovery was retarded by the occurrence three days later of a duodenitis, which persisted for about two weeks. This was undoubtedly metastatic in character. The patient was examined, April 17, 1915. Both ears had healed, and the patient was well.

It is possible that, if blood cultures were taken, many cases of otitis would show a bacteremia, and would help verify the contention of bacteriologists that there is hardly an infection, no matter how slight and localized, but that, at some time during its course, bacteria are demonstrable in the general circulation.

120 West Eighty-Sixth Street.

* Read at a meeting of the New York Physicians Association, April 22, 1915.

FOREIGN BODY IN THE BLADDER

MAX BORNSTEIN, M.D., MILWAUKEE, WIS.

F. M., German, aged 19 years, machinist helper by trade, with poor general physical condition, and mentally below par, was given to frequent masturbation, and was of that type in which direct irritation of the urethral mucosa was necessary for complete sexual satisfaction. The chief complaint was general weakness and constant dribbling of urine.

Three years before, while he was masturbating with a bougie molded from a piece of chewing gum, it accidentally went beyond his reach, entered the bladder and caused the subsequent cystitis. The patient kept on working as usual, until three weeks before I saw him (Sept. 15, 1914), when incontinence set in and a constant gripping pain began to annoy him at the neck of his bladder. He had not worked since the latter train of symptoms came on, but sat about all day, listless and dull, in clothes reeking with the odor of foul urine. He was placed on urinary antiseptics, was later examined with a stone sound, which revealed a large movable stone resting on the base of the bladder.

Suprapubic cystotomy was done through an extraperitoneal incision. The bladder wall was thickened, and the mucosa deeply congested and coated with fine granular salt. The trigon was completely hidden by a stone the size and shape of a medium-sized lemon. A projection from the bottom of the stone extended into the prostatic urethra.

The patient was placed on general tonic treatment, and the bladder irrigated daily; but his general condition continued to grow worse until he finally succumbed seven weeks after operation.

1122 Walnut Street.

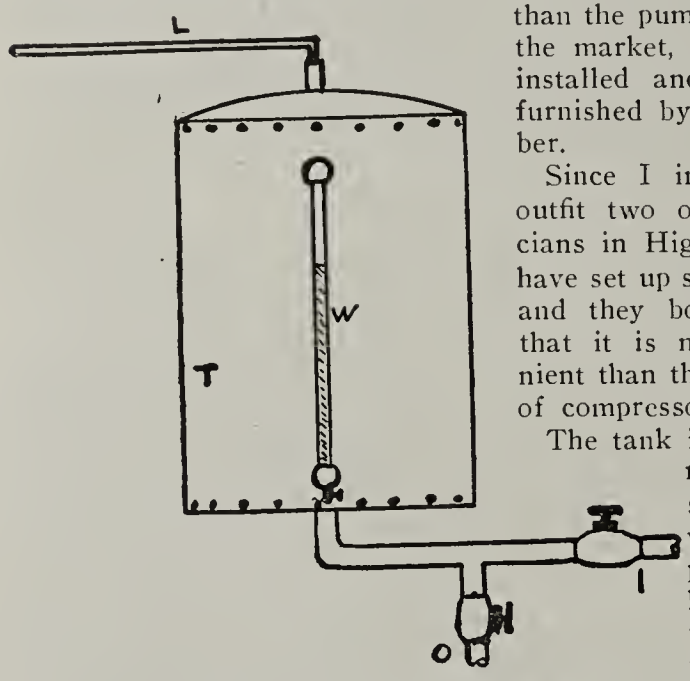
Japanese Obstetrics.—Even in ancient Japan the treatment of pregnant women received great attention. There was a special birth-chamber in which the woman remained three weeks before and three weeks after delivery. In the second half of pregnancy a belt was worn and by rubbing the abdomen the production of a correct presentation was attempted. During the birth and for eight days afterward a special birth stool was employed. After the middle of the eighteenth century obstetrics received a great impulse through Kagawa Shigen, at one time a rubber and acupuncturer. He published in 1765 an epoch-making work, San-ron, in which he attacked many erroneous Chinese views and collated many sound observations intermingled with *a priori* conclusions. The successors of Kagawa Shigen worthily continued these rational endeavors. The following particulars may be mentioned as having been known and practiced: the knee-elbow parturient attitude; care of perineum; double ligature of umbilical cord and section of same with scissors; powdered gall as a styptic; removal of the retained placenta by rubbing the abdomen and pulling on the cord; eventual instrumental extraction; nursing only after the fourth day.—Neuberger, History of Medicine.

New Instruments and Suggestions

APPARATUS FOR UTILIZING CITY WATER PRESSURE TO FURNISH COMPRESSED AIR FOR ATOMIZERS

H. J. ULLMANN, M.D., HIGHLAND PARK, ILL.

The apparatus for utilizing city water pressure to furnish compressed air for atomizers, nebulizers, etc., is old in principle, but I have never seen its adaption to this particular purpose. It is cheaper than the pump outfits on the market, and can be installed and all parts furnished by any plumber.



Apparatus for utilizing city water pressure to furnish compressed air for atomizers. *T*, galvanized iron tank, 10 or 15 gallons; *W*, water glass; *I*, inlet from city water line; *O*, outlet for draining tank; *L*, line to atomizers.

Since I installed my outfit two other physicians in Highland Park have set up similar ones, and they both tell me that it is more convenient than the pump type of compressor.

The tank is placed as near as possible to the water supply and the lead from the top run to any part of the room desired.

Water is run into the tank until it is from one-half to three-fourths full, depending on the pressure required. The intake is then shut and, in a 10-gallon tank, there will be enough air for the treatment of from three to five patients. When the air pressure falls too low for use, more water can be run in or the tank emptied and refilled, which takes less time than pumping by hand or with the small motors usually supplied with these outfits.

A BENZIDIN TABLET TEST FOR OCCULT BLOOD

DUDLEY ROBERTS, M.D., BROOKLYN

It is essential that any test for occult blood be accurate, and important that it be simple in its technic. The benzidin test, in various modifications, has largely displaced tests previously used, and because of its accuracy and the comparative simplicity of the technic, occult blood testing has come into more general use. It has, however, not been found feasible to make up stock solutions of a benzidin in acetic acid that would keep long, and hydrogen peroxid, because of its instability, has led to frequent errors.

During the past year, after considerable experimenting, we have worked out an extremely satisfactory benzidin tablet, and in both private and hospital work we have come to use it to the exclusion of other tests.

This tablet triturate is composed of 1 part benzidin to 20 parts sodium perborate triturated with great care and made up into a 5-grain tablet. The tablet is moderately friable and is best dispensed in small tubes. The specimen to be tested, either a weak emulsion of the stool or the stomach contents or urine, is placed either in a small saucer, pus basin or porcelain dish in sufficient quantity to wet the tablet thoroughly, but not to entirely immerse it. A drop or two of glacial acetic acid on the tablet if blood be present gives rise to a more or less immediate change in the tablet to a greenish blue. Experience with its use gives a fairly accurate idea of the amount of occult blood present, depending on the extent and quickness of the color change. If the amount of blood is small, only the edge of the tablet may turn. The delicacy of the test is slightly less than the benzidin-acetic-acid-peroxid test but has been found amply delicate for practical purposes. There is some danger in too delicate a test, and this has been purposely avoided. Such is the simplicity of this tablet test for occult blood that a nurse or intelligent patient may watch the appearance or disappearance of occult blood without laboratory apparatus of any kind, with merely a small dish, the handle of a spoon to make a thin emulsion, a tablet and a small vial of acetic acid.

84 Remsen Street.

A SIMPLE SUBSTITUTE FOR EMPYEMA TUBE

A. MERRILL MILLER, M.D., DANVILLE, ILL.

The so-called empyema tube having a flat flange on either end has found favor with many surgeons because it is self-retaining.

As these tubes are made the end flanges are fastened to the straight tube by vulcanizing. Due to being imperfectly secured, these sometimes become detached and one has the equivalent of a straight tube.

In place of the tube furnished by instrument houses, I have used with success a soft rubber spool—cast on *one* piece—known as "bunion-right" or "toe-right." This article may be purchased in any shoe store or from a retail druggist. It is simple, answers every purpose of the empyema tube and has the advantage of always being at hand.

508 The Temple.

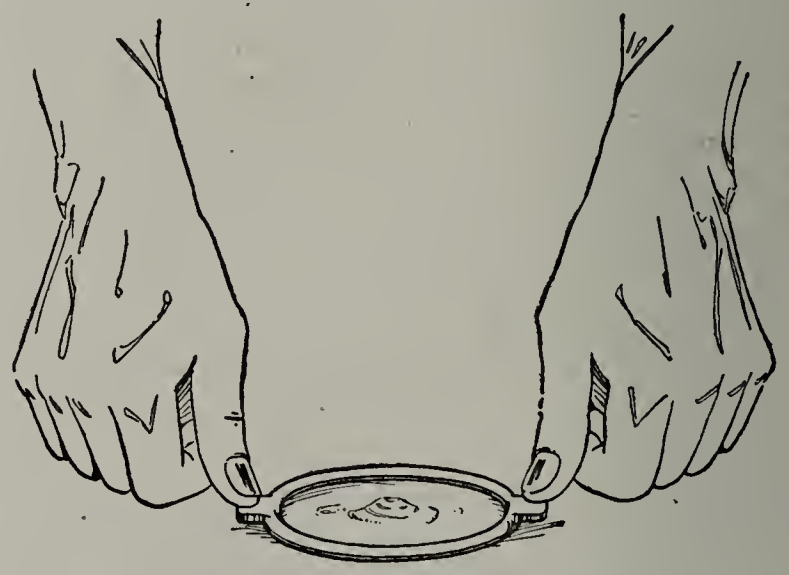
COMPRESSION RING FOR HEMOSTASIS

FRANK P. CORRIGAN, M.D., CLEVELAND
Associate Surgeon to St. Alexis Hospital

The device here illustrated is a time and trouble saver in operations for the removal of small tumors of the scalp, and other localities, under local anesthesia.

One annoying feature that is obviated is the pain caused by application of artery forceps.

This occurs even when the tissues have been so infiltrated that the actual cutting is painless.



Compression ring for hemostasis.

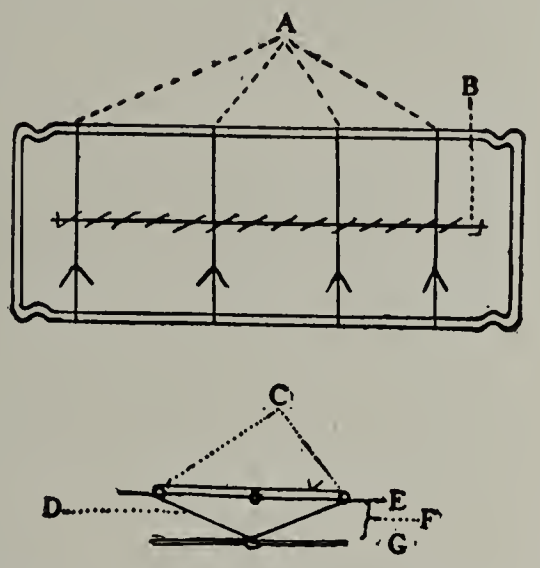
The semiflexible ring here shown, made of soft lead or solder, gives a perfectly satisfactory hemostasis without any loss of time, and tends to prevent diffusion and absorption of the local anesthetic used, acting in this connection much like a tourniquet.

The technic of application is simple. The ring should be pressed firmly down with both hands by the assistant after it has been slightly conformed to the surface surrounding the growth that is to be removed. It is especially satisfactory for use on the scalp because of the counterpressure furnished by the firm skull beneath.

DEVICE FOR FIGURE-OF-EIGHT SUTURES

ALFRED HULL CLARK, M.D., BUFFALO

Figure of eight silkworm-gut sutures, used to reinforce the fascial catgut stitch, may be tied over a wire frame longer than the skin incision and as wide as the distance between the skin holes of any stitch. This wire frame allows inspection of the line of skin sutures and the treatment of any irregularity in its healing, prevents the cutting of the skin by the silkworm-gut, obviates any pressure on the skin incision, if it be held with skin clamps, and gives an even pull on the fascia without pressure on the skin other than the slight and well-distributed pressure of the frame.



Above, diagram of frame, one-third size. *A*, silkworm-gut; *B*, skin incision. Below, diagram of skin, fascia and frame in cross section, one-third size. *C*, frame; *D*, figure-of-eight silkworm-gut; *E*, skin; *F*, fat; *G*, fascia.

The frame is made of No. 35 brass wire, nickeled, is 2½ inches wide and varies in length to suit the skin incision. Those used by Dr. Earl P. Lothrop, with whom I work, vary from 3¼ to 7½ inches in length. The accompanying diagram illustrates the frame and its use. The idea was adapted from Rovsing's glass plate.

153 Delaware Avenue.

ISOLATION OF BACILLUS TUBERCULOSIS FROM SPUTUM BY THE METHOD OF PETROFF*

O. W. H. MITCHELL, M.D., AND R. R. SIMMONS, A. M.,
SYRACUSE, N. Y.

Recently Petroff[1] described a method for the isolation of the tubercle bacillus from sputum and feces. It gave highly satisfactory results, particularly when isolation from sputum was attempted. With sixty-nine specimens of known tuberculous sputums he isolated the organism in every instance and, with a little different technic, he was successful in isolating *Bacillus tuberculosis* from feces nineteen times out of thirty-two attempts.

The method will not be described in detail as it will be best for the reader, if the method is to be employed, to refer to the original article. By using an alkaline solution to which *B. tuberculosis* is especially resistant and employing gentian violet, which inhibits the growth of many organisms, Petroff succeeded in perfecting a method for tubercle bacillus isolation which is simple, economical and trustworthy, especially when the isolation is to be made from sputum. In brief the method is as follows:

Digest the sputum in sodium hydroxid solution in the incubator at 37.5 C. for from twenty to thirty minutes. Neutralize to litmus with normal hydrochloric acid and centrifugalize. Spread several loops of the sediment on beef-infusion-glycerin-egg medium to which has been added gentian violet in the strength of 1:10,000. Petroff used fresh sputum, while we have used sputum from one to four days old.

Attempts have been made in this laboratory to isolate the tubercle bacillus on the medium without gentian violet. This method was used twenty-three times, but because of contamination only once was the tubercle bacillus grown in pure culture. Several times growth was noted by making smears but, excepting one culture, contamination was marked. Petroff was more successful and without gentian violet he isolated *B. tuberculosis* five times out of twenty trials.

Gentian violet was added and with thirty-five specimens our results were as follows: isolation and good growth, twenty-eight; contamination, six; no growth, one. Growth was observed in the different cultures from the ninth to the fifteenth day. Later development proved that the observation of early growth was correct. As the failures occurred at the beginning of the work we are inclined to consider them due to faulty technic rather than to defects in the method. All specimens of sputum employed in this work were shown by smears to be positive for *B. tuberculosis*.

Such a method which makes animal inoculation unnecessary and can be so simply performed commends itself for wide application, especially in the teaching laboratory.

* From the Bacteriological Laboratory, College of Medicine, Syracuse University.

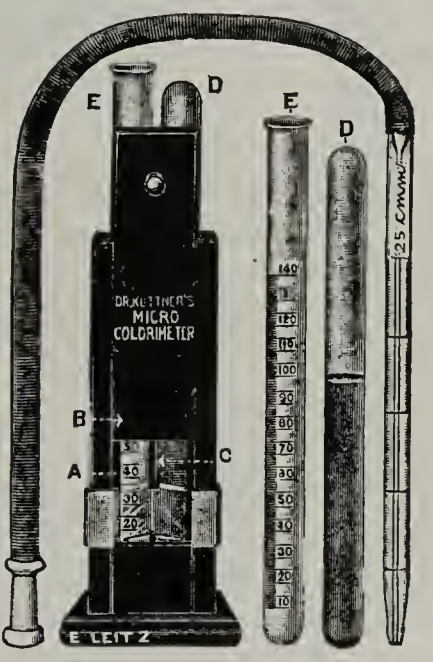
1. Petroff: Jour. Exper. Med., 1915, xxi, No. 1, p. 38.

A NEW POCKET COLORIMETER*

THEODORE KUTTNER, M.D., NEW YORK

In making analyses of blood and other physiologic fluids, it is often desirable to employ small quantities of the material to be tested, provided accurate microchemical methods with suitable instruments are available. Several advantages would result, namely, first, the ability to use less reagent for the test; second, the saving of time and labor; third, the probability of more often obtaining such material, and finally the use of less costly apparatus.

The object of this communication is to describe an instrument for use in quantitatively estimating small amounts of a constituent in solution by its color reaction. Before proceeding with the description, I wish to state that the same calibrated and color tube employed in the Sahli-Gower hemoglobinometer has been adopted for this instrument. While the Sahli allows both tubes to be viewed at full length, the new instrument shows only a small part of the tubes when making color comparison. This facilitates the color reading and is less fatiguing to the eye. An additional feature is a prism (*A*) to be described, which has the effect of causing the contents of the tubes to approach each other more closely, thereby accomplishing greater accuracy in comparing the colors.



A pocket colorimeter.

The instrument (now being made by E. Leitz, New York) consists of a closed upright box, the dimensions of which are about 2.5 cm. in width by 8.5 cm. in height, being therefore smaller in length and width than the Sahli instrument. At the top are two openings, one for the color tube, *D*, and the other for the calibrated tube, *E*. Near the lower front part of the instrument is a window provided with a small prism, *A* (Helmholtz double plates), above mentioned, serving the purpose of having the colors of both tubes appear close together, forming a continuous color band. The prism is easily removed for cleansing and can be quickly readjusted. A sliding door, *B*, which can be raised and lowered, protects the prism from dust and injury. The color standard and calibrated tube are separted from each other by a partition, *C*, which prevents light from being reflected from one tube to the other.

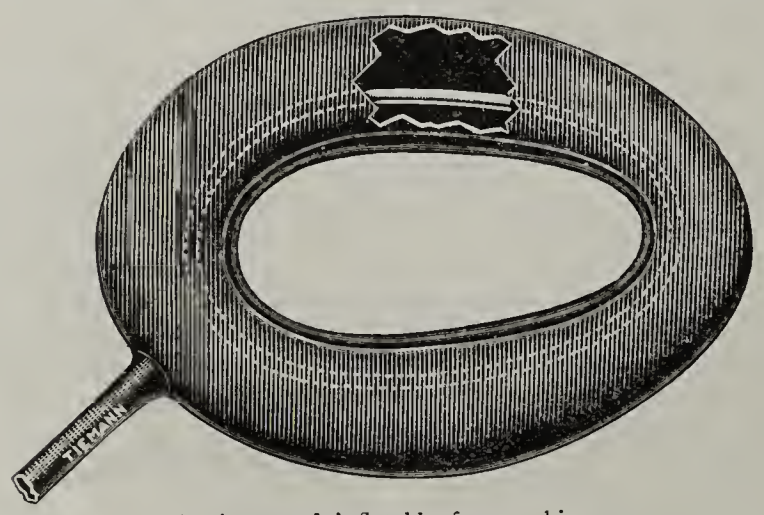
* From the Pathological Laboratory, Department of Physiological Chemistry, Mt. Sinai Hospital.

A few suggestive points regarding technic may be helpful. The standard color tube is inserted into one of the two openings, for instance, *D*, and the sliding door raised until the window is exposed. The calibrated tube with its contents ready to be estimated is inserted into the other opening, *E*, and the diluting fluid added drop by drop and mixed until the color exactly matches that of the standard, that is, when the color as seen at one half of the window is of exactly the same shade as the other half. When this is accomplished, the sliding door is raised high enough to enable one to observe the height which the fluid has attained. The calibrated tube is graduated up to 140, and in making readings, in order to obtain close results, it is best to make a reading at that point at which the color just matches the standard and then slowly continuing the dilution and taking other readings, accept as the final figure the one just previous to the point at which the color became fainter. The instrument should be held at a distance convenient to the eyes of the observer.

AN IMPROVED INFLATABLE FACE CUSHION

RAYMOND C. COBURN, M.D., NEW YORK

An essential requisite in the administration of nitrous oxid is that the face cushion form an air-tight fitting with the patient's face. There is a decided tendency, when an inflatable rubber cushion is used, for the patient's expira-



An improved inflatable face cushion.

tions and saliva to moisten the rubber, so that the cushion slips off the solid face piece, especially when a metal face piece is used, so that the solid face piece rests on the patient's cheek, instead of on the rubber cushion. This malposition permits the nitrous oxid to escape and air to be inspired, thus interfering with a proper and successful administration of nitrous oxid.

To obviate this difficulty, I have had a wire inserted *within* the inflatable rubber cushion, as shown in the illustration. This wire insert prevents the cushion from becoming displaced and from slipping out of its proper position. The wire is sufficiently pliable so that it may be changed in form and size, as may be needful.

AN IMPROVED HEMORRHOID OPERATION

WILLIAM LEE SECOR, A.M., M.D., KERRVILLE, TEXAS

The three common methods of operating on hemorrhoids—clamp and cautery, ligature, and suture—each leaves much to be desired before the ideal is reached.

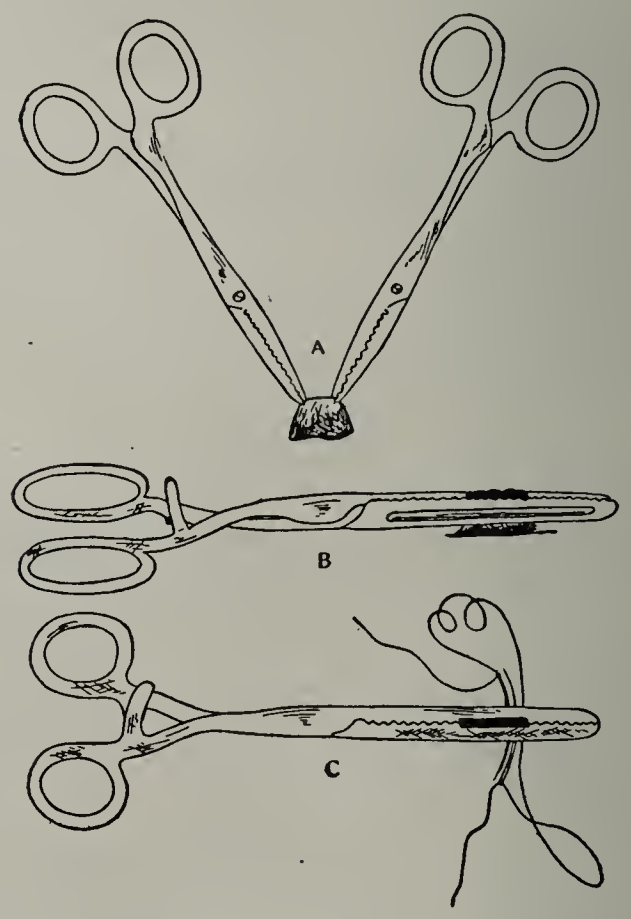
Of the three methods, the one which is freest from postoperative pain and secondary hemorrhage, which closes the mucosa and leaves the rectum most nearly normal, is the suture method.

The best technic for this procedure is to sterilize the field with 3 per cent. iodin solution, grasp a pile at its tip with a hemostat, and draw it down so that another hemostat may be placed at the top of the pile. With the pile on the stretch by the two hemostats, a narrow-bladed clamp (Ferguson's) is placed on the base of the tumor, and the tissue outside of the clamp cut away. Then with a curved round-pointed needle and No. 2 iodized catgut, an over-and-over stitch is made around the blades of the clamp, to cover in the entire raw surface. The clamp is loosened and slipped out of the loops of the stitch, the stitch is drawn up tight, and the two ends are tied together.

During the past ten years I have done this operation many times with perfect satisfaction, except for one point of danger which from my own experience seems more theoretical than practical, but nevertheless exists. In placing the stitch around the clamp, the needle may carry infection into some of the large veins of this area, giving rise to local or remote abscess formation. The iodin method of sterilization reduces the chance of this accident to a minimum.

In order to avoid even this small element of danger in a hemorrhoid operation, I have devised the following technic:

The field is painted thoroughly with 3 per cent. iodin solution. A hemorrhoidal tumor is picked up and put on tension



Procedure of the operation: *A*, grasping of pile with two hemostats; *B*, clamping; *C*, suturing.

by two hemostats as in the operation described above. Then its base is clamped with a special clamp having a slit in each blade similar to the Mayo-Moynihan stomach clamps. The tissue outside of the clamp in the grasp of the hemostats is cut away, then a No. 2 catgut suture with a needle at each end is used in making a back-and-forth shoemaker's stitch through the slit in the blades, the clamp is removed, and the stitch is tied.

In this operation, half of the split blade of the clamp crushes the tissue and vessels back of the suture line, and no infective material will travel from the stitch holes through the veins.

The mucosa is nicely approximated, and the firm stitching insures against any hemorrhage. A small strip of gauze covered with sterile petrolatum is left in the rectum for twenty-four hours. There is little pain. The bowels are moved on the fourth day, and the patient leaves the hospital in a week.

This operation done under novocain—sacral anesthesia—leaves little to be desired as to safety, simplicity and end-results.

Special Article

PRACTICAL PHARMACOLOGY *

(*Continued from page 169*)

XXVIII

THE HEAVY METALS AND THEIR SALTS—(*Continued*)

MERCURY

When the soluble mercuric salts, such as the chlorid, are taken they may be brought into more intimate contact with the tissues than the insoluble salts, such as calomel. This is because the solutions of the mercurials permit the formation of the albuminate, which is soluble in excess of albumin, such as exists in the tissue fluids.

The solubility of the mercurial compound formed, and its toxicity for all cells with which it comes into contact permits it to exert its toxic action not only on the mucous membrane of the alimentary tract at the time it is swallowed, but also on the cells of the renal tubules and of the intestine which participate in the excretion of the metal.

It is commonly stated that a metallic taste and a burning sensation in the mouth and throat are the first symptoms observed after a toxic dose of mercuric chlorid has been swallowed. Animals, however, appear to suffer no discomfort after the introduction of mercuric chlorid through a stomach-tube before the onset of nausea, which is promptly followed by emesis. The vomitus may be tinged with blood within a few minutes after the administration of an excessive dose, showing the rapidity of the onset of the corrosive action. The vomiting may be almost incessant or there may be intervals during which an animal gives little sign of actual discomfort. A cat vomited fourteen minutes after the administration through a stomach tube of a 1:500 solution containing an amount of the mercuric chlorid corresponding to about 2 gm. (30 grains) for a man. Another cat received about one tenth as much in a 1:5,000 solution and though this amount corresponds to an almost certainly fatal dose in man the animal did not vomit or exhibit any symptoms of discomfort for more than forty-eight hours. In man, the onset of nausea and vomiting may be sufficiently delayed to permit notable amounts of the poison to pass into the duodenum where part of it is absorbed. The remainder being carried into the large intestine causes diarrhea in some cases, but in others this result is delayed for twenty-four hours, that is, until the irritant action of the metal is exerted on the intestinal cells during excretion. The evacuations often resemble those seen in arsenic poisoning, and contain blood and shreds of desquamated intestinal epithelium.

Excessive doses of mercuric chlorid may cause profound collapse through the severity of the gastro-intestinal action. Death may result in a few hours, but the patient usually lives from three to eight days after a fatal dose has been taken, and death may then be due to collapse incidental to the action on the central nervous system and to gastro-intestinal and renal effects. There is little direct action on the heart and central nervous system in many cases, and consciousness is commonly retained in acute poisoning until shortly before death, when uremic symptoms with coma result.

Aside from the salivation resulting from the nausea that comes on soon after the poison has been taken, there is sometimes an intense activity of the salivary glands. The saliva containing mercury, which is irritant, may occasion excoriations and deep ulcerations extending even into the bone of the jaw unless care is given to the mouth. A 2 per cent. solution of potassium chlorate is recommended as a mouth-wash in such cases.

The salivation and soreness of the gums and mouth are important as they are among the earliest of the symptoms commonly observed in chronic mercurial poisoning when mercury is taken over prolonged periods, or when persons are exposed to its action as in the trades in which it is used (mirror makers).

In severe mercurial poisoning the colon and cecum are commonly the seat of ulceration caused by the direct action of the salt before its absorption, or more commonly, during excretion. The small intestine suffers comparatively little, probably because the poison does not remain in it long, but is either absorbed or passed on into the cecum.

The urine may be increased for a time and later completely suppressed, partly through the action of the mercury on the epithelium of the tubules, partly through the circulatory changes induced by the watery diarrhea. This by withdrawing fluid from the blood increases its viscosity, which with the lowered blood pressure causes further interference with the renal secretion.

Attention has been called to the necessity for preventing diarrhea when calomel is administered for its diuretic action, and the reasons for this have been explained. It is in keeping with that explanation that when mercurial poisoning is attended with severe gastro-intestinal disturbances with watery diarrhea, there should be less nephritis than when poisoning of equal severity is accompanied with comparatively little diarrhea.

The various skin lesions observed during chronic mercurial poisoning are due to the irritation caused during excretion in the sweat.

In chronic poisoning in long-standing cases, not in those induced by the therapeutic use of mercury, muscular tremors of central origin may occur, and a condition of erethism, or increased excitability of certain parts of the central nervous system is described. This erethism is characterized by irritability and alterations in the disposition.

The milder forms of chronic mercurial poisoning are induced when any of the mercurial is given over a prolonged period in the treatment of syphilis, and, indeed, the beginning of these symptoms serves as a guide in limiting the administration. More severe symptoms occur among workers in trades in which mercury is used constantly. The continuous administration of calomel is said to give rise to severe stomatitis more frequently than is the case with mercuric chlorid and other soluble salts of mercury, because it is impossible to control the absorption with any degree of precision in the case of calomel. Undue absorption thus occurs at times, especially when opium is administered to control the diarrhea which calomel causes otherwise.

* This is the twenty-eighth of a series of articles on useful drugs — on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

Acute fatal poisoning with mercuric chlorid has become quite common of late, owing to carelessness or the deliberate use with suicidal intent of the "antiseptic tablets," each of which contains about 7 grains of the poison.

There is little doubt that the widespread use of these tablets in solution for preventing conception is responsible for their being present in many households, inviting mistakes and affording opportunities for self-destruction.

Various ways have been suggested by which mistakes with the tablets will be rendered impossible, thus, it has been recommended that they be made of cylindrical shape, or that they be colored distinctly with indigo or ultramarine blue. The distinctive shape is preferable, since mistakes are often alleged to be due to taking tablets in the dark. The tablets are threaded together like beads by one manufacturer.

Fatal poisoning also results occasionally from the use of solutions of mercuric chlorid as a wash for large wounds and body cavities, and it should be remembered that absorption may take place from any mucus or denuded surface. Fatal poisoning has even followed the local application of the mercurial ointment, though this is extremely rare. It is even said that the oral administration of calomel may be followed by absorption and the typical corrosive action of mercuric chlorid, but this must also be rare.

The stomach should be emptied as promptly as possible after a poisonous dose of mercuric chlorid has been swallowed. The stomach tube is preferable for this purpose,[1] for while emesis occurs in the large majority of cases from the action of the drug, this is not sufficiently prompt to prevent the absorption of notable amounts, or to prevent still larger amounts from passing into the duodenum.

Egg-white, milk or other readily available form of protein should be administered immediately but not too freely, even before the stomach-tube is passed, and again after the stomach has been emptied as thoroughly as possible. The portion administered at first is intended to precipitate the poison and stop its further action on the stomach, and that administered after the stomach has been washed is for the purpose of protecting the mucous surface and precipitating any mercuric chlorid that may have escaped precipitation in the first case.

Immediately after washing the stomach, 30 gm. (1 ounce) of magnesium sulphate should be dissolved in 500 c.c. (1 pint) of water and administered in order to dilute any of the poison that passes into the duodenum and to hasten its evacuation in the feces. Egg-white or milk may be added to this solution in order to precipitate any mercuric chlorid that may exist in the alimentary tract, and egg-white or milk should be administered from time to time for the same purpose.

One cannot be certain that the most energetic treatment will suffice to prevent the absorption of a poisonous dose of the salt, hence attention should be given to its elimination and to the treatment of symptoms that may arise. Since mercury is eliminated by all of the channels of excretion, it would appear to be logical to promote all the secretions so far as possible, and diaphoretics and diuretics should be used freely.

1. The danger of perforating the stomach, while attempting to pass the stomach-tube after corrosives have been swallowed, has probably been much exaggerated. Of course, one should exercise caution in passing the tube under such conditions.

Attention has been called in previous articles to the copious diuresis that may be induced by the intravenous injection of large amounts of a 2 per cent. solution of sodium sulphate. While this procedure is not justified by the mere suspicion that a toxic dose of mercuric chlorid may have been absorbed, it would probably prove beneficial if used early in the course of poisoning after absorption has taken place and before severe nephritis has developed. We are not aware of any case of mercurial poisoning having been so treated, but when a fatal outcome appears almost certain in the presence of the usual methods, it would at least seem justifiable to employ any means of hastening the elimination that does not jeopardize the patient's welfare.

The diarrhea and its attendant pain that result during the excretion of mercury may require the administration of opium, but the evacuations must not be checked altogether since that would prevent the elimination of the poison.

It is often asserted that potassium iodid facilitates the elimination of mercury from the body but no satisfactory evidence exists that it exerts any marked effect in this way.

THERAPEUTIC USES

The disinfectant, diuretic and cathartic actions of mercury have been discussed in other articles of this series. Its use in syphilis remains to be considered.

In this disease its value has been established beyond question. Its well-known disadvantages and the overshadowing literature of salvarsan, however, together with the sensational introduction of the latter as a cure for syphilis have tended of late to create the impression that mercury is of only secondary importance. In truth mercury is indispensable still, even though there are some cases of syphilis which may possibly yield to arsenical treatment, for mercurial treatment becomes necessary in the larger proportion of cases. It seems probable that it will be used more and more in conjunction with arsenic when the technic of their combined use is perfected.

Preference has been given at one time or another to nearly every one of the better-known salts of mercury, including those that have been introduced in the effort to overcome some of the disadvantages of the other mercurials. The value of mercury in the treatment of syphilis depends on getting enough of it into the circulation to destroy (or to enable the body to destroy) the *Treponema pallidum,* the causative organism. Since mercury in sufficient concentration is toxic to all of the cells of the human body with which it comes in contact, it follows that whatever method of administration is chosen the toxic effects of the metal must be exerted at the points of absorption and elimination. It is therefore apparently impossible to secure the therapeutic action of mercury without at the same time subjecting the patient to some of its disagreeable side actions.

The literature dealing with the treatment of syphilis and the best methods of administering mercury is extensive, but the general practitioner will usually depend on oral administration despite its many disadvantages, until better means of administering the remedy are perfected. Many specialists prefer the intramuscular injection of an insoluble salt such as the salicylate, as a sufficient quantity can be given at two injections to produce an influence which will last a week, thus saving much time. This method, however,

has the great disadvantage of resulting in a variable rate of absorption, so that the dosage cannot be satisfactorily regulated. The pain attending the injection is said to be less severe but to last longer than that following the injection of mercuric chlorid. A few specialists prefer the mercuric chlorid for intramuscular injection. It has the advantage of insuring rapid absorption with satisfactory regulation of the dosage, but it causes severe pain and the injections must be made every day.

Inunction is practiced in some institutions where the services of trained attendants are available. The ointment of mercury is rubbed into the various parts of the body successively. It is extremely untidy and it gives rise to much discomfort.

Mercurial vapor baths would appear to have decided advantages were it possible to regulate the dosage satisfactorily.

Calomel, mercury and chalk, mass of mercury, and the "proto" or yellow iodid are insoluble forms of mercury that may be administered by the mouth in pills or capsules. They all cause diarrhea, usually necessitating the use of opium to secure sufficient absorption, and they have the disadvantage of being variable in absorbability even then.

Mercuric chlorid, or red mercuric iodid may be given in solution. Mercuric chlorid and potassium iodid are commonly prescribed together, the soluble double salt of mercury and potassium iodid being formed.

When arsenic is used in the treatment of syphilis an effort is made to destroy all of the spirochetes in the blood with one dose. It would therefore seem logical to use the largest doses of mercury that the patient can stand in order that the micro-organisms may be destroyed as rapidly as possible, but the toxicity of mercury for the host and its many side actions are so important that they must be taken into consideration in the method of treatment. A lack of agreement also exists concerning the best methods of procedure with the various mercurials.

The administration of mercurials during the latter months of pregnancy may induce abortion, or the newborn may suffer from chronic mercurial poisoning. The simultaneous occurrence of syphilis and tuberculosis offers additional difficulties in the administration of mercury but it does not wholly contraindicate its use.

Mercurial ointment is also used for destroying parasites, especially body lice, but there are other methods that are equally effective and more cleanly. A solution of mercuric chlorid, 1:500 in vinegar, diluted acetic acid or diluted alcohol may be applied cautiously; but absorption may occur if too much of the solution is used, hence not more than one fluidounce of such solution should be applied during a day.

Ointment of ammoniated mercury is antiseptic and a local stimulant; it is used to excite a healthy inflammatory reaction in psoriasis, and it is also applied to areas of suppurating dermatitis.

DOSAGE

The single dose of the various mercurials varies widely with the method employed. Larger single doses of the salicylate are given when injections are made intramuscularly twice a week than of the mercuric chlorid when used daily. On the other hand, it is obvious that the amount of calomel or one of the other insoluble mercurials that will be required to induce a given effect will vary considerably with the measures taken to prevent its rapid removal by purgation. It is probable that the amount of mercury necessary to be absorbed in a given length of time to produce the desired therapeutic effects, that is, the destruction of the spirochete, does not vary nearly so widely as the total amount which may need to be administered.

The oral dose of mercuric chlorid (corrosive sublimate) is 0.002 to 0.01 gm. (1/30 to 1/6 grain) in pill or preferably in dilute solution. Attention is again called to the much greater irritation caused by concentrated solutions than by dilute ones containing equal amounts of irritant salts. The maximum oral daily dose is 0.06 gm. (1 grain). The daily dose by intramuscular injection should not exceed 0.01 gm. (1/6 grain).

Solutions of from 1:1,000 to 1:2,000 are used to excite dermatitis and exfoliation; care should be taken to avoid absorption of large amounts, hence such solutions should be used only with caution and they should be discarded should there be evidences of absorption, such as salivation or a metallic taste in the mouth.

It is difficult to state the dose of calomel in exact terms with such strict limitations as in the case of the mercuric chlorid. The administration is regulated rather by the symptoms induced and evidence of absorption than by mere figures. The single dose varies from 0.06 to 0.12 gm. (1 to 2 grains) and from 3 to 5 grains daily until slight mercurialism is induced when it is employed in the treatment of syphilis.

Soluble iodids, such as sodium or potassium iodid, are contraindicated during the administration of calomel as they react with it to form metallic mercury and mercuric iodid.

The yellow mercurous iodid, also called the green iodid, or the protiodid, is little used except for the treatment of syphilis; it has less tendency than calomel to cause diarrhea. It is best administered in pill form after meals in doses of 0.015 gm. (1/4 grain) three times daily, increasing gradually by 0.008 gm. (1/8 grain) till the symptoms indicate that the limits of tolerance are being approached. The appearance of salivation, diarrhea and pain is the signal for interrupting the administration or diminishing the dose.

Red mercuric iodid is given by the mouth in doses of 0.003 gm. (1/20 grain) three times daily. It is commonly prescribed in a liquid form by directing mercuric chlorid and potassium or sodium iodid in solution somewhat as follows:

	Gm. or c.c.	
℞ Hydrargyri chloridi corrosivi.....	0.06	grains i
Potassi iodidi.....	6.00	ʒ iss
Aquae 100.00		℥ iii

Red mercuric iodid may be injected intramuscularly, in a solution in a bland fixed oil containing from 0.2 to 1 per cent. The daily intramuscular dose is about 0.005 gm. (1/10 grain) or 1 c.c. (15 minims) of a 0.5 per cent. solution.

Mercuric salicylate has come into use largely for intramuscular injection suspended in liquid paraffin or other oleaginous menstruum. Of a 10 per cent. suspension, containing 0.06 gm. (1 grain) of mercuric salicylate, 0.6 cc. (10 minims) is injected intramuscularly about twice a week or once in four days.

Mercury with chalk is given in doses about equal to those in which calomel is used. The action of mercury with chalk, the mass and the ointment, containing the metal in fine division, is quite different

from that of the metal in mass, since the finely divided globules of mercury are partially oxidized.

Metallic mercury was formerly administered in substance in large doses, but it is seldom given now in the pure form.*

DEMULCENTS, EMOLLIENTS AND OTHER PROTECTIVES

The word "demulcent" is derived from "demulceo" meaning "to smooth"; the word "emollient" from "emollio" meaning "to soften." Mucous membranes rarely require softening though they sometimes require agents to render their surfaces smoother. When, however, an inflamed skin becomes hard it requires softening, hence we speak of applying demulcents to mucous membranes and emollients to the skin, the same agent usually being both demulcent and emollient. Petrolatum is used for both purposes, but when used internally it is commonly spoken of as a lubricant for the intestinal tract.

Cushny states that the number of demulcents, emollients and astringents in common use might be curtailed considerably without loss to therapeutic practice, and the physician will find that "Useful Drugs" contains all that he needs of this group.

Acacia, tragacanth and other gums are colloidal substances that can be dissolved in water or made to absorb many times their weight of it, forming mucilages that serve to protect mucous membranes against irritants of various kinds. They form a coating that protects the surface mechanically against solid particles, and they retard the movement of liquids that are incorporated with them so that absorption and penetration into the mucous membranes are delayed.

Poisons, such as strychnin, are less active when dissolved in solutions of colloids than when dissolved in water, the slower absorption from the former permitting of the simultaneous excretion of a portion of the poison. Sweet and sour substances have less taste when dissolved in solutions of colloids than when dissolved in water, because of their slower penetration into the organs of taste in the tongue.

That such dissolved substances are more slowly absorbed, also explains the protective action of demulcents against soluble poisons in the gastro-intestinal tract, but, on the other hand, when such colloid solutions remain too long in contact with inflamed and infected surfaces they offer opportunities for bacteria to develop. This does not apply with so much force to the mouth, nose and throat, in which the natural secretions and frequent washing suffice to remove bacteria, but to the gastro-intestinal tract, where the rapid multiplication of putrefactive organisms together with the delayed digestion of food and absorption of the products of digestion may result in further injury to the inflamed mucous membranes.

Demulcents may be added to solutions of irritant drugs, such as hydrated chloral, to lessen or prevent gastric irritation, thus avoiding emesis and permitting the drug to be absorbed. For this reason they are sometimes added to nutrient enemas, as enemas are prone to set up peristalsis, thus causing their expulsion. The colloids retard or prevent this, affording time for the absorption of the nutriment.

It is sometimes difficult to relieve thirst when the stomach has become so irritable that even small amounts of water are rejected. Demulcents may be added to water in such cases, and when large amounts of water are to be administered by the mouth to induce diuresis, the use of demulcents and flavoring prevents nausea and facilitates the passage of water into the duodenum, where it is absorbed. Albumin water, made by adding the white of an egg to a glass of water with a little lemon juice or barley water, serves the double purpose of introducing water and nitrogenous or carbohydrate food, though the food value may be slight.

Demulcents are also used to allay the irritation of the gastro-intestinal tract in poisoning with such metallic salts as those of mercury. The possibility of bacterial infection should be borne in mind and in such cases the combination of an antiseptic and colloid is probably preferable. Glycerite of starch serves as a demulcent, but is digested without becoming a nidus for the growth of bacteria. The objection to the use of demulcents in the treatment of diarrhea is the same as in other inflammatory conditions of the intestine. This applies with even greater force when it is evident that pathogenic bacteria are already doing harm. Petrolatum would seem to have a special field of usefulness in such cases, at least on theoretic grounds, but protectives, such as bismuth salts, that are also astringent and antiseptic, are usually preferred for use in combination with the mucilaginous demulcents.

The skin is kept soft and pliable under normal conditions by its natural secretions, but there are innumerable ways in which the pliability is destroyed and it is rendered hard, the hardening being followed by cracking and greater or less irritation. The hands especially are subject to innumerable minor injurious influences such as frequent washing with alkali soap; frequent wetting and drying; the action of cold winds; of various chemicals, including acids and alkalies in various trades; of tannin in vegetables in domestic service; of dust and ashes. Probably the majority of occupations involve a certain degree of injury to the skin of the hands, and while this is not so serious as to demand medical treatment, the frequent use of harmless demulcents adds much to the comfort of many persons.

All bland oils are emollient, but they become rancid on exposure to the air, and ordinarily they are inconvenient to use on the hands unless they are thoroughly rubbed into the skin. Even this may be troublesome; petrolatum for this purpose is quite inconvenient, though commonly used. Many people find glycerin irritant, especially women and children who have sensitive skin. Others find it a most convenient emollient when diluted with at least an equal volume of water. It is applied after washing and wiping the hands but while they are moist. A mixture that has been found useful consists of equal parts, by measure, of glycerin, water and solution of hydrogen peroxid. Rose water in equal amount may be substituted for the water or a small amount of benzoin or other flavoring may be added.

Among the emollients that do not require detailed discussion, various ointment bases may be mentioned. Lard becomes rancid, hence the Pharmacopeia directs that it shall be treated with benzoin, which prevents rancidity. Lanolin, or hydrous wool fat, does not become rancid, but it is not pleasant to use.

Wild reported to the therapeutic research committee of the British Medical Association recently on the

* Owing to lack of space the materia medica of this group is omitted from THE JOURNAL. It will appear when the series is published in book form.

availability of certain ointment bases in common use. While the subject is not fully understood, he holds that the fats such as lanolin and lard are absorbed more readily than petrolatum, but that we have little knowledge of the rates at which incorporated substances leave these substances to go into the tissues.

While this has little bearing on the use of ointment bases as demulcents it is obviously important when the use of ointments as a means of applying drugs for their systemic action is considered.

The melting point of the ointment is held to be of first importance, gradual melting being desired, hence Wild prefers a mixture of ointment bases with different melting points.

Certain other mechanical protectives serve the same purpose as the mucilaginous and oily demulcents and emollients; for example, the insoluble salts of bismuth, which are usually taken in a fine powder suspended in mucilage, form a thin layer on the mucous membrane of the stomach and intestine. Dusting powders, such as starch, lycopodium, talcum and boric acid serve much the same purpose on the inflamed skin. The salts of bismuth are usually classified as astringents, among which they will be mentioned later. They do not appreciably dissolve in the gastro-intestinal tract as a rule, but pass through it unchanged exerting their protective action throughout its length.

The subnitrate has long been the most popular of the salts of bismuth, but its popularity over the subcarbonate is apparently due to force of habit, for their beneficial actions are similar, while the subcarbonate does not cause poisoning as the subnitrate does occasionally. This poisoning is due in part to the absorption of nitrites resulting from the decomposition of large doses of the subnitrate by bacteria, in part to the systemic action of the metal bismuth.

Bastedo administered bismuth subnitrate to dogs and after several hours found the bismuth in a flocculent state coating the mucous membrane very uniformly as far as the ileocecal valve. He also administered bismuth subnitrate with a test breakfast to a patient and at the end of the hour found the salt in a flocculent state and uniformly mixed with the extracted stomach contents. It separated slowly from the food.

Cannon introduced the practice of administering the salts of bismuth and observing their progress through the alimentary tract by means of the fluoroscope, as an index of gastro-intestinal movements. The subcarbonate or the subchlorid is to be preferred to the subnitrate for this purpose because of the danger of using such large amounts of the latter as would be required (60 gm. or 2 ounces).

Bismuth salts are partly converted into the sulphid in the colon and this may act as an irritant; like the sulphids of many other metals it colors the stools black.

The soluble salts of bismuth, such as bismuth and ammonium citrate, are apparently wholly superfluous, as the soluble salts are converted into insoluble ones in the gastro-intestinal tract, and absorption is never desired. Linseed or flaxseed is used in the form of an infusion as a demulcent. The mucilaginous outer wall of the seed swells or dissolves in water to a pleasant tasting mucilage. The crushed or ground linseed is used in the form of cataplasms as an emollient and, because of its property of retaining heat, for the relief of inflammatory conditions generally.

The insoluble salts of zinc, more particularly the oxid and stearate, are used externally in the form of a dusting powder or an ointment to protect the skin and to allay irritation.

To absorb the discharge in eczematous conditions or to check excessive perspiration, mixtures of equal parts of zinc oxid or zinc stearate with starch and boric acid or one of the insoluble bismuth salts may be used. The composition of such dusting powders should be varied to meet the particular indications or needs.

THERAPEUTIC USES

The therapeutic uses of demulcents are indicated to a large extent by the preceding discussion. Attention has been called to the fact that they retard the absorption of fluids with which they are mixed, and they may check diarrhea by lessening the irritation of the intestinal mucous membrane, thereby diminishing peristalsis and prolonging the time allowed for absorption of fluid so that less passes into the large intestine. The fluid may also be retained so tenaciously by the demulcent, as in the case of compound licorice powder, that the bulk of the intestinal contents is increased and normal peristalsis is stimulated. In this case the laxative action is due partly to the irritation of the mucous membrane caused by the hydrogen sulphid formed in the intestine from the sulphur of the powder.

Demulcents are commonly used for the relief of cough and sore throat. It sometimes happens that the continued use of demulcent lozenges causes the tongue to become coated with insoluble matter from the lozenges, and it will be found advisable in such cases to use a gargle or spray for the throat and to wash the mouth with solution of hydrogen peroxid.

The salts of bismuth are used to allay vomiting from gastric irritation and to check diarrhea arising from irritation due to decomposing food; to protect the gastric mucous membrane in hyperacidity and in gastric ulcer; in gastro-intestinal catarrh and in ulcerative enteritis.

Bismuth subnitrate and subcarbonate are used externally for ulcers and suppurating wounds. A paste made of bismuth with petrolatum has long been used in treating old sinuses and fistulous tracts. It is injected once a week in cases of chronic tuberculous cavities but not in acute conditions. Poisoning has resulted from its use in this way and the use of the paste should be discontinued on the appearance of symptoms indicating that absorption is taking place. These symptoms include headache, nausea, stomatitis, with occasionally a blue line on the gums. In such cases the cavities should be irrigated thoroughly with warm olive oil and filled with the oil, which is allowed to remain for twenty-four hours, after which the washing with the oil is to be repeated daily until symptoms of poisoning abate.

Dusting powders including the insoluble salts of bismuth, starch, boric acid, zinc oxid and zinc stearate are used to protect inflamed skin, and collodion and oiled silk are used to exclude the air from inflamed surfaces. Flexible collodion affords an impervious covering which may be used on cuts and small non-infected wounds.

Lime liniment is specially used in the treatment of burns, promptly relieving the pain, but it has the great disadvantage of being uncleanly and difficult to remove and of permitting the development of bacteria beneath it.*

(*To be continued*)

* Owing to lack of space the materia medica of this group is omitted from THE JOURNAL. It will appear when this series is published in book form.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, JULY 17, 1915

DIETOTHERAPY UNDER WAR CONDITIONS

In a recent issue of The Journal,[1] the way was discussed in which the European war has changed the supply of readily available foods, and brought about an enforced movement toward a partial vegetarian regimen, in place of the more extensive use of meats, eggs, butter and wheat products. In a minor degree these changes, being the subject of governmental regulation and enforcement, place new restrictions on the dietary of the sick. Those who depend on a more or less strict ration may be affected in both an economic and a mandatory way. The patients concerned belong chiefly to the categories of gastro-intestinal, diabetic, gouty and nephritic cases. The number of persons thus involved is, comparatively speaking, not large. The diabetic for whom cost happens to be a matter of determining importance is advised by Schmidt[2] to replace the expensive fresh meats and poultry by cheaper smoked products and fish, to use cheese in place of eggs, and to substitute the cheaper fats for butter. In other types of disease, such as gout, the changes required by the limitations of the food supply actually are in harmony with the best practices of dietotherapy. There are, however, many patients with defective gastro-intestinal function, involving diminished secretion, ptosis and atony, who do not thrive on the coarser diet of war times. They cannot readily "manage" the foods rich in cellulose, and they complain of intestinal disturbances. It sounds strange to our ears to hear that patients are actually given a prescription or permit to enable them to procure wheat flour or wheat bread for the preparation of toast. Here, too, the refinements of cookery, along with the modern milling of the various grains and the preparation of comminuted vegetables, are likely to eliminate in part the widely maintained distinctions between the animal and vegetable products. This is in harmony with the success of numerous sanatoriums conducted on vegetarian principles in matters of diet.

It is interesting to learn the difficulties of decision that frequently confront the physician in relation to the selection of men for military service. What is to be done with dyspeptic individuals subject to varying degrees of diarrheas? Shall they be drafted? A competent clinician[2] states that he has hesitated to exclude such persons from the service because the activity in the open air with its stimulation of the vegetative functions frequently has the effect of a curative tonic. At any rate, the failure of a compensatory relief usually results in their return home by direction of the army surgeons. Obviously, diabetics and nephritics cannot engage in active service in the field.

The various devices of the German army for furnishing suitable food to the troops in action are responsible for the unimpaired health of many persons of uncertain gastro-intestinal equipment. Fresh meats, potatoes and vegetables poorly cooked by the individual soldier under the stress of army conditions are certain to lead to dyspeptic diarrheas and alimentary irritations, the forerunners of the infectious invasion of the digestive tract. Experience in former wars abundantly verifies this statement. But the present field kitchens of the German army, the "Gulaschkanonen" as they have been fancifully called, have furnished foods that are cooked with great thoroughness, so that they are readily comminuted and then easily digested. The lessons of this diet service may well appeal to us.

1. The War and Practical Dietetics, editorial, The Journal, A. M. A., July 3, 1915, p. 31.
2. Schmidt, A.: Volksernährung und Diätetik in Kriegszeiten, Therap. d. Gegenw., 1915, lvi, 81.

WEISMANN AND THE INHERITANCE OF ACQUIRED CHARACTERS

An address by Professor Conklin[1] of Princeton before the American Philosophical Society in commemoration of August Weismann, the biologist, who died toward the end of last year, is particularly interesting to physicians because Weismann led our generation away from the fallacy that acquired characters are inherited. The whole aspect of heredity apparently has changed since Weismann's book "The Germ Plasm" was published, three decades ago. Before that time, physicians generally accepted as important evidence the expressions of their patients that their father or mother died of heart disease and that therefore it was to be expected that the offspring should suffer from a similar condition, or that since the father had a craving for alcoholic stimulants, his descendants could scarcely help but be inebriates. It is difficult to understand now how such a superficial mode of thinking passed without correction.

It might readily be concluded that the man who worked such a revolution in biologic thought must have been a great observer and probably master of many details in the biologic sciences. Nevertheless,

1. Conklin, Edwin G.: August Weismann, Science, June 25, 1915, p. 917.

Weismann, during twenty years of his life, suffered so much from eye infirmity that he had to be read to, and had to have most of the observations that he wished made done for him by assistants and students. While he planned his experimental researches, he had to depend on others as a rule to make them for him. It would scarcely be expected that experimental work done by assistants would count for much in science. It would surely be thought that a man could not loom large in the science of his time whose reading had to be done for him for the latter fifty years of his life, at first by his wife and after her death by a secretary. Weismann belied all these expectations and made a place for himself among the leaders of science. He demonstrated beyond all doubt, as Conklin says, that "clear thinking is necessary in the advance of science as well as fine technic." Above all, he made it clear, to a more or less scornful world, that the brains are even more important than the hands and eyes in the discovery of biologic truth. "It does not fall to the lot of any man to make no mistakes, and in this respect Weismann was only human. But it has fallen to the lot of few men to do so much work of lasting value and to have so profound an influence on his day and generation as was true of August Weismann." Probably the handicap of weakness of vision must have been profoundly discouraging to Weismann. That he should have a significant career and reach any prestige in his chosen scientific work would seem impossible, and yet it may be that his weakness of vision made him think more deeply with regard to biologic questions.

His theory of the germ plasm as absolutely continuous from the present generation back to the earliest generations of living things and absolutely distinct from the somatoplasm or basic tissue of the body underwent some modification as the result of criticism, but it has now become the ordinary thought of most biologists. The potential immortality of the germ plasm led him to the conclusion that death is not a necessary correlative of life, but rather the result of higher differentiation. In this he anticipated Minot's view that "death is the price we pay for our differentiation." Conklin points out that Weismann predicted a number of other very concrete notions in science which had not been matters of observation, but which the developments of modern biology have brought to us and with them the confirmation of Weismann's theory.

Weismann had much to do with emphasizing the recognition of a purpose in living things. While he held tenaciously to a mechanistic conception of nature, he believed that extreme mechanism was consistent with a purpose in things that manifested itself in every detail. He held that "the most complete mechanism conceivable is likewise the most complete teleology conceivable. With this conception vanish all apprehensions that the new views of evolution would cause man to lose the best that he possesses — morality and purely human culture."

In a word, this partly blind man proved to be a leader in the thought of his time, and left many ideas that still influence deeply the philosophic as well as the biologic thought of our time. His challenge to the world to furnish any satisfactory proof of the inheritance of acquired characters still remains undefied. It is doubtful if any one believes today that the developed or somatic characters of an organism are transmitted to the next generation. "Weismann admitted in his later writings that the germ plasm might be modified to a limited extent by certain environmental conditions, but he held that such changes of the germ plasm led to general and unpredictable changes in future generations which might be wholly different from those somatic changes in the parents which are directly produced by such environment. This view is now widely accepted."

No one knew better than Weismann himself that he had not reached ultimate truth or that there were not errors in some of his conclusions. He closes his essay on "Life and Death" with the candid confession that it is the seeking and not necessarily the finding, the hunt and not the capture, that is the source of satisfaction and true pleasure in life. In his own beautiful words, "After all it is the quest after perfect truth, not its possession, that falls to our lot, that gladdens us, fills up the measure of our life, nay! hallows it."

THE WATER SUPPLIES IN THE PHILIPPINES

The importance of good water supplies adequately protected from danger of contamination is recognized; good drinking water has become a primary necessity for hygienic living. The suitability of water for a municipal supply depends on its freedom from sewage and other contamination and, in a lesser degree, on its hardness and other physical properties. Previous to the American occupation of the Philippines, the eight million inhabitants, with few exceptions, were dependent for their drinking water on surface supplies, shallow dug wells, open springs or water courses. There was probably not an artesian well in the islands, and the relation between water supply and public health was seldom considered. The only public water supply installation was at Manila, which derived its water from an often dangerously polluted source. Few Filipinos were free from intestinal parasites, and epidemics of water-borne diseases were prevalent.

The problem of obtaining an adequate supply of potable water in the Philippine Archipelago is peculiarly complex.[1] The surface water in the

1. Much of the information referred to is derived from the elaborate paper by Cox, A. J.; Heise, G. W., and Gana, V. Q.: Water Supplies in the Philippine Islands, Philippine Jour. Sc., Section A, 1914, ix, 273.

inhabited districts is generally unfit to drink, and the widespread ignorance of the rules of sanitation greatly increases the difficulty of keeping such water unpolluted. Although usually undesirable sources of water supply, rivers are necessarily used in some parts of the Philippines, where other satisfactory supplies are not available. In these cases, as is true at Manila at the present time, the proper protection of the water sources and the need of filtration and sterilization are serious municipal problems.

How little purity is to be expected in surface wells in the Philippines must be apparent when we recall that the state chemist of Indiana, Dr. H. E. Barnard, has found, by an examination of 5,000 in the very center of civilization, that over 50 per cent. were polluted, and has recommended the abandonment of every surface well in Indiana. Practically every shallow well examined by the Bureau of Science at Manila has been found dangerously polluted. As Cox and his associates in the study of the Philippine water supplies remark,[1] a simple hole in the ground, unlined and without a curb, covered partially with a loose bamboo platform, has frequently been considered an adequate and satisfactory installation. Such a well, situated in the midst of a crowed barrio where life is conducted in a primitive manner and where there are no sewerage facilities, cannot possibly be safe.

In a biologic study of Philippine waters made some time ago, Edwards[2] found 53 per cent. of all samples submitted dangerously polluted, and confirmed the generally accepted conclusion that all water used for drinking purposes should be boiled. In view of what we have already stated, it appears that the best natural potable water is to be expected from artesian wells. Ever since the American occupation, the insular government has stimulated the drilling of wells, particularly by minimizing the cost of the process. Since 1905, the Bureau of Public Works has drilled hundreds of wells at a cost of nearly a million dollars. The extensive analyses now available[1] show that the artesian water has been quite satisfactory from both the chemical and the biologic points of view, and at any rate has usually been far superior to previously used supplies.

It is an unexpected fact that the water from some of the artesian wells has been found too salty to drink. The high chlorin content, which is one of the most notable general features of the Philippine artesian waters, does not necessarily indicate sewage pollution, but rather seepage from the ocean or contact with underground salt deposits. Bacteria cannot be entirely removed from deep wells by pumping; hence flowing artesian wells from deep strata are to be preferred because they are practically sterile. A report of the Bureau of Health[3] notes remarkable improvement in general health conditions in localities in which the use of artesian water has become general. In some places the death rate has dropped as much as 50 per cent.

However insignificant the actual inherent curative properties of most mineral springs may appear on critical analysis, no country appears to be completely supplied with the agencies for restoring health if it is devoid of spas. We are informed by the authorities of the Bureau of Science that there are a large number of mineral and thermal springs in the Philippine Islands, many of which are located in places admirably suited for health resorts. At the present time the springs at only three places are much visited, namely, near Baguio, at Los Baños and at Sibul. The systematic study and exploitation of the balneotherapeutic possibilities involved remains for the future.

2. Edwards: Philippine Jour. Sc., B, 1908, ii, 21.
3. Ann. Rep. Philippine Islands Bureau of Health, 1907-1908, p. 25.

SEX ORGAN CHANGES IN INSANITY

Recent histologic examination of the testicles in insane males, and of the ovaries in demented females, has demonstrated that Nature tends to limit reproduction in those who are mentally unsound. Degenerative changes and atrophy of these organs are so pronounced in some of the severe psychoses as to make procreation impossible.

Todde[1] compared the volume and weight of testicles from insane patients with those of individuals dying from accident or usual illnesses. He found that the testes of the insane were notably smaller, and that altered structure and function were present in the various groups of mental disease, and seemed, for the most part, independent of the age. The most constant and distinct lesions were found in the testicles of idiots and imbeciles, in which, not infrequently, absolute arrest in the development of these organs had occurred. In other instances, degenerative changes were present in the spermatoform and interstitial structures of both the epididymis and seminiferal canals. There was also a marked increase in the intercanalicular tissue.

In contrast to these findings are the changes which occurred in dementia praecox. Here a great variation was found. In some cases there was an alteration of the "filial" cells and therefore a diminution of function. More often, however, there was a degeneration of the cells which have to do with the production of spermatozoa, or an atrophy of the seminiferous tubules with an accompanying increase in the intertubular connective tissue. In these cases there was an absence of spermatozoa. In senile dementia, irrespective of the patient's age, function was frequently abolished and there was an atrophy

1. Todde: Ricerche sulla funzione e sulla struttura delle ghiandole sessuali maschili nelle malattie mentali, Riv. sper. di freniat., 1914, xl, 233.

of the testicles. In other cases, there was evidence of marked diminution of function. This was also found in dementia paralytica, manic-depressive insanity, and in the so-called secondary dementias. In the psychoses attendant on the late stages of pellagra, evidences of hypofunction were present, which were directly proportional to the length and severity of the mental derangement. As one would expect, the forms of insanity of alcoholic origin have least effect on the genital organs. Nevertheless, a diminution of glandular activity usually occurs.

After a study of serial sections of ovaries from one hundred women who suffered during life with some form of mental disease and who died before reaching the menopause, Laura Forster[2] came to similar conclusions. She found that in mental disease there was either a lessening or a complete loss of ability to reproduce. This was especially true in dementia praecox, in which, at the age of thirty years, there was marked evidence of involution of the ovaries with an interstitial connective tissue increase and a smaller number of graafian follicles. Thus, there seems to be no relation between the changes in the sexual organs of the insane and the age of the patients. The degenerative processes are apparently in direct proportion to the duration and gravity of the mental disease.

It is of interest in this connection to recall the work of Fauser[3] and others who found, by using the Abderhalden method, that there are circulating in the blood, in dementia praecox and other mental disturbances, enzymes which are specific for testicular protein in the male and ovarian proteins in the female.

HEMOLYTIC JAUNDICE AND SPLENECTOMY

Since Minkowski in 1900 called attention to a syndrome which we now know as hemolytic jaundice, reports of about 150 cases have appeared in the literature. Few of these have been described in this country. Although at first considered a rare condition, hemolytic icterus probably occurs more frequently than ordinarily supposed.

The disease occurs congenitally and in families; as many as sixteen members of the same family in several generations have been affected. There is also an acquired type. While patients often reach old age unaware of their illness, symptoms are usually more severe in the familial cases of the second generation. The important symptoms are jaundice, splenic enlargement, anemia, fragility of erythrocytes, and "crises of pain." The jaundice is light, often preceded by enlargement of the spleen; at first it may be intermittent, but later it tends to become continuous. The stools are colored and contain an excess of urobilin. The urine contains urobilin and urobilinogen in large amount but no bilirubin, whereas the blood serum contains bile pigment. Pruritus, slow pulse, tendency to hemorrhages and other symptoms of ordinary jaundice are absent. The spleen, while varying in size, is usually large, and often causes a dragging pain.

The liver is rarely enlarged. Abel considers the shrinking in size of the spleen, even to one fifth of its volume, as a result of the subcutaneous injection of epinephrin, a diagnostic sign of value. The anemia, while usually of low grade, may at times show the picture of pernicious anemia. The fragility or decreased resistance of red cells to hypotonic salt solution is practically diagnostic when present, but it may be absent, particularly in the familial type. The "crises," occurring as often as every three or four weeks, are frequently mistaken for gallstone colic. An attack begins suddenly, often with fever, and lasts several days. The jaundice increases, bile pigment may be found in the urine, and the spleen enlarges and becomes tender. Gallstone formation is a frequent complication.

The cause of the disease is not known. The supposition that it concerns congenitally deficient red cells still has advocates. Autohemolysins and isohemolysins have been found. In the light of the effect of its removal, the spleen must be regarded as intimately associated with the cause. Kling and Eppinger found an increase in iodin and in unsaturated fatty acids in the blood, followed after splenectomy by a reduction in iodin and an increase in total fats and cholesterin. Gibson found a streptothrix in the spleen. Eppinger suggests that the blood, obstructed by narrow splenic capillaries, is hemolyzed by contact with the connective tissue. Many authors ascribe to the spleen a regulatory effect on the function of the bone marrow, possibly by the action of a hormone. Eppinger, by analogy, designates the condition in hemolytic jaundice as a hypersplenism, as contrasted to hyposplenism manifested by polycythemia. The jaundice is ascribed to stasis in the bile capillary produced by the thick, viscid bile formed in excessive red cell destruction, the character of the bile forming pigment stones. Perhaps the spleen is only a link in the chain, and probably the whole hematopoietic system is at fault.

The spleen, removed at operation, shows slight if any connective tissue proliferation. There is a loss in follicles and in germinal centers, while the pulp is usually infiltrated. The proliferated endothelium in most cases is filled with coarsely granular hemosiderin. Necropsy shows little change in the liver except that there is a pigmentary deposit which in part is iron-containing, and which is present also in the

2. Forster, Laura: Epitome, Asylum Reports, Jour. Ment. Sc., 1915, lxi, 302.
3. Fauser: Deutsch. med. Wchnschr., 1913, xxxix, 304; 1912, xxxviii, 2446.

kidneys and in the bone marrow in some cases. The condition of the bone marrow indicates overactivity.

Before splenectomy was performed, the results of treatment were unsatisfactory. The mechanism of the improvement after splenectomy is not known. The work of Pearce and his associates suggests that toxic and hemolytic agents or their sources are removed with the spleen. That some patients are not benefited so much as others may be explained by the assumption that the thymus and hemolymph glands take over the spleen function. Küttner, in necropsies after splenectomy, found over 100 new spleens which certainly had grown enormously after the operation, at which they were not observed.

Including the first case, which was reported by Banti in 1912, and the earlier operations performed before the clinical picture was recognized, forty-eight splenectomies have been done for hemolytic icterus.[1] In this series, three patients died, one, a poor surgical risk, following operation, another of sepsis of the pedicle and the third of unknown causes over three months after operation. The forty-five patients reported as "cured" were relieved of jaundice and of the crises. While most cases still are recent, one patient, after twenty-seven years, another after ten years, one after nine years, one after six years and nine patients after six months have been reported as well.

Following operation there is a leukocytosis in most cases, an initial fall in the number of red cells, as observed after experimental splenectomy (Pearce), in a number of cases, and pain in the left shoulder, probably from the breaking up of diaphragmatic adhesions. Jaundice disappears in from a few days to two weeks, and urobilin vanishes from the urine. The red cells steadily increase in number, to more than four million in twenty-two cases and to more than six million in three cases. The resistance of red cells in one case was found normal five weeks after splenectomy, but in most cases no change is noted before three months. Indeed, after twenty-seven years, one patient still showed fragility of red cells. On the whole, return to normal resistance appears to be the exception. Except in the presence of a positive contraindication to operation, splenectomy is to be recommended not only in the severe cases, but also in the milder but progressive types, to forestall the formation of gallstones and to help patients who are always more or less ill, although they may not as yet suffer from severe crises.

Naturally the beneficial result of splenectomy will stimulate the interest in hemolytic jaundice, and in the study of the splenic function, particularly in relation to the organs concerned in blood formation and destruction.

1. Elliott, C. A., and Kanavel, A. B.: Splenectomy for Haemolytic Icterus, Surg., Gynec. and Obst., 1915, xxi, 21.

HEREDITY IN MENTAL DISEASE

The new science of eugenics has as its subject-matter the question of race improvement through heredity. It obviously suggests a number of topics which bear an important relation to practical problems of everyday life. The interest in the subject of eugenics has served to recall the older discussions of the relative parts played by heredity and environment in the modification of the race. The question of nature versus nurture has been raised anew.

Only a misguided enthusiast would venture to make great claims at the present time for the possible future usefulness of applied eugenics. The doctrines of heredity on which the new postulates are based must first be subjected to critical investigation. Data that are as free as possible from unrelated variables need to be collected in greater number and evaluated. The limitations of the practical aspects of eugenics must be clearly formulated and emphasized. It is well enough to maintain in a general way that vitality is partly inherited and partly acquired, and that "a sound physical and mental inheritance is a greater asset than the inheritance of extraneous advantages like wealth." Many individuals, however, have assumed that the new science is primarily intended to foster a scheme of general governmental interference with marriage. As a matter of fact, the most earnest students of the subject have at best hoped to promote the gradual establishment in public opinion of fundamental standards. Any hope of improving the quality of the race by preventing the production of poor stock in mankind and encouraging the breeding from the best can be accomplished only on the basis of sound knowledge of the heredity factor. A recent writer has wisely and cautiously remarked that, as a matter of fact, in the development of an individual both nature and nurture play important parts; nature, that is, the character of the stock, determines the potential possibilities in the fertilized ovum; while nurture, or the character of the environment, is influential in exciting or repressing the development of these possibilities.

The principle of mendelian inheritance, which is a conspicuous feature of the doctrine of eugenics, involves the general idea that characteristics handed down by inheritance from parents to offspring may be treated as separate units. It is implied in this view that these unit characters are conveyed by definite substances or structures in the germ plasm which, for convenience, have been designated as "unit factors." Their nature is unknown. Whenever a pair of alternating characteristics are brought together, the blending of parental characteristics may occur; but frequently one is likely to be dominant, the other recessive. To cite a specific example, if each parent possesses one of the alternating characteristics, such as brown and blue eyes, respectively,

the children will all show the dominant characteristic; in this case brown eyes; but the other characteristic will be present in a recessive or concealed form and may crop out under suitable conditions in a subsequent generation. It is not necessarily lost.

Although physical features involving color, stature and form are realized to conform in many instances to the principles of mendelian inheritance, the possibility that mental traits are likewise transmitted has not found as ready acceptance. It is often conceded that predisposition plays an important rôle in mental disorder; but it would be difficult to formulate any very precise definition as to what is meant by such a pronouncement. An attempt at a more rigid analysis at once raises the question of the nature of recognized mental diseases. Are they to be conceived as "distinct entities, manifestations of a single, indivisible, disturbing factor," or are they merely "syndromes or chance associations of symptoms?" The latter could scarcely be expected to follow any very strict hereditary sequence.

Huntington's chorea offers a comparatively clear type of neuropathic entity, in which four traits are frequently bound together, namely, persistent localized tremors; the onset of these tremors in middle or late life; their progressive nature, and progressive mental deterioration. Prof. C. B. Davenport[1] of the Carnegie Institution of Washington has been engaged in a study of four family complexes in Eastern Long Island, Southwestern Connecticut, South-Central Connecticut and Eastern Massachusetts which show nearly a thousand cases of Huntington's chorea and yield the remarkable result that practically all can be traced back to about half a dozen individuals, including three (probable) brothers who migrated to America during the seventeenth century. The method of inheritance of some of the elements of Huntington's chorea has been worked out. In general, the choreic movements never skip a generation, and in other respects show themselves clearly to be a dominant trait. The mental disorder is usually of the manic type, and this also shows itself as a dominant.

Among the 3,000-odd relatives of the 962 choreics studied, many nervous traits are recorded. Thus, epilepsy is recorded 39 times, infantile convulsions 19 times, meningeal inflammations and brain fever 51 times, hydrocephaly 41 times, feeblemindedness 73 times, Sydenham's chorea 11 times, and tics 9 times, mostly in one small family. As Davenport points out, this incidence, which would seem high for an unselected population, suggests that chorea occurs in families characterized by a general liability to nervous and mental troubles.

This is a remarkable story of the presumable hereditary nature of mental disease — of a tendency along choreic lines handed down from six or seven ancestors almost without a break through generations. Hitherto genealogical records of human beings have had much to say of social position, and very little of physical capacity or intellectual ability. It is not beyond the bounds of possibility that some day a physical pedigree in man will be rated at its true value.

Without looking forward to a time when the pride of inheritance will include physical, mental and moral stamina as important, if not as the chief items, we can still be awakened to a thoughtful attitude in the face of such statistics as the Eugenics Office has furnished for Huntington's chorea.

1. Davenport, C. B.: Huntington's Chorea in Relation to Heredity and Eugenics, Proc. Nat. Acad. Sc., 1915, i, 283.

THE RESISTANCE OF PURE PROTEINS TO BACTERIAL DECOMPOSITION

It is a current custom to speak of the destructive action of bacteria on proteins with the confidence that attends the observations of everyday experience. This proteolytic phenomenon is assumed as the basis of those changes which go under the name of putrefaction. It will therefore come as a matter of surprise to many to learn that the general caption of the destructibility of proteins by these micro-organisms cannot be defended in all its details. We refer to the now definitely established fact that some of the purified proteins, in their native condition unaltered by preparatory reagents, are resistant to the disintegrative action of bacteria so long as no other sources of nitrogen are present in the culture mediums.[1] This statement holds true for the deportment of a number of bacteria now studied, including characteristic putrefactive anaerobes of the type of putrificus and malignant edema bacilli, in relation to purified egg-albumin and the crystallized vegetable protein edestin from hemp seed.

Putrefactive micro-organisms grow rapidly, as every one knows, in solutions containing products of protein digestion, such as peptone. The failure of many familiar bacteria to develop perceptibly in these pure protein mediums undoubtedly lies in the fact that the organisms are not supplied with nitrogen in a form which is available for their immediate use. In other words, as Sperry and Rettger have expressed it, they come to a standstill in their development or they die from inanition.

Solutions of native proteins may undergo complete proteolysis, however, if they contain peptone or some other nitrogenous food material which readily furnishes the necessary nitrogen for bacterial development. In such instances the proteolysis of the native protein is the immediate result of the action of an enzyme which has been elaborated by the bacteria during the process of rapid multiplication. This multi-

1. Bainbridge, F. A.: The Action of Certain Bacteria on Proteins, Jour. Hyg., 1911, xi, 341. Sperry, J. A., and Rettger, L. F.: The Behavior of Bacteria Toward Purified Animal and Vegetable Proteins, Jour. Biol. Chem., 1915, xx, 445.

plication is made possible by the nitrogen-containing material which is present along with the native protein. According to Sperry and Rettger, the resistance of native proteins is not due to any antiseptic properties of the undigested proteins, but presumably to the absence of any enzymatic agency to start their cleavage and perhaps to the molecular structure of the intact albuminous substances. Egg white is now believed to have an antiseptic, and in a measure bactericidal, action on certain anaerobic organisms. This property is undoubtedly not due to the specific protein egg albumin contained in the egg white, but to other agencies in the egg. Evidently the bacterial decomposition of animal and vegetable protein matter, which is of so much economic importance, is made possible through the agency of an intermediary, like the nitrogenous products of autolysis, or any other nitrogenous substance which furnishes sufficient nitrogen for the early development of the proteolytic bacteria and for the production of the enzymes which in themselves bring about the proteolysis.

Current Comment

FLIES AND SICK BABIES

The Bureau of Public Health and Hygiene of the New York Association for Improving the Condition of the Poor, in cooperation with the department of health, has conducted an investigation into the relation between the presence of flies in houses and the occurrence of diarrhea in small children. It was desired to determine whether the house fly is the chief carrier of diarrhea or whether dirt in the home and artificial feeding are more deadly factors in this serious condition. The cases investigated were divided carefully into a fly-protected group and a fly-exposed or control group. These groups were made as similar as it was possible to make them. The infants were visited every five days by nurses. The fly-exposed or control cases received all the instruction given in child hygiene work, but no special emphasis was laid on eliminating the house fly. In the protected group the greatest emphasis was laid on the absolute protection of the baby as far as possible from contact with flies. For the infant in the cradle, in the go-cart, on the bed and even in the arms the constant use of netting was insisted on. Over a thousand yards of netting were distributed among the protected families. Some of the results of the study are now being published in order to emphasize its lessons for the present summer. It was found that almost twice (1.9) as many infants were attacked by diarrhea among fly-exposed as among the fly-protected infants. Apart from the influence of flies, it was found that almost twice as many infants were attacked by diarrhea in dirty homes as in the clean homes. The most important factor for child mortality, however, was found to be artificial feeding. Nearly two and a half (2.4) times as many infants were attacked by diarrhea among the artificially fed as among the breast-fed infants. The influence of flies and dirt combined was found to be almost exactly equal to that of artificial feeding, even in reasonably good surroundings. Almost two and a half (2.4) times as many fly-exposed infants in dirty homes were attacked by diarrhea as were fly-protected infants in clean homes. The combination of dirt and artificial feeding made life extremely difficult for the infant. Considerably more than one out of two of them were attacked by diarrhea. Concrete studies of this kind in detail can scarcely help but be of great service in impressing the fact that disease among children is not a mysterious dispensation, but the result of common factors: flies, dirt and artificial feeding.

ANTIVIVISECTION IN CALIFORNIA

An incident highly instructive in its bearings on the struggle to preserve freedom of medical research in the United States occurred during the recent session of the California legislature. The antivivisectionists introduced a bill providing for a commission of inquiry into laboratory conditions in the state. As usual, the advocates of the measure supported their claims by lurid tales of atrocious cruelty to animals at the hands of experimenters, and they took care that the proposed commission should consist largely of persons known to be antagonistic to the use of animals for experimentation. Such legislation has been repeatedly advocated in Eastern states, but has always been refused serious consideration by legislative bodies. The partisan character of the proposal offered in California was apparently recognized, but, instead of objecting to it on that ground, interested members of the legislature suggested a compromise. A substitute measure authorizing officers of humane societies to inspect and supervise laboratories was introduced, and with very little discussion it passed both houses. The ease with which a measure of this character can receive favorable legislative attention is as surprising as it is illuminating. The bill as passed would give to any antivivisectionist, who wished to form a humane society with himself as president, the right of unlimited search without warrant—a right not possessed even by the constituted officers of the law—the police, the constables and the sheriffs! Furthermore, the inspectors thus provided for would be persons without any required training whatsoever, and they would be placed in judgment over highly trained laboratory workers who are investigating the most perplexingly developed structures and the most involved and entangled processes in Nature. One needs only to glance at antivivisection literature to learn how readily the untrained mind grossly misinterprets the facts of biologic observation. Inspectors wholly lacking insight into the extraordinary complexities of medical research are absolutely incompetent and, if permitted to act, could prove only their own capacity for blundering. The harassing of medical investigators by perpetually classing them with suspected criminals and subjecting their labors to the stupid meddling of suspicious and ignorant fanatics

would have been disgraceful. Fortunately, the bill did not become law. The words of the governor of California, explaining his refusal to sign the bill, are pertinent in every commonwealth where antivivisection legislation is attempted:

> The antivivisection law is so positively declared illegal by the attorney general that even were I disposed I could not sign it. I may add that the laws of the state of California for the prevention of cruelty to animals and the punishment of those guilty are plenary. Full authority is given to the humane officer, under the law, to obtain search warrants, enter premises, and gather such evidence as he may suspect exists. With our drastic laws, there can be no excuse for those who insist cruelties are practiced upon animals for permitting these cruelties to continue or those practicing the cruelties to go unpunished.

A PHARMACEUTIC EXPERIMENT STATION

During recent years the number of medical schools which have been provided with facilities for research through state grants or by private endowments has rapidly increased. While much is still to be hoped for, the outlook for medical advance is far brighter in this respect than it is in the related branch, pharmacy. Pharmacy schools, whether privately owned or controlled by the state, are almost without exception devoted to the routine instruction of students, and are, as a rule, doing nothing toward the advance of pharmacy as a science. A notable exception to this backward condition of pharmaceutic education was the establishment of a pharmaceutic experiment station by the Wisconsin legislature in 1913. The statute creating the experiment station provides that it further the cultivation and investigation of medicinal plants. In the first annual report of the director of the station,[1] Edward Kremers, a well-known authority and author on plant chemistry, gives an indication of what may be expected from this pioneer work. The station not only is engaged in the experimental cultivation of medicinal plants, but also cooperates with the government in this field, and offers its help and advice to those who wish to engage in this relatively new American industry. While drug cultivation is to be a prominent feature of the station's scope, the work planned by the director has a wider sphere. The present report shows that plant analysis, a most neglected subject, as well as the so-called synthetics, is to receive attention.

1. Report of the Director of the Pharmaceutical Experiment Station, Bull. 542, Univ. Wisconsin, December, 1914.

CLINICAL INVESTIGATION IN HOSPITALS

The practical value of a remedy, after the chemist, the pharmacist and the physiologist have made their investigations, must be determined finally by the clinician. In private practice, ordinarily, it is impossible to draw scientifically accurate deductions regarding the action of remedies, because it is impossible to exercise adequate control of all the factors which affect the case. A patient recovers under a certain drug treatment; how much of the credit, then, should be awarded to the drug and how much to the diet, the rest in bed, and the other nonmedicinal therapeutic measures—not to speak of the natural tendency of the organism toward recovery? The answers to these questions can be obtained only by comparison and observation of large series of cases treated under like conditions. This means that final judgment on remedies must be rendered in hospitals where all the conditions can be controlled and checked. The carefully planned clinical investigations of the Council on Pharmacy and Chemistry regarding the comparative value of "synthetic" and "natural" salicylic acid[1] and the relative action of heavy and light and Russian and American liquid petrolatum,[2] and the studies of Eggleston[3] on the action of digitalis preparations and of Lester Taylor[4] on the relative efficiency of caffein and theobromin illustrate the type of research that is urgently needed. Similar clinical trials of the various bromids of the pharmacopeia, of the innumerable iodin preparations, of the many iron compounds, and similar preparations will probably demonstrate that not one tenth of our present materia medica is of real practical value. Of course, ill-considered experimentation and haphazard trials, whether performed in hospitals or in private practice, are to be condemned. Occasional reports indicate that interns in some hospitals are given to using drugs experimentally in a way which can promote neither the science of medicine nor the good of the public. We have in this country many large and well-equipped hospitals, superintended by high-grade physicians. Tremendous possibilities for good rest in the hands of those who direct these institutions. By clinical investigation they could increase the efficiency of the staff, benefit the patients, and at the same time perform signal services to medical science.

1. Hewlett, A. W.: Clinical Effects of "Natural" and "Synthetic" Sodium Salicylate, THE JOURNAL A. M. A., Aug. 2, 1913, p. 319.
2. Bastedo, W. A.: Clinical Experience with Liquid Paraffin (Liquid Petrolatum), THE JOURNAL A. M. A., March 6, 1915, p. 808.
3. Eggleston, Cary: Clinical Observations on the Duration of Digitalis Action, THE JOURNAL A. M. A., Oct. 12, 1912, p. 1352; Clinical Observations on the Emetin Action of Digitalis, Sept. 6, 1913, p. 1757.
4. Taylor, L.: Clinical Studies in Caffein, Arch. Int. Med., December, 1914, p. 1769.

Typhoid Fever.—An analysis of the typhoid fever situation in Chicago for the first four months of 1915 shows that there were 271 cases during that period. Investigation revealed the source of the disease in 79 cases, or 29 per cent., which was as follows: imported, 28, or 10.33 per cent.; infected by carrier, 5, or 1.85 per cent.; contact from typhoid cases, 16, or 5.9 per cent.; contracted from unpasteurized milk (one dealer), 30, or 11.07 per cent. The death rate per 10,000 of population during these months was 0.1430. The analysis further shows that the disease prevailed more largely in certain districts getting their water supply from lake stations the water from which shows either constantly or periodically considerable colon contamination. The report of the department laboratory containing the result of four years' examinations of the city water, also referred to in the *Bulletin* of the department, from which the above facts are taken, shows that the water from certain of the lake stations, notably the Lake View Station and the Two-Mile Crib, are contaminated usually above the average of the city supply, although there has been a general improvement at all of the stations. Chemical treatment of the water has been begun at some stations. Sewage from north shore towns seems to be the source of contamination of the water of the north shore, as revealed by a survey made by the department in connection with the North Shore Sanitary Association.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Health Survey.—Walker is one of the four counties in the United States for which the national government has arranged a health survey. The survey is to be under the direction of Surg. Leslie L. Lumsden of the Public Health Service, Dr. William H. Sanders, Montgomery, Dr. Ralph C. Williams, Jasper, of the State Health Board, and Dr. Carl A. Grote, Jasper, county health officer of Walker County.

ARKANSAS

Personal.—Dr. F. M. Lennard, Texarkana, was thrown from his motorcycle, June 20, fracturing two ribs.——Dr. Ida J. Brooks, Little Rock, has been appointed resident physician of the Maternity Hospital, Minneapolis, succeeding Dr. Martha G. Ripley, deceased.——Dr. August Harden, Antoine, was shot and seriously wounded during a fight between youths in church, May 30.——Dr. William P. Moore, Newark, has been appointed an intern in the State Hospital for Nervous Diseases, Little Rock, vice Dr. Patrick Murphy, resigned.

State Board Matters.—E. C. Everett, Little Rock, has been appointed a member of the State Board of Osteopathic Examiners to fill the vacancy caused by the resignation of A. E. Freeman, Russellville, who has removed to Greeley, Colo.——Dr. Wells F. Smith, Little Rock, has resigned as a member of the State Board of Health to become secretary of the State Board of Medical Examiners.——Dr. Henry L. Montgomery, Gravelly, has been appointed a member of the State Board of Health.

ILLINOIS

Personal.—Dr. Frances M. Smiley, Kewanee, fractured a bone in his left wrist, July 1, while cranking his automobile. ——Dr. Clyde A. Finley, Galesburg, is reported to be seriously ill with appendicitis in the Galesburg Hospital.——Dr. Arthur J. Dalton, St. Joseph, has returned home convalescent after an operation for appendicitis.

Hospital Dedicated.—A building, said to be the first hospital erected by a Masonic order in America, was dedicated at Sullivan, June 25. The hospital has been built on a farm of 226 acres bequeathed to the Royal Arch Masons by Robert Miller. The institution will be known as the Royal Arch Masonic Hospital, and the chief oration at the dedication was delivered by Maj. Gen. George M. Moulton of Chicago. The grounds and building have a value of about $400,000, and the hospital will accommodate fifty patients.

Chicago

Personal.—Dr. Alice Hamilton has returned from abroad. ——Dr. Theodore B. Sachs is holding over as superintendent of the Chicago Tuberculosis Institute, pending the appointment of his successor. His commission expired July 1.

Ambulance Presented City.—An automobile ambulance has been donated by Mr. John T. Crane for the use of the Iroquois Memorial Hospital, and the health commissioner has asked the council for an appropriation for the maintenance of the car.

Fresh Air for Babies.—In the baby-saving crusade of the Department of Health, six fresh-air colonies have recently been established in congested parts of the city, and ninety-three nurses, six supervising nurses and three supervising health officers are occupied in reducing the number of deaths among babies during the hot season.

Depage Memorial Fund Complete.—Mr. George F. Porter, chairman of the Murray Depage Memorial Fund, announced on July 2 that the fund of $20,000 has been completed and will soon be forwarded to Dr. Antoine Depage, surgeon general of the Belgian Red Cross. This fund is in memory of Madame Depage, who, after effective work for Belgium, both here and abroad, lost her life on the *Lusitania*.

Report on Psychopathic Institute.—In a report made July 9 to the Cook County Board by a special committee composed of Drs. Sydney Kuh, Harold N. Moyer and Hugh T. Patrick, it is stated that equipment which was purchased with the funds appropriated for the psychopathic hospital had been diverted elsewhere, that there had been a general inefficiency of management and an inadequacy of personnel. The committee recommends that the psychopathic hospital be taken from the management of the county hospital, that at least three physicians and several nurses be added to the staff, that proper records shall be kept and that provision shall be made for continuing the work after patients have been allowed to leave the hospital.

Daily News Sanatorium.—The report of the *Daily News* Fresh Air Fund shows that the construction of the new sanatorium building at Lincoln Park was postponed on account of the delay in preparing the site on the new land opposite the present location. It is hoped that work on the new building may be commenced this fall. Contributions to the building fund last year amounted to about $10,335.60, making the entire fund on the first of January $42,425.03. The estimated cost of the new building is $90,000, leaving a balance of about $40,000 to be provided, inasmuch as the *Daily News* has made a contribution of $10,000 to the fund.

INDIANA

Summer Mission Anniversary.—The Summer Mission for Sick Children, Indianapolis, celebrated its twenty-fifth anniversary, July 1. Dr. Charles P. Emerson, Indianapolis, who delivered the principal address, lauded the work done by the mission in the prevention of infant mortality and paid especial tribute to the founder of the mission, Mr. Oscar C. McCullough.

Sanitation of Public Schools.—The Indianapolis Board of Health, at a recent meeting, made a ruling that hereafter all public schools in the city shall be provided with sanitary fountains and sanitary towels.——The board has also made a contract with the Indiana Dental College providing that all schoolchildren who have defective teeth and who are unable to pay for proper dental work, shall be treated by the staff of that institution.

Personal.—Dr. Charles S. Woods, formerly city sanitarian of Indianapolis, but more recently a professor in the University of Iowa, has been elected secretary and superintendent of the Methodist-Episcopal Hospital, Indianapolis, succeeding Dr. John McLean Moulder, Indianapolis, resigned.——Dr. John F. Barnhill, Indianapolis, has been appointed chief of the ear, nose and throat department of the Indiana University School of Medicine.——Dr. Edwin W. Poinier, Huntington, was operated on at the Huntington Hospital, July 2.——Dr. Hugh M. Miller, South Bend, who was operated on, June 23, at Johns Hopkins Hospital, Baltimore, is convalescent and expects to return home soon.—— Dr. Harvey H. Martin, Laporte, has been appointed local surgeon of the New York Central Lines.——Dr. and Mrs. Charles W. Corey, Hartford City, started for California, June 27.

MARYLAND

Personal.—Surgeon-General Gorgas, U. S. Army, who is acting somewhat in the capacity of a consulting expert in Baltimore's war on the mosquito, was in Baltimore, July 9, and spent a large part of the day going over what has been done since the campaign of extermination began.——Dr. David Street is in St. Agnes' Hospital critically ill with intestinal trouble, for which he has been operated on by Dr. Joseph C. Bloodgood.——Dr. Louis L. Lloyd, Baltimore, was operated on for appendicitis, June 26, in the Maryland General Hospital.

New Surgery for Maryland General Hospital.—A new surgery for the Maryland General Hospital has just been completed and equipped at a cost of $15,000. The surgery is located on the fifth floor of the building formerly occupied by the Baltimore Medical College. There are three operating rooms, two recovery rooms, two anesthetizing rooms, a sterilizing room, a preparation room, an instrument room and a locker room. The first operation in the new surgery was performed by Dr. John D. Blake. It will be formally opened to the public, July 15 and 16.

MASSACHUSETTS

Oldest Medical Alumnus.—The oldest medical alumnus of Harvard Medical School is believed to be Dr. James Lloyd Wellington, Swansea, who retired in 1904 after having practiced medicine for sixty-two years.

War Unit Sails.—The second Harvard unit for service in Europe was mustered in, June 18, and sailed from New

York, June 26. The party consisted of thirty-five surgeons, all graduates of Harvard Medical School, and seventy-five nurses. The unit will serve for three months in British base hospitals.

Alumni Election.—At the annual meeting of the Harvard Medical Alumni Association, June 24, the following officers were elected: president, Dr. Frederick Cheever Shattuck, 1873; secretary, Dr. Arthur Brewster Emmons, II, 1902, reelected; and treasurer, Dr. James Bourne Ayer, Jr., 1907; all of Boston.

Creel Comes for One Year.—Surg. Richard H. Creel, U. S. P. H. S., whom Boston has been trying for a long time to secure as commissioner of health, has now, it is reported, agreed to come to Boston for one year and reorganize the Department of Health under the terms of the new ordinance and with special reference to the taking over by the government of the Municipal Quarantine Station. It is said that Dr. Creel's salary will be $7,500 a year.

Personal.—The fiftieth anniversary of the entrance of Dr. Amasa E. Paine, Brockton, into the medical profession was celebrated by the Brockton Medical Society, June 24. A mahogany clock suitably inscribed was given Dr. Paine by the society.——Dr. James W. Manary, Boston, of the house staff of the City Hospital, fractured his right arm while cranking his automobile, June 24.——Dr. Walter C. Bailey, chairman of the trustees of hospitals for consumptives, Boston, has resigned, taking effect July 1.

Tuberculosis Dispensary Notes.—The new tuberculosis dispensary at Wakefield is practically ready and it is expected that it will be opened this month. The Board of Health has rented quarters in the Taylor Building, which provides a waiting room for attending and giving advice to tuberculosis patients.——The new tuberculosis dispensary at Haverhill was opened, July 2, with Dr. Israel J. Clarke as physician in charge. The dispensary is located on the second floor of the City Hall.——The Employees Tuberculosis Relief Association of Springfield was organized, June 25, and elected officers and a board of managers. About $2,700 has already been collected for the general fund.——The tuberculosis hospital of Everett was opened for public and official inspection, June 18. The institution will accommodate twenty-five tuberculosis patients and has an isolation ward for contagious patients. The building has cost about $10,000.——The tuberculosis dispensary of Springfield was opened, July 1. Two rooms have been obtained in the Dwight Manufacturing Company's dispensary, and Dr. Charles H. Prindle, Chicopee, is in charge.

MICHIGAN

Hospital News.—Dr. James C. Martin, health officer of Highland Park, has asked the council to consider plans for two hospital units, one for contagious diseases and one for emergency cases. These two units could be built for $50,000.——Charles S. Mott, formerly mayor of Flint, has offered a gift of money to build a three-story addition to Hurley Hospital, the only condition being that the present hospital be sold and the proceeds from this sale applied to the cost of a new building.

Personal.—Dr. Ralph C. Apted, Grand Rapids, who underwent a serious operation on the gallbladder about two months ago, is reported to be improving after a relapse.——Dr. Della P. Pierce, Kalamazoo, was presented with a silver loving cup on the occasion of the twenty-fifth reunion of her class in the University of Michigan. Dr. Pierce has been secretary of the Alumni Association for ten years.——The degree of Master of Arts was conferred on Dr. Arthur F. Fischer, Hancock, at the recent commencement exercises of the University of Michigan, the reason assigned being his service in municipal and state health work, especially tuberculosis.——Drs. Johnson B. Kennedy, Albert McMichael, Warren L. Babcock and Robert J. Palmer, all of Detroit, were guests of honor at a dinner given, June 25, by the staff of Grace Hospital, Detroit. These gentlemen and their wives started on a trip to Alaska, California and Hawaii, July 4.——Dr. William H. Price was reappointed health officer of Detroit, June 25.——Dr. Albert E. Bryant, Detroit, has succeeded Dr. James A. McVeigh, Detroit, as physician to the Smallpox Hospital.——Dr. Florence Huson, Detroit, who has been seriously ill at her home, is reported to be improving.

NEW JERSEY

Compulsory Vaccination Mandatory.—Assistant Commissioner of Education John Enright has given as his opinion to the board of education of Newark that compulsory vaccination of schoolchildren is mandatory on the board. The board also had a similar opinion from its counsel. The question was brought up by the activity of the antivaccinationists, headed by James C. Corlies, a veterinarian, who brought to a meeting of the board of education a doctor of New York, who presented the usual arguments of the antivaccinationists.

Hygiene Workers Hold Meeting.—At the first annual meeting of the State Association of Medical Inspection and School Hygiene, held in Newark, June 25 and 26, the following officers were elected: president, Dr. George J. Holmes, Newark; vice president, Dr. Henry H. Davis, Camden; secretary, Miss Josephine Halberstadt, Newark; treasurer, Dr. Walter D. Weber, West Hoboken; and trustees, Miss M. E. Motzenbecker, Newark, and Drs. Eugene H. Goldberg, Kearny; Henry H. Brinkerhoff, Jersey City; Waldo U. Kurtz, Asbury Park, and Ralph D. Vreeland, Passaic.

NEW YORK

New York City

Personal.—Dr. and Mrs. James P. Boyd, Albany, have sailed for Europe.——Dr. M. Allen Starr has resigned the professorship of neurology at the College of Physicians and Surgeons in the City of New York, and has been succeeded by Dr. Frederick Tilney, Brooklyn.

Infant Death Rate.—The effects of the infant welfare campaign inaugurated by the State Department of Health a year ago have been gratifying in the extreme. The infant mortality for New York City was 102 deaths per 1,000 births in 1913, and 94 in 1914. For the rest of the state the corresponding rates were 120 and 110. The reduction in the rate outside of New York City from 120 to 110 corresponds to a saving of nearly 1,000 infant lives. Much yet remains to be done and there is no reason why the infant death rate for the whole state should not ultimately be forced down to the New York City figure or below it; this would mean a saving of over 1,500 more infant lives. There should be established more infant welfare stations and beneficial educational work of the public-health nurse.

NORTH CAROLINA

Woman's Hospital Opened.—Drs. William H. Crowell, Whiteville, and Charles H. C. Mills, Charlotte, announce the opening in that city of a hospital devoted entirely to maternity and gynecologic cases.

Recognition of Colleges.—A ruling was recently adopted by the North Carolina State Board of Medical Examiners that after 1915 no candidate will be admitted to the licensing examination unless he is a graduate of a college rated in Class A or Class B by the Council on Medical Education of the American Medical Association, and that after the 1917 examination only graduates of Class A colleges will be admitted.

Personal.—Dr. Archie A. Barron, Charlotte, has accepted service with the Virginia Life Insurance Company and will move to Richmond, Va.——Col. J. L. Ludlow, C. E., the only lay member of the Medical Society of the State of North Carolina, has been reappointed a member of the State Board of Health.——Maj. Francis J. Clemenger, Asheville; Capt. Thomas F. Reynolds, Canton, and Lieut. Francis M. Davis, Canton, officers of the Medical Corps of the National Guard of North Carolina, attended the maneuvers of the camp of instruction at Tobyhanna, Pa.——Dr. David A. Stanton, High Point, who was dispossessed of his position as city physician by a political upheaval recently, continues in office as registrar of vital statistics of the State Board of Health.

Antityphoid Vaccination Campaign.—The State Board of Health is pursuing a vigorous antityphoid vaccination campaign in ten counties which all are cooperating in the work. Five began a six weeks' course of general vaccination, June 21, with the following physicians to assist the local health officers: Henderson County—Drs. Edwin T. Sessoms, James A. McCoy. Buncombe County—Drs. W. B. Cox, William T. Boyette. Cumberland County—Drs. Paul C. Carter, Donald B. Moore, Drexel. Wake County—Drs. Grover B. Woodard, Lawrence O. Crumpler, William P. McKay. Northampton County—Clifton G. Parker, Woodland; William H. Sloan. These, with five other counties, have made appropriations for local expenses sufficient to secure the active cooperation of the state board under whose supervision the work is being done, aided by efficient local health officers. Lectures are given at each point, consultations on any disease question are afforded, records are systematically kept, and every effort

made to render the work thorough. The cost to the counties ranges from 10 cents to less than 7 cents a head. It is estimated that more than 50,000 persons will be vaccinated during the campaign.——The state laboratory of hygiene is running at its full capacity on account of the campaign against typhoid fever, and is now able to supply sufficient vaccine for 30,000 injections weekly. At present about 18,000 patients a week are being inoculated.

OHIO

Personal.—Dr. Maurice Feiman, Canton, who has been studying in Vienna for the last year, has gone to Switzerland.——Dr. William R. Coleman, Sugar Grove, who was painfully injured in an automobile accident, June 20, is reported to be doing well.——Dr. Samuel P. Fetter, Portsmouth, is reported to be improving.

Library Planned.—Rooms have been leased in the new Y. M. C. A. building, Canton, for a permanent medical library and lecture room, by the Canton Medical Library Association, an auxiliary of the Canton Medical Society, and the Chamber of Commerce. Dr. John P. DeWitt, Canton, is temporary chairman of the organization committee.

Western Reserve News Notes.—Prof. George N. Stewart of the H. K. Cushing Laboratory for Experimental Medicine, has sailed for Europe.——Dr. David Marine, associate professor of experimental medicine, sailed for France, July 3. He will be associated with Dr. Alexis Carrel at Compaigne during the summer in the study of wound infections.——Dr. Maurice L. Richardson, Hanna research fellow in pathology, has gone to Harvard for the summer for laboratory work.——Dr. Roland E. Skeel, associate clinical professor of gynecology, has had conferred on him the honorary degree of master of arts by the University of Michigan and Ohio Wesleyan University.

Western Reserve Graduates Called to Other Posts.—The following instructors and graduates of Western Reserve University have recently been called to other posts: Dr. Howard D. Haskins, '95, former associate professor of biochemistry, has been made professor of biochemistry in the University of Oregon, Portland; Dr. James Douglas Pilcher, '05, former assistant professor of pharmacology, has been made professor of pharmacology in the College of Medicine of the University of Nebraska, Omaha; Dr. Harold B. Myers, '11, formerly instructor in pharmacology at Bellevue Hospital Medical College, New York City, has been appointed professor of pharmacology in the Medical School of the University of Oregon, Portland; Dr. Aldis A. Johnson, '12, has been appointed assistant professor of clinical pathology in the College of Medicine of the University of Nebraska, Omaha, and Dr. Oscar Theodore Schultz, formerly assistant professor of pathology, has been appointed professor of pathology and bacteriology in the University of Nebraska College of Medicine, Omaha.

Faculty Changes.—The following promotions and appointments have been made by the trustees and medical faculty of Western Reserve University, Cleveland: William Henry Humiston, M.D., associate professor of gynecology, to be clinical professor of gynecology with seat and vote in the faculty; David Marine, A.M., M.D., assistant professor of experimental medicine, to be associate professor of experimental medicine; John James Thomas, A.M., M.D., associate in obstetrics, to be assistant professor of obstetrics; William Hawksley Weir, M.D., associate in gynecology, to be assistant professor in gynecology; George Bourne Farnsworth, A.B., M.D., instructor in obstetrics, to be associate in obstetrics; Paul John Hanzlik, Ph.C., A.M., M.D., instructor in pharmacology, to be associate in pharmacology; Roy Gentry Pearce, A.B., M.D., instructor in physiology, to be associate in physiology; Harold Oliver Ruh, A.B., M.D., instructor in pediatrics, to be associate in pediatrics; Oscar Theodore Thomas, M.D., instructor in gynecology, to be associate in gynecology; Harry Roswell Wahl, A.M., M.D., instructor in pathology, to be associate in pathology; Howard Dittrick, M.D., demonstrator of gynecology, to be instructor in gynecology; William Craw Gill, A.B., M.D., demonstrator of dermatology, to be associate visiting dermatologist of Lakeside Hospital; George Franklin Thomas, A.B., M.D., demonstrator of roentgenology, to be instructor in roentgenology, and George Eric Simpson, B.S., demonstrator of organic biochemistry, to be instructor in biochemistry.

Cincinnati

Personal.—Dr. Joseph L. DeCourcy has returned after two years' special study in New York City.——Dr. Robert Roy Sattler, son of Dr. Robert Sattler, is on duty with the Harvard Hospital unit in England.

Professorship Endowed.—Dr. Robert S. Morris, New York, has been offered and accepted the full-time professorship of medicine in the medical department of the University of Cincinnati. Thirty thousand dollars has been subscribed by friends of the university and of the late Dr. Frederick Forchheimer, after whom this chair is to be named, for the maintenance of the professorship for three years.

New Medical College Building.—A new medical college building is assured for the medical department of the University of Cincinnati, for which Mrs. Mary M. Emory subscribed $250,000 a few weeks ago, on condition that a similar amount be raised before July 1. Dr. Christian R. Holmes announced on that day that $255,000 had been raised, making the total $505,000. The building will be erected on the grounds of the new Cincinnati Hospital and will be connected with the latter by a tunnel. Construction will probably be commenced on the new building early in the spring.

PENNSYLVANIA

Shorter Quarantine.—Under a ruling of the State Board of Health in conformity with an act of the last legislature, a shorter period of quarantine for some contagious diseases is established. Quarantine in the cases of measles, mumps, chickenpox and German measles will be lifted in sixteen days on the application of the physician, who must certify that the patients have fully recovered.

Philadelphia

Hospital Buys Guild House.—The Orthopedic Hospital has purchased for $40,000 the guild house of Epiphany Chapel, where the hospital authorities will erect a building with new departments as a memorial to Dr. S. Weir Mitchell.

Personal.—Dr. Ralph H. Luikert sailed for Serbia, June 26, with the University of Pennsylvania contingent.——Dr. Max J. Stern, who was struck in the eye by a golf ball recently, is reported to be slightly improving and it is hoped that the sight of the eye may be saved.——Dr. Henry K. Gaskill has been appointed visiting dermatologist to the Philadelphia General Hospital, succeeding Dr. Henry Stelwagon, resigned. Dr. Stelwagon had been connected with the dermatologic institution for twenty-seven years.

Child Federation Places Bulletin No. 2 in Alleys.—The second "health bulletin" which the Child Federation is placing in the courts and alleys of the city for the instruction of those who do not read newspapers and have not access to the ordinary helps toward proper living, has been issued. The bulletin has been placed in the iron standards that have been erected for this purpose by the federation, and will be read by the children of thousands of foreigners and interpreted to their families. It deals with the evils of bad housing and is directed to fathers.

SOUTH DAKOTA

Personal.—Dr. Mortimer Hertzberg, Sioux Falls, state bacteriologist and director of the state health laboratory, was operated on for appendicitis at the McKennan Hospital, Sioux Falls, June 25.——Dr. Leonard C. Mead, superintendent of the State Hospital for the Insane, Yankton, recently completed twenty-five years of service to the state in that capacity.——Dr. C. A. Homan has resigned as superintendent of the German Baptist Hospital, Aberdeen, and will go to New Mexico.——Dr. Fred Treon, Chamberlain, was awarded a gold medal at the annual commencement of Columbus College, June 8. The new college infirmary, now nearing completion, is to be named Treon Hall, in honor of Dr. Treon.——Dr. Merlin O. Johnston has resigned as superintendent of the Brown County Board of Health and will resume practice in Aberdeen.——Drs. Jesse D. Whiteside and Fridolin J. O. Kraushaar, Aberdeen, have been appointed members of the Brown County Board of Health.

TEXAS

Dr. Carrick's Mother Dies.—Mrs. Cammie R. Howard, mother of Dr. Manton M. Carrick, Dallas, died in Dallas, July 8. Mrs. Howard has been much interested in the campaign against tuberculosis, was largely instrumental in establishing the State Tuberculosis Sanatorium, and in founding the Woodlawn Hospital for Tuberculosis, Dallas, and has made a bequest of $25,000 in her will for the latter institution.

Hookworm Campaign.—The hookworm campaign in Texas, conducted by the Rockefeller Hookworm Commission during the past three years, was discontinued June 30 on account of the failure of the legislature to make any appropriation for state cooperation. The only cooperation received by the commission was from local appropriations by counties. The commission does not therefore feel called on to continue the work under the circumstances.

Health Boards Organize.—At a meeting called by State Health Officer William B. Collins at Austin, June 28, the Association of Boards of Health of Texas perfected permanent organization at Austin, and elected the following officers: president, Dr. William M. Brumby, Waco; vice presidents, Drs. William E. Spivey, Belton; Charles Tarver, Eagle Pass; William W. Lathan, Crockett; Pearl C. Wray, Jayton, and Robert L. Graham, Cotulla; secretary, Dr. Edgar W. Loomis, Dallas, and treasurer, Dr. James C. Winn, Gilmer. The purposes of the association are the advancement of sanitary science; the promotion of better cooperation and organization of boards of health, and the uniform enforcement of sanitary laws and regulations.

VERMONT

More About the Cancer Meeting.—As a result of the district meetings held throughout the state, June 8 to 11, for the study of cancer, much interest on the subject has been excited among the people of the state. It is proposed to follow up the start that has been made by having the next meeting of each county medical society devoted to the cancer problem and to have cancer as the theme of the oration in surgery at the annual meeting of the state society to be held in Burlington, October 14 and 15. The secretary also expects to publish a bulletin of the papers read at the district meetings, and the details of this new method of interesting simultaneously, the laity and the medical profession, in this important question.

WASHINGTON

New Hospital.—The Dereberry residence, Dayton, has been purchased and will be remodeled as a hospital.

Physicians Organize.—The West Seattle Medical Society was organized, June 10, and Dr. Samuel B. Ross was elected secretary.

Sanatorium for Colored People.—The first state sanatorium for colored people in the state is to be located in Delaware, where a temporary building has been opened with accommodation for twenty patients.

Personal.—Dr. Walter V. Gulick, Tacoma, has been appointed a member of the staff of the Western Washington State Hospital, Fort Steilacoom.——Dr. Herbert W. Stoughton, Granite Falls, has been appointed surgeon and sanitary inspector for the new government railway in Alaska.

WEST VIRGINIA

State Board Appointments.—Drs. Charles M. Scott, Bluefield, and J. McKee Sites, Martinsburg, have been appointed members of the State Board of Examination and Registration of Nurses.——John N. Judy, Petersburg, has been appointed a member of the State Board of Pharmacy and George L. Beerbower, Terra Alta, and D. C. Clark, Blacksville, have been appointed members of the State Board of Dental Examiners.

New Buildings.—Contracts have been let by the State Board of Control for the construction of a school of medicine at the West Virginia University, Morgantown, to cost $57,000. ——The capacity of the State Tuberculosis Sanatorium, Hopemont, near Terra Alta, which now can accommodate sixty patients, will be doubled by August 1, when the three new buildings, now under course of construction, are finished. Dr. Elijah E. Clovis, Terra Alta, is superintendent of the sanatorium.

Health Council Notes.—The West Virginia Public Health Council, which succeeded the State Board of Health, has been unable to obtain suitable quarters in the State House and will be obliged to rent offices.——Dr. Samuel L. Jepson, Wheeling, state health commissioner, presided over the first meeting until Dr. William W. Golden, Elkins, was elected president of the council.——The name of the member from Upshur County, should be Dr. Floyd F. Farnsworth, Frenchton, and not Dr. J. S. Farnsworth as erroneously stated in THE JOURNAL of June 12.——Dr. Samuel L. Jepson has moved from Wheeling to Charleston.

WISCONSIN

Obstetricians Organize.—The Obstetrical Society of Milwaukee, an organization to promote the science and art of obstetrics, was organized in Milwaukee, June 25, with an initial membership of forty. Meetings are to be held on the first Monday of each month.

Addition to Infants' Home.—The Milwaukee Infants' Home and Hospital has raised $20,000 for an addition to the present hospital and expects to raise $10,000 additional. It is planned to build a fireproof addition to the home where a much larger number of babies can be treated.

Marriages Decreased Under Eugenic Law.—Marriages in Wisconsin under the eugenic law are said to have decreased from 21,052 in 1913 to 17,245 in 1914, a decrease of nearly 20 per cent. The secretary of the State Board of Health is inclined to blame business conditions rather than the law for this decrease.

Free Wassermann Test.—Under authority given in chapter 307 of the laws of 1915, the board of control has given authority to make the necessary arrangements with the laboratory of the Psychiatric Institute, Mendota, to give the Wassermann test to any person confined in any state or county institution and to make the test free of charge for any practicing physician of the state who makes application therefore in behalf of any resident of the state. The law also provides that arrangements shall be made in the institute for the free examination of cerebrospinal fluid for any physician of the state.

Personal.—Dr. John M. Dodd, Ashland, was elected secretary-treasurer of the Wisconsin State Board of Medical Examiners, June 30.——Dr. Paul C. Hodges, Ashland, has accepted the chair of physiology in the Harvard Medical School, Shanghai, China.——Dr. Arthur D. H. Thrane, Eau Claire, suffered a slight cerebral hemorrhage, July 1.——Dr. Frank I. Drake, Waupun, has succeeded Dr. Charles Gorst, Mendota, as superintendent of the State Hospital, Mendota. ——Dr. Ellietson H. Rogers, Stevens Point, was operated on in Mercy Hospital, Chicago, June 19.——Dr. Edmund F. Woods, Janesville, has sailed for England for work in war hospitals in France.——Dr. James J. Caveney, Milwaukee, was knocked down by an automobile, June 20, and seriously injured.——Dr. Norman Hoffman has been reelected superintendent of the Wisconsin Tuberculosis Sanatorium, Wales.

CANADA

Manitoba Contribution to Red Cross.—The Manitoba Provincial branch of the Red Cross Society in Canada has collected over $6,000 in that province. The money will be used to supply 121 beds for the Canadian Red Cross Hospital at Cliveden, England, the name of the donor of each bed to be inscribed thereon.

Ryerson Returns to Toronto.—Surgeon-General George A. Sterling Ryerson, M.D., Toronto, president of the Canadian Red Cross Society in Canada, arrived in Toronto, July 9. Speaking of the Canadian hospitals which he inspected while abroad he said they were remarkable for equipment, for efficiency and for good results which have been uniformly obtained. The first one to be established is at Le Touquet. This is a very fine hospital and the staff of doctors and nurses are all Canadians. It has now 1,000 beds instead of 620 formerly. Another is at Le Treport under command of Lieutenant-Colonel Bridges, Ottawa. It is also a finely equipped institution, having also 1,000 beds, all under canvas. A third with accommodation for 400 patients is at Winereux, under command of Lieut.-Col. S. Handford McKee, Montreal. The three field ambulances are under command of Lieut.-Col. Charles M. Foster, formerly of Toronto, with Lieut.-Col. Arthur E. Ross, M.P.P., Kingston, Ont.; Lieut.-Col. Walter L. Watt, Winnipeg, and Lieut.-Col. Duncan A. McPherson, Toronto. All of these officers have been mentioned in dispatches. Another Canadian hospital is being established in Etaples. McGill University Hospital is in France at a point 9 miles east of Calais, while the University of Toronto General Hospital is being retained at Shorncliffe, England, for the present. Dr. Ryerson states the sanitation is remarkable in hospitals, camps and trenches.

Personal.—Dr. Charles R. Bourne, superintendent of the Montreal General Hospital has gone to Three Rivers, Quebec, as sanitary inspector in the army medical service, and will be succeeded at the hospital by Dr. E. T. Kirkland.——Drs. E. Waterson and Alfred T. Bazin, Montreal, have gone to Camp Valcartier for training.——Drs. J. Bryce McMurrich

and Samuel J. N. Magwood, Toronto, have been accepted for overseas service with the army medical corps, and will proceed across the Atlantic to join a British medical unit.——Dr. Edward Ryan, superintendent of the Kingston (Ont.) Hospital for the Insane, strongly endorses the resolution of the Ontario College of Physicians and Surgeons calling on the Ontario government to provide for proper care of wounded soldiers who become affected with nervous and mental diseases. He suggests that the government of Ontario select a competent staff from its provincial hospitals for the insane and that the new hospital now nearly completed at Whitby, Ont., be selected for further treatment of the more advanced cases.——Sir Charles Tupper, M.D., Bart., the first president of the Canadian Medical Association (1867-69) has just passed his ninety-fourth birthday and is living quietly in England in the enjoyment of good health.——Lieut.-Col. Hew R. Duff, M.D., Kingston, Ont., is determined to get to the war somehow. He has just been accepted for overseas service with the Queen's Stationary Hospital. Dr. Duff first volunteered with the first Canadian overseas contingent, but while in training at Valcartier Camp last fall was thrown from his horse and seriously hurt. He recovered and was in readiness to go with the second contingent when he contracted pneumonia. Recovering from that he has been appointed as an overseer of Queen's Stationary Hospital. Lieutenant-Colonel Duff was formerly chief medical officer of the third division of Canadian militia.——Lieut.-Col. George G. Nasmith, formerly bacteriologist and chief of laboratory to the department of health, Toronto, who went abroad with the first Canadian overseas force as sanitary officer, has been put in charge of the hygiene work of a British army corps.——Capt. Fred J. Hart, M.D., formerly of Winnipeg and Regina, who was attached to the fifth battalion of Canadian militia in France, was taken prisoner by the Germans on April 27, as a result of going on alone to aid at the post where wounded had been left. With other prisoners he was removed to Danholm on the Baltic. On June 17 Captain Hart was informed that all the British medical officers would be released. Eight days after the announcement was made he was on his way to London, where he recently arrived in safety. After spending fourteen days' holiday in England he returned to his former duties in France.——Dr. Edwin K. Richardson, Toronto, is mentioned to command the thirtieth battery of Toronto, the new artillery regiment being raised.——Major Thomas Bedford Richardson, Toronto, at present in command of the hospital at Camp Niagara, has been accepted for overseas service.——Capt. George S. Strathy, Toronto, who went abroad with No. 2 Clearing Hospital, is in charge of the infectious cases at Moore Barracks, Shorncliffe, England.——Drs. Herbert A. Bruce, Herbert J. Hamilton, J. Orlando Orr and Harry B. Anderson, Toronto, have been named honorary lieutenant-colonels.

GENERAL

Southwest Physicians to Meet.—The annual meeting of the Medical Association of the Southwest will be held in Oklahoma City, October 12 and 13, under the presidency of Dr. Jefferson D. Griffith, Kansas City.

Confederate Medical Officers Meet.—The eighteenth annual meeting of the Association of Medical Officers of the Army and Navy of the Confederacy, was held in Richmond, Va., June 1 to 3, under the presidency of Dr. Aurelius A. Lyon, Nashville, Tenn. Dr. Stuart McGuire, Richmond, Va., was elected president; Dr. John N. Upshur, Richmond, vice president, and Dr. Samuel E. Lewis, Washington, D. C., secretary.

Insurance Congress.—A world insurance congress is to be held in San Francisco, October 4 to 16, under the auspices of the Panama-Pacific International Exposition. The subjects of chief interest from a medical standpoint to be discussed at the congress are the services performed by life insurance companies, and the conservation of human life. Among the organizations that will participate in the congress are the American Life Convention, the Association of Life Insurance Medical Directors, and the Life Extension Institute.

Ophthalmologists Elect.—At the annual meeting of the American Ophthalmological Society held in New London, Conn., July 6 and 7, the following officers were elected: president, Dr. George E. de Schweinitz, Philadelphia; vice president, Dr. Peter A. Callan, New York City; secretary-treasurer, Dr. William M. Sweet, Philadelphia; councilors, Drs. William H. Wilmer, Washington, D. C.; Richard A. Reeve, Toronto, Ont.; Alexander Quackenboss, Boston; Arnold Knapp, New York City, and William Zentmayer, Philadelphia, and the committee on theses, Drs. William H. Wilder, Chicago; Alexander Duane, New York City, and George S. Derby, Boston. Washington was decided on as the place of meeting for next year and the dates selected were May 9 and 10.

University of Utah Situation.—The preliminary report of the committee of inquiry of the American Association of University Professors on conditions in the University of Utah has been made and printed in *The Nation* and *School and Society*. There are eight findings. It will be remembered that seventeen professors including several in the medical school resigned in March of this year on account of matters in controversy between the president and board of regents of the institution and the faculty. The committee finds, among other things, that criticism in private conversation of the chairman of the board of regents and speaking in an uncomplimentary way of the university administration are not proper grounds for the dismissal of university teachers, and this attitude the committee regards as especially unsuitable in officials of a state university. One of the causes of resignation of members of the faculty was that they had no proper means of bringing their views, when they differed from those of the president, to the governing body of the university. The report states that since the resignations the board has adopted radical and excellently conceived alterations in the plan of administration which should give the University of Utah an advanced position among American colleges in respect to provisions for consultation between faculty and trustees. The committee, however, reserves judgment on the final effect of the plan and regrets to note that the board has refused to apply the new procedure to cases which have recently come before it. The committee also regrets the attitude of the board of regents toward numerous petitions asking public investigation of recent university conditions. It believes the stand of the board that it alone is responsible for the management of the university and its lack of doubt as to the correctness of its past attitude, and the rectitude of its motives and those of the president, fails to take into consideration three fundamental facts, namely, that every institution of public education, and especially a state university, requires for its success the confidence and respect of the public; that this cannot be had without an unflinching readiness to face publicity in regard to all official acts and policies; and that the only effective way to meet serious charges brought by responsible persons is by not merely permitting, but by demanding searching and open inquiry into its methods. Any other course engenders suspicion and hostility and must affect disadvantageously the position and work of teachers in the institution and be a continuing detriment to the university's efficiency.

FOREIGN

Roentgen's Epoch-Making Report.—The Physikalisch-Medizinische Gesellschaft at Würzburg, the local scientific society to which Roentgen presented his first report on the Roentgen rays, has recently had his three communications on the subject reprinted in pamphlet form. The society was founded in 1849, and the Roentgen rays are its crown of achievement.

Physicians Candidates for the Legislature in Portugal.—The *Medicina Contemporanea* of Lisbon says that over fifty medical men are among the candidates this year for the national council (164 members) or the upper house (71 members). The population of Portugal, including the Azores and Madeira, is about 6,000,000. It will be remembered that this new form of government dates from only 1911.

Apothecaries' Hall Examinations.—At a meeting of the General Council of Medical Education and Registration of Great Britian, following the report of a special committee which had been appointed to ascertain the character of the licensing examinations given by the Apothecaries' Hall of Ireland, the following resolutions were adopted: That it appears to the General Council that the course of study and the examinations to be gone through in order to obtain the qualification of Licentiate of the Apothecaries' Hall of Ireland are not such as to secure the possession by persons obtaining that qualification of the requisite knowledge and skill for the efficient practice of their profession.

The Russkiy Vrach.—The Russkiy Vrach of St. Petersburg, which has been received by THE JOURNAL since its foundation in 1901, did not arrive after the war began. The last issue received was dated in July, 1914. Consequently, it was not

reviewed in the Current Foreign Literature department, as in the past, and it was dropped from the list of journals published on page 2175, just preceding the Index, in the issue for June 26, 1915. THE JOURNAL has just received in one package the entire file from Jan. 1 to June 19, 1915. It is impossible to index these overdue numbers, but important items will be reviewed in the Miscellany department. After this has been done, the copies can be lent, as mentioned in the editorial entitled "The Index," June 26, 1915, p. 2138.

Deaths in the Profession Abroad.—L. Tobler, professor of pediatrics at the University of Breslau, aged 38. He has done much research on the physiology and pathology of metabolism in children, but his last work was on the sagittal sinus as site for intravenous injections in infants, summarized in these columns, July 10, 1915, p. 205.——G. Matterstock, professor of internal medicine at the University of Würzburg, aged 66.——G. Haltenhoff, professor of ophthalmology at the University of Geneva, aged 72. He was a collaborator on various ophthalmologic journals and also on the *Revue médicale de la Suisse romande,* and was the official delegate from Switzerland to international scientific gatherings, and president of various medical and specialist societies in his part of the world.——F. H. Marsh, professor of surgery in the University of Cambridge, master of Downing College, and honorary member of the American Orthopedic Association, aged 76. He always took an active part in civic affairs, and the *Lancet* says that he was one of the first to realize from the outset the vast significance of the boy scout movement and help it in every way. His early work as a demonstrator of anatomy laid the foundation for his success as a consulting surgeon.

WAR NOTES

Reception for Second Harvard Unit.—President and Mrs. Lowell of Harvard University gave a reception for the thirty two physicians who sailed for Europe recently as a second Harvard unit for service in the war hospitals.

More Funds for Belgian Red Cross.—Another check for $5,000 for the Belgian Red Cross, the proceeds of the Chicago *Tribune* Belgian war pictures, was turned over to Dr. Cyrille Vermeren, Belgian consul in Chicago, by the Chicago *Tribune,* July 7.

Orthopedic Treatment for Outpatient Crippled Soldiers.—The halls of the National Museum at Munich have been equipped to give courses of orthopedic treatment to all the crippled and maimed soldiers able to take advantage of them. The Medicomechanical Ambulatorium, as it is officially designated, is in charge of Professor Trumpp.

Military Psychiatric Clinic Opened at Treviso.—The city of Treviso in Italy has organized a hospital, with 100 beds, for special treatment of nervous and mental affections among the troops. Professor Zanon, director of the insane asylum for the province has been placed in charge of the new war psychiatric hospital.

German Red Cross Attachés Return Home.—A party of sixty-five surgeons and nurses attached to the German Red Cross, who had been in Kiou Chau, China, for several months, passed through Chicago, June 25, en route to England. The group consisted of ten surgeons in charge of Dr. Hans Houss and fifty-five male nurses.

Personal.—Drs. Harry Plotz and George G. Bohrer, both of the staff of Mt. Sinai Hospital, New York, sailed for Serbia on the Greek steamer *Themistocles.* They took with them a complete bacteriologic outfit supplied by the hospital and will proceed to Nish where they will join Dr. Richard P. Strong, the head of the Serbian sanitary commission.

More Physicians Needed.—The medical council of England, on account of the death of qualified physicians and surgeons owing to the large numbers at present on duty as military surgeons, is considering the advisability of the mobilization of all the physicians of Great Britain that their work may be so arranged as to meet military and civil demands.

Typhus in Germany.—According to the *Münchener med. Wochenschrift,* during the fortnight ended June 5, there were twenty-three cases of typhus at fourteen different points in Germany, all in German soldiers or persons employed at the camps of prisoners. Typhus was also reported among the prisoners at eighteen of the concentration camps of prisoners of war.

Medical Aid for Turkey.—The German Red Cross has sent a unit to Turkey under the leadership of Professor Dürck of Münich. A German-Turkish medical mission has also gone to Scutari where it is installed in the local hospital. The mission is in charge of Drs. Aschheim and W. Schwalbe of Berlin. A branch hospital has been organized by them on the firing line and a base hospital at Rodosto near Constantinople.

Lüthje Succumbs to Typhus.—Another prominent victim to typhus in Germany is reported, Prof. H. Lüthje, director of the medical clinic of the University of Kiel, aged 44. He was regarded as one of the leading clinicians of the younger school and had made numerous contributions to science. He contracted the disease at a concentration camp. The *Deutsche med. Wochenschrift* demands that henceforth only interned Russian physicians should have charge of the typhus patients among the Russian prisoners of war.

Contributions to War Fund.—The following totals of the contributions to the various war relief funds were recently announced:

Red Cross European War Fund	$ 503,176.21
Belgian Relief Committee	1,044,962.00
Serbian Agricultural Committee	115,206.00
British-American War Relief Fund	25,487.00
Polish Relief Fund	36,855.00
Committee of Mercy Fund	225,490.00
Prince of Wales National Relief Fund	131,129.00
American Ambulance Hospital, Paris	400,000.00
Persian War Relief Fund	37,140.63
Fund for the Relief of Women and Children of France	82,924.69
American-Polish Relief Committee	67,390.00
Lafayette Fund for sending kits to French Soldiers	74,343.00
Vacation War Relief Committee	111,689.00

Epidemic Diseases.—A telegram from London, July 6, stated that an alarming outbreak of cholera has appeared in the camps at Debretzen, Hungary, where in a single week there were 1,400 cases and more than 300 deaths among Russian prisoners.——A dispatch from Geneva stated that on June 30 there were two cases of cholera in Vienna, five in Moravia, three in Silesia, two in Cracow, four in Yavprow and twenty-eight in Valovitch.——The Rockefeller Foundation in a statement, June 27, reports that Serbia and Montenegro are still suffering severely from the epidemic of typhus, and that suffering and want are still acute in Serbia, Russia, Poland and parts of Galicia. The foundation has thus far furnished about $85,000 toward the equipment and maintenance of a sanitary commission in Serbia.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending July 10, 1915, lists the following contributions:

S. E. B., Pittsburgh, Pa.		$ 50.00
Dr. George B. Broad, Syracuse, N. Y.		10.00
Dr. Winfred Wilson, Memphis, Texas		11.50
Delta County Medical Society, Escanaba, Mich.		10.00
Receipts for the week ending July 10		$ 81.50
Previously reported receipts		7,544.34
Total receipts		$7,625.84
Previously reported disbursements:		
1,625 standard boxes of food at $2.20	$3,575.00	
1,274 standard boxes of food at 2.30	2,930.20	
353 standard boxes of food at 2.28	804.84	
Total disbursements		7,310.04
Balance		$ 315.80

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

The McGill Medical Unit at Shorncliffe.—According to information from a private correspondent the Third Canadian General Hospital (McGill) has been "marking time" at the great camp near Folkstone, waiting for orders to cross the channel for "somewhere in France." There are some 50,000 troops quartered there; forty odd live in each hut where they sleep on boards covered with a blanket. The sanitary squad is very strict about the care given to the huts—of course it is quite proper that a medical unit should set the pace in the matter of hygiene. The swathed figures convalescing on the lawn of a base hospital and the darkness of the big town nearby at night, with the whine of scouting aeroplanes, are the most impressive features of the war thus far seen. From all that is said of conditions in military hospitals in England and in France there is an endless chain of tasks for all workers. In a great hospital of over 2,000 beds near London each nurse has to look after ninety patients, all of them with suppurating wounds. The war has established the efficacy of antityphoid inoculation. Out of the hundreds of thousands of British troops only a few hundred have had typhoid. Canada's 50,000 have all arrived safely. They include every branch of the service.

LONDON LETTER

London, July 2, 1915.

The War

ARRIVAL OF CHICAGO UNIT

The Chicago unit, consisting of a full medical and nursing establishment for a general hospital of 1,040 beds, has arrived in London. Its services have been accepted by the War Office. It consists of thirty-two physicians and a nursing staff of seventy-five. The medical staff includes specialists in all departments, a roentgenologist and a pathologist. The junior members of the unit have been temporarily distributed among the various general military hospitals in London pending their departure for the seat of war. The hospital corps will be kept intact for at least six months. After that the places of those who wish to retire will be filled from the waiting list. All the members have been inoculated not only against smallpox and typhoid fever but also against typhus by the new Plotz vaccine, supplied from the Mount Sinai Hospital, New York.

EARLY OPERATIONS IN MILITARY SURGERY

The necessity for early operation in the case of wounds of certain regions, particularly of the head and abdomen, presents a difficult problem in this war. Several schemes for mobile operating theaters have been devised, but the necessity for absolute rest and good nursing after operation has proved a drawback. The subject has been very fully considered by the heads of the army medical service and the consulting surgeons with the British army, and the decision has been against motor operating theaters. It has been decided that the only way to insure early operation under suitable conditions with proper provision for the after-treatment is to develop the casualty clearing stations immediately behind the firing line and equip them with modern operating theaters. Between Ypres and Bethune, at a distance of from 5 to 7 miles from the trenches a line of nine operating theaters, forming parts of the casualty clearing stations, has been established. It is now possible for a man who has been seriously wounded to be operated on within one or two hours. These stations are just beyond shell fire, and on several occasions have been shelled.

AN OPEN AIR HOSPITAL FOR THE WOUNDED

An open air hospital for the wounded, containing 1,240 beds, has been opened in an athletic ground of Cambridge University. There are about three quarters of a mile of wards split up into ten long blocks of buildings running east and west. Each block faces south and is divided into a western and an eastern ward with sixty beds each. Between the eastern and western wards, but quite continuous, is a central building in which are three bathrooms, lavatories, service rooms, with hot and cold water, sinks, plate heaters and tea infusers, two private wards for special cases, and a room for the use of nurses at night. The wards have only three walls, and are quite open toward the south. They are made of asbestos slabs on wood. Protection against rain is afforded by means of blinds, but these are not always effective. There is fresh air in abundance, but no cold cross and drafty currents. There is no closeness of atmosphere and no smell either from wounds or dressings, and, except in the operating theater, no odor of iodoform or other antiseptics. The patients also enjoy a freedom impossible to grant in a closed ward. Above all, visitors, however numerous, cannot foul or pollute the atmosphere, while patients, nurses and doctors alike remain free from lassitude and headache, the well-known result of breathing air rendered impure by the respiration of human beings. The patients, instead of losing their health and strength during the period of recovery from disease or wound, maintain and even improve in vigor. Bacteria are blown out of the wards, and the usual germ-laden atmosphere of a hospital—the curse of all hospitals in which septic wounds are treated—abolished.

The Health of England

Mr. Walter Long, president of the Local Government Board, speaking on the vote for his department in the House of Commons, said that the health of the country is unquestionably satisfactory, particularly when one remembers the size of the armies that have been unexpectedly quartered on it. The general condition, as regards both unemployment and poverty, is better than it has been for forty years. The difficulty at present is to find labor for the work there is to be done. There has been a curious outbreak of measles among adults, and it has largely affected the soldiers and has brought serious results in the case of some men. There have been 2,500 cases of cerebrospinal disease, but the number is rapidly decreasing. There is, however, a great increase in the price of all the necessaries of life, which is consequent on the scarcity and high price of labor. The prosperity of the country is, of course, on a false basis, for the war means an immense destruction of capital, which is not being replaced. No doubt when the war is over we shall feel the economic loss. This was noticed after the South African War, during which also the country enjoyed unusual prosperity.

PARIS LETTER

Paris, June 24, 1915.

The War

THE INCINERATION OF BODIES ON THE BATTLEFIELD

M. Lucien Dumont, a deputy, has introduced into the Chamber of Deputies a bill for the incineration of the bodies of men and animals on the battlefield for the purpose of avoiding epidemics which might be caused by hasty burials. The parliamentary commission on hygiene approved it, but the Conseil supérieur d'hygiène raised objections based on the difficulties of making numerous incinerations with such means as may be at hand. Experiments have just been made in the presence of a committee composed of Dr. Lemoine, medical inspector-general of the army and professor of hygiene at the Ecole d' application de médecine et de pharmacie militaires du Val-de-Grâce, Dr. Rouget, director of the medical service of the sixth corps, MM. Navarre and Dumont, deputies, Dr. Bordas, professor at the Collège de France, Dr. Thierry, head of the medical service of the city of Paris and others. Two trenches were prepared. In one was placed two bodies which had been buried in coffins at the end of April and had been exhumed the day before for the purpose. These corpses were in a state of relative preservation and were giving off an unpleasant odor. They were sprinkled with a tar preparation made by Dr. Bordas, which markedly reduced the putrid odor. The corpses were surrounded by fuel, which was set on fire at 9:30 a. m. and had burned out at 2 p. m., when no part of the skeletons remained. While it was burning there was no bad odor given off. In the second trench the body of a horse weighing about 500 kilos (about 1,100 pounds) was burned. The fire was lighted at 10:30 a. m. At 2 o'clock the head, the neck and the limbs had disappeared, the splanchnic cavities were open, and there remained a mass of charred flesh which continued to burn without giving off odor. The committee concluded that the incineration of human and animal bodies is practicable with ordinary means; also that improvements in economy of materials and facilitation of operations can be made without loss of effectiveness. Following these experiments the Chamber of Deputies passed M. Lucien Dumont's bill: 1. All unidentified bodies of soldiers found on the battlefield are to be burned. 2. All identified bodies of French soldiers or allies are to be buried according to regulations. No exhumations are to be authorized during the war.

THE TRAINING OF DOGS TO SEARCH FOR WOUNDED

I mentioned in a previous letter (The Journal, Dec. 5, 1914, p. 2055) the creation of the Association française pour le dressage du chien de guerre. This association proposed to outline scientifically the logical training for each class of dogs, basing its methods of rapid education on psychologic laws. It also contemplated the organization of a kind of war school for dogs and a normal school, so to speak, for trainers and demonstrators of training. Four different methods were proposed for the indication of the presence of a wounded man. 1. The dog is taught to remain near the wounded man when he is found, barking to call the attention of the ambulance attendant. The barking of the dog, however, may call the attention of the enemy to the presence of the wounded man and that of the litter bearer close by. 2. The dog is taught to bring back the wounded man's cap. This gives good results; but the dog, in its attempt to seize a cap held on the head by a chin strap, may bite the wounded man. Then the man may have lost his cap or he may wear a helmet. 3. By Captain Bonnard's method a piece of cloth, intended to be removed by the wounded man, is fastened to the dog's collar by a slipknot. But if the wounded man is in a faint when the dog finds him, this plan does not work. 4. The dog held in leash leads the attendant toward the wounded man. This

method has the advantage of being rapid, but it cannot be employed in regions where there is undergrowth. M. P. Hachet-Souplet, director of the Institut de psychologie zoologique, believes it might be possible to combine the last three methods. Only very docile dogs are used. They are not trained to snatch the cap away when the strap resists. They are also furnished with a square of cotton cloth for the wounded man to take. If a dog returns without his bit of cloth and without cap this shows that he has found a wounded man who has no cap or whose cap is too firmly held by the strap. If he returns with a cap and with his bit of cloth, the wounded man has fainted. In regions without undergrowth the dog is led on a leash, thereby gaining much time.

PURIFICATION OF WATER DURING WAR TIME

At the last meeting of the Association générale des hygiénistes et techniciens municipaux, interesting papers were read regarding hygiene in war time. M. E. Bonjean, head of the laboratory of the Conseil supérieur d'hygiène publique de France, spoke on the purification of drinking water by Javelle water and sodium and calcium hypochlorites. Then M. L. Gaultier, an engineer, read a paper on the filtration of water and its sterilization by ultraviolet rays, a method applicable to campaign use. A large part of France, he said, now has all its drinking water contaminated. There is not a single portion of the territory from Paris to the Vosges, to the Ardennes and to the North Sea that may be considered free from the risks of contamination of the underground water. The use of the ultraviolet rays may render great services by giving safe water to the invaded districts. It is necessary that the system selected be as simple as possible, that it offer a guarantee of safety and that it be capable of application in all cases. The sterilization stations comprise (1) a motor engine; (2) a set of rapid filters, and (3) a group of sterilizers. The motor engine is of the agricultural type, the model of which is now so well known in the country throughout the world. This motor runs a pump capable of delivering a volume of 5, 10 or 20 cubic meters of water to be sterilized per hour and a continuous current dynamo of 110 volts capable of furnishing the current to the burner of the ultraviolet ray sterilizer. According to the importance of the station, there are two; three or four sand filters, all alike. To avoid the inconvenience of an overheavy apparatus, the ordinary silicious sand, which weighs 1,700 kilos per cubic meter, is replaced by an artificial sand made of a kind of lava and weighing only 600 kilos per cubic meter. The sterilizer is composed of an enameled sheet-iron vat containing, according to the importance of the station, two, three or four quartz mercury-vapor lamps. The arrangement is such that the water undergoes the influence of the lamp three times and before passing from the apparatus it receives the rays from at least two lamps.

THE MEAT SUPPLY AND THE INTRODUCTION INTO FRANCE OF CATTLE FROM NORTH AMERICA.

The government has recently made arrangements with Great Britain for 240,000 tons of refrigerated meat for the use of the troops, to be delivered previous to February, 1916. A bill recently passed by the Chamber of Deputies authorizes the annual purchase of 120,000 tons of frozen meat (THE JOURNAL, June 19, 1915, page 2082). The latter measure, however, will not come into full effect for four or five months, as it will be that long before the transportation companies can install on their boats the necessary refrigerating apparatus. Meanwhile the scarcity and dearness of meats remains an urgent question. The agricultural committee of the Chamber of Deputies has therefore approved the proposition of M. Cosnier authorizing the acquisition and importation of foreign cattle on the hoof, especially from North America. Canada and the states bordering on the Great Lakes can furnish a satisfactory supply, since the sanitary condition of the meat is guaranteed. With special sanitary precautions cattle might also be imported from Argentina and Brazil.

The Osiris Prize

As I mentioned in a previous letter (THE JOURNAL, July 3, 1915, p. 42) the Osiris prize was awarded for antityphoid vaccination, 50,000 francs ($10,000) to Professor Vincent and 50,000 francs to Professors Chantemesse and Widal. Dr. Chantemesse has devoted his share to the preparation and gratuitous distribution of antityphoid vaccine in France. Dr. Widal has presented his share to the Assistance publique as a contribution to the construction and the maintenance of the laboratory of the Cochin Hospital.

Deaths

Edgar H. Thornton, M.D. University of Oregon, Portland, 1892; of Portland, Ore.; aged 49; formerly a member of the American Medical Association; a member of the Oregon State Medical Association; local surgeon to the Southern Pacific Railway; surgeon to the Good Samaritan Hospital, Portland; who was bitten by a rabid dog early last year and suffered a nervous breakdown after taking the Pasteur treatment; died in a sanatorium in Montavilla, Ore., June 21.

Asa Augustus Hamilton, M.D. Indiana Medical College, Indianapolis, 1872; aged 64; a member of the Indiana State Medical Association; once coroner of Grant County; for six years a member of the city council of Marion, and for nine years a member of the board of education; died at his home in Marion, June 26. The Grant County Medical Society, at a special meeting, appointed a committee on resolutions and decided to attend the funeral in a body.

Francis Augustus Temm, M.D. Missouri Medical College, St. Louis, 1890; aged 48; also a graduate in pharmacy; from 1890 to 1896, lecturer on materia medica and pharmacy in his alma mater, and since 1894 instructor in gynecology in the medical department of St. Louis University; anesthetist, gynecologist and attending physician to St. John's Hospital, St. Louis; died at his home in St. Louis, June 26.

Riley Ambrose Axtell, M.D. New York University, New York City, 1849; aged 91; who practiced in Kalamazoo, Mich., until 1858, and then devoted himself to farming; a resident of South Dakota since 1887 and for the last seven years a homesteader of Bison; died in Yankton, S. D., April 8, three days after a fall in which he sustained a fracture of the hip.

James Webster Knapp, M.D. Syracuse (N. Y.) University, 1881; aged 62; a Fellow of the American Medical Association; president of the board of trustees of the Canastota (N. Y.) Public Library; president of the Canastota Hospital and formerly a member of the board of education; local surgeon of the New York Central Lines and the Oneida Railroad; died suddenly at his home in Canastota, June 26.

Leslie G. Rhodes, M.D. State University of Iowa, Iowa City, 1881; aged 63; a Fellow of the American Medical Association; of South Haven, Mich.; formerly president of the Kalamazoo Academy of Medicine; while answering a professional call near Covert, was instantly killed by the overturning of his automobile.

Anton Theodore Remer, M.D. Barnes Medical College, St. Louis, 1900; aged 53; professor of obstetrics and clinical lecturer on diseases of children in the Dallas (Tex.) Medical College; who recently established a maternity hospital in Dallas; died at his home in that city, July 2, a month after a surgical operation.

Harry Addison Williams, M.D. University of Toronto, Ont., 1908; aged 45; of Hamilton, Ont.; who was conducting the practice of Dr. Victor Ross during the absence of the latter from the city; was shot and killed in his surgery, July 2, by a former patient, who afterward shot himself dead.

Leroy Jones Randall, M.D. Louisville (Ky.) Medical College, 1874; Bellevue Hospital Medical College, 1890; aged 75; a member of the State Medical Association of Texas, and for many years a practitioner of Wise County; died at the home of his granddaughter near Springtown, Tex., June 24.

Ernest McDonald Tayman, M.D. Denver and Gross College of Medicine, Denver, 1908; aged 37; a Fellow of the American Medical Association and formerly president of the Dawson County (Neb.) Medical Society; died at his home in Cozad, Neb., June 27, from tuberculosis of the lungs.

Robert Earl Swigart, M.D. Cleveland College of Physicians and Surgeons, 1898; of New York City; aged 41; director of the medical department of the United Fruit Company's Steamship Service; died in the Knickerbocker Hospital in New York City, June 28, from cerebral hemorrhage.

Joseph Redfearn, Jr., M.D. College of Physicians and Surgeons in the City of New York, 1873; aged 66; a Fellow of the American Medical Association; local surgeon at Marlboro, Mass., for the Boston and Albany Railroad; died at his home in Marlboro, July 1, from cerebral hemorrhage.

Pryor W. Fitts, M.D. Atlanta (Ga.) Medical College, 1883; aged 55; formerly a member of the Medical Association of Georgia and secretary-treasurer of the Meriwether County Medical Society; a practitioner and druggist of Dalton; died at his home in that place, June 24.

Lorrain Anderson Lemmon, M.D. Medical College of Ohio, Cincinnati, 1886; aged 57; a Fellow of the American Medical Association and a well-known practitioner of Columbiana County, Ohio; died at his home in East Liverpool, Ohio, June 29, from cerebral hemorrhage.

Robert J. Tomb, M.D. Jefferson Medical College, 1854; aged 84; a veteran of the Civil War, in which he served as assistant surgeon and surgeon of volunteers; a practitioner of Armagh, Pa., for fifty-four years; died at his home in that place, July 1, from cerebral hemorrhage.

William Gibson Floyd, M.D. University of Maryland, Baltimore, 1878; aged 63; a practitioner and druggist of Roanoke, Ala.; for several years county physician of Randolph County; died in a sanatorium in Atlanta, Ga., June 26, several days after a surgical operation.

Reuben Escher Dinger, M.D. Western Pennsylvania Medical College, Pittsburgh, 1897; aged 39; formerly local surgeon of the Pennsylvania System at New Bethlehem, and president of the local board of health; died suddenly in Detroit, June 18, from heart disease.

George E. Jordan, M.D. College of Physicians and Surgeons, Baltimore, 1891; aged 56; a member of the Medical Society of the State of North Carolina and a practitioner and druggist of Gibsonville; died at his home in that place, June 20, from cerebral hemorrhage.

William F. Baskerville, M.D. Tulane University, New Orleans, 1889; aged 49; a member of the Arkansas Medical Society; major, M. C., Arkansas N. G.; local surgeon at Booneville for the Rock Island System; died at his home in Booneville, May 6, from pneumonia.

Edmond U. Bourg, M.D. Tulane University, New Orleans, 1871; aged 66; for many years a practitioner and druggist of Labadieville, Lafourche Parish, but since 1906 a practitioner of New Orleans; died at his home in New Orleans, June 23, from heart disease.

Peter Edwin Tovey, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1883; aged 60; a member of the Illinois State Medical Society; supreme medical examiner of the order of the Magi; died at his home in Galesburg, June 23, from angina pectoris.

Clinton Bradford Herrick, M.D. Albany (N. Y.) Medical College, 1880; aged 55; a member of the Medical Society of the State of New York and a resident of Troy; died at his winter home in Sharpes, Fla., March 23, from carcinoma of the bladder.

George Joseph Studer, M.D. Indiana Medical College, Indianapolis, 1907; aged 31; formerly a member of the Indiana State Medical Society; first police surgeon of Fort Wayne, Ind.; died at his home in that city, July 1, from nephritis.

George Henry Zimmerman, M.D. Medical College of Virginia, Richmond, 1880; aged 58; for many years in charge of the medical department of the Southwest Virginia Improvement Company; died at his home in Pocahontas, Va., June 26.

Wilbur B. Payne, M.D. University of Virginia, Charlottesville, 1892; Tulane University, New Orleans, 1893; aged 48; a member of the Medical Society of Virginia; died at his home in Covington, Va., June 24, from disease of the stomach.

Thaddeus F. Hamer, M.D. University of Marburg, Germany, 1884; aged 70; for many years a practitioner and druggist of Lincoln, Ill., but since 1912 a resident of Los Angeles; died at his home in that city, June 24.

John Daniel Mitchell, M.D. New York University, New York City, 1876; aged 62; founder and for six years superintendent of the Steuben Sanitarium; died at his home in Hornell, N. Y., June 27, from heart disease.

Archibald Robert Brown, M.D. University of Southern California, Los Angeles, 1907; aged 38; a Fellow of the American Medical Association; died at his home in San Dimas, Calif., June 11, from pneumonia.

Horace F. Livingood, M.D. Jefferson Medical College, 1882; aged 66; of Womelsdorf, Pa.; in 1904 controller of Berks County, Pa.; died in Jefferson Hospital, Philadelphia, June 25, from postoperative pneumonia.

Theodore Frelinghuysen Wolfe, M.D. College of Physicians and Surgeons in the City of New York, 1868; aged 72; author of a number of works on literary shrines; died at his home in Succasunna, N. J., June 14.

William Green Downing, M.D. Missouri Medical College, St. Louis, 1874; for thirty-eight years a practitioner of Solano County, Calif.; died at his home in Suison City, Calif., June 30, from heart disease.

Hanna J. Price, M.D. Woman's Medical College of Philadelphia, 1881; of New York City; for many years a practitioner of Chester, Pa.; died at the home of her son in Harrisburg, Pa., July 5.

Thomas G. Shannon, M.D. University of Nashville, Tenn., 1855; aged 83; for many years a practitioner of Nashville; died at the home of his daughter in Murfreesboro, Tenn., June 16, from senile debility.

Walter Frank Hammitt, M.D. University of Nebraska, Lincoln and Omaha, 1913; aged 30; of Union, Ia.; while fishing in the Iowa River near his home, June 21, was swept over a dam and drowned.

John Jordan Lenhart, M.D. Eclectic Medical Institute, Cincinnati, 1871; University of Buffalo, 1878; aged 70; died at his home in Bemus Point, N. Y., March 26, from acute dilatation of the heart.

Henry Otto Hoffmann, M.D. University of Wurzburg, Germany, 1872; aged 76; a member of the Medical Society of the State of New York; died at his home in Brooklyn, June 24, from diabetes.

Joseph F. Roselle, M.D. University of Louisville, Ky., 1891; aged 48; formerly president of the municipal board of health of Alexandria, S. D.; died suddenly in his office in Spencer, S. D., June 28.

Palmer Coville, M.D. Cleveland University of Medicine and Surgery, 1857; aged 82; a pioneer practitioner of Belding, Mich.; died at his home in that place, about June 29, from cerebral hemorrhage.

James J. McConkie, M.D. Starling Medical College, Columbus, Ohio, 1864; aged 80; for twenty-seven years a practitioner of Iowa; died at the home of his son in Cedar Rapids, June 27.

Orrin C. Shaw, M.D. University of Buffalo, N. Y., 1873; aged 67; for more than forty years a practitioner of Chautauqua County, N. Y.; died at his home in Cassadega, N. Y., June 28.

Philip Bronk Collier, M.D. Long Island College Hospital, Brooklyn, 1856; aged 71; a member of the Medical Society of the State of New York; died at his home in Kingston, N. Y., May 23.

George Myron Nesbit, M.D. College of Physicians and Surgeons, Chicago, 1888; aged 52; of Waterloo, Ia.; died suddenly in a livery barn in that city, June 25, from cerebral hemorrhage.

Franklin Russell Timmermann, M.D. University of Michigan Homeopathic Medical College, 1880; aged 61; died at his home in Hastings, Mich., June 26, from the effects of a carbuncle.

Henry Middleton Stuart, M.D. Medical College of the State of South Carolina, Charleston, 1857; aged 80; of Beaufort, S. C.; died in Quincy, Fla., March 11, from senile debility.

J. A. White (license, Texas, Sixth Judicial District Board, 1900), aged 47; a practitioner since 1898; died suddenly at his home in Clarksville, Tex., from acute gastritis, April 18.

Benjamin F. Stalker, M.D. University of Louisville, Ky., 1873; aged 69; a veteran of the Civil War; for four years township trustee; died at his home in Borden, Ind., June 25.

George P. Sword, M.D. New York Homeopathic Medical College, New York City, 1889; aged 53; died at his home in Huntington, N. Y., July 2, from disease of the kidney.

Lewis Sherman, M.D. New York University, New York City, 1887; aged 72; a homeopathic practitioner and pharmacist; died at his home in Milwaukee, July 2.

Allen W. Ashburn, M.D. Miami Medical College, Cincinnati, 1872; aged 67; a veteran of the Civil War; for forty-three years a practitioner of Batavia, Ohio; died at his home in that place, June 27.

Thomas Huston Shy, M.D. University of Louisville, Ky., 1907; aged 33; a member of the Missouri State Medical Association; died at his home in Centerville, Mo., June 18, from heart disease.

George Carmel Rees, M.D. Physio-Medical Institute, Cincinnati, 1885; aged 64; of Corry, Pa.; died in the Buffalo General Hospital, June 6, after an operation for strangulated umbilical hernia.

Edward Annon Carpenter, M.D. Albany (N. Y.) Medical College, 1869; aged 68; died at the Cambridge Home for Aged People, Cambridge, Mass., June 24.

Edgar Vernon Van Norman, M.D. Cleveland University of Medicine and Surgery, 1870; aged 77; formerly of Springfield, Ohio; died at his home in San Diego, Calif., June 8.

Joseph B. Meek (license, Indiana, 1897), aged 62; a physician and druggist of Centerville, Ind.; died at the home of his brother near Centerville, June 12, from pneumonia.

August Ferdinand Richter (license, Connecticut, 1893), aged 64; a practitioner for thirty-nine years; died at his home in Bridgeport, Conn., June 22, from epilepsy.

Charles Sumner Porter, M.D. Iowa Eclectic Medical College, Des Moines, 1889; aged 61; died at his home in Creston, Ia., April 27, from general breakdown.

Mary Anna Priest, M.D. Fort Wayne (Ind.) College of Medicine, 1880; aged 72; formerly of Toledo, Ohio; died at the home of her daughter in Portland, Ore.

Louis J. Leger, M.D. University of Louisville, Ky., 1882; aged 56; a practitioner of Gulfport and Hansboro, Miss.; died at his home in the latter city, June 3.

Orrin Hugh Stutson, M.D. Starling Medical College, Columbus, Ohio, 1898; aged 40; died at his home in Columbus, June 12, from tuberculosis.

J. T. Smith, M.D. Medical College of Georgia, Augusta, 1850; aged 85; died at his home in Evans, Ga., about June 11.

Cyrus Smith, M.D. Rush Medical College, 1872; aged 92; died at his home in Glanford, Ont., March 7.

Marriages

COL. PHILIP FRANCIS HARVEY, M. C., U. S. A. (retired), to Mrs. Kathryn Patterson Talmadge, both of Washington, D. C., June 22.

WILLIAM WHITLOCK MATTSON, M.D., Rochester, Minn., to Miss Hazel Fletcher of Seattle, at Mayowood, Rochester, June 23.

RALPH HERBERT LUIKERT, M.D., Norfolk, Va., to Miss Marie Ryon of Philadelphia, in New York City, June 24.

MILES AXE COPELAND, M.D., Birmingham, Ala., to Miss Leonora Armstrong of Demopolis, Ala., June 16.

LEE WILSON EDWARDS, M.D., Omaha, to Miss Grace Bailey of Chicago, at Menomonie, Wis., June 30.

JOSEPH COOK BUNTEN, M.D., Osage City, Kan., to Miss Gladys Kirchner of Burlingame, Kan., June 26.

MABELLE SPAULDING WATSON, M.D., Ashtabula, Ohio, and Charles Edward Gilbert of Cleveland, June 28.

WILLIAM JAMES YUTSKI, M.D., Reading, Pa., to Miss Myrtle L. Crump of Camden, N. J., June 28.

LIEUT. JOHN H. H. SCUDDER, M. C., U. S. A., to Miss Adelaide Smith at Nogales, Ariz., June 22.

ASST. SURG. CECIL S. O'BRIEN, U. S. Navy, to Miss Inez Mischon Demonet, at Baltimore, April 21.

CAPT. CHARLES M. WALSON, M. C., U. S. Army, to Miss Bonnie Miller of Salt Lake City, June 2.

VICTOR CLARENCE VAUGHAN, JR., M.D., Detroit, to Miss Elsbeth Hosig, in Duluth, Minn., June 28.

GEORGE RICHARDS MINOT, M.D., Boston, to Miss Marian Linzee Weld of Milton, Mass., June 29.

JAMES ISRAEL TYREE, M.D., Kansas City, Mo., to Miss Eugenia Franz of Joplin, Mo., June 26.

MAX MORRIS, M.D., Rochester, N. Y., to Miss Minette Goldberg of Hamilton, Ont., June 27.

HARVEY K. FLECKENSTEIN, M.D., Baltimore, to Miss Isabella Griffith of Gaithersburg, Md., June 12.

ASST. SURG. FREDERICK CERES, U. S. N., to Miss Madeline Fliege of New York City, June 29.

WILL WILSON JACKSON, M.D., Vinita, Okla., to Miss Helen Beals of Salem, Ind., recently.

JESSE B. PASCHALL, M.D., to Miss Mary Addie Browder, both of Fulton, Ky., recently.

DANIEL CONNELLY, M.D., Kingston, N. Y., to Miss Louise Lau of Cleveland, recently.

PETER JOSEPH CHRISTENSON, M.D., to Miss Clara Mulligan, both of Chicago, June 30.

ROBERT SORY, M.D., to Miss Olyn Prather, both of Madisonville, Ky., June 23.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

TONGALINE AND PONCA COMPOUND

Report of the Council on Pharmacy and Chemistry

The Council, having considered "Tongaline," "Tongaline Tablets," "Tongaline and Lithia Tablets," "Tongaline and Quinine Tablets" and "Ponca Compound Tablets," found these preparations ineligible for New and Nonofficial Remedies and authorized publication of the following report.

W. A. PUCKNER, Secretary.

TONGALINE

Tongaline (Mellier Drug Co., St. Louis) is a fancy name given to what is essentially a sodium salicylate mixture. The air of mystery created by the name permits the manufacturers to make claims for the product which would be ludicrous if the medical profession was fully conversant with the very ordinary character of the preparation.

Tongaline receives its name from tonga, an inert, long-discarded mixture of various barks and herbs said to be gathered and prepared by Fiji Islanders. Its constituents evidently tend to vary with the collector. The history of the introduction of this indefinite combination of simples is thus given in THE JOURNAL, May 10, 1913:

> "A supply of the crude drug was carried to England by a man who had lived for a short time in the Fiji Islands and it was placed in the hands of a retail house in London. This occurred about 1879. In 1880, two English physicians of repute published laudatory articles on the therapeutic value of tonga in neuralgia and rheumatism. This created a demand for the drug which extended to the United States."

Time showed that tonga was inert therapeutically, and authorities on pharmacology now no longer notice it. As the Council previously reported[1] the indefinite character of the mixture should, alone, be sufficient to exclude it from practical therapeutics. During the temporary popularity of tonga, the proprietary mixture Tongaline was put on the market for physicians' use by the Mellier Drug Company, St. Louis. In this, tonga was named as the active ingredient. The commercial interests thus involved have faithfully nourished and kept alive the "tonga" myth.

In a recent advertising booklet "The Therapeutic Properties of the Ingredients of Tongaline," the virtues of tonga, blue cohosh, colchicum, jaborandi and salicylic acid are discussed. The label of a recently purchased bottle reads:

> "Tongaline contains: Tonga, Cimicifuga Racemosa, Salicylate of Sodium (the salicylic acid being made from pure natural oil) Colchicum and Pilocarpin."

It will be noticed that Tongaline is "made from the pure, natural oil." In fact, the statement is repeated in red ink, in large letters running across the face of the label, thus emphasizing the alleged importance of this assertion. In this connection it is only necessary to recall that it has been proved clinically, chemically and physiologically that there is absolutely no difference between the salicylic acid made from the natural oil and the synthetic.

The formula was thus commented on in the article previously quoted from THE JOURNAL:

> "Tongaline . . . is essentially a preparation of sodium salicylate. . . . The Mellier Drug Company realized the impossibility of creating any marked demand for a nostrum unless it had some real drugs in it—hence the presence of the salicylates. What the actual composition of Tongaline is, no one but the manufacturers know. At one time the following was given as the formula:
>
> | | |
> |---|---|
> | Fluid Tonga | 30 grains |
> | Extract of Cimicifuga Racemosa | 2 grains |
> | Sodium Salicylate | 10 grains |
> | Pilocarpin Salicylate | 1/100 grain |
> | Colchicin Salicylate | 1/500 grain |
>
> "These amounts refer to the quantity of drugs in each fluidram of the preparation. Whether the nostrum still has this composition we do not know, but assuming that it has, it is quite evident that sodium salicylate is the essential and active ingredient."

1. Reports of the Council on Pharm. and Chem., 1912, p. 40.

The therapeutic indications given on the label of the bottle are:

"Rheumatism, Neuralgia, Grippe, Gout, Nervous Headache, Sciatica, Lumbago, Malaria, Tonsilitis, Heavy Colds, Excess of Uric Acid, and wherever the use of the Salicylates is indicated."

In a recent booklet this semisecret salicylate mixture is recommended, not only in conditions in which salicylates are indicated, but also combined with aconite for rheumatic fever, with benzoate of soda in the treatment of "grippe," with potassium bromid in nervous headaches, with gelsemium, glycerin and whisky for "heavy colds," with ammonium chlorid, stramonium and cimicifuga in "rheumatic dysmenorrhoea," and even with mercury biniodid as a treatment of syphilitic eruptions!

"When administered with good judgment, Tongaline exerts a stimulating effect upon every organ of elimination; cleansing the complex sewerage system and putting it into working order. When this is done, the sluggish blood current begins to flow more freely; the lymphatic and glandular systems to give up and carry off the toxic products, so long retained . . ."

TONGALINE TABLETS

Then because of a "desire to put Tongaline in a more compact and convenient form," the same concern puts on the market Tongaline Tablets. Whether Tongaline Tablets are of the same composition, the doctor who prescribes them is not advised. In this form we have Tongaline and Lithia Tablets, and Tongaline and Quinin Tablets. Presumably those who are attracted by the word "lithia" are sufficiently uncritical to be content with the statement that:

"The addition of Lithia to Tongaline presents a most useful combination which does not rely upon its action on the kidneys alone as is the case with Lithia salts or Lithia waters as administered . . ."

And the foregoing quotation, be it remembered, is for the information of the medical profession! Tongaline and Lithia Tablets, we are informed, are:

". . . particularly indicated for certain diseases which are caused by deposits of urates in the joints and kidneys, and can be used with much benefit for many people who indulge in generous or intemperate habits of living."

Tongaline and Quinine Tablets are also exploited without statement of composition. The promoters are probably justified in feeling that physicians who prescribe quinin in combination with "Tongaline" care little about the dosage.

It is unnecessary to discuss the silly claims made for Tongaline and its combinations, although it is worth while to point out that the prescribing of such nostrums by physicians is an imposition, if not a fraud, on the public.

PONCA COMPOUND

Ponca Compound, also made by the Mellier Drug Company, St. Louis, is a "female weakness remedy" in tablet form. The name suggests that "ponca" is a medicinal substance, and, in fact at one time, "Ext. Ponca" was named as an ingredient. The nature of "Ext. Ponca" was apparently never explained. It is now replaced in the "formula" by "senecin," and the only information concerning the composition at present given is:

"Ponca Compound Tablets Contain Extract of Mitchella Repens, Senecin, Helonin, Caulophyllin and Viburnin."

This "formula" is practically meaningless, not only because the amount of each ingredient is not stated, but also because "senecin," "helonin," "caulophyllin" and "viburnin" are in themselves variable mixtures of unknown composition.[1]

Presumably, "senecin," "helonin," "caulophyllin" and "viburnin" are extractives of some kind prepared respectively from senecio aureus (life root), helonias dioica (false unicorn), caulophyllum thalictroides (blue cohosh) and viburnum prunifolium or opulus (black haw or cramp bark). These are, one and all, practically inert drugs. There is no reason to believe that any or all of them can have any beneficial influence in the many and varied conditions for which Ponca Compound is advertised.

1. See Report of the Council on Pharmacy and Chemistry on "Resinoids and Concentrations," THE JOURNAL, Nov. 13, 1909, p. 1655.

The following are excerpts from the advertising matter:

"Ponca Compound is a remedy of a very beneficial character for Functional, Uterine and Ovarian troubles, which will respond to internal treatment, especially when digital examination or surgical interference is undesirable."

"Ponca Compound is also valuable during gestation and after parturition."

"Uterine Alterative for Leucorrhoea, Dysmenorrhoea, Amenorrhoea, Metritis, Endo-Metritis, Menorrhagia, Metrorrhagia, Irregular Menstruation, Subinvolution, Painful Pregnancy."

It is recommended that Tongaline and Ponca Compound and all their preparations be held in conflict with Rule 1, in view of their semisecret and indefinite composition; with Rule 6, for the grossly exaggerated therapeutic claims made for them; with Rule 8, because of their misleading names, and with Rule 10, in view of their unscientific character as irrational combinations. It is also recommended that this report be published.

A MEDICAL IMPOSTOR IN THE TRANSVAAL

In the *South African Medical Record* of April 10, 1915, there is a diverting account of "A Remarkable Medical Imposture" which, for clever impudence, compares favorably with the Köpenick incident which excited so much ire in Germany, and which was only exposed through certain bank frauds of considerable magnitude. Although the British Medical Council has run down several men who practiced on the registration of deceased physicians or even on the diplomas of living doctors, it is difficult to get the necessary data quickly at the Cape Province, on account of its great distance from the English metropolis. The case in point occurred recently at Johannesburg and, says the *Record*, was "so cleverly worked that it is difficult to see what any medical council could do to prevent similar fraud, short of filing photographs or finger prints," although it is recommended that one ought to be "scrutinisingly suspicious of every man with particularly suave and engaging manners, until one has found out all about him." These characters too are "invariably more or less specialists in diseases of women." Our impostor began to operate in the Rand by publishing in the *Sunday Times* of July 5, 1914, the following announcement of his marriage and family connections:

GIBSON—STAFFORD.—At St. Mary's, Johannesburg, on July 1st, by the Very Rev. the Rector, Dr. A. J. Gibson, eldest son of the late Mr. Justice John W. Spencer-Gibson of Canterbury, to Elizabeth Ethel, eldest daughter of James Stafford, "Talbagar," Inglewood, Queensland.

The father of the bridegroom was described as a "Judge of the Supreme Court of New South Wales," although no such name could subsequently be found in the Colonial Office Lists. The real Dr. A. J. Gibson was listed in the Medical Directory of 1912-13 as a well accredited practitioner at Victoria, British Columbia, and had actually registered in the Transvaal in 1903, where he practiced for about two years, subsequently leaving the country to settle down in London. The false Gibson evidently knew these facts, which he utilized to his advantage. Although finally suspected of being a convict from Pretoria or America, he was either an actually qualified or formerly qualified practitioner, or else a man of unusually good medical training, who even performed surgical operations. While he did not mix freely with his fellow practitioners or seek their society, he contrived to impress several members of the profession with his skill and success in diagnosis and operations, building up a big reputation in the eastern suburbs, and an income of between $15,000 and $20,000 a year. He specialized in gynecology, making a hit with his diagnoses and cures, had a private hospital in Belgravia, sent cases to the Kensington Sanatorium, was liked for his kindness, courtesy and cleverness in paying poor men's fees and even backing bills for doctors themselves, while he was robbing banks of thousands by means of forged government bonds and, toward the last, even ran up huge tradesmen's bills on the strength of worthless checks, which he even had the effrontery to offer to the bank—on the eve of his exit from the scene, on March 4.

All this fakery "got over," simply because the real Dr. Gibson, having moved from London to Canada, did not reply to the ordinary statutory letter from the Secretary of the

Medical Council, asking if he were still practicing. Of the personality of the faker, the *Record* says:

There is no doubt that "Dr. Gibson" possessed an outstanding personality. With keen, intellectual features, to quote one acquaintance, his physical appearance at once attracted attention, but apart from that he was a man of wide reading, and had a profound knowledge of his fellow men. He was deeply versed in medical lore, and so far as one is able to judge, never once gave himself away in any of his frequent consultations with well-known doctors.

To an acquaintance Gibson stated that he had been in Johannesburg six or seven years ago, *apropos* of which it is understood that recently he operated upon a detective who was after him on his previous visit. Although the police had his photograph and his record, and were desirous of coming into close touch with him he does not seem to have been much worried. It is related of him, in fact, that on one occasion he went to Marshall Square to lay information against a native, and that this was not the only time he personally approached the police.

Another remarkable characteristic of the man was his profession of deep religious convictions. So great indeed was his interest in ecclesiastical topics that more than once he visited the house of a well known minister of religion, and had arguments with him. He also took a keen interest in the hospital ordinance brought before the provincial council by the labour party, and discussed details with the promoters.

How he robbed the banks is more a matter of criminal history. Suffice it to say that it was done in a manner that disarmed suspicion, and he was able to get a long start of the police. He left Johannesburg on March 4 or 5, and to the last kept up his intercourse with several doctors, even wiring to one of them from Delagoa Bay to the effect that he was "having a fine time."

From that moment both he and his wife had vanished as though the earth had swallowed them, and, in spite of the utmost efforts of the police, have not been seen. A suggestion was made to the *Sunday Times* that they have been spirited away by a steam yacht owned by an international gang of crooks, to which the "doctor" belonged, but no confirmation of this can be obtained.

Correspondence

Amblyopia

To the Editor:—In THE JOURNAL, June 12, 1915, p. 2001, in "Medical Notes on England at War," Sir William Osler writes:

"A very puzzling case which interested us greatly at Clevedon was a man with monocular amblyopia, without visible changes in the fundus or in reflexes; there was in the left eye complete defect of vision, except a very small area in the temporal field."

On page 203 of the *Medical Times*, July, 1901, occurs the following:

"A form of amblyopia shows itself in infancy and childhood, is common in middle age, but is most prevalent in old age. It comes in but one eye, may exist for years unknown and be confused with amaurosis and other amblyopias. Loss of vision may be slight or extreme, may be rapid in its course or years developing. In a few cases there is unnoticeable cockeye. The outer side of the field of vision suffers least, probably because the corresponding portion of the retina never sees objects which can be seen by the sound eye. This seems to show that this blindness is suppression of function to avoid double vision, dissimilar or blurred images."

N. B. JENKINS, M.D., New York.

[COMMENT.—The term "amblyopia" is unfortunately so elastic that it is used to describe conditions of defective vision varying in degree from a slight blurring to complete amaurosis or blindness. The case referred to by Sir William Osler might come under one of three headings: (1) amblyopia from hemorrhage; (2) feigned amblyopia, or (3) functional or hysterical amblyopia. Under the first group it must be assumed that the patient lost a large quantity of blood from some battle wound. It is not stated whether or not this was the case. It is now believed by most ophthalmologists that in most cases of amblyopia following profuse hemorrhage, some other abnormal condition is present besides the loss of blood, to account for the visual defect. In this connection, too, it is interesting to note that the literature on this subject emphasizes the relatively infrequent occurrence of amblyopia following hemorrhage, among soldiers wounded in battle; and when it is seen it is almost always bilateral.

Feigned amblyopia or malingering might for a time escape the attention of the army surgeon, but with the many infallible tests which the ophthalmologist has at his disposal, any attempt at this form of deception would be discovered at once.

There remains the third form of functional or hysterical amblyopia, to which this case apparently belongs. Occurring as it did "under the extraordinary stress and strain of trench fighting," which in the present war has been the cause of so many cases of insanity and milder degrees of brain disturbances among the troops at the front, it would not be very strange to come across at least a few cases of this form of amblyopia. It must be remembered that in an amblyopic eye the degree of visual defect bears no relation to the ophthalmoscopic findings. Good visual acuity may be present with pronounced fundus changes, and vice versa. If enough vision were left in this case to permit a perimetric examination of the color fields, and these were found to be reversed, the diagnosis would be absolute. In any event, careful search would probably disclose some other hysterical stigmata, such as pseudoparalytic ptosis, reflex photophobia or blepharospasm.]

Depage to His American Colleagues

To the Editor:—I enclose literal translation of a letter just received from Dr. Depage which he wishes to have published. I think it should be printed in THE JOURNAL, as it is addressed to the medical profession in this country.

RICHARD H. HARTE, M.D., Philadelphia.

My dear Colleagues:—I have received from a large number of you, and notably from the Committees which you have formed, the most touching tributes of sympathy and of condolence for the catastrophe of the *Lusitania* in which my wife lost her life.

These tributes are so numerous and so unanimous that I wish to express to you publicly my appreciation of them. I address myself to you, my dear colleagues, as the authorized representatives of the humanitarian sentiments which so honor the great American nation.

You all know, as I wrote to you when my wife left for America, for what purpose she accepted the mission which the Red Cross confided to her. In the presence of the unexampled miseries of which we have been the prey, she had resolved to solicit your fraternal assistance. You gave her that largely, I should say "joyously" if the word could be used in these times.

The letters my wife wrote to me in the course of her mission told me how you worked for her, and revealed to me the extent and generosity of your projects for our wounded. Your hearts were open to our appeal; your country did not wait to come to our assistance. Powerful America wished to take under her protection our little people, tortured but always valiant.

My great sorrow does not permit me to reply as I wish I might to each one of you. Only today have I been able to measure — thanks to the letter of your compatriot, Dr. Houghton — the extent of the gratitude I owe, to him first for having risked his life in trying to save that of my wife, and after that to you all for your devoted help in our common work. Under the strain of my emotion, the sentiment of thankfulness is the only one to which at this moment, I am able to give expression. Permit me to do so with all my heart.

ANTOINE DEPAGE, La Panne, Belgium.

[COMMENT.—Dr. Antoine Depage, it will be remembered, was president of the International Surgical Congress which met in New York last year, and is at the present time chief of the Belgian Red Cross. Mme. Depage was in the United States soliciting help for that small part of Belgium which still remains free. Contributions from this country for the Belgians have gone through Holland; consequently none

reached this part of Belgium, since they would have had to go through the German line. In the short time Mme. Depage was in this country, she collected approximately $150,000. Hearing that her younger 16-year-old son had also enlisted, she was hurrying home in the quickest manner, hence taking the *Lusitania* to greet him before he went to the front.]

Pulsus Alternans and the Sphygmomanometer

To the Editor:—Several contributions to the literature of pulsus alternans with respect to its determination by the sphygmomanometer have recently been made in this country and abroad without due recognition of Hoffmann and Rehberg, who described the method in 1906 and 1909, respectively, the former in the *Münchener medizinische Wochenschrift* (liii, 1977), and the latter in the *Zeitschrift für klinische Medizin* (lxviii, 247). Rehberg in his summary says:

> There are two methods of rendering manifest a latent pulsus alternans: (*a*) by artificially increasing the frequency; (*b*) by increasing the pressure proximally from the artery being investigated. This not only can increase the size of the pulse waves but may also render evident any retardation in the small pulse. (Als besondere Ergebnisse hebe ich hervor: 1. dass es 2 Methoden gibt, den latenten Pulsus Alternans zur Wahrnehmung zu bringen: (*a*) durch die (hier nicht angewendete) künstliche Erhöhung der Frequenz; (*b*) durch Erhöhung des Druckes zentralwärts von der untersuchten Arterie, wobei sich nicht nur ein Grössenunterschied der Pulswellen, sondern auch eine Verspätung des kleinen Pulses bemerkbar machen kann.)

Rehberg points out also the necessity of graphic records in the determination of alternation of the pulse.

PAUL D. WHITE, M.D., Boston.

New York Polyclinic Hospital Not Responsible for Method of Treating Inoperable Cancer

To the Editor:—In view of the publicity which has been given by the lay press to a method of treating inoperable cancer, and the use that has been made of the name of the Polyclinic Hospital therewith, the management of the Polyclinic desires to disclaim any connection with or responsibility for this method of treatment. The cases that have been treated in the hospital have been received as the private cases of physicians who have the privilege of sending patients to the pay wards and private rooms of the hospital.

JOHN A. WYETH, M.D.,
A. R. ROBINSON, M.D.,
CHARLES H. CHETWOOD, M.D.,
D. BRYSON DELAVAN, M.D.,
JOHN A. BODINE, M.D.,
WM. H. KATZENBACH, M.D.,
W. VAN V. HAYES, M.D.,
New York.

Board of Management, Polyclinic Hospital.

Inadequate Supply of Long Catheters

To the Editor:—At various times I have urgently needed a soft rubber catheter 18 inches in length and have been unable to obtain one in Chicago. It would seem to me probable that other physicians may have found themselves at times in the same dilemma. Would you kindly suggest a means for the relief of this situation? Most of those obtainable are from 16 to 16½ inches in length.

SANGER BROWN, M.D., Kenilworth, Ill.

The Cigar Cutter

To the Editor:—The public drinking cup has become a rare article, which is certainly a good thing. There is another public nuisance which to me seems a greater evil, and that is the cigar cutter, for one can rinse out the cup but not the cutter. One has only to stand in a cigar store for a few minutes, when he will notice a man buy a cigar, roll it around in his mouth, and put the end—possibly with the saliva dripping from it—into the public cutter and clip it off. This is repeated many times, and the cutter must get covered with germs—much more so than the drinking cup, which can be rinsed.

Many states have abolished the public drinking cup, but I know of none that has done away with the public cigar cutter. Were it abolished it would be another move in the right direction. PAUL E. WIESEL, M.D., Garfield, Wash.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

OUTSIDE CONTAMINATION OF MILK BOTTLES

To the Editor:—I have written to a number of health commissioners and editors of medical publications in reference to milk infection. The danger of outside milk bottle contamination has been pointed out as a source of milk infection. The average milk bottle passes through many hands, is placed in filthy racks in the wagon, and is placed under door-steps exposed to dust and other infectious matter before reaching the buyer.

Will you kindly inform me what is the importance of outside milk bottle contamination in milk infection?

Do you approve of adopting means to protect the entire milk bottle from contamination, to prevent the possible danger of milk infection?

A. H. BRAECKLEIN, M.D., Baltimore.

ANSWER.—In the reported instance of milk-borne infection apparently due to bottle contamination (THE JOURNAL, June 22, 1912, p. 1941) it is not possible to distinguish between inside and outside contamination. There can be no doubt, however, that contamination of the inside of the bottle is by far the more dangerous. While it is evident that the outside of any food container should be kept as clean as practicable, it is questionable whether regulation requiring a special cleanliness of the outside of milk bottles could be effectively enforced.

UNGUENTINE

To the Editor:—What is the status of "unguentine," a preparation put out by the Norwich Pharmacal Company of Norwich, N. Y.? If the composition of the preparation has been given in THE JOURNAL, please refer to the proper number. A fellow practitioner extols the compound highly in the treatment of burns and especially sluggish skin ulcers, but as he is unable to give its composition, I argue he is shooting in the dark, and that there are other official preparations of known composition which are preferable.

J. B. H. WARING, M.D., Fort Logan, Colo.

ANSWER.—An analysis of unguentine made in our chemical laboratory was published in THE JOURNAL, March 27, 1909, p. 1047. From that analysis it was concluded that unguentine contained as its essential constituents aluminum acetate and zinc oxid, or more probably impure zinc carbonate (the entire quantity of both not exceeding 5 per cent.), phenol (less than 1 per cent.) and aromatic oils (amounting to not more than approximately 1 per cent.), the ointment base being, in the main, petrolatum. It contained no ichthyol or, if any, but the merest traces. An examination of the advertising claims made at the time showed that the claims of composition had varied from time to time. The report concluded:

> In Unguentine we have, therefore, another proprietary "specialty," regarding the composition of which indefinite, false or misleading statements have been made — this irrespective of protestations of honesty by the firm.

No further examination of unguentine has been made since publication of the foregoing report. It is quite possible, therefore, that the unguentine of today differs from that which was the subject of analysis. The argument that one using unguentine is "shooting in the dark" would seem to be correct.

SENSITIZED AND PLAIN VACCINES

To the Editor:—Please advise me if there is any real value of the sensitized typhoid vaccine over the plain.

J. HUTCHINGS WHITE, M.D., Muskogee, Okla.

ANSWER.—Sensitized vaccines are made by exposing suspensions of bacteria, for example, typhoid bacilli, to the action of the corresponding immune serum which has been heated

in order to destroy the complement. The excess of serum is removed by centrifugation, and the bacteria suspended in salt solution. Sensitized vaccine may be prepared with living as well as with dead bacteria, but in the case of typhoid vaccine it would hardly be justifiable to use living sensitized bacteria. There would be a possibility of either infecting the individual or causing him to become a carrier, notwithstanding Besredka's assertion that the sensitized living typhoid bacilli used by him are wholly harmless, and especially as it has not been established that any kind of sensitized vaccine has any greater value than plain vaccine. It is true that advantages are claimed for sensitized vaccine, but there does not as yet seem to have been sufficient experience to warrant any definite conclusions.

Medical Education and State Boards of Registration

Kentucky Report

Dr. A. T. McCormack, secretary of the Kentucky State Board of Health, reports that 5 candidates were licensed through reciprocity from March 11 to June 14, 1915. The following colleges were represented:

College	Year Grad.	Reciprocity with
Rush Medical College	(1903)	Illinois
Louisiana Medical College	(1904)	Indiana
Starling-Ohio Medical College	(1912)	Ohio
Ohio-Miami Medical College	(1913)	Ohio
University of Tennessee	(1914)	Arkansas

Kansas February Report

Dr. H. A. Dykes, secretary of the Kansas Board of Medical Registration and Examination, reports the written examination held at Topeka, Feb. 9, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 5, of whom 4 passed and 1 failed. Six candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Howard University	(1914)	86
Georgia College of Eclectic Medicine and Surgery	(1913)	88
Bennett Medical College	(1911)	77
University of Minnesota	(1913)	83

FAILED

Meharry Medical College	(1914)	62

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
University of Illinois	(1914)	Illinois
Louisville Medical College	(1894)	W. Virginia
University of Minnesota	(1890)	Minnesota
American Medical College	(1913)	Missouri
Washington University	(1901)	Missouri
Memphis Hospital Medical College	(1901)	Missouri

Arkansas Eclectic May Report

Dr. C. E. Laws, secretary of the Arkansas Eclectic Medical Board, reports the written examination held at Little Rock, May 11-13, 1915. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 22, of whom 21 passed and 1 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
California Eclectic Medical College	(1911)	79.1
Georgia Coll. of Eclectic Med. and Surg.	(1914) 89.2; (1915)	79.6
Eclectic Medical University, Kansas City	(1913) 75.6, 75.9; (1914), 77.3; (1915) 75.4, 76.5, 76.9, 77.5, 77.9, 77.9, 78.2, 80.1, 80.3, 81.1, 83.2, 83.2, 83.4, 83.7.	
Eclectic Medical College, Cincinnati	(1915)	83.4

FAILED

Eclectic Medical University, Kansas City	(1915)	*

* No grade given.

Book Notices

SANITATION IN PANAMA. By William Crawford Gorgas, Chief Sanitary Officer, Panama Canal, Surgeon-General, U. S. Army, Major-General, U. S. Army. Cloth. Price, $2 net. Pp. 298, with illustrations. New York: D. Appleton & Co., 1915.

It is repeating what practically every physician knows to say that the building of the Panama Canal was made possible through the work of Chief Sanitary Officer Colonel (now Major-General) Gorgas and his associates — and under "associates" in this instance must be included Reed, Carroll, Agramonte, Henry R. Carter, Finley and Lazear, as well as all those who worked with General Gorgas in the Canal Zone.

In his book, "Sanitation in Panama," General Gorgas tells how two of the most unhealthy places on earth were transformed into healthy places—one of them into a territory in which the death rate is as low as that of any healthy city in the United States—an accomplishment which fifteen years ago would have been declared impossible. The work which General Gorgas and his associates did in Panama was based on still more important work that had been done before, namely, the working out of the cause of the transmission of yellow fever and malaria. General Gorgas recognizes this fact and gives a most excellent account of the work that finally solved the problem. It is probably the best and the truest description of the discovery of the method of transmission of yellow fever that has yet been given, for, while not a member of the Reed Commission, in Havana, yet as chief sanitary officer of that city, General Gorgas was in daily touch with the work and knew practically its every detail. Nearly all of the first half of the book is devoted to this matter and to the history of yellow fever in general.

The rest of the book is devoted chiefly to an account of the methods employed in the Canal Zone, and to the almost insurmountable difficulties that had to be overcome in the fight against the various diseases to which the white people especially were subjected in the Canal Zone; for it was not yellow fever alone: almost as much dreaded was malaria and, to a less extent, other tropical diseases—even leprosy. Those who know General Gorgas will not be surprised at the modesty with which he discusses his relation to the work. And he does not hesitate to give credit to others: in his account of yellow fever work he gives due recognition to the most important work of Dr. Henry R. Carter, of the Public Health Service, which had more to do with solving the problem of transmission of the disease than is always remembered.

The book is written for the layman, and therefore in non-technical language; nevertheless it contains such valuable information regarding tropical diseases, especially yellow fever, that every medical man will find it of decided value. The habits of mosquitoes, the methods by which they carry disease, the sanitation of construction camps, the methods of securing civilian cooperation, are all brought out without breaking the thread of the narrative. The subject-matter is presented in a most interesting manner, enlivened by anecdotes and by amusing as well as pathetic incidents that make the book read almost like a novel.

LECTURES ON THE HEART. Comprising the Herter Lectures (Baltimore); A Harvey Lecture (New York), and an Address to the Faculty of Medicine at McGill University. By Thomas Lewis, M.D., F.R.C.P., D.Sc., Physician City of London Hospital. Cloth. Price, $2 net. Pp. 124, with 83 illustrations. New York: Paul B. Hoeber, 1915.

This small volume contains five lectures. Three of these were the Herter lectures, one is the Harvey lecture, and the fifth an address delivered at McGill University, Montreal. The Herter lectures are "The Method of Electrocardiography Exemplified," "The Relation of Auricular Systole to Heart Sounds and Murmurs," and "Observations Upon Dyspnoea, with Especial Reference to Acidosis." The Harvey lecture is on the "Excitation Wave in the Heart." The McGill lecture is entitled "Observations Upon Cardiac Syncope." Emphasis is constantly laid on the close relation that should exist between the laboratory and the bedside. "The Method of

Electrocardiography Exemplified," for instance, is largely taken up with showing how clinical cardiograms may be interpreted in the light of duplicate tracings made on animals when the cardiac conditions are seen or are produced at the will of the experimenter. A certain tone of authority that is manifest is warranted, for of English writers, at least, on the newer phases of the diseases of the heart, there is none whose thorough work, much of it pioneer in character, ranks higher. In these lectures as in his other writings, Lewis presents his subject in a wonderfully clear and direct manner.

Handbook of Obstetrics for Students and Junior Practitioners in India. By Kedarnath Das, M.D., Teacher of Midwifery, Campbell Medical School. Cloth. Price, $3.75. Pp. 612, with 298 illustrations. Calcutta: Butterworth & Co., 1914.

This book is rather large for a so-called handbook. The author notes that it is the first book of this character issued in India. He has been compelled, therefore, to use illustrations prepared for other texts; but in the selection of these he has shown apparently excellent judgment. The author's views, and they seem to be based on practical experience, are stated clearly and concisely. In a special chapter entitled "Hints on Obstetric Surgery," there are numerous suggestions which seem exceptionally apt.

Miscellany

Rural Sanitation Dependent on Evolution as Well as Economic Progress

Progress in rural sanitation and hygiene may not depend on economic progress and material prosperity, though these are important factors. It may depend quite as much on the evolution of mind of the persons affected and their acceptance of higher standards of living. In an address before the American Public Health Association at Jacksonville, Dowling recounted some experiences in the rural districts of Louisiana among the poor farmers and likewise among some of those who were more prosperous. He found many poor farmers with most wretched living conditions, with lack of the ordinary conveniences which contribute to health, with poor food, of small variety, badly prepared, and with a seeming lack of any ambition to better conditions. A reliance on "patent" medicine "dope," as he calls it, was the chief source of hope in the many ills which beset them. Among the more prosperous class there was some improvement in the surroundings, but in many cases apparently no inclination to adopt modern comforts and conveniences or to follow out the simplest rules of hygiene and sanitation. Rural life is still in the transitional stage in the United States, and in this respect much of the South is still very backward, though constantly improving. According to Dowling, more than material prosperity or the efforts of individuals or organizations will be necessary to secure improvement.

"Progress in the economic features of community life means progress in the social; they are interrelated," he says: "but advancement, either economic or social, depends on growth or evolution of many kinds. This precludes the hope that you or I or any organization can do very much toward the substitution and acceptance of higher standards by the adult population. In a democracy, the people accept whatever appeals to them as pleasing or useful; in a country governed by a monarch, acceptance of measures is implied. It is easier in the latter to abolish a custom detrimental to health or to substitute the sanitary for the insanitary. It doesn't matter so much in the older countries whether the people accept a new point of view; but here it is the all-important element of a change of action. Ideas direct activities and conduct. Ideals of life and action are among the most dynamic forms of ideas; therefore, the viewpoint of the resident of the rural hope is the key to regeneration. It follows that the school is an institution to which we must look. Proper standards of living must be instilled into the minds of the children and training given in habits both of thought and action. In this our rural schools heretofore have failed. They did not recognize properly their whole function. At present, in many states, schools of the rural districts are being reorganized; effort is being made to adapt the course, the teaching and the subject-matter to conditions. It will require long and patient experimentation before a system entirely fit can be established, for it must embody the cultural as well as the vocational; it must apply the universal to the unit; and it must keep the ultimate in sight yet not lose in practical adaptation to the needs of the present. No people in the world's history ever grappled with a greater problem."

The Enteric Administration of Benzene

Since the establishing of the treatment of various forms of leukemia with benzene, numerous methods have been devised for the preparation of capsules for the enteric administration of this substance. In a recent issue of the *Druggists Circular* (May, 1915, p. 289), Kuever has described a simple and apparently satisfactory technic. Benzene is rarely administered alone. It is usually combined with an equal volume of olive oil. Ordinarily hard gelatin capsules were found to give the best service. The body of the capsule is placed in a holder made of a pasteboard box or cover through which perforations of suitable size have been made. The right size capsule is selected to contain the proper dosage in minims. The mixture of equal volumes of benzene and olive oil is dropped into the body of the capsule, and the cap placed on it to prevent evaporation. The cap is sealed to the body by holding it in warm water, 40 C. (104 F.), for a fraction of a second. The superfluous water is shaken off and the capsule held between the thumb and index finger a moment to permit the two parts to stay well together. Care must be taken to prevent oozing of benzene between the two parts, as this will prevent a proper application of the coating. Keratin is applied first. The capsule is rolled in this substance after it has been moistened by immersion in glacial acetic acid for an instant. The excess of keratin is then brushed off with the finger tips after it has had time to set, about fifteen minutes. The capsules are then exposed to a draft of air for an hour to aid evaporation of the acetic acid and dry the keratin. The salol is melted on a waterbath at a temperature not exceeding 45 C. (113 F.). The capsules are thoroughly chilled meanwhile in a refrigerator. The warm salol is placed in a wide-mouthed precipitating flask of 250 c.c. The chilled capsules are put into the warm salol, while the flask is being violently rotated until all the salol has cooled and crystallized. After the salol coating has been applied, the capsules are returned to an ice-bath or refrigerator and again chilled until the salol sets. The dose of the benzene-olive oil is from 3 to 5 minims of each substance to begin, and these dosages are given three times a day after meals. The 5-minim dose is continued for a week or two, or perhaps three, but is gradually increased up to 7 minims, then 8, 10, 15, etc., until finally the patient receives 30 minims of each ingredient, or 60 minims of the mixture three or four times a day. Naturally, when the large dosages are reached, it is necessary to use three or four capsules to hold the required amount.

Acquisition of Lip Reading

E. B. Nitchie in the *Volta Review* suggests some requirements for the acquisition of the art of lip reading, an accomplishment of the greatest value to deaf persons and also most desirable for persons who are slightly or considerably hard of hearing. Several habits are fundamental and must be acquired by the lip reader. One of the first is the habit of watching the mouth always, even by persons who hear fairly well. While the eyes and the rest of the face are expressive, yet if the eyes are watched, many slight and determining movements of the lips and tongue will be missed. Habits of concentration and attention are also essential. The art will be practiced in time without effort, but in the beginning

requires a good deal of conscious endeavor. The eye must be trained to make the required associations quickly, but it is not to be expected that it will catch all the movements in every word and syllable. Only a part of them are caught; but by the synthetic ability of the observer, the speaker's thought can be understood completely. Eye training and mind training are the two lines that are important in learning lip reading. In eye training mirror practice is important, and in this neither vagueness nor exaggeration should be employed; just natural speech; and as the person practicing knows what he is saying, by this means he gets the correct movements and associations. In the beginning almost any words may be used, but it is advisable to start with words of one syllable. Then use longer words, watching carefully the lips in each part of the word, noting particularly the movement in the transition from one portion of the word to another. The method of sentence practice is similar to that for word practice. In practicing clauses, repeat them as many times as there are words in them, each time concentrating the attention on a succeeding word. Observe each word as a whole, and do not try to see the individual elements. In practicing this art, the mind must be trained at the same time by endeavoring to seize the sense of the remark rather than the individual elements or words. In fact, it is said that in rapid conversation, the way to get every word is to get them from the thought and not the thought from the words.

Society Proceedings

COMING MEETINGS

Washington State Medical Association, Tacoma, July 20-22.

PHILADELPHIA COUNTY MEDICAL SOCIETY

Meeting held June 9, 1915

DR. SENECA EGBERT, in the Chair

CANCER

Some Latest Thoughts on Carcinoma

DR. JOSEPH MCFARLAND: In recent years new methods of investigation have been developed, and all have been applied to cancer with most interesting results. The first of these is the method of implantation. This method of investigation with mouse cancer has shown that the tumors can be carried successfully through many successive generations of mice, and has revealed many facts of surprising interest, though unfortunately it has not led to much increase of knowledge in regard to the etiology of cancer. The same is true of the cultivation of cancer tissue in vitro; we can make cancer tissue grow, but we cannot start a piece of tissue growing in such manner that it will become carcinoma and continue as such when transplanted into animals.

Some interesting experiments have come to light with regard to certain chemical substances which have an influence on epithelial cell multiplication. Thus, inunction with sudan III produces a condition resembling cancer, but when the inunctions are stopped the patient recovers. It has recently been shown that in coal tar derived from gas distillation there is an element possessing a marked influence on the growth of epithelium. This, however, though it accelerates cell multiplication in vitro and in paraffin cancers, has not been shown experimentally to have the power to start a cancer. We hear much of the "precancerous stage" of cancer. Cancer of the stomach is more common in those who have had gastric ulcer, but ulcer can account for only a few cases. Carcinoma of the cervix is more common in women who have borne children, but may occur in others. Cancer of the breast is probably more frequent in cases with "chronic cystic mastitis"; but this accounts for not more than 20 per cent. Therefore in these so-called precancerous conditions we have to do with conditions which lead to cancer just as traumatism does, just as heredity does, just as other things do, and are not in themselves very important. Miss Maud Slye of Chicago has shown that cancer can be bred into or out of families of mice and that its occurrence follows the mendelian law of inheritance. It is not improbable that cancer in the human being will ultimately be found to be a heritable condition inherent in the germ protoplasm as the result of the occurrence of cancer in remote ancestors.

Relation of Diet to Transplantable Tumors

DR. GORDON SAXON: The Mendel and Osborne maintenance diet which is composed of a pure fat, a pure protein, a pure carbohydrate and a salt mixture has a depressing action on tumor growth. In over 1,000 "takes" in animals on a normal diet and on the Mendel and Osborne diet, there was not one instance of metastasis to distort organs. With diet rich in cholesterol, however, there was an increased percentage of "takes" and a remarkably high percentage of metastases. The litter unit was employed in all of the experiments, since there is greater uniformity of susceptibility, or immunity encountered, in the litter than in individuals.

Factors Operative in the Production of Cancer of the Skin

DR. JAY F. SCHAMBERG: Cancer of the skin rarely, if ever, develops from healthy integument, from a cutaneous surface which is free of antecedent pathologic defects. We see cancer of the skin develop from moles or nevi, either pigmented or unpigmented; from chronic fissures, old ulcers, scars, warty surfaces and especially keratoses. Exposure to sunlight is perhaps one of the most important factors in the development of cancer of the skin. The following observations tend to support this view: (1) The seats of predilection of cancer of the skin are the face and hands; (2) classes of individuals much exposed to sunlight, such as sailors and farmers, show the highest incidence of cancer of the skin; (3) in full-blooded negroes who have a protracted layer of pigments, keratoses and cancer of the skin of the face are excessively rare, indeed, almost unknown; (4) children, afflicted with that rare affection xeroderma pigmentosum, exhibit a hypersusceptibility to the action of the solar rays, and usually succumb to cancer of the skin before the age of 5; (5) there is a strong analogy in the Roentgen-ray cancers due to an allied form of radiant energy. Cancer of the skin may also be due to the repeated action of mechanical and chemical irritants. Workers in soot (chimney sweeps) and tar and crude paraffin workers are peculiarly susceptible to skin cancer. The long-continued or excessive ingestion of arsenic may lead to multiple cancer of the skin. A study of the causes of cancer of the skin argues against parasitism and in favor of mechanical, chemical and biochemical irritation as the productive factors.

What do Nonoperative Measures Offer in the Treatment of Malignant Disease of the Skin

DR. FRANK CROZER KNOWLES: The nonoperative treatment may be considered under: (1) internal treatment; (2) prophylaxis; (3) refrigeration; (4) caustics; (5) electrolysis; (6) fulguration; (7) Finsen light; (8) Roentgen rays, and (9) radium. Arsenic has been found to have an inhibitory influence in some of the malignant growths of the skin. Prophylaxis has an important bearing, particularly in the avoidance of local irritation, traumas, excessive smoking and of too long and too constant exposure to the solar rays. Emphasis should be laid on the early removal of warts, moles, nevi and various keratoses, found in old age skin, by such simple measures as trichloracetic acid, electrolysis, carbon dioxid snow, or fulguration. Refrigeration, electrolysis and fulguration are suggested only in the removal of small and very superficial epitheliomas. Finsen rays also should be limited in use to this type of growth. The three caustics recommended are potassium hydroxid, zinc chlorid and arsenous acid. Roentgen therapy has yielded excellent results. The Roentgen rays have certain advantages over other forms of treatment in that the surface is unbroken and the treatment is painless, is applicable in locations inacces-

sible to operation, dressings are unnecessary and the cosmetic results are excellent. Objections to caustics are pain, inflammatory reaction and the limited area to which they can be applied. Many patients rebel at the thought of the knife, disfiguring themselves with a facial dressing for weeks. Owing to the great expense of radium, the Roentgen-ray treatment for suitable cases of skin cancer—those without glandular enlargement or mucous membrane involvement—is the natural deduction.

What Does Surgery Offer the Patient With Carcinoma of the Stomach?

Dr. John B. Deaver: What surgery can offer in this condition depends on an early diagnosis and immediate and radical operation, with removal of the lesion, be it already carcinoma or gastric ulcer, which is a forerunner of carcinoma. There are no pathognomonic signs of cancer of the stomach in the operative stage. It is my routine practice to open the stomach if diagnosis is impossible by inspection and palpation of its wall. The surgeon has not yet been born who by sight or touch can always differentiate between carcinomatous infiltration and the inflammatory infiltrate of a chronic ulcer; between glandular enlargement due to metastases and that due to hyperplasia. Medical treatment has never cured a case of this disease, and while the operative mortality is from 18 to 20 per cent., the mortality without operation is 100 per cent. Cancer of the stomach causes about 1 per cent. of the total death rate; less than 1 per cent. of these cases come to the surgeon and less than one quarter are suitable for operation. In the treatment of benign ulcer of the stomach it is my practice to excise the ulcer when surgically possible, which is practically always the case. That a percentage of gastric ulcers do undergo malignant change has been proved. Wilson and McDowell have shown that out of a series of 399 pathologic specimens examined by them the following was found: 4.8 had ulcer with doubtful cancer; 15.8 had ulcer with positive cancer; 36.8 had ulcer with advanced cancer; 42.6 had cancer with doubtful ulcer. In 60 per cent. of cases of cancer of the stomach the tumor is situated in the pyloric region and is easily accessible. The fundal cases are usually extensions and are practically inoperable. A jejunal fistula is all that can be promised, and it is a glaring sign that some one has blundered. Absence of free hydrochloric acid has not been in my experience a constant sign. The Roentgen ray, in the hands of an expert, is of great value in early diagnosis. The uncertainty which always hovers about any clinical idea of the pathologic variety of cancer which may be found even in the evident case will practically always justify exploration in the hope that something may be done. The operation of choice is subtotal gastrectomy with wide excision of involved glands and a posterior gastro-enterostomy. Polya's new operation of bringing a loop of jejunum through the transverse mesocolon and anastomosing it to the proximal end of the cut stomach in its entirety holds out the possibility of a greater area of extirpation. The end-results of operation on carcinoma of the stomach at present suffer from the fact that in most cases operation is performed in the late incurable stages. Finally, I would say operate in all cases of cancer of the stomach; operate early, and if unable to make a diagnosis, operate to make it.

What do the Newer Methods of Treatment Offer the Patient With Malignant Disease of the Uterus?

Dr. John G. Clark: From the literature the inevitable conclusion is drawn that radium offers excellent possibilities in the treatment of superficial growths and for the relief of hemorrhage and malodorous discharge in extensive cases; but no extreme degree of optimism can be gathered from these reports, since they all point to the fact that the deeper metastases are not reached by the radium, on which hangs the fate of the patient. Five years ago I reached the conclusion that when the deeper iliac glands are the seat of metastases, attempt to cure these patients is futile. Thus far we must conclude that there is not sufficient evidence to justify the substitution of radium for surgical measures in cases which are operable. As a forerunner to, and a follower up of an operation, it is unquestionably advisable. In inoperable cases it should invariably be tried, for apparent cures have occurred in some very advanced cases, and in those cases not ultimately cured there is a decided amelioration of symptoms. The occasional production of necrosis need not deter one from the use of radium, as this occurs in the advanced cases. In chemotherapy thus far no measure has proved of real value in the treatment of cancer. The treatment of the disease by cancer extracts and by the various serums has proved to be worse than valueless. Percy of Galesburg is an ardent advocate of the use of desiccating heat for the cure of inoperable carcinoma. He uses a cold cautery at a comparatively low degree of heat for a sufficient length of time to destroy superficial and deep-seated growths. I believe the majority of surgeons in the United States attempting to use this method assume that he employs a cauterizing heat. Against this use of his cautery he protests very strongly and prefers to speak of it as a "cold cautery." I believe the method holds out definite promise of favorable results if Percy's rules are accurately followed. I feel, however, that radium offers equally good chances for cure without the greater danger of mortality incident to this operation. From this review of the newer therapeutic methods in the treatment of cancer we may conclude that definite progress has been marked, but that as yet a universal panacea in the treatment of cancer has not been discovered or even forecast by the most optimistic champions of the methods here mentioned.

Gross Pathology of Malignant Disease of Breast

Dr. C. B. Longenecker: Some tumors of the breast are undeniably benign, but others are malignant from the beginning. There is, moreover, no guarantee that the benign tumors will remain so; certain types of cysts and the scars of a chronic mastitis are especially liable to take on malignant change under the influence of irritation and age. It is the part of prudence to regard all growths with suspicion and to do early radical operation in the majority of cases. The so-called precancerous conditions are in reality often cancerous from the beginning. When cancer of the breast has advanced to such an extent that the typical signs are easily observed, it is approaching the final stage and should not be a subject for diagnosis. Occasionally we see cancer under the microscope which shows the beginning of the breaking through of the basement membrane and proliferation of epithelial cells. This may be coincident with a small palpable lump in the breast which, on section, shows unmistakable evidence of early malignancy in the milk glands. When the case is sufficiently far advanced, the microscopic section shows the general infiltration of the surrounding tissue and of the deeper structures; one small lump of the breast shows the beginning breaking through of the capsule and general disarrangement of the cell formation around the ducts, and likewise a collection of cells occupying a position deeper down in the pectoral muscle, while the only thing palpable is a small lump in the breast. A patient who showed a not very large involvement of the breast, with slight retraction of the nipple, showed, on section, a general involvement of almost the entire breast. One patient, discovering a lump in the breast two years ago, consulted a physician who advised waiting for two months "to see what would happen." Instead of going back to him the patient consulted a second physician who gave the same advice. She failed to return to him. Later she turned up at one of the hospitals, where operation was advised. She took this under consideration for a few weeks but did not report. She applied to another hospital, receiving the same advice. She said she would think about it for a few days and she never returned. The lack of judgment of the physician and the procrastination of the patient are obvious. In a case of Paget's disease which had once been cured by Roentgen ray, the breast was removed on return of the trouble and on section showed a wide involvement of the underlying structure. As a matter of

fact, Paget's disease is simply an outward manifestation of a well-established deeper cancer. Another patient with a small palpable lump, on section showed a discrete lump considerably removed from the nipple and, in the portion of the breast between the lump and the nipple, quite definite involvement. One patient coming for advice with considerable involvement of the breast refused operation for six months, in which time the breast had very markedly degenerated. Operation was done to remove the widely involved breast. In three months the patient returned with wide involvement of the other breast. A very large breast, in which the pathologic condition started probably as Paget's disease, showed almost the entire breast a consolidated mass involving not only the breast structure, but also the pectoral muscle. Recurrence rapidly followed in the opposite breast, which, at the death of the patient, had become almost as large as the first breast. A tumor of the shoulder on removal showed sarcoma. Within a few weeks a second growth was noted in the breast. A portion of the breast, containing the lump, was removed; recurrence followed in a few weeks in the breast, and likewise a large recurrence followed removal of the growth on the shoulder. The second growth on the shoulder within a few weeks attained a size of about 6 by 4 inches. Under massive doses of Roentgen ray there was entire disappearance within three weeks.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

July, X, No. 1, pp. 1-76

1 Congenital Dextrocardia with Patent Interventricular Septum. R. D. Moffett and S. Neuhof, New York.
2 Pathology of Myatonia Congenita (Oppenheim). Necropsy Report. A. Strauch, Chicago.
3 *Case of Congenital Heart Disease with Demonstration of Specimen. J. L. Morse, Boston.
4 Acute Infective Endocarditis. F. Huber, New York.
5 Three Cases of Catarrhal Jaundice in Infancy. T. C. Hempelmann, St. Louis.

3. **Congenital Heart Disease.**—The examination of the heart in Morse's case was as follows: The right border of the heart was 4.5 cm. to the right of the median line, and the left border 11 cm. to the left of the median line. The upper border was at the lower border of the second rib. The action was regular. There was a high-pitched murmur beginning just before the first sound, accompanying the first sound and continuing a little after it. The second sound was accompanied by a long, somewhat rough murmur, which was loudest in the third left space. It was louder in the pulmonic area than in the aortic area or at the apex. The second sound was distinct. There was no edema or ascites. Gross anatomic diagnosis: Complete congenital atresia of pulmonary artery; congenital defect of interventricular septum; persistent ductus arteriosus; acute vegetative endocarditis; thrombosis of ductus arteriosus; patent foramen ovale; dilatation and hypertrophy of right ventricle.

American Journal of Public Health, Boston

June, V, No. 6, pp. 493-592

6 Truth in Publicity. C. V. Chapin, Providence, R. I.
7 Judicial Enforcement of Health Protection. H. B. Hemenway, Evanston, Ill.
8 Dairyman vs. Dairy. C. E. North, New York.
9 Accuracy of American Cancer Mortality Statistics. F. L. Hoffman, Newark, N. J.
10 Prevalence of Occupational Factors in Disease and Suggestions for Their Elimination. E. R. Hayhurst, Columbus.
11 Statistical Treatment of Deaths of Nonresidents. C. L. Wilbur, Albany, N. Y.
12 International Joint Commission's Investigation of Sewage Pollution of Boundary Waters. A. J. McLaughlin, Boston.
13 Physical Examination of Employees Engaged in Manufacture of Portland Cement. G. E. Tucker, Riverside, Calif.
14 Use of Complement Fixation Reactions in Public Health Diagnostic Laboratory. A. McNeil, New York.

Annals of Surgery, Philadelphia

June, LXI, No. 6, pp. 641-778

15 *Ligature of Innominate Artery for Cure of Subclavian Aneurysms; Report of Case. J. E. Thompson, Galveston, Tex.
16 *Transplantation of Entire Bones with Their Joint Surfaces. A. B. Gill, Philadelphia.
17 *Osteogenic Power of Periosteum; Note on Bone Transplantation. J. S. Davis, Baltimore, and J. A. Hunnicutt, Athens, Ga.
18 Gunshot Injuries of Spinal Cord. R. Derby, Paris.
19 Perforating Gunshot Wounds of Abdomen. L. Guerry, Columbia, S. C.
20 Fracture of Pelvis. A. C. Burnham, New York.
21 *Simultaneous Fracture of Both Femurs. A. Vander Veer and E. A. Vander Veer, Albany, N. Y.
22 Autogenous Bone Grafts Versus Lane's Plates. H. H. Trout, Roanoke, Va.
23 Papilloma of Gallbladder; Report of Eighty-Five Cases. H. C. Irwin and W. C. MacCarty, Rochester, Minn.
24 Occult Strangulated Inguinal Hernia; Spontaneous Reduction "En Masse." M. R. Bookman, New York.
25 Treatment of Benign Papillomata of Urinary Bladder with High Frequency Currents. E. Beer, New York.

15. **Ligature of Innominate Artery.**—The case which forms the basis of Thompson's communication was one of spontaneous aneurysm of the axillary artery involving also the third and second parts of the subclavian. The sac was an enormous one, and reached from the scalene muscles above to the axillary outlet below. The axillary portion was many times larger than the subclavian. The patient died one month after the ligation.

16. **Transplantation of Entire Bones.**—Full-grown dogs were operated on under complete surgical anesthesia by ether. The second long metatarsal bone was excised in the front paws and each one was implanted in the opposite paw. The ends of the bone were held in position by chromic catgut sutures. Tendons and fascia were sutured over it with interrupted sutures of silk floss. No dressings were applied and the dogs were permitted to walk about. This they usually did on the day following operation without any evidence of pain. Eleven bones were transplanted. One dog was killed a week after operation, before healing in of the bones had occurred, and in another dog one transplant was removed under ether. The remaining eight transplants healed in after more or less suppuration of all wounds but one. The dogs were killed from seven to eight and one-half months after operation. One of the eight healed-in transplants was found to be almost all absorbed. Another is badly distorted and a second moderately changed as a result of osteomyelitis following operation, but they appear to be serving their function and they present evidence of new bone formation. The remaining five transplanted bones are practically normal in appearance. The articular ends of the bones are apparently normal and the joints have perfect function except in those cases in which the end of the bone was destroyed by the suppurative process. Microscopic examination of the transplanted bones that healed in with little or no suppuration of the wounds shows no evidence of dead bone anywhere. The bone cells as well as the cells lining the marrow cavity and the cells of the periosteum are well stained. If there was necrosis of the transplanted bone, the necrotic part has all been absorbed and replaced. The joint cartilage also appears normal.

17. **Osteogenic Power of Periosteum.**—Davis and Hunnicutt repeated during the last two years many of Macewen's experiments, and also have carried out a number of their own. The experiments were carried out as follows: 1, the transplantation of free periosteum without bone particles into the muscle or subcutaneous tissue of the same animal; 2, the transplantation of free periosteum without bone particles into the muscle or subcutaneous tissue of another animal of the same species; 3, the injection into the soft parts of small bits of periosteum without bone particles in suspension; 4, the transplantation of free periosteum with thin bone shavings attached, into soft parts of the same animal; 5, the transplantation of free periosteum without bone particles, concealed in a blood clot, into the subcutaneous tissue of the same animal; 6, the transplantation of pedunculated flaps of periosteum without bone particles into, or around, adjacent muscle; 7, the transplantation of pedunculated flaps or periosteum, with a thin film of bone attached into adjacent soft

parts; 8, the subperiosteal resection of bone, leaving the periosteal tube, so far as possible, undisturbed; 9, the transplantation of bone and other substances into the periosteal tube after partial subperiosteal resection of a rib; 10, the implantation of bone and periosteum into prepared defects in the skull; 11, autobone in soft parts; 12, isobone in soft parts; 13, autobone in bone defects; 14, isobone in bone defects.

The results of these experiments are summarized as follows: Free periosteal transplants did not produce bone in the large majority of experiments, even though osteoblasts were adherent to the transplants. Pedunculated flaps of periosteum did not produce new bone. Free periosteal transplants and pedunculated periosteal flaps with bone shavings attached produced bone in each experiment. From this we might surmise that bone particles had been accidentally transplanted in those experiments in which bone was found after the transplantation of free periosteum. The removal of periosteum had little, if any, effect on the nutrition of a bone. The surface from which the periosteum was removed showed very little overgrowth of bone, unless there had been considerable irritation of that surface, either by trauma or by infection. The area from which the periosteum was taken was covered by a thin, very adherent fibrous membrane, or the muscle tissue was adherent to the denuded area. Absorption occurred when a silver ring was snugly applied around a bone over the periosteum and also at times when it was applied around denuded bone. There was no new bone formed from either the periosteum or bone when a silver ring was placed around a bone beneath the periosteum. Both autobone and isobone, without periosteum, were effective in repairing skull defects. Autobone and isobone, without periosteum, when transplanted into the periosteal tube after subperiosteal resection of a rib, caused stimulation of bone growth from the periosteum, and also from the rib ends.

Transplants covered with periosteum, and foreign bodies, stimulated bone growth only from the rib ends. Transplants of the same size in a periosteal tube, after subperiosteal resection, under exactly the same conditions, acted quite differently. After subperiosteal resection of a portion of a bone, the growth of bone in repairing the defect was from the bone stumps, the periosteum acting as a limiting membrane. Autobone, both with and without periosteum, lived and was successfully transplanted to fill defects in bone. Clinically, it is advisable to transplant bone covered in part, at least, with periosteum. Isobone in a bone defect acted as a scaffold for the growth of new bone from the living bone stumps, but there was ultimate absorption of the transplant. Autobone, both with and without periosteum, was absorbed when transplanted into soft parts. The periosteum seemed to have some protective influence against early absorption. The fate of those transplants which had grown together and produced new bone is doubtful, but as absorption was going on, and as the tendency of free bone in the soft parts is to be absorbed, it seems probable that absorption would eventually occur. The same may be said of isobone in soft parts, except that in no instance was any new bone formed from the transplant. The growth of new bone from bone stumps after resection of a portion of a bone with its periosteum is astonishingly slow, being very little more advanced after six months than after six weeks.

21. **Simultaneous Fracture of Both Femurs.**—The authors call attention to a case in which one femur was treated by plating, the other by extension and plaster of Paris case. Much better union was secured by means of plating than by extension and use of plaster of Paris.

Boston Medical and Surgical Journal

July 1, CLXXIII, No. 1, pp. 1-36

26 Transportation of Wounded. E. L. Gros, Paris.
27 First Impressions of Opportunity for Orthopedic Work at American Ambulance. R. B. Osgood, Boston.
28 *Paralytic Conditions Resulting from Surgical and Obstetric Accidents. J. W. Sever, Boston.
29 *Homogenized Milk; Its Possible Applications to Infant Feeding. M. Ladd, Boston.
30 Luetic Bursopathy of Verneuil; Report of Case of Congenital Type. W. P. Coues, Boston.
31 *New Symptoms in Amaurotic Family Idiocy. I. H. Coriat, Boston.

28. **Paralytic Conditions Resulting from Surgical and Obstetric Accidents.**—The method which, in Sever's opinion, offers the best results in the treatment of Volkmann's paralysis is the one which divides the muscle bellies by free incisions and so lengthens the tendons. The after-treatment is of the greatest importance, and consists of the use of a palmar and dorsal splint to prevent and reduce the contractures of the wrist and fingers; electricity, galvanic and faradic, if there be nerve involvement, and massage and manipulation. Treatment should be long continued, but in many cases the benefit to be derived from any or all of these methods is not very great, and it is only rarely that a very useful hand is obtained. The results, however, are much better than if nothing had been attempted.

29. **Homogenized Milk.**—It is possible to combine by homogenization a vegetable fat, such as olive oil, with precipitated casein, or fat-free lactic acid milk, and test its food value in acute diarrheas, or in convalescents from acute diarrheas, conditions in which the ordinary fats of milk are not well tolerated. Ladd has tested the tolerance to olive oil in these acute infections in three cases: one a convalescent from a severe infectious diarrhea, and two during an infectious diarrhea at the end of the first week of fever. In the convalescent case, the child, 2½ years of age, took 2 per cent. of olive oil in a fat-free lactic acid mixture and gained over a pound in four days. In the other two cases the 1.50 per cent. of olive oil was given in a malt-soup mixture. Both children, one 1 year, the other 3 years of age, steadily improved. The type of food which Ladd has found most useful in cases of fat indigestion with extreme malnutrition, is the malt-soup mixture. He says that many of the worst cases are amenable to successful feeding by this method intelligently applied. If olive oil is combined with fat-free milk, the cost of a modified milk could be greatly reduced for the benefit of the poor, especially if we are able to demonstrate the possibility of keeping sweet and palatable, for several days, a pasteurized homogenized milk.

Another point in connection with the malt-soup olive-oil mixtures is the effect of the homogenizing process on the starch. The tendency for the barley decoction to separate on standing is prevented. In fact, any milk modification is improved in taste and appearance by this process of homogenization. It has been shown that whole milk so treated is more easily digested and assimilated. Homogenization of modified milks would, therefore, seem to increase their efficiency if used in cases in which there is no marked intolerance for cow's fat. There are other fats and oils besides olive oil, which Ladd is planning to use as substitutes for cow's fat. Cod liver oil, for instance, homogenized with fat-free milk or malt-soup mixtures, is fairly palatable as compared with ordinary methods of administration, but he has not yet tried it in a case of difficult fat digestion. Banana oil and the oil of the soja bean might also be tried.

31. **Symptoms in Amaurotic Family Idiocy.**—The symptoms mentioned by Coriat are: Explosive laughter: This symptom was noticed in three cases. In two of these, the mental deterioration was marked. Hydrocephalus: This was present in one case. Bulbar symptoms: This was present in one case and was shown by drooling of saliva, choking spells, difficulty of swallowing and attacks of apnea. This child died suddenly from bulbar paralysis. Nystagmus: Constant lateral and rotary nystagmus was present in three cases, in one of which it persisted during the entire course of the disease. Hypotonia: In two cases there was a marked flaccidity of the limbs, resembling the condition seen in amyotonia congenita. Abnormal reflex phenomena were noted.

Canadian Medical Association Journal, Toronto

June, V, No. 6, pp. 469-564

32 Prophylactic Inoculation Against Typhoid in Fourth Militia Divisional Area of Canada. H. B. Yates and L. J. Rhea, Montreal.
33 Artificial Pneumothorax in Treatment of Phthisis. C. D. Parfitt and D. W. Crombie, Gravenhurst, Ont.
34 Occurrence of Fluid Exudate in Cases of Lobar Pneumonia. W. Goldie, Toronto.
35 Case of Multiple Facetted Calculi of Penile Urethra. G. M. Manning, Montreal.

Cleveland Medical Journal

June, XIV, No. 6, pp. 407-482

36 *Ogilvie Method of Treatment of Syphilis of Central Nervous System with Standardized Salvarsanized Serum; Report of Sixteen Cases. W. C. Stoner, Cleveland.
37 Symptoms and Diagnosis of Incipient Pulmonary Tuberculosis. S. A. Douglas, Mount Vernon.
38 Composite Report of Service of Lakeside (Cleveland) Unit at American Ambulance, Paris. G. W. Crile.
39 Diagnosis of Cardiospasm. J. D. Osmond, Cleveland.
40 *Pericardial Cyst. A. R. Timme, Cleveland.
41 *Cavernous Hemangioma of Pericardium. A. R. Timme, Cleveland.

36. **Treatment of Syphilis of Nervous System.**—In the sixteen cases treated by Stoner with a total of forty-two injections, no untoward symptoms arose except pain (in approximately 50 per cent. of the cases) which generally required no means of relief and passed off in twelve hours. In only two cases were the pains very severe, and these were cases of tabes, in which 0.75 mg. was given. The treatments have been repeated every two weeks, and in cases with positive blood stream to the Wassermann, an intravenous 0.3 gm. salvarsan was given in a week subsequent to intraspinal treatment. The cases treated have peculiar interest, inasmuch as a number of them have had intensive intravenous salvarsan therapy and some mercurial therapy over a period of two years. The cases consist of the following clinical classification: 6 tabes; 1 paresis; 4 cerebrospinal syphilis; 3 cerebral syphilis; 1 syphilitic hemiplegia; 1 syphilitic psychosis (?). This group of cases received a total of forty-two injections at two weeks' interval. The greatest number of treatments given in a single case were six. The clinical improvement in certain cases has been striking. One patient with cerebral syphilis who had a second syphilitic infection following an intensive salvarsan intravenous treatment of an infection just one year previous to his reinfection, developed severe head pains, which were not relieved with intravenous salvarsan treatment and intramuscular mercurial treatment. After three intraspinal treatments, his head pains were completely relieved, his general mental condition much improved, and the laboratory findings on the fluid gave a negative Wassermann with all antigens, a negative Lange and a cell count within normal limits. In some cases of cerebrospinal syphilis the patients have lost their pains, deep reflex disturbances, and show decided changes in lumbar puncture findings.

Early cases of paresis treated intensively show marked improvement, both mentally and physically. Laboratory findings closely parallel the clinical improvement. One patient with psychosis of questionable classification, but not a paretic, who had a marked syphilitic infection as evidenced by a very positive Wassermann in the blood, but a negative lumbar puncture, was given an intraspinous treatment to determine what effect it might have on the mental condition. The day following the injection, his mental state became practically normal and he has remained much improved. A second intraspinal injection was given in three weeks on the supposition that the toxemia of his syphilitic infection might be a factor in his abnormal mental state. There was found, on examination of the fluid three weeks subsequent to the first injection, an increase of lymphocytes up to sixty-five cells, to 3.4 c.c. of cerebrospinal fluid, but the Wassermann and Lange tests were both negative. One case of syphilitic hemiplegia of nine years' standing, in which there was a more recent interstitial keratitis, showed marked improvement with intravenous and intraspinal treatment. The eye condition cleared up, the anemia disappeared, and a gain in weight and strength was very marked. Two cases of tabes with Charcot joints lost their last remnant of pains following intraspinal treatments that had persisted after intensive intravenous and mercurial treatment.

40. **Pericardial Cyst.**—Timme's patient was a 57-year-old man who entered the hospital with a complaint of incontinence and retention of the urine as well as edema for the past month. Physical examination showed a slightly enlarged heart with a soft systolic murmur. Over the end of the sternum could be heard a to-and-fro friction-rub with each cardiac cycle during inspiration. A suprapubic puncture was done to relieve the distention of the bladder, but the patient later died in uremic coma. On necropsy the bladder and ureters were found to be moderately distended or dilated, the stricture being in the prostatic urethra. The kidneys showed an acute nephritis. The lungs showed nothing beyond a congestion. The myocardium and endocardium were normal. The pericardial sac was slightly increased in thickness; it contained about 50 c.c. of a clear straw-colored liquid not under tension. The entire serous surface was covered with a thick fibrinous exudate and showed everywhere a delicate villous surface with many delicate adhesions. The exudate was easily removed and left a fine granular surface.

On the right side of the cardiohepatic angle, there was an ovoid cyst-like body, rather firm and fluctuating. It was attached to the lower anterior extremity of the pericardial sac. Although it could not be emptied by pressure, gentle probing along the pericardial surface opened up a small connection of only a few millimeters diameter. On cutting the sac, it was found to be a multiloculated cyst containing a thick yellow liquid. There was apparently no connection between the branches, but the cyst nearest the pericardium opened into it. The contents of this nearest cyst seemed to be infected from the pericarditis by contiguity. The wall was rather thick, tough and inelastic.

41. **Cavernous Hemangioma of Pericardium.**—A 58-year-old woman complained of shortness of breath and swelling of the feet, and a diagnosis of mitral stenosis and insufficiency. There was no friction-rub during life. The patient died in decompensation. At necropsy the clinical diagnosis was borne out, and in addition were found arteriosclerosis, atheroma and calcification plaques of the aorta, and also thrombosis at the aortic bifurcation, with complete thrombosis of both common iliacs for 3 inches, with complete organization; there was ossification with marrow-formation in the walls of the lower aorta and iliacs. The pericardium contained some fat and was heavier than usual. The sac contained 75 c.c. of a clear yellowish liquid with an occasional string of fibrin. On the portion of the parietal layer overlying the anterior surface of the heart, and a little below the middle point, was situated a dark bluish mass of distended vessels. These were about the size of a normal radial artery and were closely bound together. The whole structure covered an area slightly larger than the size of a 25-cent piece. The surface was perfectly smooth and glistening, there being no rupture, adhesions, exudate or external clotting.

Georgia Medical Association Journal, Augusta

June, V, No. 2, pp. 25-48

42 Observations on Blood Pressure. J. H. Honan, Augusta.
43 Failure to Recognize Normal Variations of Abdominal Viscera Cause of Poor Results in Abdominal Surgery. B. Moore, Atlanta.
44 Undesirable Provisions in Present Vital Statistics Law and Suggestions for Their Correction. E. R. Park, Atlanta.
45 Treatment of Uncinariasis Relative to Improved Methods. A. G. Fort, Atlanta.

Indiana State Medical Association Journal, Fort Wayne

June, VIII, No. 6, pp. 277-322

46 *Education of Public to Early Recognition of Cancer of Uterus. B. Kennedy, Indianapolis.
47 *Nasal Polypi. G. W. Spohn, Elkhart.
48 *Trachoma in Indiana. E. M. Shanklin, Hammond.
49 Technic of Roentgen Ray Massive Dose for Treatment of Deep Seated Carcinoma. J. N. McCoy, Vincennes.

46 and 47. Abstracted in THE JOURNAL, Oct. 24, 1914, pp. 1499 and 1501.

48. Abstracted in THE JOURNAL, Oct. 31, 1914, p. 1602.

Journal of Experimental Medicine, Lancaster, Pa.

July, XXII, No. 1, pp. 1-121

50 *Studies on Circulation. Inequalities in Blood Flow in Two Hands (or Feet) Due to Mechanical Causes (Embolism, Compression of Vessels, etc.) or to Functional (Vasomotor) Causes, with Discussion of Criteria by Which Conditions are Discriminated. G. N. Stewart, Cleveland.
51 *Hibernation and Pituitary Body. H. Cushing and E. Goetsch, Boston.

52 *Late Poisoning with Chloroform and Other Alkyl Halids in Relationship to Halogen Acids Formed by Their Chemical Dissociation. E. A. Graham, Chicago.
53 Form of Epithelial Cells in Cultures of Frog Skin, and Its Relation to Consistency of Medium. E. Uhlenhuth, New York.
54 *Occurrence of Carriers of Disease-Producing Types of Pneumococcus. A. R. Dochez and O. T. Avery, New York.
55 Effects of Long Continued Intraperitoneal Injections of Proteins. P. G. Woolley, A. DeMar and D. Clark, Cincinnati.

50. **Studies on Circulation.**—In cases in which great inequalities in the blood flow in the two hands were produced by mechanical causes (ligation or compression of vessels, embolism), the stability of the ratio of the flows, in successive measurements at short intervals, was found by Stewart to be characteristic. Over long intervals the opening up of collateral circulation or the progressive increase of the block (in a case of multiple embolism with thrombosis) was followed by changes in the ratio of the blood flows in the normal and the affected part. Another criterion of these conditions was found to be that the inequality was not abolished by producing general vasomotor changes, namely, by altering the external temperature. In certain cases inequalities in the blood flow in the two hands (or feet) were found which were not stable from day to day, and which could be abolished, reduced, increased or reversed by alterations in the external conditions which bring about general vasomotor changes. These inequalities, not associated with clinically recognizable differences between the parts compared, were interpreted as due to unequal activity of the vasomotor mechanism on the two sides. The condition appeared to be most frequent in certain groups of neurologic cases.

51. **Hibernation and Pituitary Body.**—Cushing and Goetsch hold that a train of symptoms coupled with retardation of tissue metabolism and with inactivity of the reproductive glands, not only accompanies states of experimentally induced hypophysial deficiency, but is equally characteristic of clinical states of hypopituitarism. The more notable of these symptoms are a tendency, in the chronic cases, toward an unusual deposition of fat, a lowering of body temperature, slowing of pulse and respiration, fall in blood pressure and oftentimes a pronounced somnolence. These symptoms bear a marked resemblance to the physiologic phenomena accompanying the state of hibernation which have heretofore been unsatisfactorily ascribed solely to extracorporeal factors, namely, a seasonal deprivation of food and low temperature. In a series of hibernating animals (woodchucks) it was found that during the dormant period histologic changes are apparent in many of the ductless glands. The most notable of these changes occur in the pituitary body. The gland not only diminishes in size, but the cells of the pars anterior, in some animals at least, completely lose their characteristic staining reactions to acid and basic dyes. At the end of the dormant period the gland swells, and as the cells enlarge they again acquire their differential affinity for acid, basic and neutral stains, and at the same time karyokinetic figures may appear.

52. **Late Poisoning with Chloroform.**—The view is developed by Graham that the changes characteristic of late poisonings, namely, edema, multiple hemorrhages, fat infiltration and necrosis are ascribable (1) to acids and (2) to the fact that the amount of acid formed parallels the chemical dissociability of the drug outside of the body. Favoring the view that acid is responsible for the changes are the following observations: 1. All the characteristic features of late chloroform poisoning have been produced merely by the administration of hydrochloric acid, except, however, for a different distribution of the liver necrosis. 2. The areas of central necrosis produced in the liver by the various substances under discussion give an acid reaction to neutral red. 3. Sodium carbonate in a hypertonic sodium chlorid solution markedly inhibits the production of the lesions. The suggestion is made that the halogen acid (hydrochloric, hydrobromic or hydriodic acid), directly liberated in the process of dissociation, may be the important factor which makes the tissue changes seen in poisoning with chloroform and other alkyl halids so different from those following the administration of narcotic drugs of a different type.

54. **Carriers of Disease-Producing Types of Pneumococcus.**—The studies detailed by Dochez and Avery show that there are two sources of danger in the spread of pneumococcus infection. One lies in the occurrence of healthy carriers of disease-producing pneumococci among individuals associated with cases of pneumonia, and the other in the fact that patients recovering from the disease harbor the responsible organism for a considerable length of time. In every such instance the pneumococcus isolated has corresponded in type with that of the infected individual. Convalescents from pneumonia carry for a considerable length of time the type of pneumococcus with which they have been infected. The existence of the carrier state among healthy persons and among those recently recovered from pneumonia establishes a basis for understanding the mechanism by means of which lobar pneumonia spreads and maintains its high incidence from year to year.

Journal-Lancet, Minneapolis

June 15, XXXV, No. 12, pp. 307-338

56 Avoidable Errors in Diagnosis of Cardiac Insufficiencies. C. L. Greene, St. Paul.

Kentucky Medical Journal, Bowling Green

June, XIII, No. 7, pp. 259-304

57 Use of Salvarsanized Serum. H. J. Farbach, Louisville.
58 New Diagnostic Method. C. Pope, Louisville.
59 Twice Recurring Hernia Repaired by Free Fascial Transplantation. L. Kahn, Louisville.
60 Circumcision. H. L. Read, Louisville.
61 Treatment of Pneumonia in Childhood. J. H. Pritchett, Louisville.
62 Report of Three Urinary Bladder Operations. J. R. Wathen, Louisville.
63 Peritonitis; With Especial Reference to Use of Iodin in Its Treatment. F. T. Fort, Louisville.
64 Unusual Case of Fistula. J. G. Sherrill, Louisville.
65 Some Observations on Tonsils. A. McKenney, Owensboro.
66 What Is Rheumatism? J. T. Dixon, Owensboro.
67 Ankylostomiasis. F. S. Tripp, Harrodsburg.
68 Neurasthenia. E. D. Turner, Sorgho.
69 Tuberculosis of Cervical Glands. J. W. Kincaid, Cattlettsburg.
70 Some Cases Operated on in Somerset General Hospital. A. W. Cain, Somerset.
71 Pellagra; Report of Case. J. H. Harrison, Hawesville.

Lancet-Clinic, Cincinnati

June 19, CXIII, No. 25, pp. 673-700

72 Septic Sinus Thrombosis; Report of Cases. G. C. Hall, Louisville, Ky.
73 Disease Prevention and How It May Be Accomplished. L. H. Schriver, Cincinnati.
74 Tuberculosis of Hilus Lymph Glands. C. S. Rockhill, Cincinnati.

June 26, No. 26, pp. 701-728

75 Injuries of Eye and Appendages. D. H. Abbott, Cincinnati.
76 Roentgen Ray Illustrations of Tubercular Lung Lesions. C. C. Kennedy, Cincinnati.
77 Prophylaxis in Pediatrics. H. R. Carroll, Cincinnati.
78 Relation of Medical Profession to Practical Pan-Americanism of Twentieth Century. C. A. L. Reed, Cincinnati.

Medical Record, New York

July 3, LXXXVIII, No. 1, pp. 1-46

79 Advances in Our Knowledge and Treatment of Cancer in Last Thirty Years. F. C. Wood, New York.
80 Transition of Gastric Ulcer into Carcinoma and Gastric Carcinoma into Ulcer. J. C. Hemmeter, Baltimore.
81 Carcinoma of Stomach. J. F. Erdmann, New York.
82 Plea for Rational Treatment of Cancer. L. D. Bulkley, New York.
83 Organotherapy in Chronic Disease with Special Reference to Its Possibilities in Cancer. H. R. Harrower, New York.
84 *Roentgen Ray in Carcinoma of Breast. M. K. Fisher, Philadelphia.

84. **Roentgen Ray in Carcinoma of Breast.**—In the absence of any specific remedy at present for the cure of cancer, the status of present-day treatment for carcinoma of the breast, according to Fisher, resolves itself, first and foremost, into early and wide removal of the diseased organ and all secondarily involved tissues, followed by thorough, persistent and continuous Roentgen-ray exposures over the site of operation and all contiguous areas.

Michigan State Medical Society Journal, Grand Rapids

June, XIV, No. 6, pp. 309-350

85 Mouth Infections. F. B. Walker, Detroit.
86 Neuroretinitis; Report of Cases. A. E. Bulson, Jackson.

87 Infectious Jaundice. W. Donald, Detroit.
88 Strychnin and Caffein in Acute Infectious Diseases. E. Boise, Grand Rapids.
89 Morphinism — Its Treatment at Home — Harrison Law. H. A. Sharps, L'Anse.
90 Under What Circumstances is Craniotomy on Living Child Justifiable? R. Peterson, Ann Arbor.
91 Case of Myelogenous Leukemia Treated with Benzole and Roentgen Ray. H. B. Schmidt, Ann Arbor.
92 Syphilis as Complication of Pregnancy. R. A. Bartholomew, Ann Arbor.
93 Case of Cirsoid Aneurysm. H. M. Malejan, Ann Arbor.

Modern Hospital, St. Louis

June, IV, No. 6, pp. 383-452

94 Chicago Lying-In Hospital and Dispensary. J. B. DeLee and R. E. Schmidt, Chicago.
95 Organization of New York State Hospitals. A. W. Hurd, New York.
96 Small Community Hospital Built and Conducted by Physicians. F. G. Murphy, Mason City, Ia.
97 Electric Heat for Cooking in State Hospital. C. E. Laughlin, Evansville, Ind.
98 Chemistry and Physiology of Bread, Biscuits and Crackers. J. P. Street, New Haven, Conn.
99 Fireless Cookers as Adjunct in Hospital Kitchen. F. A. Seely, Chicago.
100 Cost of Hospital Buildings and Fallacy of "Per Bed" Rating. T. J. Van der Bent, New York.
101 Operating Hospital Under Budget System. C. S. Loder, New York.

New Orleans Medical and Surgical Journal

June, LXVII, No. 12, pp. 983-1070

102 Pathology and Bacteriology of Hodgkin's Disease. J. A. Lanford, New Orleans. .
103 Malingering. H. D. King, New Orleans.
104 Compensation of Workmen and Others for "Neurosis" Following Accident. T. A. Williams, Washington, D. C.
105 Sanitary Control of Leprosy. P. Gelpi, New Orleans.
106 Pertinent Remarks on Bacteriology and Pathology of Leprosy C. W. Duval, New Orleans.
107 Medical Aspects of Leprosy. R. Hopkins, New Orleans.
108 Surgical Aspects of Leprosy. R. Matas, New Orleans.
109 Value of String Test in Diagnosis of Gastric Lesions. S. K. Simon, New Orleans.
110 Prostatectomy Under Local Anesthesia. C. W. Allen, New Orleans.
111 Amputations. H. B. Gessner, New Orleans.

New York Medical Journal

July 3, CII, No. 1, pp. 1-64

112 Cancer of Mouth. R. Abbe, New York.
113 Cancer Patient's Dilemma. W. S. Bainbridge, New York.
114 What Does Surgery Offer Patient with Carcinoma of Stomach? J. B. Deaver, Philadelphia.
115 *Incision of Tumors for Diagnosis. J. Ewing, New York.
116 Cancer in Relation to Body Elimination. L. D. Bulkley, New York.
117 Cancer of Skin. S. Pollitzer, New York.
118 *Uterine Carcinoma Treated by Radium. W. S. Newcomet, Philadelphia.
119 Cancer of Upper Air Tract, with Special Reference to Its Treatment with Radium. W. Freudenthal, New York.
120 Negative and Positive Diagnosis of Cancer of Gastro-Intestinal Tract. L. G. Cole, New York.
121 Cancer of Bladder and Kidneys. (To be continued.) V. C. Petersen, New York.
122 Treatment of Epithelioma by Modern Radiation. R. H. Boggs, Pittsburgh.
123 Cancer of Female Breast. W. B. Snow, New York.
124 Some Comments on New Antiserum for Cancer. W. N. Berkeley, New York.

115. **Incision of Tumors for Diagnosis.**—Ewing states his conclusions regarding the indications for the microscopic study of tumors before operation, as follows: 1. The careful excision of a small piece of a malignant tumor by a sharp scalpel need not as a rule tend to disseminate or aggravate the disease. Dissemination of tumor cells requires sufficient force to propel the cells along lymph vessels or the opening of blood vessels, into which tumor cells may be carried. 2. Incision through the unbroken skin is seldom admissible for the sake of diagnosis. The skin is the chief protective against infection which, when once established in a tumor, greatly aggravates the disease. It is especially to be avoided with sarcomas of bones, muscle and fasciae, tumors of the breast, and in all growths in which incision of the skin involves also incision through a tumor capsule. In all such cases, whenever possible, it is better to remove the entire tumor by an incision which permits of enlargement for a more extensive operation. 3. The clinical history is an essential basis for the correct interpretation of microscopic structure. 4. The prognosis of a tumor may to a considerable extent be based on the microscopic structure. 5. The use of frozen sections, while occasionally of decisive value, encourages hasty conclusions and readily leads to error. It should be replaced as far as possible by the gross examination of the whole tumor. 6. No rigid rules can safely be followed in deciding when to remove a portion of a tumor for diagnosis. The conditions surrounding the growth of tumors are so variable that each tissue and organ must be considered by itself.

118. **Uterine Carcinoma Treated by Radium.**—While radium is not recommended by Newcomet as an agent to control carcinoma of the uterus, as there is no evidence to show that it controls metastasis, he claims that it does inhibit its local growth in many cases, and even advanced cases can be temporarily restored. With the evidence of the complete disappearance of the disease, the general improvement of the system can scarcely be laid to a psychical impression. Therefore, the more general use of radiation in cases of uterine carcinoma is to be recommended, especially as a postoperative procedure.

Pennsylvania Medical Journal, Athens

June, XVIII, No. 9, pp. 681-764

125 Basic Considerations in Roentgen Study of Intestinal Stasis. J. T. Case, Battle Creek, Mich.
126 Intestinal Stasis — Medical Aspect. T. R. Brown, Baltimore.
127 *Surgical Aspects of Fecal Stasis. J. G. Clark, Philadelphia.
128 Orthopedic Aspects of Chronic Intestinal Stasis. L. T. Swaim, Clifton Springs, N. Y.
129 History of Allegheny County Medical Society. E. B. Heckel, Pittsburgh.

127. **Surgical Aspects of Fecal Stasis.**—Clark has performed the hammock operation or suspension of the transverse colon in a considerable series of cases with satisfactory results in almost 50 per cent.; in others partial relief was secured, and in a definite percentage no relief, or even an exaggeration of previous symptoms followed; in one instance, death ensued from acute dilatation of the stomach. The most satisfactory results were obtained in those cases in which the transverse colon is weighted with fecal matter, but is not so redundant or so dilated as to interfere with its proper return to the upper abdomen. If the colon is greatly redundant or markedly dilated, this operation is not effective, and in Clark's opinion should not be performed. In two cases, in which he attempted to deflect the fecal current by making a lateral anastomosis between the cecum and the dependent transverse colon, or between the latter and the sigmoid, the effort was not successful, the symptoms being in no way alleviated. In one case Clark blocked the ascending colon at the hepatic flexure. The patient was no better, in fact, was worse, and ultimately Clark was forced to remove the colon down to the sigmoid flexure and the ileum was short-circuited at this point. Then and then only was the obstructive constipation and exaggerated tympanites overcome.

In eleven colectomy cases the primary basis for the operation was a definite obstructive constipation of such severe grade as to require, day in and day out, excessive purgatives and drastic enemas. Six patients were most satisfactorily relieved, the remaining five have not fared so well. One is dead of an intestinal obstruction which occurred six months subsequent to the operation, after the patient made a most satisfactory gain in every way. At least three of the others are no better, possibly are worse, because they are now battling against the evils of an enlarging small intestine and a toxic state from a reflux from the rectum through the anastomotic opening. When these cases reach this stage, Clark says, nothing further can be done for them.

Clark calls attention to one of the serious defects in the short-circuiting operation of the small intestine, the danger of an antiperistaltic impaction of the ascending and transverse colons with inspissated fecal matter which inevitably requires the removal of the colon in about one-third of these cases. On the other hand, the removal of the colon carries

with it certain serious anatomic hazards. First, the omentum is removed, and the postoperative risks are enormously increased through the formation of adhesions causing a partial or complete intestinal obstruction. In this direction the patient is deprived of this blanket which serves so admirably in shielding the small intestine from adhesions to the anterior abdominal wall and from adhesions between individual coils of intestine. A further and very serious objection is the tendency for the ileum to become dilated and gradually to lose its functional value. At first, Clark attributed this to a defective anastomosis with possibly a too small intestinal aperture, but in one or two instances he had an opportunity to see the subsequent results and found that the intestinal adhesions caused the trouble.

Public Health Journal, Toronto

June, VI, No. 6, pp. 253-306

130 Refuse Destruction. R. O. Wynne-Roberts, Regina, Sask.
131 Supervision of Communicable Diseases in Smaller Communities. H. W. Hill, London.

South Carolina Medical Association Journal, Anderson

June, XI, No. 6, pp. 171-203

132 Diet in Typhoid. J. R. Murlin, Spartanburg.
133 Nitrous Oxid as Anesthetic. A. E. Baker, Charleston.
134 What Modern Community Has Right to Expect of Its Physician. E. W. Pressly, Clover.

Southern Medical Journal, Mobile

June, VIII, No. 6, pp. 447-550

135 Syphilis of Heart. S. R. Roberts, Atlanta, Ga.
136 Syphilis in American Negro. K. M. Lynch, B. K. McInnes and G. F. McInnes, Charleston, S. C.
137 Treatment of Some Typical Cases of Syphilis of Central Nervous System. J. P. Munroe and A. J. Crowell, Charlotte, N. C.
138 Treatment of Syphilis. E. H. Martin, Hot Springs, Ark.
139 *Etiology and Treatment of Tabes Dorsalis and Specific Paresis. E. D. Holland, Hot Springs, Ark.
140 Atypical Neurologic Syphilis. B. R. Tucker, Richmond, Va.
141 Wassermann Reaction in Relation to Diagnosis and Treatment. R. B. H. Gradwohl, St. Louis.
142 Simple and Efficient Contrast Stain for B. Diphtheriae. G. McF. Mood, Charleston, S. C.
143 *Fifty Cases of Intestinal Parasites in Adults, with Attempt to Study Some Symptoms Caused by Them. H. L. McNeil, Galveston, Tex.
144 Sanitary Markets. M. G. Perrow, Lynchburg, Va.
145 Treatment of Fractures. R. W. Knox, Houston, Tex.
146 Treatment of Ununited Fractures. H. H. Trout, Roanoke, Va.
147 *Threatened and Real Gangrene of Extremities as Seen by Modern Surgeon. B. M. Bernheim, Baltimore.
148 Experiences in Spinal Surgery. R. T. Taylor, Baltimore.
149 Severe Crushing Injuries to Knee-Joint. W. F. Smith, Little Rock, Ark.
150 Treatment of Fracture of Femur by Means of Double Angular Plaster Splint. J. H. Downey, Gainesville, Ga.
151 Vascular Ligation in Tonsillar Fossa. J. W. Jervey, Greenville, S. C.
152 Intranasal Obstructions. G. A. O'Connell, Birmingham.

139 and 143. Abstracted in The Journal, Dec. 12, 1914, p. 2158.

147. **Threatened and Real Gangrene of Extremities.**—Gangrene of the extremities, Bernheim says, is an affection that occurs in the young as well as the old; it is of more frequent occurrence than most men believe; there are many different types, there are many different causes. The symptom most common to all forms is pain—pain that is most difficult to relieve, becoming toward the end all but unbearable. The condition is usually overlooked in its early stages because careful examination of the vascular apparatus of the extremities is not the rule with most medical men.

As to the proper line of treatment to be followed in dealing with those emboli that lodge in the arteries of the extremities, Bernheim believes that it is a mistake to expose the vessel and remove the thrombus for the simple reason that it invariably reforms. Wherever an embolus finds its resting place it becomes attached to the vessel wall at that point with the consequent destruction of its endothelial lining, and no matter how soon it is removed the result is the same, namely, a vessel is left which is hollow, but whose inner surface is rough and minutely torn. Being devoid of its normal glaze and being rough and minutely torn this wall forms the most favorable possible place for the deposition of fibrin, platelets and red and white corpuscles, so that within a few hours after the removal of a thrombus and the turning on of the renewed blood stream, another thrombus is invariably formed at the exact site of the old one.

Bernheim therefore strongly advises not the removal, but the short-circuiting, of the thrombus in these cases. A vein always accompanies the artery. Tie off the artery above and below the thrombus and do an end-to-end or a lateral suture between artery and vein above and below the ties. Or if the thrombus is so extensive that it is impossible or inadvisable to get below it, the author suggests a lateral suture between artery and vein above it, with a tie put on the vein proximal to the suture. This will give a reversed circulation, which will answer every purpose. The return flow will take care of itself, as it does without difficulty in every case in which this operation is done.

Texas State Journal of Medicine, Fort Worth

June, XI, No. 2, pp. 71-150

153 Development of American Medicine. F. D. Boyd, Fort Worth.
154 Life and Death; Twin Mysteries. C. M. Rosser, Dallas.

West Virginia Medical Journal, Wheeling

June, IX, No. 12, pp. 397-434

155 Early Diagnosis of Tuberculosis. J. W. Gilmore, Wheeling.
156 Pellagra. B. B. Sturdivant, Harding.
157 Pellagra in West Virginia Hospital for Insane. J. G. Pettit and C. Denham, Weston.
158 Effect of Pituitrin Extract in Sixty-One Cases of Parturition. J. L. Miller, Thomas.
159 Puerperal Eclampsia. U. G. Cook, Beckley.
160 Amebic Dysentery; Report of Case. T. E. Romine, Charleston.

Wisconsin Medical Journal, Milwaukee

June, XIV, No. 1, pp. 1-34

161 Some Deductions from Medical Examination of Five Thousand Students Entering University of Wisconsin. R. Van Valzah, Madison.
162 Cooperation of State Medical Societies with University Extension Movement. R. Sleyster, Waupun.
163 Present Status of Nervous Syphilis. E. M. Hammes, St. Paul.
164 Sporadic Cretinism. A. L. Beier, Chippewa Falls.
165 Plea for Corrective and Cosmetic Surgery of Nose. F. Pfister, Milwaukee.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

March, XXXVII, Parts 3 and 4, pp. 341-462

1 *Distortions of Visual Fields in Cases of Brain Tumor. H. Cushing and C. B. Walker.
2 *Demonstration of Spirocheta Pallida in Chronic Parenchymatous Encephalitis (Dementia Paralytica.) J. McIntosh and P. Fildes.
3 Cases of "Crossed Reflex" Associated with Pain; Bearing of Crossed Reflex on Theory of Existence of Automatic Spinal Centers. E. D. Macnamara and E. B. Gunson.
4 Case of Motor Dyspraxia and Paraphasia; Necropsy; Tumor in Supramarginal Convolution. E. G. Fearnsides.
5 *Undifferentiated Nucleus in Forebrain (Nucleus Subputaminalis). G. Ayala.

1. **Distortions of Visual Fields in Brain Tumor.**—In a series of 454 cases classified as tumor of the brain and analyzed by Cushing and Walker there have been 101 in which the lesion was of hypophysial or parahypophysial origin, and in eighty-one of these cases chiasmal involvement led to deformations of the fields of vision. These deformations tended at the time of admission to be bitemporal in twenty-six cases, homonymous in 12, were unclassifiable in eight cases, and the remaining thirty-five showed blindness in one or both eyes, making it difficult to tell in which group—bitemporal or homonymous—they belonged. In the majority of cases, whether of intrasellar or suprasellar tumor, the first perimetric indication of the process is shown by a slant in the boundary of an upper temporal form field and a corresponding quadrantal defect in the color peripheries. In all stages the loss of color perception is usually in advance of that for form, and the condition in one eye is usually in advance of that in the other, so that every possible stage combination in the two eyes may be encountered.

When relief from pressure has been afforded by operative measures the recession of the defects takes place in a sequence, the reverse of that characterizing the stages of an advancing process. In the receding process relative paracentral scotomas often persist, as the functional vulnerability of the macular and paramacular fibers appear to be greater than that of the other fasciculi. Restoration of normal field peripheries is possible even when the process has advanced to or beyond typical half vision, and some vision may be regained even after blindness has occurred, provided it has not been of too long duration. In view of the prompt restorations in field outlines which may follow operative relief from pressure, it is evident that the so-called primary optic atrophy often does not represent an actual anatomic degeneration so much as a physiologic block to the transmission of visual impulses.

2. **Spirocheta Pallida in Parenchymatous Encephalitis.**—Seven cases of "dementia paralytica" were examined by McIntosh and Fildes and in six of these spirochetes were found by the dark-ground method, although when sections in these positive cases were cut the organisms were detected in only three. Five cases also were examined in which the symptoms suggested a diagnosis of "dementia paralytica." This diagnosis was, however, found on section to be incorrect. No spirochetes were found. All the cases examined had exhibited relatively acute manifestations before death, and the brains with one exception were not markedly wasted. The lesions on the whole appeared to be recent. The spirochetes were always confined to the gray matter; in one case only was a single specimen seen in the meninges. They were more or less superficial, and no constant relation could be observed between them and nerve cells or blood vessels. Some spirochetes indeed appeared to be applied to nerve cells, but this distribution was not striking. Further no connection was apparent between the organisms and cellular infiltrations; they appeared to be scattered quite fortuitously about the superficial layers of the cortex.

5. **Undifferentiated Nucleus in the Forebrain.**—While studying the structure of the different formations of the substantia perforata anterior in man in relation to the overlying ganglion mass of the nucleus lenticularis, a group of nerve cells of considerable size was observed by Ayala which he calls nucleus hypolenticularis, or more exactly, nucleus subputaminalis.

British Medical Journal, London

June 19, I, No. 2842, pp. 1033-1072

6 Fatigue Dyspepsia. G. Rankin.
7 Prognosis in Heart Disease. C. E. Lea.
8 *Investigation of Best Methods of Destroying Lice and Other Body Vermin. J. P. Kinloch.
9 *Wassermann Test. O. Heath.
10 Arteriovenous Aneurysm of Femoral Artery Successfully Treated by Operation. G. G. Gillon.

8. **Method of Destroying Lice and Body Vermin.**—For practical purposes, Kinloch states, the destruction of lice and nits is best secured by immersion of verminous garments and bedclothes in a petrol or benzene bath. Danger from fire and waste of petrol are avoided by using such a bath and extractor as are employed in a dry-cleaning apparatus. In such an apparatus 90 per cent. of the petrol or benzene is recovered for future use. A petrol or benzene bath is necessary, especially for uniforms and woollen garments generally. In cases in which the clothing is such that it is not injured by immersion in water, steeping the garments for half an hour at 12 C. (54 F.) in a soap solution containing 2 per cent. of trichlorethylen or 10 per cent. of tetrachlorethan secures destruction of lice and nits. For cleansing the body itself, bathing or sponging with soap solutions containing 2 per cent. of trichlorethylen or 10 per cent. tetrachlorethan gives the best results.

9. **Wassermann Test.**—The most important of the points in which the technic employed by Heath differs from the original method is the use of fresh normal human serum for the supply of complement, in place of guinea-pig's serum, the amount of the complement present being titrated for each batch of tests and 2 units (minimum hemolytic doses = m. h. d.) added to each tube, the serums tested having been inactivated.

Edinburgh Medical Journal

June, XIV, No. 6, pp. 409-504

11 Inversion of Sexensemble. D. B. Hart.
12 Pituitary Infantilism (Fröhlich Type); Gigantism with Infantile Sexual Organs; Polyuria with Lesions of Pituitary Gland. B. Bramwell.
13 New Psychiatry. W. H. B. Stoddart.

Glasgow Medical Journal

June, LXXXIII, No. 6, pp. 401-475

14 Simple Peptic Ulcer and Malignant Disease of Stomach. (To be continued.) W. MacLennan.
15 Chorea. I. Mackenzie.
16 Scottish Women's Hospital in Serbia. M. W. Hutchison.

Lancet, London

June 19, I, No. 4790, pp. 1275-1322

17 Cervical Gland Tuberculosis. A. S. Griffith.
18 Rheumatism in Children. M. H. Williams.
19 Case of Tetragenus Septicemia. H. Robinson.
20 Nasal Flap and Modified Langenbeck Operations for Cleft Palate. G. S. Thompson.
21 *Complete Heart-Block with Higher Ventricular than Auricular Rate. E. Lea.
22 Case of War Wound Infection by Anthracoid Bacillus. A. W. Sheen.

21. **Complete Heart-Block.**—A case of complete heart-block is reported by Lea which presented the following unusual features: An abnormally high and persistent idioventricular rate of 50 to 60 beats per minute, with occasional irregularity of rhythm not wholly due to premature ventricular contractions. A period of sinal bradycardia of frequency 51, during which time the ventricular rate exceeded this. Auricular tachycardia of frequency 200 per minute following the injection of 1/50 grain of atropin sulphate. An unusual relationship between the auricular and ventricular beats during an apparent 3-1 block.

Archives des Maladies du Cœur, Etc., Paris

June, VIII, No. 6, pp. 149-192

23 *Heart Block Suspended by Atropin. (Bradycardies permanentes d'origine organique et d'origine inorganique: déblocage par l'atropine.) E. Coitin.
24 *Acute Coffee and Tea Poisoning. (Le caféisme aigu.) M. Roch.

23. **Heart Block Suspended by Atropin.**—In the first of the two cases described a man of 72 with cancer of the stomach had a pulse of 38 or 40 and the pulse curves confirmed the assumption of auriculoventricular dissociation, but no effect was apparent from injection of atropin. Cottin is inclined to ascribe this negative response to the atropin test to the age of the patient; the elderly are not very susceptible to atropin. The changes found in the bundle of His amply explained the heart block. The second patient was a woman of 34 with pulse of about 45. For a number of years she had had attacks of dizziness and partial syncopes; since 1910 the auriculoventricular dissociation has been complete and permanent. The atropin test has constantly demonstrated the nervous origin of the bradycardia. Each time after injection of 2 mg. of atropin sulphate the auricles and ventricles begin to beat together and with normal rhythm. The drug unblocks the heart for as long as its influence is felt. The patient has a moderate goiter and it is possible that pressure from this on the nerves may be the cause of the nervous bradycardia. It would be interesting to resect the thyroid to learn what effect this would have on the bradycardia, but the patient is so little incommoded by her heart block that she refuses any operation.

24. **Acute Coffee Poisoning.**—Roch writes from Geneva to comment on the frequency of coffee poisoning and its non-recognition as a factor in various nervous, circulatory or digestive disturbances. He quotes an old writer to the effect that coffee does not prevent sleep, it simply renders it unnecessary to sleep. He reviews the literature on the subject of acute poisoning and its syndrome. There may be symptoms more or less severe on the part of the nervous and cardiovas-

cular systems and the muscles, the latter including cramps, diarrhea and colic. No fatal case is on record, although the list of cases includes some children who ate handfuls of ground coffee.

Bulletin de l'Académie de Médecine, Paris

May 25, LXXIII, No. 21, pp. 619-637

25 Stenosis of Artery and Varices Complicating Old Gunshot Wounds of Nerves. O. Laurent.
26 Asphyxiating Gases from Bombs. C. Achard.
27 The Urine Findings in Patients with Frozen Feet. (Notes urologiques sur les malades atteints de gelures profondes des extrémités inférieures.) L. Tixier.
28 *The Tuberculin Reaction a Phenomenon of Immunity, Not of Anaphylaxis. (Signification générale des réactions tuberculiniques.) A. Jousset.

June 1, No. 22, pp. 639-669

29 Protection of Soldier's Head with Metal Cap. (Protection du crâne contre les blessures de guerre par la calotte métallique.) Le Dentu and Devraigne.
30 Grafting Operation for Pseudarthrosis of the Radius and Ulna After Gunshot Fracture. (Greffe par dédoublement osseux.) E. Delorme.
31 The Sensory, Motor, Vasomotor, Emotional and Other Factors in the Shock from a Wound in War. (De l'existence d'un "syndrome commotionnel," dans les traumatismes de guerre.) A. Mairet and others.
32 Extract of Barley in Typhoid. (Les injections intraveineuses d'hordénine dans la fièvre typhoide.) R. Mercier and Mme. W. C.-Ratuld.
33 *Professional Training of the Maimed. (Les bases scientifiques de l'éducation professionnelle des mutilés.) J. Gautrelet.

28. **General Significance of the Tuberculin Reactions.**—Jousset declares that a positive reaction to tuberculin is generally regarded as impossible of occurrence in an organism virgin of tubercle bacilli, but he has produced it under these conditions in large animals immunized by injection of filtered and sterilized products of tubercle bacilli. The serum of the animals thus immunized acquires great therapeutic power and the animals are rendered immune to tubercle bacilli. They are entirely free from macroscopic or microscopic tuberculous lesions, and yet they give the finest local or general reactions to tuberculin it is possible to imagine. He has repeated this experience again and again on cattle and horses, all testifying that it is the immunization, not the presence of the tubercle bacilli, that is responsible for the reaction to tuberculin. The response to the tuberculin is thus an index of the progress toward immunity.

33. **Professional Reeducation of the Maimed.**—Gautrelet proposes to apply Taylor's science of business efficiency in training crippled soldiers, aiming not only to teach them a new trade if necessary, but to train them to obtain the maximum of results with the minimum of effort. The physical points should be registered for each so that not merely the man's tastes and inclinations but his physical aptitudes are to be considered in the training, uncrippling the crippled, as it were.

Berliner klinische Wochenschrift

May 31, LII, No. 22, pp. 569-596

34 *How to Combat Tendency to Cold Feet. (Kalte Füsse.) P. G. Unna.
35 Treatment of Shell Wounds. (Granatverletzungen.) W. Israel.
36 Simultaneous Vaccination Against Typhoid and Cholera. (Einzeitige Immunisierung mit Typhus- und Cholera- Impfstoff: Mischimpfstoff.) K. E. F. Schmitz.
37 *Gunshot Wounds of the Larynx. (Schussverletzungen des Kehlkopfes.) M. Scheier.
38 Technic for Revealing Tubercle Bacilli in Tissues under Microscopic Examination. (Antiformin zur Untersuchung der Gewebe und Organe.) C. Martelli.

34. **Tendency to Cold Feet.**—Unna ascribes the tendency to cold feet to the retention of the moisture of the foot and to inadequate blood supply. The arteries should be kept warm where they are most exposed, and he advocates wearing an ankle warmer, like a wrist warmer, only a little larger. Woolen and cotton stockings retain the moisture from the foot and keep it cold. This can be avoided, he says, by treating the cotton stockings with some substance that will permit their being written on with ink. When they thus have a glazed surface, like writing paper, they do not soak up water, and the foot keeps dry and warm. He gives a formula for this sizing for stockings: 12 parts collodium; 4 parts colophony; 4 parts castor oil; 16 parts alcohol and 64 parts ether. The shoes should be large enough to permit the wearing of two pairs of stockings and ankle warmer. The lining of the shoes should also be glazed with the above mixture, and the skin of the foot kept greased.

37. **Wounds of the Larynx.**—Scheier has had seven cases of this kind in a total of 2,500 wounded that have reached the base hospital in his charge. The seven men are recovering, but some will need an operation later to remove the scrap of shell. In one case the bullet had passed through the upper part of the thyroid cartilage, but the wound healed so promptly that the man returned to the front in two weeks.

Correspondenz-Blatt für Schweizer Aerzte, Basel

June 5, XLV, No. 23, pp. 705-736

39 *Electric Muscular Exercise in Treatment of Obesity. (De la gymnastique électriquement provoquée d'après la méthode de Bergonié.) F. Chatillon.

39. **Electric Muscular Contractions in Treatment of Obesity.**—Chatillon has given the Bergonié electric apparatus a thorough trial in the treatment of obesity in twenty-two cases. The results were more satisfactory when the diet was regulated at the same time, but, even alone, a number of the patients lost from 4,000 to 6,000 gm. On a slightly reduced diet one lost 8,900 gm. No effect was apparent in one case after fifteen hours' application of the apparatus and great reduction of the diet. Another patient lost 409 gm. per hour of application plus dieting; nothing else had had any effect in this case.

Deutsche medizinische Wochenschrift, Berlin

May 27, XLI, No. 22, pp. 637-664

40 *Vaccination Against Camp Diseases. (Bekämpfung der Kriegsseuchen durch Schutzimpfung.) F. Sinnhuber.
41 *Treatment of Gunshot Wounds of the Extremities. G. Axhausen.
42 *Neurasthenia of the Heart. G. Graul.
43 *Gonorrheal Cystitis. F. Weinbrenner.
44 Extermination of Vermin in the Concentration Camps. (Vorschläge zur Entlausung von Gefangenenlagern.) E. E. Galewsky.
45 Emergency Sterilization of Drinking Water. (Zur Wasserversorgung der Truppen im Felde.) P. Trübsbach.

June 3, No. 23, pp. 665-696

46 Physical Requirements for Active Service and for Garrison Duty and Disability. (Felddienstfähigkeit, Garnisondienstfähigkeit und Dienstunbrauchbarkeit.) Christian.
47 *Wounds of Peripheral Nerves. F. Reichmann.
48 Influence on Irritability of the Heart of Courses of Alkaline Sulphate Mineral Waters. (Einfluss der Trinkkur mit glaubersalzhaltigen Quellen auf den Reizablauf im Herzen.) A. Strubell.
49 Appendix as Substitute for Part of Urethra. (Ersatz eines durch einen Schuss zerstörten Teils einer Harnröhre durch den Wurmfortsatz.) A. Rothschild.
50 The Field Ration of the Swiss Soldiers. (Zur Kriegsdiätetik.) E. Grandjean-Hirter.
51 *Depth and Duration of Action of Tincture of Iodin. J. Schumacher.
52 Reduction of Infant Death Rate. (Bekämpfung der Säuglingssterblichkeit eine Frage der Massenbelehrung.) Behr-Pinnow and P. Rissmann.

40. **Vaccination Against Typhoid, Typhus, Cholera and Dysentery.**—Sinnhuber gives the history of preventive vaccination against camp diseases, and relates that of the 444 typhoid cases in his service among the soldiers, 55 of the men had been vaccinated against typhoid, and 2 of these died; in one the disease was of a peculiarly malignant type.

41. **Active Treatment of Wounds of the Limbs in War.**—Axhausen commenced the war fully impressed with the necessity for strictly conservative treatment at the front, but soon became convinced that wounds with much destruction of tissue require more active measures. The dead and dying tissues must be got rid of, and there is no need to strive for asepsis. He states that he used the same instruments for the various cases, not attempting to boil them nor wash his hands between cases. The aim is to help Nature by coarse mechanical means; she takes care of all the rest. Delicate aseptic procedures are superfluous. The main point is to secure a good bleeding surface over the entire expanse of the wound, wiring fractured bones together and suturing muscles and nerves after proper freshening, embedding the sutured nerve in muscle tissue, tamponing the rest of the

wound, with drainage, counter drainage and immobilization. The temperature soon dropped to normal, and when the tampons and drains were removed the eighth or twelfth day, the environment was found free from irritation and the secretion was moderate. As a typical instance of what can be done in this line he relates the case of an officer whose destructive wound of the right elbow involved the ulnar nerve. Axhausen treated it on the above principles in November. By January the functional use of the sutured nerve had been regained and there is no trace of paralysis or contracture. None of these cases thus treated developed gas phlegmon, progressive pyogenic infection or tetanus.

42. **Neurasthenia of the Heart.**—Graul regards the constitutional neuropathic tendency as the clue to the diagnosis of what he calls neurasthenia of the heart and also as the guide to treatment. The difference in the pulse on reclining and standing is greater with a neurotic than with a sound heart, and the individual pants more readily under physical exertion. The pulse swings from extra fast to extra slow, neither bradycardia nor tachycardia being permanent. A functionally weak heart does not grow stronger under exercise, but requires physical and mental repose, change of scene and atropin if there is vagotony. Morphin and digitalis increase the tonus of the vagus.

43. **Gonorrheal Cystitis.**—Weinbrenner remarks that the benefit from sweats, stimulation of the emunctories and vomiting, in infectious diseases, is due probably in large measure to the fact that the losses of fluids in these ways modify the tissues to such an extent that the bacteria do not find them such a favorable culture medium. This consummation is hastened and magnified by refraining from eating, the tissues becoming more acid under the influence of fasting from food and drink. It is especially important in gonorrheal cystitis to render the tissues and the urine as acid as possible, that is, to reduce the alkalinity. This he accomplishes by restricting the intake of water to the utmost, avoiding all alkaline waters, allowing only animal food and drugs which intensify the acid reaction and soothe irritation while they have a disinfecting action. The effect of the drugs is magnified by the restriction of the intake of water, as they are not washed out of the system so soon and are less diluted. The thirst can be relieved by rinsing out the mouth with cool water and gargling with it. What fluids are allowed should be cold and be taken by the spoonful. Even with tormenting thirst, the patient should realize that the sooner the tissue reaction is modified, the less time the treatment will have to be kept up. The restriction of fluids must be enforced with especial strictness if there is danger of the inflammation spreading to involve the prostate, seminal vesicles or epididymis. The food should be limited to eggs, meat, fish, butter and cheese, avoiding bread, potatoes and other vegetables. The tendency to constipation must be combated regularly with castor oil—no alkalines. This aids in dehydrating the tissues. He gives to an otherwise healthy patient 1 gm. of sodium salicylate in a little water five times a day each time after food. Along with it he gives two 0.5 gm. capsules of oil of santal, a total of 5 gm. a day. This dosage may have to be modified for the elderly, and all the patients must be warned of certain possible by-effects. The kidneys should be tested beforehand and repeatedly during the course of treatment. In all the treatment it must be borne in mind that the body is to be helped, not hindered, in its material resistance. Warmth and rest in bed and local heat are useful adjuvants in cystitis from any cause. With treatment along these lines he has frequently witnessed cystitis rapidly retrogress when it had persisted for months unmodified by all other measures. He has often had patients with posterior urethritis and cystitis, even bleeding, throw off all their disturbances and present a limpid urine in three days. Even prostatitis may subside and the gonococci disappear without bed rest, but more than a few days is required for this, or a gentle rinsing out of the urethra may be required. He obtained similar good results in five women with painful gonorrheal parametritis. The same method of treatment also proved effectual in a number of cases of colon bacillus cystitis, but not in the more chronic cases, probably because the prostatitis was the primary process. Vegetables must be avoided on account of their alkali content, and also acid fruits, cider and wine, because their acids form alkaline salts and thus increase the alkalinity of the urine. Carbonated beverages have the same drawbacks and also tend to stimulate the sexual organs. He also forbids alcohol in any form.

47. **Wounds of the Peripheral Nerves.**—Reichmann advocates careful study and conservative treatment in every case of gunshot wound of the nerves that is encountered from three to six months after the injury. Spontaneous regeneration is possible for a nerve in the forearm up to three or six weeks and for a plexus up to one or two years. If the nerve did not call for immediate suture when the wound was first examined, it is better to wait until the wound has entirely healed. The conservative measures include electricity, massage, hot air, exercise and means to ward off contracture.

51. **Action of Iodin on the Tissues.**—Schumacher reports experiments which have apparently demonstrated that when tincture of iodin is applied to the tissues it forms an organic compound with the albumin in the secretions, and this penetrates deep into the tissues without undergoing any appreciable chemical transformation. He was surprised at the length of time during which this iodin-albumin compound could still be detected in the tissues; even after an interval of eight days it was still apparent.

Medizinische Klinik, Berlin

May 30, XI, No. 22, pp. 607-632

53 *Lip Reading for the Deaf. (Fürsorge für ertaubte und schwerhörige Krieger.) Haenlein.
54 Importance of Psychotherapy for Nervous Collapse and Melancholia Among the Troops. (Zur Entstehung, Vorhersage und Behandlung nervöser und depressiver Zustandsbilder bei Kriegsteilnehmern.) F. Mohr.
55 Immobilization of Fractures. (Zur Behandlung der Oberschenkelschussfrakturen.) O. Orth. (Neue Kriegsschiene.) A. Partos.
56 *Injurious Influences from Treatment with Superheated Air and Their Prevention. (Die diagnostisch-therapeutische Ausnutzung meiner Methode zur Funktionsprüfung der Gefässnerven. II) E. Weber.
57 *Nonoperative Treatment of Hernia as Indirect Cause of Death. (Operationslose Bruchbehandlung als mittelbare Todesursache.) G. Magnus.
58 The Gluteal Muscle Clonus—a sign of Pyramidal Tract Disease. H. Pfister.
59 *Death After Intraspinal Injection of Neosalvarsan. J. Zadek.
60 The Shelter Nests of the Anthropoid Apes. (Zur Psychologie der Anthropomorphen. Der Nestbau der Menschenaffen.) A. Sokolowsky.

June 6, No. 23, pp. 633-660

61 *Hypertrophy and Tumors of the Prostate. L. Casper.
62 Bacteriology of Intestinal Infections in the Field. (Untersuchungen an Darminfektionen leidender Soldaten.) H. Schroeder and O. Umnus.
63 Vaccine Therapy of Typhoid. G. Holler.
64 *Diagnosis and Treatment of Arteriomesenteric Occlusion of the Intestine in Children. (Zur Klinik des mesenterialen Darmverschlusses im Kindesalter.) E. Mayerhofer.
65 Treatment of Typhus. (Flecktyphus.) S. v. Waldheim.
66 The Blood Changes in Mice with Cancer. (Blutveränderungen bei Tumormäusen.) H. Koenigsfeld and F. Kabierske.

53. **Training in Lip Reading for Deaf Soldiers.**—Haenlein remarks that the number of soldiers rendered irreparably deaf by war injuries is not large proportionally. The hearing is generally recovered, on one side at least. The cases of more or less total deafness are usually traceable to a traumatic neurosis, hysteria or direct injury of the internal ear. He emphasizes the necessity for training the deaf in lip reading, utilizing in particular the perception of vibrations. This is often peculiarly acute in the deaf. A deaf person may notice a blow on a table at some distance which is not felt nor heard by a person with good hearing. Learning lip reading with the aid of the fingers on the throat of the speaker, to feel the vibrations, gives excellent results in some cases. Many of the men develop a special aptitude for lip reading. One learned it so fast and so perfectly that it was hard to believe he was not simulating his deafness.

56. **To Overcome the Drawbacks of Treatment with Superheated Air.**—Extensive use is made of the local hot-air bath in

treatment of the wounded soldiers at Kiel, and Weber noticed that fully 90 per cent. of the men thus treated showed various disturbances after each application of the hot-air box, fatigue, slight headache, etc. The long-continued repetition of these disturbances during a protracted course of treatment with superheated air had better be avoided, and this can be done, he says, by applying cold to one leg for three or four minutes. The stimulus from the cold is felt by reflex action through all the innervation of the blood vessels, and normal conditions are restored at once. The principle is the same as with the stimulus from alternating cold and hot douches as a means of restoring normal conditions after concussion of the brain, as Weber described recently (summarized in these columns, June 5, p. 1949).

57. **Death as Indirect Consequence of Alcohol Injection Treatment of Hernia.**—The man in question had been given over 200 local injections of alcohol in the course of two years in the hope of curing the tendency to inguinal hernia on one side. The hernia had not been influenced, and he finally applied for operative treatment, but the alcohol had induced inflammation and adhesions and fatal ileus resulted.

59. **Death After Intraspinal Injection of Neosalvarsan.**—A man of 41 had chronic tabes with recurring gastric crises, and he was given an intralumbar injection of 0.0036 gm. neosalvarsan. He died the next day, after presenting the symptoms of acute hemorrhagic encephalitis. In a still more recent case, in a man of 25, the syndrome was identical and likewise fatal the day after an intravenous injection of salvarsan.

61. **Hypertrophy or Cancer of the Prostate.**—Casper compares the clinical picture in a case of each of these, pointing out the resemblance between them, both in symptoms and course. In both the first sign of trouble was tenesmus with pains, increasing at times and again subsiding under treatment. The general health began to run down in both, and pus and colon bacilli were found in the urine in both cases. The man with simple hypertrophy of the prostate improved at once after the bladder had been cleaned out; the pains subsided and the general health showed marked improvement. In marked contrast to this the course was consistently and unremittingly progressive in the cancer case. It was impossible to relieve the pains except by larger and larger doses of morphin. Rinsing out of the bladder, which had such a favorable influence in the hypertrophy case, had no effect on the condition in the cancer case.

With hypertrophy there is liable to be sudden bleeding from the prostate and it may keep up for days or weeks. With cancer the bleeding is usually insidious, sometimes only microscopic, but this may keep up a long time. If the bladder is already infected, catheterization can be done without delay, but otherwise from 100 to 300 gm. of residual urine does not call for the catheter, other things being equal. If the bladder is abnormally small the urine should be drawn. There is little prospect of a permanent cure from removal of the cancerous prostate; the cancer is usually too far advanced when first detected. Casper comments on his bitter disappointment with the use of radium and the Roentgen rays. No objective results were ever obtained in any case, and the slight transient subjective benefit did not surpass that realized by suggestion from any new treatment. If the pains are caused by the distention of the bladder, they can be cured by a suprapubic permanent fistula. Even with hypertrophy of the prostate he does not advise removing the organ unless for strict indications. Many men who are permanently dependent on the catheter live to a good old age, although some have pyelonephritis. Even when one's hand is apparently forced, yet severe diabetes, extensive cardiovascular or kidney changes, advanced arteriosclerosis and chronic general urosepsis forbid prostatectomy.

64. **Arteriomesenteric Occlusion in Children.**—Mayerhofer relates that a boy of 8 had intense spasms of pain following an apparently simple catarrhal stomach affection. The bowels had not moved for several days, but there was no fever. Under the ordinary measures he seemed to be recovering smoothly when a slight error in diet brought back the paroxysms of pain. The diagnosis wavered between occlusion from a foreign body, stenosis from ulceration, invagination, lead poisoning and pylorospasm, but the clinical picture was not altogether typical of either. The surgeon could not find anything to warrant a laparotomy in the child's debilitated condition. There was a history of a somewhat similar attack a year before. Toward the last the boy found some relief by getting up on his knees and boring his head deep into the pillows, as if he were going to turn a somersault. This instinctively assumed attitude in fact relieved the constriction of the bowel by the mesentery which necropsy revealed to be the cause of the trouble. Mayerhofer has not found any analogous case in a child on record. A prompt gastroenterostomy might have saved the child or possibly systematic application earlier of the knee-forehead position. Among the typical symptoms were the uncontrollable vomiting; lack of appetite; intense thirst; constipation; no blood in the stools; tendency to subnormal temperature; severely toxic facies; no meteorism, no peristalsis or nearly none; the dilated stomach was only rarely to be determined by percussion; the abdomen was soft, doughy, stiffening only during the spasm. There was a tender point to the right above the umbilicus; no large tumor could be palpated, but sometimes cords or small contracted loops; the pulse was small, the spine in lordosis, and the urine as in lordotic albuminuria. The pains ranged from extremely mild to spasms of great intensity; they radiated to the right from the tender point. Reclining aggravated the pains and they were relieved to some extent by swaying to and fro, seated; by active kyphosis and by the knee-forehead position. It is possible that certain cases described as "umbilical colic" may belong in this category.

Münchener medizinische Wochenschrift, Munich

May 18, LXII, No. 20, pp. 673-704

67 *Cardiovascular Disease in War. (Herz- und Gefässkrankheiten während der Kriegzeit.) E. Romberg, T. Schott and H. Ehret.
68 *Test Inoculation of Animals Directly Into the Spleen. (Beschleunigter Nachweis der Tuberkulose im Tierversuch durch Milzimpfung.) M. Damask and F. Schweinburg.
69 As the Operation is Commenced, the Elastic Balance of the Soft Parts is Upset by the Incision, Permitting the Foreign Body to Sink Deeper Into the Tissues. (Die Fremdkörper rücken häufig bei der Operation tiefer. Ursache: Störung des elastischen Gleichgewichtes der Gewebe durch die Inzision.) H. Wachtel.
70 *Disturbance in the Heart Action. (Störungen der Herztätigkeit.) E. Aschenheim and F. Merkel.
71 Heart Neuroses with Hyperesthesia of the Skin. Brasch.
72 *First Aid for Wounds of the Eyes in War. (Erste Wundbehandlung bei Augenverletzungen im Kriege.) C. Bahr.
73 Local Anesthesia. (Zur Verwendung der Lokalanästhesie.) J. E. Schmidt.
74 Treatment of Tetanus. H. Liebold.
75 Feeding a Patient After Extensive Destruction of the Jaw. (Die Ernährung von Verwundeten mit ausgedehnten Kieferzertrümmerungen.) T. Weishaupt.
76 Electric Probe for Bullets and Fragments of Shells. (Elektrische Fremdkörpersonde mit Annäherungsanzeigevorrichtung.) R. G. Cohen. (Kugelsucherapparat.) P. Jödicke.

67. **Heart Disturbances in the War.**—Romberg here analyzes his personal observations of heart disturbances in the troops at the front. In a number of cases they were traced to slight tonsillitis, bowel trouble, febrile catarrhs, disregarded abscess near a tooth, incipient tuberculosis, or, in one case, to a febrile cholecystitis, the men consulting the physician solely on account of the annoying palpitations of the heart, sense of oppression in the heart region during sleepless nights and sudden dyspnea or even syncope after severe exertion. The disturbances are those liable in any febrile or convalescent patient who does not keep still, or in the physically exhausted. The difficulty is to refrain from assuming organic trouble. One may be misled by the pressure and spreading out of the heart against the wall of the chest from excessive upward displacement of the diaphragm. This may be the result of flatulence or abdominal fat or of swallowing of air. Roentgenoscopy of the heart is instructive only, as a rule, when the tube is placed directly above

or at a distance of 5 or 6 feet. Purely nervous cardiovascular disturbances seem to be less common than during peace times; the men's minds are diverted from themselves. He has found cardiac neuroses rare and has seen no acquired neurasthenia. The manifestations of congenital neurasthenia have become remarkably attenuated in a number of men whose condition was familiar to him before the war. In others the condition has been much aggravated. In a number of the men under 40 the cardiovascular disturbances were traced to excessive smoking; in this group the disturbances came on without any connection with physical exertion, mostly during the night or on waking. In men over 40, excessive smoking caused more serious disturbances, the blood pressure running up and the heart showing objective signs of insufficiency. Iodin treatment of wounds has not caused any thyroid disturbances to his knowledge.

Many of the men with arteriosclerosis or syphilitic vascular trouble had had slight symptoms before the war, but in the majority there had been no signs of anything wrong. In these cases heart symptoms developed suddenly after some special physical strain, and four, five or six months elapsed before satisfactory improvement was evident. He has encountered occasional cases of what he calls juvenile arteriosclerosis. The artery walls feel thick; either the muscular wall is unusually thick or it behaves like a sclerotic artery. This is often associated with orthostatic albuminuria and there may be a hint of thyroid intoxication. In the majority of such cases the heart seems fully competent, but in the others acute dilatation follows severe physical exertion. It subsides under appropriate treatment, but, if this is neglected, prolonged and possibly severe insufficiency may follow. There may be a systolic, sometimes also an aortic murmur. The maximal blood pressure may be a little higher than normal.

Rest and digitalis, and only gradual resumption of physical exercise are the main reliance in all these forms of soldier's heart. Examination of the heart and pulse is not enough; the behavior of the other organs that influence the circulation must be investigated also and the previous history. Organic disturbances are found uncommonly frequent, he remarks, in conclusion, and arteriosclerosis is a frequent factor, but the cardiovascular system had been already damaged before the war.

Schott emphasizes that cardiovascular trouble in the soldiers on sick leave calls for complete repose, in bed at first. Any exercise or excitement is liable to aggravate the symptoms. Under rest and the usual measures improvement is the rule. Psychic measures proved effectual adjuvants in his experience. When the man has apparently recovered, Schott puts him through a course of graduated exercise, walking, then climbing or doing gymnasium work, until the cardiovascular system has been trained and has shown good resisting powers. The men were then allowed to return to the front, and all have borne the stress of the campaign since without apparent harm.

Ehret says that at the Hamburg hospital in his charge 1,820 soldiers have been treated for internal disease since the war began, and in 6.6 per cent. the men had been sent for treatment on account of heart disturbances. The various types observed had nothing special about them except the unusual frequency of arteriosclerosis in the younger men. Everything seems to indicate that the stress of the campaign is the sole factor responsible for this war sclerosis, as he calls it. In every case of actual heart disturbance there was evidence that this organ had not been entirely sound at the start.

68. **Improved Technic for Diagnostic Inoculation of Animals.**—Damask and others have noticed that the spleen usually shows pronounced tuberculous lesions in infected guinea-pigs, generally more than the liver, and he utilizes this fact to hasten the findings with diagnostic inoculations. He says that with a little practice it is a simple matter to inject the suspicious material directly into the spleen. The tuberculous lesions develop there exceptionally fast, and to an exceptional extent. The spleen is examined through a laparotomy. This permits repeated examinations later in the case of negative findings. In fourteen days, on an average, macroscopic lesions are evident in the spleen if the injected material was tuberculous.

70. **Heart Disturbances in the War.**—The hospital in Aschenheim's charge is not far back of the firing line, and he sees the men almost at once. He has been impressed with the frequency of neuroses of the heart among the soldiers. There were signs in these cases of a general nervous instability, a constitutional physical inferiority. In 74 per cent. the testicles were smaller than the average; in 50 per cent. the thyroid was a little larger than usual; the lymph glands were swollen in many, and the hair on the body was scanty; in short, the condition was typical of a readiness to yield to any disease that may happen along. He remarks that the systematic study of these *Krankheitsbereitschaften* has only just begun, and we must beware of linking effects with single causes until we know more about the subject. It seems evident, however, that under the stress of the campaign in certain persons the cardiovascular regulation has become paralyzed to a certain extent—thus we have a neurosis of the autonomic-sympathetic system. This occurs in men who present other indications of physical inferiority, and there is much to suggest that the glands with an internal secretion share in this inferiority. A long period for recuperation is necessary before such men can resume their service at the front.

Merkel found that during a recent fortnight 29 per cent. of the eighty-three Bavarian soldiers admitted to the hospital in his charge had been sent to the hospital on account of heart disturbances. The general proportion for all the soldiers was only 18 per cent. He regards this as evidence that considerable beer drinking has a deleterious influence on the heart. He was impressed also with the number of men who presented cardiovascular disturbances closely resembling those in severe cases of chlorosis in young girls.

72. **First Treatment of Wounds of the Eyes.**—Bahr advocates painting all the wounded tissues with tincture of iodin, saying that in his eight years' experience with industrial accidents of the eyes this has amply proved its efficiency in warding off infection. The eye is prepared with cocain if possible, and he avoids touching sound tissue with the iodin, as causing needless pain. The edges of the wound, the iris, the vitreous body and other prolapsed parts are dabbed with the iodin until they are dark brown. A layer of cotton is interposed before the lid is turned back, to protect it against needless contact with the iodin. An injured eye thus treated does not require redressing for two or three days. The pain at first is quite severe and keeps up for the day and night sometimes, but the eye is saved from infection as a rule.

Wiener klinische Wochenschrift, Vienna

May 20, XXVIII, No. 20, pp. 519-548

77 *Wounds of the Central Optic Nerve Tract; Two Cases. (Schussverletzungen der zentralen Sehbahnen.) F. Dimmer.
78 *Adsorption of Bacterial Toxins by Charcoal. II. R. Kraus and B. Barbara.
79 Primary Suture After Gunshot Wounds, Especially of the Brain. Barany. (See 84 below.)
80 Serotherapy Effectual in Epidemic Meningitis; Ten Cases. (Epidemische Genickstarre.) C. Brach and J. Fröhlich.
81 Typhoid Agglutination in Dysentery. (Positive Typhusreaktion bei Ruhr.) R. Marek.
82 Vasomotor and Trophic Disturbances After Wounds of Peripheral Nerves in War. R. Reznicek.

May 27, No. 21, pp. 549-578

83 Serodiagnosis by Dialysis; 120 Cases. (Die Abderhaldensche Dialysiermethode.) H. Keitler and K. Lindner.
84 *Inadvisability of Primary Suturing of Wounds. (Zur Frage der primären Okklusion der Schusswunde durch Naht.) E. Ranzi.
85 *Gas Phlegmons. H. H. Schmid.
86 *Typhoid Serous Meningitis. J. Löw.
87 *Typhoid Parotitis. M. Cahanescu.
88 *Management of Typhoid. J. Feldner.
89 Difference in Heart Findings as Man Stands Relaxed or in Military Position. (Wichtige Fehlerquelle bei der Herzuntersuchung der Soldaten.) B. Molnar.
90 Biologic Study of Lice. (Züchtungsversuche von Läusen aus Nissen.) L. Zupnik.

77. **Injury of Central Optic Tract.**—Dimmer gives an illustrated description of two cases which throw light on the

structure of the central visual apparatus, especially when compared with Wilbrand's eight cases published in 1907 and Henschen's case in 1909. In Dimmer's cases vision had been much impaired at first, but gradually improved. The chief disturbance a few months later was homonymous scotoma, the features of which did not correspond to the Monakow theory. In the lower right quadrant of the visual field there was a patch of absolute blindness extending for about 20 degrees and almost identical in the two eyes; the outer outline alone varied slightly. The injury causing this loss of part of a quadrant must have been a destruction of a part of the center for vision at the upper margin of the calcarine fissure, probably in the rear portion of the fissure.

78. **Adsorption of Toxins by Charcoal.**—Kraus and Barbara report research and describe the technic with which they succeeded in demonstrating that charcoal adsorbs bacterial toxins both in the test tube and in the living body. They show that dysentery toxin, for instance, has its toxic properties nullified by the charcoal as effectually as by an antitoxin, and that this is not a reversible phenomenon. Dysentery toxin injected into a rabbit vein is eliminated by the mucosa of the cecum. In its passage through the mucous membrane it is liable to cause characteristic lesions at this point. After internal administration of charcoal by the mouth, the rabbit that had been given an intravenous injection of the dysentery toxin recovered. They accept this as evidence that the charcoal is liable to render harmless not only the toxin in the interior of the bowel, but also that in the bowel mucosa.

84. **Primary Suture of Wounds.**—Ranzi protests against some recent articles advocating primary occlusion of wounds by suture, even although Barany had nine recover of twelve men with wounds of the brain, treated in this way. Ranzi deplores the bringing up of the subject again, urging that all should heed Thiersch's remark, "I think the best thing to do is to leave gunshot wounds open, and to close the discussion of the subject."

85. **Gas Phlegmons.**—Schmid has encountered twenty-eight cases and they have convinced him that gas phlegmon with gangrene requires amputation without a moment's delay, as also deep gas phlegmons with fracture. Under other circumstances, extensive incisions and excisions of the affected portions of the skin and subcutaneous cellular tissue are usually sufficient to arrest the process.

86. **Typhoid Serous Meningitis.**—The symptoms of meningitis developed during convalescence from typhoid. Great relief was obtained by a lumbar puncture and recovery was soon complete.

87. **Typhoid Parotitis.**—Parotitis was encountered in sixteen of the 760 cases of typhoid in Cahanescu's service, and several of the men died. The typhoid was always unusually severe in these parotitis cases.

88. **Treatment of Typhoid.**—Feldner is an ardent advocate of the starvation treatment of typhoid, insisting that the experience of years has established that the disease runs its most typical and mildest course when the patients are not fed by the mouth. He says that Abderhalden's protective ferments amply explain the advantages from refraining from feeding typhoid patients. Nature takes away the appetite, as the protective ferments are needed in the blood to combat the bacteria and their products. When food is given by the mouth, the ferments have to go into the digestive tract to take care of the food, and the blood thus loses a large proportion of its means of defense. Saline infusion also promotes the vital, the defensive processes, he thinks, as it weakens some inhibiting function, by diluting the blood, and thus leaves free play to the defensive forces. In the test tube, intensity of agglutination may increase as the serum is more and more diluted, and there is every reason to assume that this occurs with saline infusion in the body. Hence treatment of typhoid, he declares, should consist of deprivation of all food, "absolute starvation," to divert the protective juices into the infected blood, and copious saline infusion for specific concentration of the defensive forces.

Zentralblatt für Chirurgie, Leipzig

May 29, XLII, No. 22, pp. 385-408

91 *Blocking the Lumbar Plexus. (Versuche, den Plexus lumbalis zu anästhesieren.) A. Schlesinger.

92 *How to Manage an Artificial Leg. (Ueber den Sitz des künstlichen Beines.) R. Suchier.

93 Dislocation of Little Toe. (Traumatische Luxation der I. Phalanx der rechten kleinen Zehe im Metakarpophalangealgelenk.) O. Orth.

91. **Blocking the Lumbar Plexus.**—Schlesinger's work was done on the cadaver and his illustrations show how simple and easy it is to reach the root of the fifth lumbar nerve between the transverse process of the fifth lumbar vertebra and that of the first sacral vertebra. At this point all the fibers comprising the lumbar plexus are crowded into one easily accessible space, so that the whole can be anesthetized at one injection. A frozen section of the region shows distinctly a cleft in the nerve, separating the fibers that diverge below to the front and rear. Schlesinger had but little chance to apply the method in the clinic on account of the war interfering, but in five attempts with a 1 or 2 per cent. solution of novocain the results seemed promising, and he urges others to try this paralumbar anesthesia, as he calls it.

92. **Support of Artificial Leg.**—Suchier has worn an artificial leg for twelve years, and relates a number of points he has learned from this experience. The skin in and around the inguinal region is exceptionally tender and sweats readily, so that it gets sore easily. No pressure should be allowed to come on the skin in this region. The weight should be supported by the tuberosity of the ischium, just as the acetabulum bears the weight on the femur in normal conditions. The tuberosity of the ischium naturally bears the weight of the body when sitting, and it should be utilized as the support for the artificial limb, rather than the sloping surface of any bone.

Zentralblatt für Gynäkologie, Leipzig

May 29, XXXIX, No. 22, pp. 369-392

94 *Cancer of Bartholin's Gland. H. Wittkopf.

94. **Cancer of Bartholin's Glands.**—Wittkopf knows of only twelve cases of cancer of the vulva in German literature, but in 1914 he encountered two cases in his service at Kiel. The women were 59 and 42, both of good family. Bleeding after a trauma or oozing was the first sign to call attention to the small tumor and ulceration in the rear of the labium major. The ulceration was 1 cm. in diameter in one case and 2 cm. in the other. Recovery proceeded smoothly after extirpation of the tumor and inguinal glands in each case, although delayed at first by thrombophlebitis in one case; the glands were already involved in this case. In a large proportion of the cases on record rapid recurrence was the rule. Wittkopf discusses the anatomy of the region and commends his method of giving an aftercourse of radium to supplement the operation. The radium was placed in the midst of the cavity left in the tissues. This might be supplemented by cross-fire Roentgen exposures. The main thing, however, is to recognize and remove such growths in their incipiency, and an exploratory excision should be made whenever the vulva shows anything even remotely suggesting cancer.

Gazzetta degli Ospedali e delle Cliniche, Milan

May 27, XXXVI, No. 42, pp. 657-672

95 *The Herxheimer Reaction Must Not Mislead to Drop Specific Treatment. V. Panto.

96 *Rubber Sponge to Plug Hernial Opening; Two Cases. (2 casi di ernia operati da un anno col metodo degli innesti artificiali profondi di caucciu.) C. Scandola.

May 30, No. 43, pp. 673-688

97 *Pseudogastralgic Angina Pectoris. A. De Blasi.

June 3, No. 44, pp. 689-704

98 *Seroreaction to Cobra Venom as Sign of Cancer. (Nuova sieroreazione per la diagnosi di carcinoma.) C. B. Farmachidis.

99 The Uterus in a Femoral Hernia. (Caso di ernia crurale dell'utero.) L. Z. Colleoni.

95. **Herxheimer Reaction.**—Panto warns that the stormy reaction to beginning salvarsan treatment must not be inter-

preted as a sign of toxic action contraindicating further treatment. On the contrary, it is an urgent call to push treatment, as this alone puts an end to the disturbances from the syphilis and also from this reaction.

96. **Rubber Sponge in Treatment of Hernia.**—Scandola cuts a chunk of rubber sponge, grips it with forceps on each side and boils it hard, forceps and all, for fifteen minutes, the forceps holding it down under the water. After the hernia has been reduced he reenforces the defense against its return by implanting the chunk of rubber sponge in the depths of the canal and suturing the skin over it. In one of the two cases in which he applied the sponge, it fitted well into the femoral canal, but had to be removed later, as it induced a slight inflammatory reaction. In the other case it healed smoothly in place and has given no sign of its presence during the year to date. The sheet of sponge in this case was 2½ by 5 cm. in size and 0.5 cm. thick. In the other case a chunk the size of a nut was used. Fieschi's advocacy of rubber sponge for this purpose was mentioned in THE JOURNAL, lxii, Feb. 28, 1914, p. 735, "Regeneration of Tissues in Implanted Rubber Sponge."

97. **Pseudogastralgic Angina Pectoris.**—De Blasi's patient had what was apparently gastralgia, the attacks of pain in the stomach region accompanying ectasia of the aorta developing in the course of mild and chronic kidney disease. The man was a hearty eater and smoker. The paroxysmal pain in the epigastrium spread vaguely toward the heart region, and the pulse became small, while the pallor was extreme as the man writhed under the "gastralgia." No one suspected angina pectoris as the cause of the attacks of pain in the stomach region, but De Blasi, after witnessing one of the attacks, warned the family that any one might prove fatal, and his warning came none too soon.

98. **Cobra Venom Test for Cancer.**—Farmachidis gives an imposing array of tables showing the application of this biologic hemolysis test to 37 patients with carcinoma, 16 with sarcoma and 38 with various nonmalignant affections. The findings are given for each of the twelve applications of the test in each case with rabbit serum and again for six applications with guinea-pig serum in 18 cancer and 14 nonmalignant cases. He points to his tabulated findings as indicating beyond question that the reaction to the cobra venom is specific for carcinoma. With rabbit corpuscles, positive results were obtained in 86.48 per cent. of the carcinoma cases and constantly negative in the controls. With guinea-pig corpuscles, the reaction was positive in 100 per cent. of the carcinoma cases and, with the exception of one dubious reaction in one case, constantly negative in the nonmalignant controls. With sarcoma, the cobra venom arrests the hemolytic action of the serum; with carcinoma it induces hemolysis; with nonmalignant disease it has no influence on the behavior of the serum. He mixes the serum, the venom and the blood corpuscles, and keeps it at a temperature of 20 C. for two hours, then places it on ice for twelve hours. The corpuscles are washed four times in physiologic saline, and a 5 per cent. suspension in 0.85 per cent. salt solution is used in the test.

Pediatria, Naples

June, XXIII, No. 6, pp. 401-480

100 Lipase Content of Children's Blood. (Sul contenuto in lipasi del sangue nell'eta infantile.) V. Zamorani.
101 *Teratoma in Lumbar Region of Child of 2. B. Rosati.
102 *Malaria in Children at Palermo. S. Maggiore.

101. **Teratoma in Lumbar Region.**—Rosati devotes considerable space to the literature on congenital tumors in the lower part of the back, and describes with the histologic findings a case from his own experience. The tumor was about the size of an egg and implanted above the sacral region. There was rachischisis but no hernia of the meninges, and the teratoma was easily removed.

102. **Malaria in Children at Palermo.**—Maggiore found malaria in 38 infants less than 1 year old; in 17 under 2; in 11 under 3, and in 25 older children—a total of 91 malarial children in the last three years. The parasites were mostly of the estivo-autumnal type and the malaria was never pernicious. It displayed a marked tendency to become chronic, with frequent periods of latency.

Policlinico, Rome

May 23, XXII, No. 21, pp. 689-720

103 *Ear, Nose and Throat in the School. T. Mancioli.

May 30, No. 22, pp. 721-752

104 *Burns. (Cura razionale delle ustioni.) G. Frattin.

June 8, No. 23, pp. 753-784

105 *Treatment of Acute Peritonitis Without Draining. R. Carnelli.
106 *Eczema a Defensive Reaction. (Eczema-reazione di difesa.) P. Sabella.

103. **Prophylaxis of Ear, Nose and Throat Trouble in Schools.**—Mancioli's article is an abridged copy of a course of lectures he delivered on this subject at Rome last winter. Among the points especially featured is the danger for other children from a child that stammers; any disturbances in speech are unconsciously imitated by other children. He has found that a dental prothesis sometimes aided mechanically in the cure of stuttering, and operative measures may be needed to restore nose breathing. Systematic breathing and speaking exercises under wise training cure fully 70 per cent. of the children in three weeks. The physician should confer with the teacher, and the child be trained to deep breathing, supplementing physical gymnastics with breathing exercises. The child should take a deep breath before starting each sentence when reciting or reading aloud. There is a neuropathic factor in all forms of stammering. He says of deafmutes that a large proportion die of tuberculosis between the fifteenth and thirtieth years. History, he relates, records several deafmutes who attained fame, including Schutz, a Spanish sculptor; Sonton, an English artist; Berthier, dean of the National Institute of Paris; Wigam, a mathematician; Peyton, an artist; Monpellier and others. The Italian census of 1881 gave a proportion of 5.37 deafmutes per 10,000 inhabitants; 6.75 were registered in the United States; 10.18 and 10.23 in Norway and Sweden, up to the maximum of 13.07 in Austria and 24.52 in Switzerland, according to the statistics he cites.

104. **Treatment of Burns.**—Frattin washes the surrounding tissues and then the burn itself with soap and water and then he scrubs it with a brush very lightly or with a sponge dipped in soapy water. This removes the skin over the blisters or he cuts the blister skin off; it will be cast off spontaneously sooner or later. After the surface is thus completely cleared of dead and dying tissue, he flushes it copiously with a tepid salt solution, dabs it dry, and then covers with dry sterile compresses and over this a thick layer of cotton. The whole is fastened with absorbent bands, nothing impermeable being used. The region or limb must be immobilized. When the patient is first seen after the blisters are suppurating, he applies this same absolutely aseptic treatment, and the general condition improves at once as a rule. The fever drops and when the patient comes out from under the anesthetic he is free from pain. The first dressing can be left unmolested for eight or ten days. Then the dressings can easily be soaked off with tepid saline. The method is similar to that advocated by Lejars. General anesthesia is indispensable if the burn is extensive.

105. **Acute Peritonitis.**—Carnelli here reports six cases in which he followed the American position method of managing acute peritonitis from appendicitis, closing the abdomen without draining. He writes to commend the technic, as its value is not generally appreciated in Italy.

106. **Eczema a Defensive Reaction.**—Sabella relates that Gougerot has been rallying evidence to prove that eczema is the manifestation of a defensive reaction to noxious influences acting on the skin, that is, to some poison from within or without injuring the skin. Its chief feature is the edema of the upper layers of the skin, Nature thus striving to dilute the toxic substances and render them less harmful for the skin. The inflammation and the blister production show plainly the defensive nature of the process. It is aseptic in itself; when cocci are found they are secondary. The

essential anomaly is that the outer skin is unusually porous. This allows toxins to get into the skin both from within and without. A normal skin repels them more. Treatment of eczema, therefore, should be directed to reducing the amount of toxic influences acting on the skin, facilitating their elimination by other routes, compensating for deficient internal secretions by organ therapy, and in rebellious cases trying to wash the blood free of toxins by venesection and saline infusion. The inflammation should be combated with local measures, spraying and moist applications at first, then a period of inert applications, zinc oxid, etc., to ward off superposed infection, concluding with measures to stimulate repair. The influence of restriction of salt in kidney disease suggests the advantage of similar measures in eczema. After getting rid of the toxins causing the trouble and curing the defensive inflammatory reaction, it is a simple matter to cure all that is left then of the dermatosis.

Riforma Medica, Naples

May 29, XXXI, No. 22, pp. 589-616

107 *Meningococci Found in Noses of Horses. (Il meningococco nel muco nasale dei cavalli durante un'epidemia di meningite cerebro-spinale.) L. Mazzetti.
108 *Syphilitic Disease of the Heart. (La sifilide del cuore.) F. Soprana and C. Piazza. Commenced in No. 20.

June 5, No. 23, pp. 617-644

109 Defensive Elements in the Milk of Animals Immunized Against Tuberculosis. L. Sivori.
110 No Formation of Specific Antibodies in Course of Immunization of Reptiles and Amphibians. (Sulla formazione di anticorpi specifici nell'immunizzazione degli animali a sangue freddo.) L. Mazzetti.
111 Study of Loss of Power to Recognize Shape of Objects by Touch. (Astereognosi.) U. Buzano.
112 Cancer of the Head of the Pancreas. C. Silvan.

107. **Meningococcus Carriers.**—Mazzetti found 600 carriers of meningococci among 2,000 men in the garrison at Capua, where cerebrospinal meningitis was epidemic at the time. Then the disease seemed to have been controlled by the vigorous isolation and other prophylactic measures enforced, and twenty-three days passed without a new case. Then two new developed and nearly 200 new carriers were found. No further cases developed among the infantry, but there were twenty more cases in the cavalry. Whence these could have derived their meningococci was the question. It was finally solved by the discovery of a diplococcus in the nasal mucosa of six, out of twenty-eight horses examined, apparently the same as the Weichselbaum meningococcus. Cultures which showed every feature of the meningococcus were made from two of the horses. In 1902 Calamida reported the isolation from the middle ear of a dog of a diplococcus apparently identical with the meningococcus. Mazzetti merely reports the above suggestive facts, as he was unable to follow them up farther, having been ordered to Naples as soon as the epidemic had been conquered.

108. **Syphilitic Heart Disease.**—Soprana and Piazza present an extensive study of the clinical picture and necropsy findings in syphilitic lesions in the heart, with considerable bibliography. The clinical picture with myocardium syphilitic lesions and the pathologic anatomic findings still have many puzzling features. One case is described with the histologic findings in which the acquired syphilitic changes were in the pulmonary artery, and of a gummatous nature. There are no pathognomonic symptoms of syphilitic heart disease, but it should be suggested by its development in the young, the intense dyspnea independent of changes in the kidneys or other organs, the rapid modifications in the precordial area, the lack of benefit from ordinary heart tonics, and the improvement under treatment for syphilis. The Wassermann reaction does not prove that the heart disease is of syphilitic origin; it merely indicates that the patient is syphilitic. Asystolia with notable insufficiency on the part of the heart, without other known cause, should always suggest possible syphilis, especially when ordinary heart tonics fail. Early differentiation is possible only as a rule when the coronaries or the aorta are predominantly or exclusively affected, and yet the outcome depends on the differential diagnosis before irreparable lesions are installed. Potassium iodid in large doses, with mercury and with salvarsan, if the kidneys are sound, will generally relieve, even when it is too late for a cure.

Brazil-Medico, Rio de Janeiro

May 1, XXIX, No. 17, pp. 129-136

113 Two Alleged New Species of Flagellates. (Metopus nasutus n. sp. e M. caudatus n. sp.) A. da Cunha.
114 Physiotherapy in Brazil. T. Dodsworth. (To be continued.)

May 8, No. 18, pp. 137-144

115 New Classification of Brazilian Family of Insects. (Revisão dos Acantocephalos brazileiros, I. fam. Gigantorhynchidae Hamann, 1892.) L. Travassos.

Hygiea, Stockholm

LXXVII, No. 9, pp. 405-512

116 *Arteriosclerosis of the Abdominal Vessels. (Arterioskleros i tarmkärlen—och ileus.) J. A. Hedlund.
117 *Pseudotabes of Hypophysis Origin. G. Kahlmeter.
118 Colloid Cancer of the Breast. A. Rubenson.

116. **Arteriosclerosis of the Abdominal Vessels.**—Hedlund comments on the rarity of arteriosclerosis affecting the abdominal vessels. When it occurs it is liable to induce symptoms suggesting angina pectoris, gastric trouble or attacks of meteorism. In a case he describes in detail the syndrome induced was that of fatal ileus. The patient was a workingman of 61 who for two years had complained of stomach trouble. Then came two attacks of severe colic within five days, followed in two days by the ileus. At the operation the next day, over 4 feet of the ileum was resected. The man did not rally, and necropsy revealed advanced arteriosclerosis almost exclusively affecting the vessels of the walls of the lower part of the large intestine. There was calcification at some points. Some were entirely obliterated, but no mechanical obstruction of the bowel was found at any point. Differentiation is difficult; the symptoms may be dependent on spasmodic contraction of the arteries affected or of the part of the bowel wall involved, or there may be arteriosclerotic neuralgia. Treatment can be only symptomatic.

117. **Hypophysis Pseudotabes.**—Kahlmeter has encountered two cases of the syndrome suggesting typical tabes except that the Wassermann was negative and that the Roentgen rays revealed a tumor in the hypophysis. His cases were closely similar to some compiled by Oppenheim, including one from his own experience. Kahlmeter's first case was in a man of 39 who claimed to be of regular habits and free from venereal disease, and who has four healthy children. Always healthy till 1912, he noticed after a trauma that he saw double and then the left visual field became restricted. A few months later vision was also impaired in the right eye and in a few months was lost entirely in this eye. Headache and difficulty in maintaining the balance and in walking soon followed. By the end of a year he had spasms of pains in his legs. There were no disturbances on the part of the stomach or bladder but the man was impotent. The atrophy of the papilla was exactly like that of tabes, as also the loss of the knee-jerk, but the roentgenogram cleared up the diagnosis by showing a tumor that had destroyed the sella turcica. Kahlmeter's second patient was a man of 50 whose optic atrophy and glycosuria were accompanied by such a complete change of character or loss of character during the last year that it seemed to indicate progressive paralysis, as also the lack of the knee-jerk, but here too the Wassermann was negative and the sella turcica was seen to be the seat of a destructive process. With acromegaly glycosuria is not infrequent, but it is rare with other forms of hypophysis disease. Kahlmeter has found one case on record in which diabetes accompanied a hypophysis tumor without acromegaly. There was bitemporal hemianopsia and the Roentgen rays showed destruction of the sella turcica. There was also a tendency to myxedema and the thyroid showed sclerotic atrophy to some extent. Review of the literature reveals too many instances of glycosuria with a hypophysis tumor for this to be a mere casual coincidence. The various theoretical questions raised by his two cases are discussed in detail, especially Cushing's views and the results of Schweiger's and others' research.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 4 CHICAGO, ILLINOIS JULY 24, 1915

THE MANAGEMENT OF BURNS*

A. RAVOGLI, M.D.
CINCINNATI

To attempt to establish a line of management of all burns *a priori* is somewhat preposterous. Following the doctrines of Hebra, and accepting his division of burns into three degrees, we find that the pathologic process in each is different. In burns of the first and second degree there is an inflammatory reaction of the skin, while in the third degree there is primary necrosis. The degree of the burn, the medium producing the burn, the depth of the injury in the tissues, the extent of skin burned and the condition of the nervous system of the patient, all influence the treatment of such important injuries. In general we can state that the best treatment is that which favors the sloughing of the burned skin, which maintains the sterility of the resulting wound and promotes granulation and the newly forming epidermis, so that a regular soft cicatrix may be obtained.

A burn is always a serious injury in view of the resulting shock, and of the action of poisonous substances arising from the burned skin. The treatment of the local lesion is only a part of that necessary, for the results on the general system have to be taken under consideration.

In 1902 I reported 88 cases of burns, of which 56 were in men and 32 in women.

The burns seen in that year were: of the first degree, 8; second degree, 54; of the third degree, 26.

The results of that year were: recovery in 61; death in 24, while 3 left the hospital.

Last year we had 49 cases of burns: in men, 34; in women, 7; in children, 8.

The results were: of the 34 men, 32 recovered, 2 died. Of the 7 women, 5 recovered, 2 died. Of the 8 children, 6 recovered, 2 died.

In severe burns the patients when taken to the hospital are greatly excited, crying and screaming with pain. As soon as the wounds are dressed and the patient is placed in bed an injection of morphin, ¼ grain, produces quiet. Some so regain their normal power as to furnish details of the accident and ask questions about their relatives. After a severe burn, the patients as a rule do not void urine, and when they do it is scanty and contains either blood or a quantity of albumin.

A woman suffering from a slight epileptic attack fell while carrying a coal-oil lamp, her clothes being set on fire. When taken to the hospital nearly two thirds of the body was burned to a crisp, from the feet to the chest. Both legs were just baked, the whole surface brown, hard and insensible (Fig. 1). She received an injection of morphin, ¼ grain, and was placed in a water bed in which a handful of sodium borate had been dissolved to remove the burned clothes adherent to the skin. After cleansing the burned surface she was placed in bed, and compresses were applied moistened with a 2 per cent. solution of aluminum subacetate. The patient lay in apathy and began to vomit bilious and bloody matter. This continued for two days. The urine was scanty and contained albumin. The following day she received a subcutaneous injection of normal salt solution, and also strychnin, 1/30 grain. The stupor passed away and the pulse improved considerably. She lived twenty-four days. The eschar was detaching, but it was a difficult matter to remove it, because the muscles were becoming detached and exhaling an offensive odor. The patient grew very weak, became delirious, fell into stupor and died.

Death was due to sepsis. Although the action of the fire or of different mediums at an elevated temperature is limited to the skin, yet general disease follows. The burn has a remarkable influence on the organism. The severe symptoms following an extensive burn of the skin are in relation with the entity of the lesion. At times, even in consequence of an apparently light combustion, severe symptoms endanger the life of the patient. For this reason the burns have a general as well as a local treatment.

The treatment of burns[1] by forcibly removing the burned skin and deep blisters is risky, unnecessary, and will not accomplish the purpose. This was proposed by Sneve[2] and summarized by W. A. Jack, Jr.,[3] and Brazer[4] recommended that as much as possible of the burned skin be removed, and the surface then washed with gasoline, while Lieber,[5] advocating the same process, advises washing the bleeding surface with benzin. Although this operation is carried on under an anesthetic, and is followed by an injection of morphin, it is to be avoided. The shock is so severe that the patient may not recover from it.

According to my experience, time is necessary to give the burned tissues a chance to detach from the

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. The Treatment of Burns, New York Med. Jour., March 14, 1914, p. 541.
2. Sneve, Haldor: Treatment of Burns, THE JOURNAL A. M. A., July 1, 1905, p. 1.
3. Jack, W. A., Jr.: Washington Med. Ann., May, 1912.
4. Brazer, Louis: New York Med. Jour., Aug. 2, 1913.
5. Lieber, M.: Beitr. z. klin. Chir., 1912, lxxxi; Die Verbrennungen und ihre Behandlung, Dermat. Wchnschr., 1913, No. 23, p. 657.

normal nonburned structures. Even in the second-degree burns, when large blisters are formed, it is better to puncture the blisters in several places to allow the serum to exude, leaving the old epidermis for some time to cover and protect the denuded papillae of the derma. Some blisters are superficial, the serum is contained only in the stratum corneum, and when punctured the whole contents ooze out. Other blisters are deep, they affect the entire thickness of the corpus mucosum, and when opened very little or no serum escapes. The corpus mucosum is thick and has the appearance of grayish pulp.

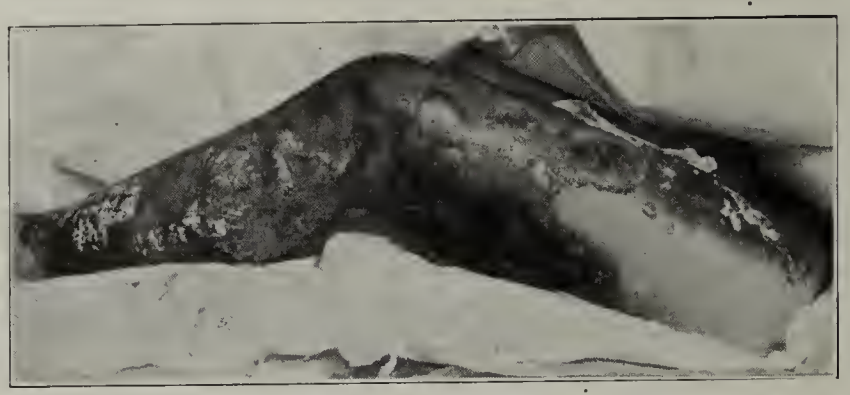


Fig. 1.—Burn of third degree. Leg baked. Surface hard and insensible.

The histologic changes of the skin in the second degree burn are characterized by an enlargement of the papillae, enlargement and congestion of the capillary blood vessels, swelling and infiltration of the collagenous tissues of the derma. The corpus mucosum is swollen, and a layer of small leukocytes lies on the papillae and beneath the epidermis, which forms the vault of the bulla. According to Kaposi[6] the papillae appear like a reticular tissue whose meshes contain serum and white cells, epithelium and fibrinous masses. The blister, either breaking of itself by the pressure of the serum or artificially broken, undergoes a regressive process. When exposed to the air the cuticle dries up, the fibrinous contents form a thick crust under which the epithelium is reproduced, which covers the papillae. When a deep blister is opened the disorganized tissues of the mucous layer gradually slough off. The inflammatory process diminishes in intensity, the epithelial cells underneath become more coherent, cover the papillae and form a new epithelial layer which completes the epidermization without leaving a scar.

The burns at the time they occur cause great pain; a few hours later fever follows. In the same way when the burned tissues begin to slough off, a high temperature shows the general systemic reaction. Although a second degree burn is not so dangerous, yet, according to the extension and the age of the patient, it can have fatal results.

In a third degree burn the skin has been disorganized; there is mortification of the tissues. The eschar involves the derma, and may reach to the subcutaneous tissue. When the skin has been burned to such a degree by flame it appears dark brown (Fig. 2) and dry like leather; when burned by steam at high pressure, it looks white like marble, hard and coriaceous, and is insensible to the touch. In the skin so burned the blood circulation is destroyed, and the vitality also. Together with the disorganization of the skin (Fig. 3), coagulation and decomposition of the proteic substances takes place. The products of the disorganized albuminous tissues then arising from the burned skin are poisonous and according to Ferrarini[7] cause the systemic symptoms, and even death. Spietschka[8] found that these poisonous elements are excreted by the kidneys. The urines of men and of animals affected with extended burns are poisonous. To the coagulated albuminous matters and to the burned blood corpuscles these poisonous elements may be traced.



Fig. 2.—Burn of third degree caused by flame. Skin dark brown and dry like leather.

In the beginning it is difficult to establish whether a burn is of the second or of the third degree, especially when it has been produced by steam. After two or three days the burned skin assumes a dead appearance, and at the edges the elimination process begins, separating the burned from the healthy skin.

Figure 2 shows a third degree burn, caused by flame. It was taken the second day after the occurrence. The skin is baked brown, dry and hard, and is insensible to the touch. The whole surface is swollen; in some parts the cuticle has been removed, in others it is forming blisters. It was treated with continuous moist compresses with 2 per cent. solution of aluminum subacetate. Figure 4 shows the same burn one week later. Toward the periphery where the blisters were situated the epidermization is well advanced. Where the eschar sloughed out the granulations are forming. In the center where the burn was still deeper, the eschar is still hanging on. The eschar is removed without forcing, the shreds which are detached are seized with a thumb forceps and taken off with scissors. In this way we avoid pain, and still better, the bleeding. When the blood vessels are broken the door is opened for infection. The burned skin in the tissues is so adherent that it is impossible to remove it without producing trauma.

Nature removes the burned from the healthy tissues, and it is our duty to help this process and not to disturb it. In many cases when we believe we have a very deep eschar we are surprised in a few days to see that the shreds of burned skin are sloughed off and there remains underneath a clean healthy granulating surface, which soon shows islands of epithelium and in a short time heals. The elimination of the eschar begins between the third and the fifth day.

6. Kaposi, M.: Pathologie et traitement des maladies de la peau, translation by Besnier and Dayon, Paris, 1891, i, 492.

7. Ferrarini, Guido: Die toxische Lehre in der Pathogenese des Verbrennungstodes, Dermat. Wchnschr., 1913, No. 12, p. 335.

8. Spietschka: Ueber verbrennungen und Verbrennungstod, Arch. f. Dermat. u. Syph., ciii, Nos. 1 to 3.

An inflammatory process starts around the eschar by way of a groove which separates it from the healthy tissues. The separation is effected in from eight to twelve days. The resulting granulating wound has an uneven bottom and irregular edges, on account of the irregularity of the mortification of the tissues. After the elimination of the disorganized tissues, abundant granulations come up to replace the loss of substance of the skin. From the edges of the granulating wounds the epithelium is concentrically reformed and, furthermore, islands of epithelium appear in a round form in different places in the middle and these, gradually growing, peripherically cover the newly formed tissues. This is the process of cicatrization. Scar substitutes the lost skin; it has no papillae and no hair follicles. The difficulty of the cicatrization is the reproduction of the horny layer. The granulations sometimes are irregular, luxurious and abundant, and if not watched and kept under control, the resulting scar may become irregular, uneven, inelastic, contracted, distorted, protuberant and disfiguring. Figure 5 shows a burn of the leg and thigh, which came under my service twenty days after the occurrence. The patient had remained in his house treating himself. It was covered with crusts and was infected with *Bacillus pyocyaneus*. The dressing in a few hours turned blue. Compresses moist with 1:2,000 solution of mercuric chlorid cleared the surface of infection. In Figures 6 and 7 burns of both hands and feet of the second and third degree are well illustrated. On the hands deep blisters formed, which in a few days were removed and in a short time the burn healed. It took nearly two weeks for the eschar to slough off the feet with a third degree burn, and nearly four weeks for complete recovery.

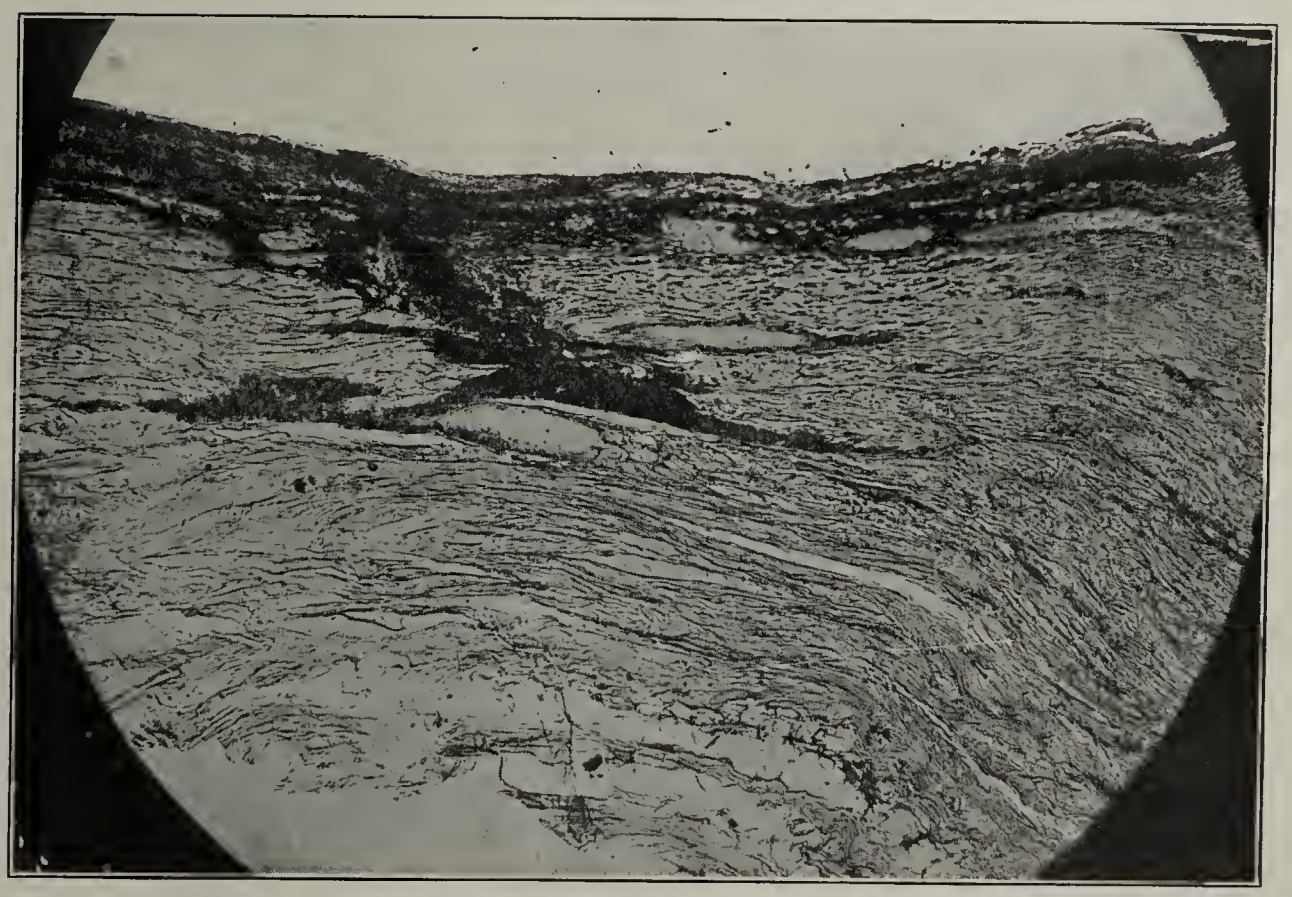


Fig. 3.—Section of burned skin. From photomicrograph. Epidermis missing; no papillary layer. Lymph spaces filled with coagulated albuminous matter. Blood vessels shown as streaks of dark granules, the upper surface infiltrated with black granules. Collagenous tissues hardened and shrunk.

LOCAL TREATMENT

In a first degree burn the application of dry powders such as talcum powder, bismuth, or alum is the best treatment. Rosslenger[9] has already recommended the exclusion of salves and of baths in these burns in order to avoid maceration and excoriations of the epidermis, which often constitute open doors for infection. In case of severe pain I recommend application of compresses moistened with a solution of aluminum subacetate of from 2 to 5 per cent., which will calm the burning pain. As soon as the patient is eased the dry powder is applied. In a few days the redness and swelling disappears, and under a superficial desquamation the skin returns to its normal condition.

In second degree burns I apply moist compresses of a solution of aluminum subacetate. When the blisters are distended with serum they are opened, draining the fluid and leaving the epidermis in place to protect the denuded papillary layer.

The application of compresses moistened with a 1 per cent. solution of picric acid has been highly recommended, especially by Boland[10] of Atlanta, Ga., and a 3:4,000 solution of potassium permanganate has been recommended by Beck.[11] In my service I could find no advantage that the picric acid or potassium permanganate had over the aluminum subacetate. It has been found disagreeable to handle on account of the staining. Compresses of sterile gauze are applied on the burned surface and kept continually moist with the aluminum solution, and the whole is bound with a piece of oiled silk, so cut as to hold the dressing in place.

Oily substances as carron oil, oleum lini and aqua calcis, so much recommended by Kaposi[6] and Wertheimer,[12] according to our experience must be avoided. We must agree with Verney[13] that carron oil in many cases is dangerous, on account of infecting wounds.

When the shreds of epidermis forming the blisters are easily detached all are cut off by means of a pair of scissors and a thumb forceps and the whole surface is gradually cleared. The papillae are already covered by a newly formed epithelium, the surface is red, and a little oozing can be noticed. At this point the Sneve[2] treatment, exposing the surface to plain air is very useful. In the beginning the patient complains of the burning and wishes to have it covered, but after a while he does not experience much discomfort. The

9. Rosslenger: Die erste Behandlung bei Verbrennungen und Verbruhungen, Intern. Med. Kong. in Wien, September, 1892.

10. Boland, Frank K.: New York Med. Jour., Aug. 2, 1913.

11. Beck: Treatment of Severe Burns in Children, Therap. Monatsh., No. 8, 1913.

12. Wertheimer: Zur Behandlung der Verbrennungen in Kinderalter, München. med. Wchnschr., 1892, No. 31.

13. Verney, A. E.: Ueber Behandlungen von Brandwunden, Deutsch. med. Ztg., No. 100, 1894.

surface is left exposed to the air for one hour at first, later for two or three hours. The surface is then dusted with powder and covered with sterile gauze. A second degree burn can recover in the course of one week or ten days. Some little points may remain which ooze and granulate; these may be touched up with 3 per cent. nitrate of silver, and to prevent the formation of crusts at night can be covered with 2 per cent. boric acid in petrolatum.

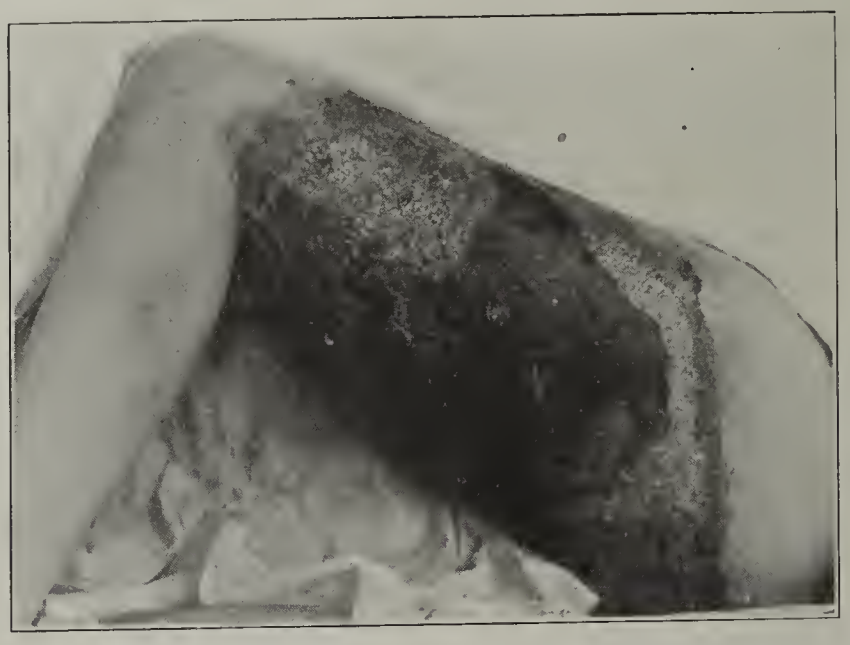


Fig. 4.—Same burn shown in Figure 2, one week later.

The treatment for a third degree burn is nearly the same. I mostly use compresses moistened with aluminum subacetate solution for the purpose of softening the eschar and helping the process of elimination. In the skin burned to the third degree, there is no more life, no more circulation, the proteic elements are decomposed, and it has to be eliminated from the living tissues. This is done by nature herself. Between the third and the fifth day a groove is formed by inflammatory process around the eschar which is gently detached, and gradually eliminated. With scissors I cut away all the shreds of the eschar which hang on the surface, without forcing. When the eschars are removed by force the tissues tear and bleeding follows. Bleeding means the opening of the blood vessels, and causing them to absorb the putrid material, which is derived from the burned tissues which form the eschar. This is the time when the patient has more intense fever due to the entrance of the poisonous substances into the system. When fever is high and pus is formed on the surface, compresses moistened with 1:2,000 solution of mercuric chlorid have given me the most satisfactory results.



Fig. 5.—Burn from hot water, fourth week.

When the eschar has been completely eliminated, the resulting wound is rose red, clean, and slightly uneven on account of the different depths of the burn. On the whole surface healthy granulations form a substitute for the lost skin. From the epidermis at the edges an epidermic layer gradually tends to cover the granulating surface as a whitish thin cover. In different places in the center of the granulating wound, islands of epidermis are seen, which look like epidermic grafts, and, in a round shape, keep reforming the epidermic layer. We believe with Hebra and Kaposi that these epithelial islands are the results of preexisting epithelium emanating from portions of the mucous layer, or from hair follicles which escaped destruction.

Recovery is therefore obtained through cicatrization, from newly formed connective tissue in which papillae, hair and glands are missing, and which is covered by a thin, slowly produced epidermis.

In order not to disturb the process of epidermization, the Sneve method is useful. It has been pointed out that the direct application of the gauze on the granulating area tends to delay the healing of the burns. The adhesion of the gauze to the surface has been considered as interrupting the process of repair, and as causing unnecessary pain and drain of nervous energy each time that the dressing is removed.

As I have already said, the exposing of the granulating wound to clean plain air is advisable at this time, and the surface is improved by its drying action. So long as parts of the eschar, necrotic particles and infectious detritus are still on the surface, moist dressings with mercuric chlorid must be used, in order to clean the surface and favor their sloughing off.

The open-air treatment and the direct application of the sun's rays to ulcers and wounds has been advised for many years. Recently attention was called to this by Wagner[14] and Oscar Barnard,[15] the latter claiming it to be a disinfecting and a healing power. In minor burns, open-air treatment had been used by W. P. Copeland,[16] protecting the wound by means of a pasteboard box, and by Reid,[17] who protected the surface with a wire cage. As stated, we expose the granulating surface to the

14. Wagner, H.: Quoted by Sneve, Note 2, Zentralbl. f. Chir., December, 1903.
15. Barnard, Oscar: München. med. Wchnschr., Jan. 5, 1904, quoted by Sneve, Note 2.
16. Copeland, W. P.: New York Med. Rec., 1887, quoted by Sneve, Note 2.
17. Reid, G. Archdall: Lancet, London, March, 1898, quoted by Sneve, Note 2.

air only for a certain time, from one to three hours. More than that inconveniences the patient, the secretion begins to form crusts, and we prefer to cover the surface again after this length of exposure.

It seems that the plain air acts by stimulating the granulating surface from which clear serum is oozing. The serum dries up when exposed to the air and forms an homogeneous film, which covers the granulating papillae. From the edges the epithelial cells underneath keep extending their whitish layer which covers the granulating surface. When exposed directly to the sunlight the action is much stronger, and if the surface is not sterile, vesicles are formed at the edges, which easily break and form crusts which are soon removed with compresses moistened in a 1:2,000 solution of mercuric chlorid.



Fig. 6.—Burn of second degree. One week after occurrence.

It must not be forgotten that the granulations need to be touched with a solution of silver nitrate every other day to prevent irregular, or keloidal scar. The wound after being exposed for from two to three hours, must be covered with a suitable dressing as 2 per cent. borated petrolatum on English lint. When the granulations are pale and show a tendency to the formation of pus the application of a mixture of castor oil and Peruvian balsam also gives good results. This dressing, however, cannot be used for a long time on account of producing irritation. Kuss[18] advocates covering the burned surface with a piece of caoutchouc paper as a protective, cut exactly to fit the wound, having holes to drain the serum, and allowing moistening in salt solution. This is covered with patches of gauze also moistened with salt solution. When a burn involves a joint, the scar has to be watched so that it does not cause contracture of the limb. The fingers, eyelids, and lips, must be kept separated with lint, so that no adhesions may occur.

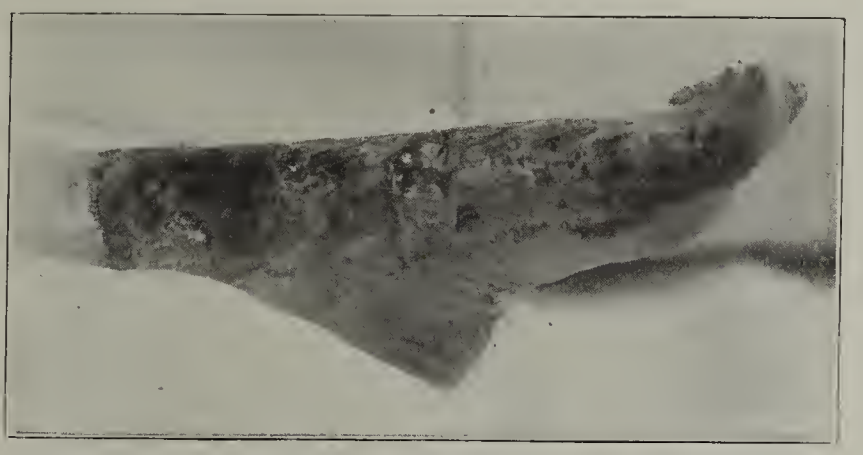


Fig. 7.—Burn of third degree. Four weeks required for full recovery.

In a burned area of a large size, without a tendency to the formation of epidermis, a few grafts of epidermis after the method of Reverdin, will help to produce the epidermization.

SYSTEMIC TREATMENT

An extensive burn, no matter of what degree, causes always a general systemic reaction. In the beginning the patient may suffer primarily from the shock. Klauder[19] calls attention to this condition, and advises injections of morphin or strychnin in the very beginning to prevent this condition. In my service cases of shock have been rare. More often I have seen gastroduodenal ulceration, with continuous vomiting, sometimes nephritis, and pneumonia. In nephritis the intravenous injection of Fisher's solution with the internal administration of digitalis has greatly helped, and in a few days the urine was clear of albumin. The fever following the burn rises and falls somewhat resembling that of typhoid fever. In all my cases the administration of chinin has been very beneficial, and I consider it one of the most useful antiseptics. Gradually as the patient improves, when the fever is gone, a substantial diet must be given with some tonic iron preparation to improve the general condition of the patient.

18. Kuss, Georges: The Treatment of Burns, Med. Standard, April, 1914, No. 4, p. 157.
19. Klauder, Joseph V.: New York Med. Jour., Aug. 2, 1913.

ABSTRACT OF DISCUSSION

DR. W. A. PUSEY, Chicago: It is not my experience to see many cases of burns, but I have a strong impression that burns are not, as a rule, well treated. I think the most useful part of Dr. Ravogli's paper is that in which he emphasizes the value of wet dressings, and particularly of wet dressings of aluminum acetate solution. There is, I believe, an open field for the writing of a book on "old and useful remedies which have been forgotten." In that book I would put among the first subjects, aluminum acetate solution, with which dermatologists are all familiar, but whose value is apparently unknown to the great majority of the profession. If Dr. Ravogli's paper does no more than call to the attention of the profession the value of dilute aluminum acetate solution as a bland antiseptic dressing it will have served an excellent purpose.

DR. JOSEPH ZEISLER, Chicago: In the case of a burn we should always endeavor to make a prognosis at the beginning. People easily misjudge the nature and the importance of burns from the local evidence presented. I have seen severe burns in which I pronounced a fatal ending in a few hours or days, when the parents were utterly amazed. When they looked at the skin and failed to see blisters or injuries, they could not understand that it was a serious case. The general public does not know of the apparently harmless appearance of the skin in burns of the third degree. In one case in which a child was burned by a gasoline fire, the skin had a peculiarly waxen appearance; and the parents did not realize the serious case they had before them until the child died.

DR. ERNEST DWIGHT CHIPMAN, San Francisco: I would like to amplify the remarks of Dr. Pusey concerning the application of wet dressings. There comes a time in the treatment of most, or many burns—as in cases of some eczemas—when the particular therapeutic indication is for something slightly astringent and something which promotes epidermization—in some cases an application of acetate of aluminum; but I like 1 or 2 per cent. of resorcin or salicylic acid. Resorcin is my favorite. Its effect many times is magical; and there are many burns in which that condition must be fulfilled. I think it is an ideal application.

DR. A. RAVOGLI, Cincinnati: I thank Dr. Pusey for his remarks on the utility of the acetate of aluminum solution, which I prefer to any other thing, on account of its action.

It quiets the pain, diminishes the hyperemia and does not give any trouble through discoloration, such as occurs with picric acid and permanganate of potassium, which have no other beneficial effect than to soil the clothes and the attendant's hands. Early prognosis is extremely interesting, as Dr. Zeisler has said. I have seen cases in which it was thought the patient would rapidly recover, but he died, and vice versa. In the matter of resorcin, I prefer mercuric chlorid for this reason: I have shown the illustration of a leg and thigh burned after twenty days which came under my service, and when the patient was taken to the hospital the lesion was infected with the *Bacillus pyocyaneus*. I must say I am afraid of *Bacillus pyocyaneus*. The use of mercuric chlorid 1 or 2 per thousand by continuous bathing I think is the best way to get rid of the *Bacillus pyocyaneus*. The Sneve treatment is very good. Expose the resulting wound, when granulating, to the plain air for one hour, and no more, as after one hour the patient feels such discomfort that he cannot stand any more; for this reason very seldom do I extend that to two or three hours. In the same way I use the direct rays of the sun. I treated a case of very severe burn in a boy of 12 with a large granulating surface infected with pus germs; the exposure to the sun had an antiseptic effect on that suppurating surface and epidermization began. But the boy could stand hardly one hour's exposure to the rays of the sun.

EXPERIENCES IN MILITARY SURGERY*

W. EARLE DRENNEN, M.D.
BIRMINGHAM, ALA.

The ideas presented here were gained during a service at the American Ambulance Hospital at Paris during the latter part of 1914 and the early part of 1915. Hence the point of view is that of the surgeon at a large base hospital.

In any discussion of military surgery, the questions of shock and physical fitness naturally occupy a prominent place. Surgeons at the first-aid stations say that the degree of shock exhibited by wounded soldiers is much less than that seen in civilians sustaining similar injuries. It is remarkable how little shock is shown by men received at the base hospitals suffering from grave injuries 24 to 48 hours after being wounded. There can be no doubt that the mental attitude plays a considerable part in this. The wounded soldier, while discouraged and suffering, sees visions of a comfortable bed and pleasant surroundings, feels himself somewhat of a hero, and escapes at the same time from the ever present specter of impending death. In the mind of a civilian similarly injured, the mental picture is entirely different. He begins immediately to grieve over a multitude of troubles, loss of wages or position, and in civil life, gunshot injuries are not infrequently attended with shame and chagrin to the sufferer. The physical condition of the French and English soldiers speaks well for those in charge of the commissary. They were uniformly well nourished and healthy in appearance, facts which go far toward minimizing shock.



Fig. 1.—Showing type of ambulance body used on Ford chassis.

The modern sharp-pointed, steel-jacketed, so-called humane rifle ball, despite all claims to the contrary, is remarkable for its severe and mutilating trauma. The point of entrance may be a small slit, or round wound, but the wound of exit is quite often large and ugly, with herniated muscles, giving it a mushroom, or explosive, appearance. In our Spanish war, the high velocity rifles, shooting balls of the Mauser type —that is with an oval end and with the center of gravity near the middle of the mass—made wounds which were, comparatively speaking, quite humane. The effects of the modern rifle bullets are usually classified according as they occur in one of four zones. These are:

First zone (0 to 500 yards) explosive effects.
Second zone (500 to 1,000 yards) penetrating effects.
Third zone (1,000 to 2,000 yards) simple wounding effects.
Fourth zone (2,000 to 2,500 yards) contusive wounding effects.

It is no exaggeration to say that the modern sharp-pointed bullets are all potentially dumdums, for it is the rule rather than the exception that the ball, after striking, pivots and turns sidewise. This is explained by the fact that the center of gravity is situated far back, near the base, so that the slightest deflection of the point from the line of flight is an instantaneous command for the base to swing forward. From such balls picked up on the battlefields, and some extracted from the wounded, it is seen that not infrequently the base of the bullet is deformed in consequence of striking first, while the sharp point is in nowise altered. From this, it would seem that these bullets often possess a wobbling motion, and even rotate on their transverse axis, particularly toward the end of their flight.

Modern field artillery consists, for the most part, of 3-inch field guns and 6-inch howitzers. The extreme ranges of these guns vary from 5,600 to 6,700 yards. The projectiles weigh from 15 to 20 pounds. The German shrapnel contains from 300 to 500 round lead bullets, hardened with antimony, which vary from 1 to 1.5 cm. in diameter, and in weight from 10 to 16 grams. In the present war more than 80 per cent. of the ammunition used by field guns is in the form of shrapnel. A 3-inch shrapnel shell may be described as a steel or brass tube with a solid base and a detachable head in which there is a time fuse. At the base, there is a charge of about 3 ounces of black powder, and in the center of the tube is a core of gun cotton to assist in the explosion. Surrounding this core are placed lead balls, which are, in turn, surrounded by the smoke-producing matrix. This latter serves as an index to the gunner to locate the point of explosion. Shrapnel will kill at 6,500 yards, at which distance it

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

has a velocity of 565 feet per second. At the moment of the explosion, an additional 300 feet per second is imparted to the lead bullets—thanks to the powder and gun cotton. The time fuse can be cut so as to cause the projectile to explode at any given one-sixth of a second during its flight. The number of effective fragments varies from 600 to 1,500, and area of dispersion, from 400 by 200 yards to 150 by 75 yards.

The Germans have an 11-inch howitzer with a range of 8 miles, which shoots a projectile weighing 748 pounds. This strikes with an energy of 5,000 foot-tons. It requires a blow of 60 footpounds to kill a human.

The terrible efficacy of modern artillery has not been exaggerated in any degree. Shrapnel wounds are more frequent than rifle injuries, and are often multiple. Thus, in 250 wounded French soldiers, reported by Hartmann,[1] 169 were injured by artillery projectiles; 127 by fragments of shells; 41 by shrapnel bullets; only 99 by rifle shot.



Fig. 2. — Mutilating effect of rifle ball at 600 yards. Complete avulsion of lower jaw. Ball barely touched shoulder, which caused it to pivot. Little shock. Recovery.

Wounds caused by artillery differ chiefly from rifle wounds in that the missiles are apt to be larger, and, traveling at a lower velocity, they carry more clothes and dirt into the wounds. It is noticeable how frequently shrapnel bullets break a bone, and at the same time are arrested in the tissues. The singular of bone is used advisedly, for one rarely observes both bones broken either in the forearm or leg. It would seem that they possess just the required momentum to break any bone, even the femur or a vertebra, and this accomplished, they are content to rest and do no more.

The iron envelope of the shrapnel shell is shattered into thousands of pieces at the moment of explosion, and the wounds made by these rough masses are often severe and lacerated. It is quite puzzling how small the wound of entrance can be in comparison to the size of the fragment itself. Thus, a piece of ragged shell which had traversed the anterior wall of the axilla measured 1 by 1¼ by ⅓ inch, and, taken from the chest cavity, had a wound of entrance at the anterior border of the deltoid which measured less than ½-inch long, and was a mere slit, a phenomenon which can with difficulty be explained by allowing for the greatest elasticity of the skin.

The regional distribution of injuries in battle has been estimated as follows:

	Percentage	Mortality Percentage
Head	15	51
Neck	2	18
Perforating spine	2	75
Perforating chest	4	25
Perforating abdomen	3	65
Upper extremities	25	2
Lower extremities	30	2

1. Hartmann: Rev. Sc. gen., No. 9, Dec. 19-26, 1914.

As a basis for the sanitary and ambulance corps, it is estimated that the battle casualties are as follows:

	Percentage	
Killed	20	
Nontransportable — serious head and abdominal injuries	8	
Requiring transportation	32	20 per cent. sitting up. 12 per cent. recumbent.
Slightly wounded—able to walk	40	

Patients whose injuries in the opinion of the surgeon at the classifying stations would permit their returning to the firing line within three weeks were sent to the hospitals known as the hospitals of the zone of the army. These hospitals are located within an imaginary zone extending backward about 20 miles from the firing line. Those whose injuries were most serious were sent to the base hospitals. To attempt an enumeration of the various wounds seen, bizarre effects, etc., would be endless and useless.

At the base hospitals, there were no fresh gunshot wounds of the abdomen to be seen. Now and then a patient who had survived with some complication, such as an abdominal abscess, was sent in for an operation. Acute appendicitis was fairly common. At no time did I see a wound made by the bayonet. One traumatic aneurysm was seen. The treatment of the different types of wounds varied somewhat, according to their location and extent; but, in the main, a routine was followed which was applicable to all. Roentgenograms were taken as soon as possible after admission, and used as guides in the operative procedures and after treatment. Many of the operations are merely dressings under ether. All small wounds of entrance or exit were freely enlarged, careful search being made for foreign bodies, particularly bits of clothing. Irrigation with normal salt solution was much used in the mechanical cleansing of the wound. Personally, I preferred, and used, a 5 per cent. solution of benzoate of soda, both as an irrigation and wet dressing. It acts in two ways: first, by virtue of its hypertonicity, it induces a flow of lymph in the wound, thereby lessening the chances of toxic absorption; second, it has a preservative effect on the devitalized tissue surrounding the track of the missile. It is in this dead, pulpified tissue that the saprophytes find their favorite abode. So impressed were they, in one hospital, with doing away with this pulpified tissue, that one saw the wounds being burned out with a large blow-pipe flame, a method which was undoubtedly too heroic. The use of benzoate of soda solution was begun somewhat late in my service, and while

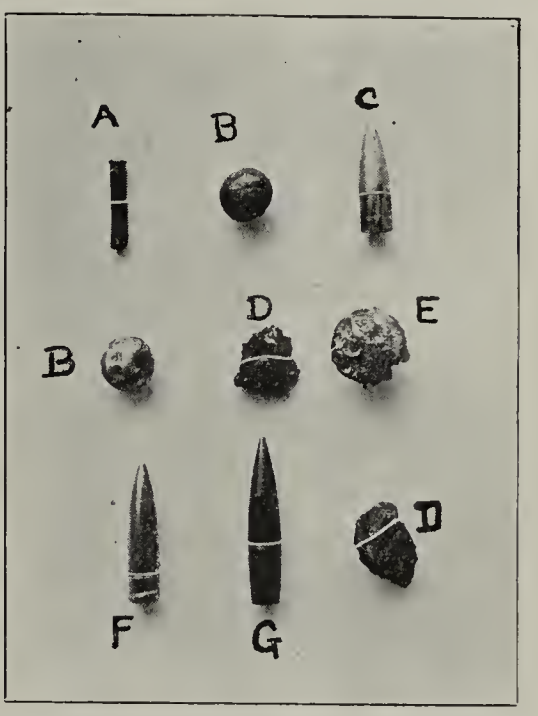


Fig. 3.—Various missiles: *A*, rivet; *B*, *B*, small sized shrapnel; *C*, German rifle bullet; *D*, *D*, pieces of stone; *E*, large size shrapnel; *F*, English rifle ball; *G*, French rifle ball.

I have no statistics to present, I have no hesitancy in saying that it had a beneficial effect on the wounds. In no case in which it had been used did gas gangrene develop, and, in all cases, the wounds were kept sweet, and free from the terrible odors with which one often had otherwise to deal. The main point in the treatment of the wounds, however, consists in the establishment of free drainage. This is best accomplished by free incisions and the use of large, fenestrated soft-rubber tubes, varying from one-quarter to three-quarters of an inch in diameter.



Fig. 4.—Shrapnel wounds, patient dead. The instructions to the soldiers are, to fall prone when a shell is expected to explode nearby.

The great complications most feared in military surgery are tetanus and gas gangrene. Cultures taken from wounds were teeming with aerobes and anaerobes, as well as the ordinary pyogenic cocci. It is safe to say that more than 95 per cent. of the wounds suppurated. This may be explained by the fact that this war is a dirty war in more ways than one. Bathing facilities for the soldiers, for the most part, have been entirely absent or quite limited. A wounded soldier who in civic life had been a man accustomed to the luxuries, told me that he had not bathed in more than three months. The most of this time he had spent in the trenches. The amount of tetanus now seen is almost negligible—thanks to the general use of antitoxin. In the early part of the war, Hartmann reported 36 cases developing in 2,473 wounded soldiers, and at the Hotel Dieu, of Bourg, 7 cases developed among 900 wounded. In none of these cases had antitoxin been administered. I saw one fatal case in which the infection came from frozen feet, and, unfortunately, the prophylactic dose of antitoxin had not been given. In another case, the antitoxin was administered only on the sixth day after the receipt of the injury—a shrapnel ball having passed through the right thigh and lodged in the left. Two days after the antitoxin was administered, that is, eight days after the injury, symptoms of tetanus first appeared, and soon became quite marked. It is interesting to note that his wounds were closed without drainage by a field surgeon, and that he spent the first night after being injured in a stable. This patient recovered after receiving daily doses of 40 c.c. of antitetanic serum injected intraspinally, a like amount of spinal fluid having first been withdrawn. This was continued for three consecutive days, and thereafter 60 c.c. were injected daily for several days into the muscles. There is one point in regard to tetanus which has been noted in this war, I believe, for the first time; that is, that infection by tetanus bacilli is apt to recur whenever operative procedure is carried out on an old wound which has previously been the site of a tetanic infection. It has been demonstrated that the spores of tetanus may live for months in the walls of wounds or old sinuses in which the circulation is quite feeble. Such a patient may thus become a tetanus carrier, differing from the typhoid carrier, in that he is dangerous only to himself. Such cases, when they are to be subjected to a secondary operation should always be given a prophylactic injection of antitetanic serum the day before the proposed operation is undertaken.



Fig. 5.—Condition of feet from frostbite in the trenches, January, 1915. Feet were frozen ten days before picture was taken. Amputation resulted in recovery.

The other great complication to be feared is the one of gas gangrene; the more so, because we have no certain means of preventing its development, and once developed, no sure method of combating it. Maisonneuve, in 1853, first described the condition. In 1864 Pirogoff named it acute gangrenous edema. Gas bacillus infections as seen in the present European conflict are usually of a mixed type, pyogenic organisms growing in symbiosis with putrefactive saprophytes. It is admitted on all sides that the causative agent is an anaerobe, or anaerobes. The *Bacillus perfringens,* which is identical with the *Bacillus aerogenes capsulatus,* is quite constant, and is generally considered as being responsible for the condition. It was present in all cases at Neuilly. Other bacilli which have been recorded as causative are: *Bacillus oedematis maligni, Pseudobacillus oedematis maligni,* and *Bacillus coli.*

Clinically, gas gangrene presents a striking feature. In all cases seen by me the process began in an extremity, and in every instance there had been a serious primary injury to the great vessels of the limb. There was a rapid spreading of the process, with an increasing area of anesthesia, often involving the entire limb within thirty-six hours. In some cases there was a fairly distinct line of demarcation; in others, the infection was progressive and extended to the trunk and became generalized.

Gas gangrene, contrary to moist gangrene, begins at the edges of the wound and not at the periphery. The edges are at first an angry red, later become greenish, and, finally, turn black. The skin is cold and clammy, of a dark, bluish-black color, with many large blebs on the surface, and the whole affected extremity is enormously swollen. Crepitation may be felt on palpation, and the tissues to the touch give a peculiar pulpy, boggy sensation. If incised, a flow of dark bloody fluid results, which contains many bubbles of gas. The gas may be seen to bubble up from the tissue planes into the wound when pressure is exerted thereon. In drawing blood for a blood culture in cases in which the infection has become systemic, many bubbles of gas may be seen to flow into the receptacle directly from the vein. At

necropsy, myriads of bubbles may be seen in the mesenteric vessels. Dr. Benjamin Jablons, pathologist at the American Ambulance Hospital in Paris, demonstrated to me a phenomenon first observed by himself, namely: the presence of very small subperitoneal blebs, or vesicles, mostly on the intestines; but also beneath the parietal peritoneal membranes, which first make their appearance from four to five hours after death. So far as I know, they are peculiar to this condition.

As regards the treatment for gas gangrene; many measures have been tried, and none found effective. Lawson and Whitehouse, two English surgeons, report 8 cures and 3 deaths in 11 cases treated by their method. This consists in undermining a zone of skin surrounding the extremity and well above the infected area, and injecting this area with neutral hydrogen peroxid at body temperature under pressure. At the same time, the infected area is incised, drained and treated according to general surgical principles. The use of a serum, the injection of oxygen under pressure with a large hollow needle directly into the tissues, proved of no avail. The best results were obtained by multiple incisions, which gave free drainage and undoubtedly aborted some incipient cases. In these cases, despite the large amount of drainage from the wounds, heavy dressings should be avoided in order to permit direct contact of the air with the wounds as freely as possible. When amputation has been decided on, it must be done high up and the wound left open. In five such case with amputation the patients recovered. In the malignant cases, in spite of every effort, the end came rapidly, preceded by delirium.

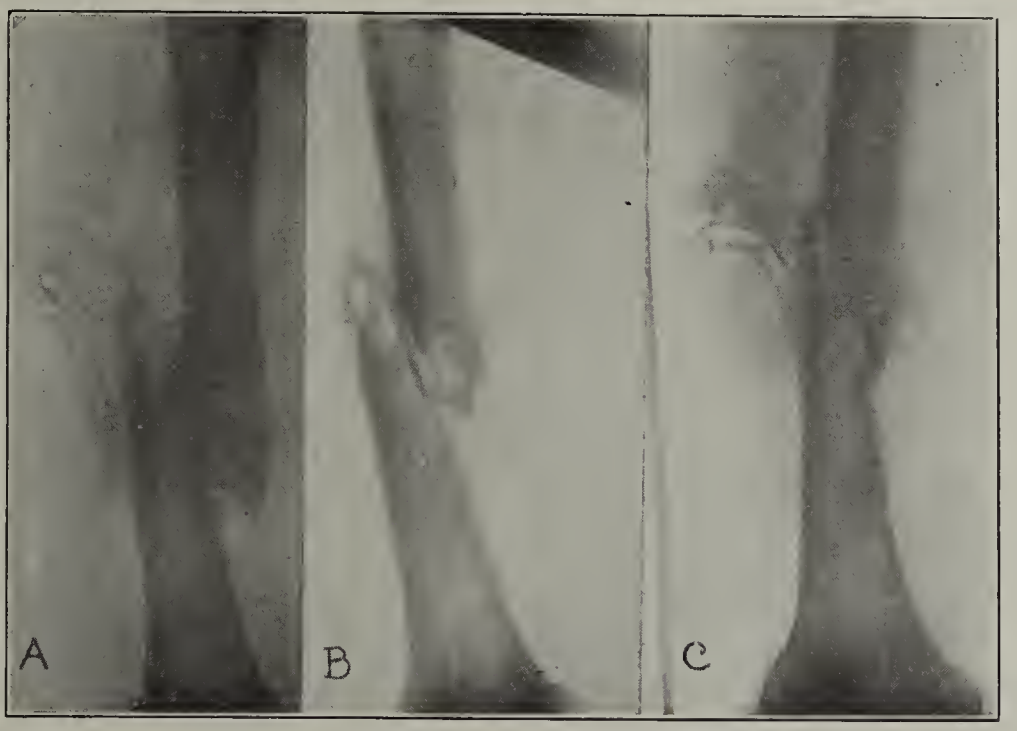


Fig. 6.—*A*, compound infected fracture of femur. Roentgenogram shortly after injury. Drainage perfect, extension not yet applied; *B*, fracture one week later. Drainage good, extension applied, by Dr. Blake's splint; very slight inflammation of ends of fragments; *C*, fracture one month after injury. Extension has effected good position. Drainage has prevented necrosis and loss of tissue, by maintaining nutrition.

The question of gas gangrene is one of paramount importance to the military surgeon, and as yet the last word on this subject is far from being said.

Secondary hemorrhage constitutes another complication, against which one must guard. During my service, there were two deaths from this cause.

Joint injuries were common. Six cases of infected knee joint were seen, all of which recovered, drainage and extension being employed. In no case were the crucial ligaments cut, or the joint resected.

Of even greater interest are the compound fractures. One sees, sooner or later, practically every bone in the body broken. These fractures differ from those in civil life chiefly by the greater displacement of the fragments, greater splintering and comminution of the bones and the tendency toward limiting the injury to one bone where there are two in an extremity. Fractures of the extremities are very common, as might be expected from the high percentage of wounds received in these parts. It is in reality just these cases which tax the judgment and ingenuity of the surgeon, for they constitute the greatest problem seen at the base hospital. Needless to say, they are all infected.

Pathologically, a compound infected fracture may be compared to a common boil.[2] A boil comes from pyogenic organisms which have gained entrance and lodgment in the subcutaneous tissues. The infection takes place through some microscopic wound or an abrasion, and thus, in a sense, the wound has been for the moment compound. The germs grow and give off products of their activity, and the tissues, in their turn, react against them. The capillaries dilate, the blood stream becomes slow, leukocytes emigrate, some forming a protective barrier about the periphery of the inflammatory process, others destroying microorganisms by phagocytosis, and still others perish in the struggle and become partially distintegrated and go to form pus. Just inside the protective zone is a layer of innermost living cells, which I shall call the zone of nutrition. This zone is by no means stationary, for it fluctuates back and forth with barometric sensitiveness, as an index to the pressure within. It is this shifting zone of nutrition which concerns us most in these cases. Still further out is the zone of irritation, in which the circulation is increased, metabolism accelerated and the powers of repair heightened. If now proper drainage is established, that is, if the small boil is incised—a drop or two of pus escapes—tension is relieved by drainage. This allows the zone of nutrition to press in on the infected area, the necrotic tissue is removed and healing rapidly occurs.

If, on the other hand, drainage is not obtained, tension increases within, and the zone of nutrition is forced further and further back, with the result that the central portion of the now small abscess, loses its nutrition and dies. The living cells attack the necrotic mass at its periphery and cause an anatomic separation of the dead from the living. This central necrotic mass, the laity speak of as the "core." When the core is removed by incision, tension is relieved by drainage, the zone of nutrition encroaches on the abscess cavity and the wound is healed by granulating, the destroyed tissues being replaced by new connective tissues.

In compound infected fractures, it is exactly the same thing. Every such fracture constitutes an

2. For suggesting the pathologic similarity between a compound infected fracture and a boil, I am indebted to my friend Dr. Hugh Auchincloss of New York.

abscess cavity. The core, when it is made of bone, we call a sequestrum. The zone of irritation, with its increased powers of repair, we call the involucrum, and the zone of nutrition, or the innermost layer of living cells, is formed from the innermost layer of the involucrum.

If, in these cases, sufficient drainage is obtained and maintained, tension will not occur, and good nutrition of the fragments within the infected area will be assured. In this way rapid restoration with but little or no loss of tissues will occur. However, if drainage is poor or imperfect, tension will occur, the nutrition of the tissues will be impaired or destroyed, and the formation of a sequestrum with healing long delayed will result.

In operating on compound infected fractures, it is important,

1. To make large incisions; it is usually best to make the incision so that it will be dependent.
2. To remove all foreign bodies.
3. To remove all loose or detached pieces of bone. The fingers form a good guide to go by. All pieces that can be removed by the fingers without undue effort should be taken away.
4. To maintain drainage; this is best done by the insertion of large fenestrated rubber tubes.
5. To use absolutely no foreign material of any kind in the wound, such as wire, chromic gut or bone plates; the use of these means nothing but trouble.
6. As to the question of amputation, the tendency is rightfully more and more toward conservatism. Under favorable conditions, it is marvelous what nature will do in the repair of broken and infected bones. It is now possible to save limbs and restore them as useful members, whereas formerly it would have been considered entirely correct to amputate. If the economic status of the patient is not to be considered, the question of amputations becomes more and more identical with the question of the limb's viability. With the recent additions to our knowledge in the realms of bone grafting and transplanting, many wonderful results are being obtained.



Fig. 7. — Compound infected fracture of humerus, shell wound. Course complicated by typhoid fever. Drainage of upper fragment good. Large sequestrum of lower fragment, the result of insufficient drainage. Roentgenogram ten weeks after injury.



Fig. 8. — Illustrating tendency to fracture only one of two bones in same location. Upper third of ulna beginning to thicken, due to stimulation of zone of irritation. Ulna not injured.

The after-treatment of compound infected fractures consists in the maintenance of drainage and extension. Both are most important. Dr. Blake has advised a very simple and effective apparatus for extension of the lower extremity. It is much like a Thomas knee splint, resting above against the tuber ischii, the great trochanter and the pubic bone, and extending below well beyond the plantar border. He also made another such apparatus for use on the humerus. Both are made of metal, and can be bent in individual cases to permit of dressing wounds at any location.

The soldier permanently disabled, or injured so greatly as to prevent his return to the army, begins to turn his mind toward the pursuits of peace, toward industrial activity. So in just such cases do we find the surgical problems approaching those of everyday peaceful life. It is here that various plastic operations, repair of nerves, transplanting of bone and other tissues are finding a useful field. All Europe will soon be one great laboratory for such constructive surgery, and he who can will do well to avail himself of the opportunity.

XERODERMA PIGMENTOSUM

ITS TREATMENT WITH AUTOGENOUS SERUM *

J. B. KESSLER, M.D.
IOWA CITY, IOWA

In 1914, two children from Clarinda, Iowa, were sent to the asylum for the blind at Vinton, Iowa. Some time later they were referred to the University Hospital to be treated for weeping eczema.

Family History.—Their father, a carpet weaver, aged 37, was born in Iowa. His health has been good, no history being given of disease or injury before the children were born. Their mother, aged 34, was born in Missouri, and was always healthy. The father and mother are not related, and neither were married before. The mother has had no miscarriages and there is no history of carcinoma, mental disturbance or tuberculosis in the family.

Verdie F., a white girl 8 years old, did not attend school until last summer, at the asylum for the blind. As a baby she was healthy and stout, being undeformed at birth. There is no history of snuffles or adenoids. The present disease began when she was 2½ years of age. It first appeared on the face and limbs as little red spots.

On examination we find the child to be small for her age, fairly well nourished; hair is light colored, the scalp covered with scales. Her face is thin and pinched, the ears are atrophied and hard, the nose is drawn and pinched, the nostrils are flattened, the lips are thin and hard and cannot be everted without pain. The whole face has a shiny, almost a glazed appearance, with underlying telangiectases. The eyes are red, and show conjunctivitis and marked photophobia.

An irregular coalesced tubercle formation appears over the left eye, having almost the appearance of a tumor. It is elevated ¼-inch and is dark brown. Similar formations, but more wart-like and smaller, varying in size from a large pin head to a penny are on the forehead. They have scaly tops and are rough, and variable in color.

Five of these growths are on the forehead, one on the nostrils and two on the chin. The tumors are all located on

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

the face and head. The other parts involved, show a lentigenous or freckle-like pigmentation, and vascular telangiectases appear from the neck down to the buttocks, caused, probably, from the dress being open in the back. They also appear on the thighs, more profusely on the back than on the front. They are on both front and back of the legs, on the flexors of the feet, and some may be seen even on the toes. The arms show them on both extensor and flexor surfaces. They are on the front and back of the forearms, but on the back only of the hands. The lesions on these surfaces consist of superficial light areas and are scaly with an under pigmentation. They vary in size, and are flat on the surface. On the back of the hands the skin is beginning to take on a furrowed appearance. Conical patches occur which look like those of leukoderma and show no pigmentation. The skin seems to be attached to the underlying structures. The neck is slightly flexed, but rotation and extension are normal. There are no palpable glands. The pulse rate is 84, the temperature at times rises to 99. The lungs and heart are normal. The abdomen shows no pigment. The skin of the neck and face is difficult to pick



Fig. 1.—Appearance of eruption on front of body. Note elevated nodules on forehead of girl.

up; it is hard and stiff and firmly attached. The skin in other regions varies from normal elasticity to almost entire loss of it (Figs. 1 and 2).

The blood count shows whites 11,800, reds 4,980,000; polymorphonuclears 80 per cent., eosinophils 1 per cent., small lymphocytes 17 per cent., large lymphocytes 2 per cent.

The urine is normal. Microscopic examination shows epithelium but no blood cells, an occasional pus cell, no crystals and no bacteria.

Howard F.. white boy, aged 6, began at the age of 2½ to show this disease. The lad is small for his age, and has a shrunken appearance. His legs and arms are small; his face seems to be drawn toward the midline. One is struck immediately by the hanging of the head and the spotted appearance of the face. The chin and the nose are small and angular. The hair is brown, dry and shaggy. The scalp is covered with white scales that are dry and very fine, and closely adherent.

Over the face, neck and ears there are freckle-like spots. The skin has a glossy appearance as if stretched, so that when the boy makes grimaces the skin pulls in fine folds about the neck and mouth. The face has three tints, pink, white and dark brown, which appear as if put on at different times, and cause a mottled appearance. The pigmentation extends entirely over the ears into the external meatus. He has continuous and marked photophobia. His eyes are small and sunken. There are no palpable glands. Freckles and telangiectases appear on the legs, arms, neck, face and ears with marked atrophy of the skin of the ears and face; in appearance he is an exact counterpart of his sister, except that he has no tumors and his back is not freckled.

Orpha F., the oldest of the children, had the same disease, which commenced when she was 1½ years of age, and,



Fig. 2.—Appearance of eruption on back and legs.

at its onset, had the appearance of sunburn. She had atrophic spots, conjunctivitis and photophobia, but no tumors. This child was deformed and an invalid all her life. She died at the age of 13.

One 4-year-old boy at home is healthy. The mother writes us that the children were no more exposed to the sun than her other children and is positive the disease began in the two living children as little red pimples, and in the first one attacked by it as a sunburn. At all events the disease is in locations accessible to the sun's rays.

Gross Pathology (by Dr. Dean).—The tumors removed from the eyelids of the little girl present the following appearance:

The specimen consists of two growths, one removed from the left eyelid and the other from the right. The growth from the left side measured 1.5 by 1.25 by 0.5 cm. It is reddish-gray, is firm and cartilage-like and its outer surface is nodular. The growth removed from the right side is

similar in size to the one described, but is thinner, appearing like a piece of skin with a roughened surface.

Microscopic Examination.—A section of the growth from the left side presents at some portions an irregular and unbroken epithelial border, the superficial layers of which are cornified and overlaid with an accumulation of polymorphonuclear leukocytes. At some points this epithelial border sends strands of epithelial tissue into the underlying structure. These appear as larger and smaller strands or islands, the centers of which show a concentric laminated arrangement of cornified epithelium which stains brightly with eosin. These epithelial islands are present in great numbers, but individually are small and occupy only a small part of the section. The tissue which intervenes between them is, to some extent, of a fibrous nature, but for the most part is made up of round cells, closely packed, sometimes shown in the form of cords of cells, but more frequently arranged in dense masses. Where the round cells are arranged in cords the intervening spaces present a fibrous appearance, which stains a bright blue with hematoxylin. These round cells are a little larger than a red blood cell. The nucleus occupies nearly the whole substance of the cell. It is granular in appearance. Frequently mitotic figures may be seen. A section of the growth from the right side presents the same appearance as that described in connection with the left, but to a much less extent (Fig. 3).

From these findings we would make a diagnosis of squamous-celled carcinoma.

A microscopic section of the contiguous skin shows the superficial epithelium cornified and desquamating. Occasional points of thickening of the epidermis are noticeable by a bulging on its surface and more active cell multiplication in the lower layers. The corium is dense and more or less diffusely infiltrated by small mononuclear lymphocytes. The infiltration is more marked in the vicinity of the hair follicles and excretory apparatus. Small hemorrhages are seen here and there.



Fig. 3.—Section from nodule incised from eyelid of girl.

Diagnosis. — The appearance of the disease in early childhood, the six kinds of lesions present in the majority of cases, namely, lentigenous or freckle-like pigmentation, atrophic spots, vascular telangiectases, warts, superficial ulcerations and tumors render it unmistakable for any other disease. We were unable to find in the literature any form of treatment of this disease that promised a cure. At a venture we used autogenous serum, thinking it could do no harm. We gave the little girl five treatments and the lad six, at weekly intervals, with daily applications of theobroma to the skin. The general condition of the children has improved and they are gaining in weight. The improvement has seemed to result from the autogenous serum, so that if given in the beginning of the disease, I believe it would be highly beneficial.

I am indebted to Dr. Royce for the pathologic findings.

ABSTRACT OF DISCUSSION

DR. OLIVER S. ORMSBY, Chicago: It is interesting to see these cases occur in family groups. They are like the family groups reported by Dr. Hyde several years ago; there are now several such families. That these growths are malignant and that the disease terminates fatally, is interesting. The disease is a type of carcinoma. Some of you may have seen the family group which was imported. One of those children developed a huge tumor in the orbit and died very soon. But we do have indigenous family groups in this country and they are interesting.

DR. J. B. KESSLER, Iowa City: The point I lay stress on in this paper was not what I did in these two cases, but what might be done if the cases had been taken in the beginning. The disease in the little girl had existed four or four and one-half years, and that of the little boy two and one-half years. He had not reached the tumorous stage, but had a growth on the cornea. I should certainly try this treatment if I got a case in the beginning. There was an apparent improvement, I did not say there was a cure; that could not be expected after it had gone as far as it had with these children.

INFLUENCE OF AGE AND SEX ON HEMOGLOBIN

A SPECTROPHOTOMETRIC ANALYSIS OF NINE HUNDRED AND NINETEEN CASES (PRELIMINARY REPORT) *

CHARLES SPENCER WILLIAMSON, B.S., M.D.
Professor of Medicine, University of Illinois
CHICAGO

It has long been known to those who have studied the variations in hemoglobin in the normal subjects that by far the greatest variations are those due to age. Our real knowledge of the age curve of hemoglobin begins with the work of Leichtenstern, who in 1878 published his results in a monograph entitled "Untersuchungen über den Hemoglobingehalt des Blutes in gesunden und kranken Zuständen." This author recognized very clearly that a precise knowledge of the variations due to physiologic conditions, especially age and sex, was an indispensable prerequisite for the study of the hemoglobin in diseased conditions. Leichtenstern's work was all done with the then newly discovered Vierordt's method, which was by far the most accurate method then available. This research extended into the estimation of the hemoglobin in a very large number of pathologic conditions, and the study of the variations due to age and sex was undertaken more or less incidentally.

Leichtenstern's results made it perfectly apparent that any comparative determinations of hemoglobin must take the age and sex factor into consideration, or else be grossly inaccurate. In spite of these results and in spite of the authority of their distinguished author, this research made almost no impression on the medical world at large, and but very little on the students of hematology. Even now, in such extensive monographs on the blood, as that of Grawitz, one finds

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

the age curve hardly mentioned, and the entire subject is often dismissed with the bare statement that all authors are agreed that the hemoglobin is highest at birth. Very few writers on clinical hematology seem to appreciate the fact that hemoglobin determinations on individuals of different ages, especially if young children be included, cannot be compared with each other without making a considerable error, if the differences due to age and sex be not taken into consideration.

Again, much of the work done on hemoglobin is nearly valueless because of the imperfection of the methods employed. None of the ordinary clinical methods are of sufficient accuracy to form the basis of a research, when standards are to be established. In many instances, too, conclusions have been drawn from an entirely insufficient material.

In spite of the early date at which the work of Leichtenstern was done his results have the best claim to accuracy, since the method employed by him, the spectrophotometric, was unquestionably even in the primitive form then in use, a very exact one. The original Vierordt apparatus used by him has since been supplanted by newer and better forms of spectrophotometer, so that this apparatus has now only an historic interest. The weak point in the work of Leichtenstern, aside from any shortcomings of the method used, is that he bases his conclusions, in many of his age periods, on an entirely insufficient number of cases. For example, he examined no babies on the first day of life, and his figures for the newborn up to the fourth day are based on the examination of only four infants, three male and one female, the youngest being only thirty-six hours old. In his comparison of the sexes we find his figures for the third-year males based on one case, and for the fourth-year males also on a single case. For the age periods 51 to 55, 56 to 60, and over 60, we find them based on a total of only five cases (for both males and females). He did not carry his age periods over 60.

A special incentive to the present research lay in the fact that no similar investigations have been made in America, and, therefore, we have up to the present no data bearing on American patients. In view of the inadequacy of Leichtenstern's material as a basis for formulating the age curve of hemoglobin, and especially since his results lack confirmation, it seemed a matter of importance that the entire subject should be investigated de novo, using the most accurate methods, on a sufficiently large and properly selected material. With these ideas in mind this research was begun early in 1914.

After a careful study of the methods at our command for the quantitative determination of hemoglobin, the spectrophotometric method was selected, since there is a practical unanimity of opinion that it affords a degree of accuracy and reliability not equalled by any other. The particular type of instrument selected was the Hüfner, in its latest model, as made by Albrecht of Tübingen. Even to one thoroughly familiar for years with hemoglobin determinations, it is highly important that a considerable amount of experience be attained with the instrument, if accurate results are to be had. To this end, we devoted some months of intensive work to preliminary investigations of the possible errors of the method, and to developing a definite technic which could be relied on to furnish results of a satisfactory degree of accuracy.

For placing at my disposal the facilities of the physiologic laboratory and for much advice in this preliminary work, I am indebted to the courtesy of Prof. George Dreyer, head of the department of physiology.

CONSTRUCTION AND CALIBRATION OF PIPET

It was sufficiently obvious from the study of Leichtenstern's technic that his method of obtaining the blood was faulty in two directions: first, the form of the pipet was such as to make it almost impossible to measure out with it the same amount of blood each time, the short and stocky build of the pipet rendering a slight error in the height of the column of blood of great importance; second, the capacity of the pipet was unnecessarily small, rendering accuracy in dilution difficult. In our preliminary study much experiment and thought were given to the question of a suitable pipet. We finally decided on one constructed of heavy walled thermometer tubing of very fine caliber, and yet of sufficient size that when filled with blood and held vertically, the column would flow down with a degree of rapidity most suitable for accurate measurement.

Experiments were made to determine how much blood could be readily obtained, without undue squeezing, from an incision in the finger, and the length of the pipet was so chosen as to contain approximately this amount. In its final form, then, our pipet was a piece of heavy thermometer tubing about 7 inches in length so drawn out at the tip as to constrict the opening to the least possible extent, with a fine mark around it about 4 inches from the tip, to mark the desired length of the blood column. Three calibrations of this pipet were made as carefully as possible and the weight of blood delivered by it was found to be 0.03865 gram. The specific gravity of the blood was determined with two different pyknometers, and found to be 1.0601 and 1.0597 respectively, the average being 1.0599. The volume of blood delivered by our pipet was, therefore, 0.03646 c.c.

A further check of the accuracy of the calibration of the pipet was made in the following way: One pipetful of blood was added to 4 c.c. of 0.1 per cent. sodium carbonate solution, giving a dilution of 1:110,709. Similarly to 1 c.c. of blood sufficient sodium carbonate solution was added to make the same dilution. These two dilutions were then compared spectrophotometrically. The results of the comparison are shown by the following extinction coefficients:

Solution 1.—Extinction coefficient 1.340
Solution 2.—Extinction coefficient 1.336

In making all our routine dilutions a Mohr normal 5 c.c. pipet was used, and in the comparison of our pipet a Mohr normal 1 c.c. pipet and a normal buret were used, all bearing the standardization mark of the German *Reichsanstalt*. In the foregoing matters I was rendered invaluable aid by Professor Welker, to whose kindness I am indebted for the construction and calibration of the pipet, and to whose advice and skill the accuracy of this part of the work is entirely due.

METHOD OF OBTAINING AND DILUTING THE BLOOD

From the middle finger of the left hand, or from the lobe of the ear in the case of young infants, a large flowing drop of blood was obtained by sticking deeply with a cataract knife. From this drop was readily obtained sufficient blood to fill the pipet to a

point a little above the mark, and then with the pipet held vertically, the column of blood was allowed to sink down exactly to the mark, and the excess of blood on the tip wiped off with the thumb and finger. The contents of the pipet were blown into 4 c.c. of 0.1 per cent. sodium carbonate solution, which had previously been measured with a Mohr normal pipet into a long-neck glass-stoppered flask of 50 c.c. capacity. In the case of infants under two weeks, in which the hemoglobin values are very high, 5 c.c. was used in order to bring the dilution into the most suitable region of the spectrum. By graduating our pipet as a delivery pipet, and by always blowing with maximum force for ten seconds, withdrawing the tip of the pipet from the fluid while still blowing, it is believed that a very high degree of accuracy was obtained. The diluted blood was now thoroughly oxidized by shaking, and was transferred to the "trögchen" of the apparatus and covered with a heavy piece of glass to exclude atmospheric influences. With the sector set at the proper position (542.0 to 534.0) ten readings were taken, five on each side of the vermier scale. In every case readings were also taken in the region between the bands (566.5 to 558.5), so that in each and every observation, it was perfectly certain that no deterioration of the blood from any cause had taken place, since any variation in the constancy of the ratio of the extinction coefficients from these two readings would disclose this at once. We regard this as a by no means superfluous caution, since in several instances it happened that, for one cause or another, some deterioration had occurred, and this was at once disclosed, the observation rejected, and new dilutions of blood were made and readings taken of these.

THE PRINCIPLE OF THE QUANTITATIVE DETERMINATION OF HEMOGLOBIN BY THE SPECTROPHOTOMETER

Vierordt in 1873 and Hüfner in 1894 developed the method. The former showed that for one and the same colored substance the ratio $\frac{\text{concentration}}{\text{extinction coefficient}}$ is a constant, which he named "absorption ratio, A." In the case of blood, the concentration, C, is the number of grams of HbO_2 in 1 c.c. of the solution. The extinction coefficient is the reciprocal of that thickness of the absorbing body, by which light of the intensity 1 is reduced to the intensity one tenth. If E is the extinction coefficient, and T the thickness of the layer which reduces the light to one tenth of its original value, then E is equal to $\frac{L}{T}$. If the thickness of the layer remains constant, as in the Hüfner apparatus, E can be determined by measuring the intensity of the remaining light. This is done by rotating the analyzer with respect to the polarizing Nicol. It can be shown that the extinction coefficient, E, is equal to $-2 \log \cos O$, where O is the angle of rotation. In order to obtain E, we have only to measure the angle of rotation, O, necessary to produce equality in the two fields, and from this value E is readily calculated. For one and the same coloring matter, and for the same spectral position, different concentrations are directly proportional to their respective extinction coefficients, so that the latter give a convenient way of expressing the relative concentrations. To obtain absolute values all that it is necessary to do is to prepare a solution of known strength, determine E, and the quotient $\frac{C}{E} = A$, or $C. = E\ A$. This was done by Hüfner for oxyhemoglobin for the spectral region 531.5 to 542.5. He found A to be 0.001312. Butterfield found A to be $1.18.10^{-3}$ for the region 533.5 to 542.0.

The instrument used by us was the newest model Hüfner apparatus, a detailed description of which is unnecessary. The instrument was used in a dark room, especially fitted up for the purpose, and in addition to this enclosed in a large light-proof hinged box, so arranged that when closed during the readings nothing but the telescope tube was visible from the outside. In this way ideal conditions were obtained with practically absolute darkness. A properly centered Welsbach was the illuminant. The collimator slit was set at 0.05 mm. and remained at that width during all the work. The eye-piece slit was set at a width of 8. The calibration of the sector scale was carried out in the usual manner, so that the reading of this scale could be converted into wave lengths. In addition to this calibration we determined the degree of absorption for the entire area between the bands as well as in the band itself, thus assuring ourselves that the positions in the spectrum actually represent the position of minimum and maximum absorption. These positions fixed, and the ocular slit properly and symmetrically adjusted, the apparatus was ready for the actual determinations.

RESULTS OF EXAMINATIONS

Age	Extinction Coefficient Dilution 1: 110.71			Number of Cases		
	Male	Female	Both	Male	Female	Total
1 day	1.7859	1.7763	1.7813	16	15	31
2-3 days	1.7229	1.7657	1.7454	15	16	31
4-8 days	1.6965	1.6936	1.6949	15	18	33
9-13 days	1.6366	1.6342	1.6355	15	15	30
2 weeks-2 months	1.4329	1.3822	1.4109	15	15	30
3-5 months	1.0019	1.0915	1.0467	16	16	32
6-11 months	1.0129	1.0876	1.0499	18	15	33
1 year	0.9763	0.9367	0.9571	18	16	34
2 years	0.9530	0.9727	0.9631	16	17	33
3 years	1.0121	1.004	1.008	15	16	31
4 years	1.0177	1.071	1.0435	16	15	31
5 years	1.0596	1.0166	1.0375	17	18	35
6-10 years	1.1163	1.0498	1.0861	18	15	33
11-15 years	1.109	1.1389	1.1252	17	20	37
16-20 years	1.2879	1.1986	1.2447	16	15	31
21-25 years	1.3203	1.1515	1.227	17	21	33
26-30 years	1.2572	1.1895	1.2169	19	28	47
31 35 years	1.2975	1.1832	1.2403	16	16	32
36-40 years	1.3008	1.1771	1.2428	17	15	32
41-45 years	1.2913	1.1981	1.2432	15	16	31
46 50 years	1.2080	1.1866	1.2588	22	15	37
51-55 years	1.2993	1.2323	1.2687	19	16	35
56-60 years	1.260	1.2074	1.2537	15	15	30
61-65 years	1.2612	1.2033	1.2313	15	16	31
66-70 years	1.2405	1.1880	1.2159	17	15	32
71-75 years	1.1611	1.1848	1.1723	19	17	36
76 and over	1.2003	1.1519	1.1793	30	23	53
				464	455	919

ACCURACY DETERMINATIONS

A considerable number of accuracy determinations were made not only before beginning the actual work, but also from time to time during its progress, in order to determine the effect of an increasing amount of practice. The procedure employed was the following: A pipetful of blood (defibrinated) was diluted with 4 c.c. sodium carbonate solution, and the pipet was then cleaned and dried in the usual way. A second sample of the same blood was taken, and similarly diluted in a second flask. After shaking, the diluted blood was transferred to the "trögchen" and ten readings taken, five on each side, in the usual manner. The same "trögchen" was used, after cleaning, for the second dilution. The extinction coefficient of each sample

was then calculated. Two typical determinations made in this manner are given below.

	Solution A Extinction Coefficient	Solution B Extinction Coefficient
No. 1	1.259	1.253
No. 2	1.393	1.399

In order to test the possible deterioration of the blood solution on standing, three separate dilutions of the same specimen of defibrinated blood were made, and tested spectrophotometrically, the first immediately, the second a half hour later, and the third two hours later. The subjoined extinction coefficients show the results that were obtained, and make it manifest that under our conditions of experiment no deterioration of the blood occurred within two hours. Under the conditions then in which we worked the method leaves nothing to be desired in the way of accuracy. The extinction coefficient of No. 1 (immediately) was 1.300; of No. 2 (one hour), 1.290; of No. 3 (two hours), 1.297.

It should be especially noted that these accuracy determinations were made with the same number of readings and under precisely the same conditions as all the rest of the determinations, so that they represent the accuracy really attained, and not merely that which is possible under especially favorable conditions.

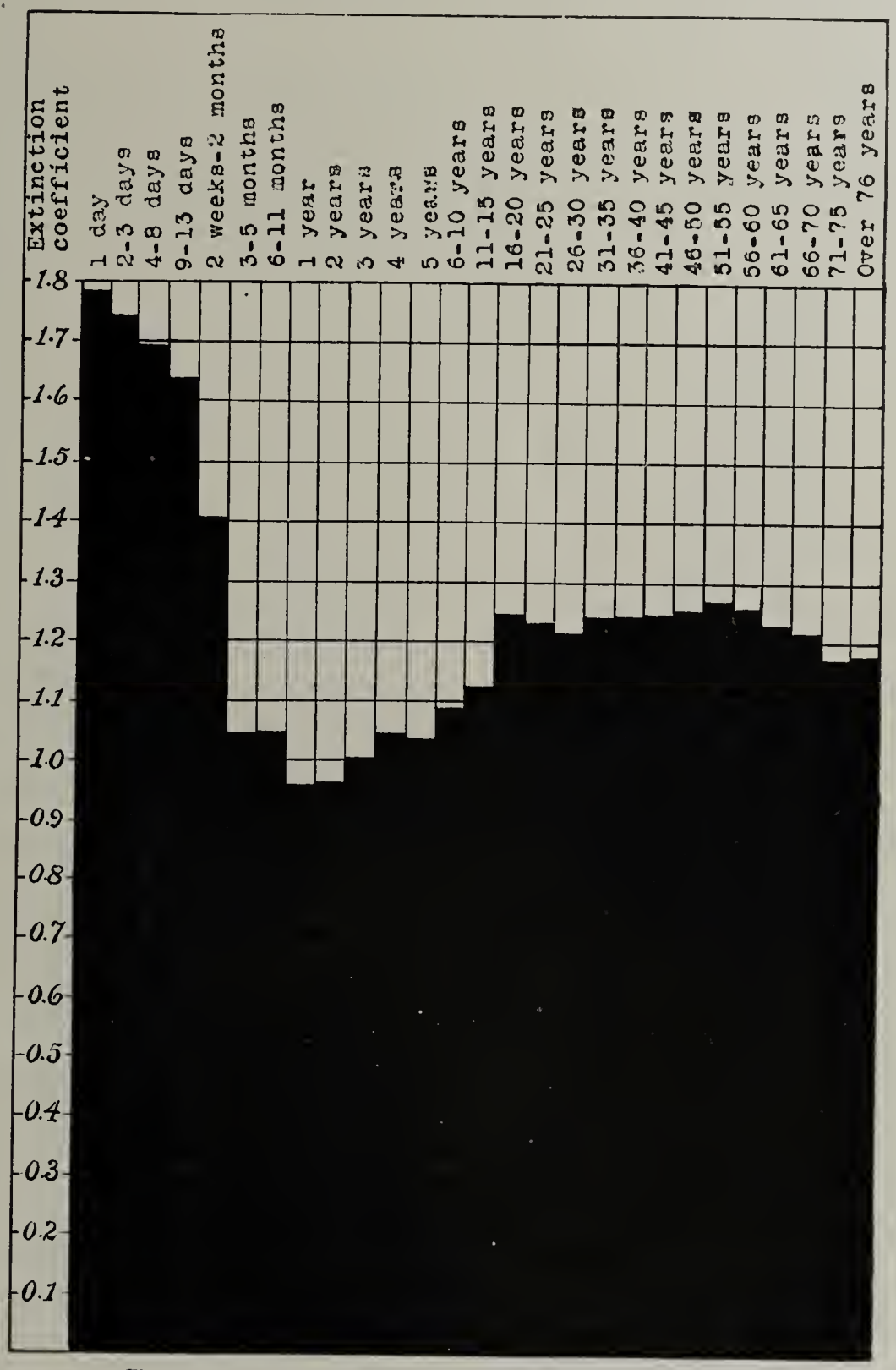


Fig. 1.—Curve showing influence of age on hemoglobin percentage.

MATERIAL USED

Our material was selected with the greatest care. every effort being made to select strictly normal healthy individuals. Particularly in the babies all children were excluded that were not thriving and gaining weight in a normal manner. The great majority were breast-fed babies. In one group of children, out of forty-one supposedly healthy normal children but nineteen were accepted as complying with our requirements. Care was taken, as will be seen from the table, to have approximately the same number of cases in the various age periods selected for study, and again to have these evenly divided between the two sexes. The number of individuals available at all ages was sufficiently large to make it a fairly simple matter to reject all unsuitable material. On the other hand, no attempt was made to select individuals of phenomenal development or strength, but rather to select individuals from all walks of life so as to make the cases selected a fair average. For the ages from 10 to 30, schoolchildren and college students made up a considerable portion of the material, and these cases were, for the most part, studied early in the fall, just after the close of the summer vacation, at a time when their physical condition was presumably at its best. In all, 919 individuals were examined, and the accompanying table shows the results.

CHARACTERISTICS OF THE AGE CURVE

Our results agree with those of other investigators, in that the hemoglobin value is greatest at birth. The decline begins at once, and is very rapid, so that by the fifth month the average value is nearly down to the minimum (about ten seventeenths of the value at birth), and is far below the average adult figure. From the fifth month onward there is a progressive, but very slow diminution, but the actual minimum is not reached until one year, that is, in the second year of life. There is a fairly rapid rise up to the sixteenth year, and from the sixteenth year onward the variations in the different periods are relatively small. The rapid decline in the amount of hemoglobin during the first five months is a highly characteristic feature of the age curve, and in this our results are in perfect accord with those of Leichtenstern. This decline is quite independent of nutrition, since, as stated, the greatest care was exercised to select only infants that were thriving. Moreover, it is not a question of artificial feeding, since the great majority of our cases, especially up to the sixth month, were breast-fed infants.

A noticeable feature of our curve is the fact that in the period from 16 to 20 years the values have attained practically the maximum, and from this time to middle age the curve is nearly horizontal. The very highest point is attained in the 51 to 55 period, but the variation in this period from the other adult ages is insignificant. From the fifty-fifth year onward the values decline, and it is noteworthy that there is a slight rise from 76 onward in the case of the men, while the decline continues in the case of the women. The sharp drop found by Leichtenstern from 55 to 60 is seen, on the basis of our larger number of cases, not to exist. The rise in old age found by him was based on only five cases in all, whereas our figures for the patients over 76 alone is based on a total of fifty-three cases.

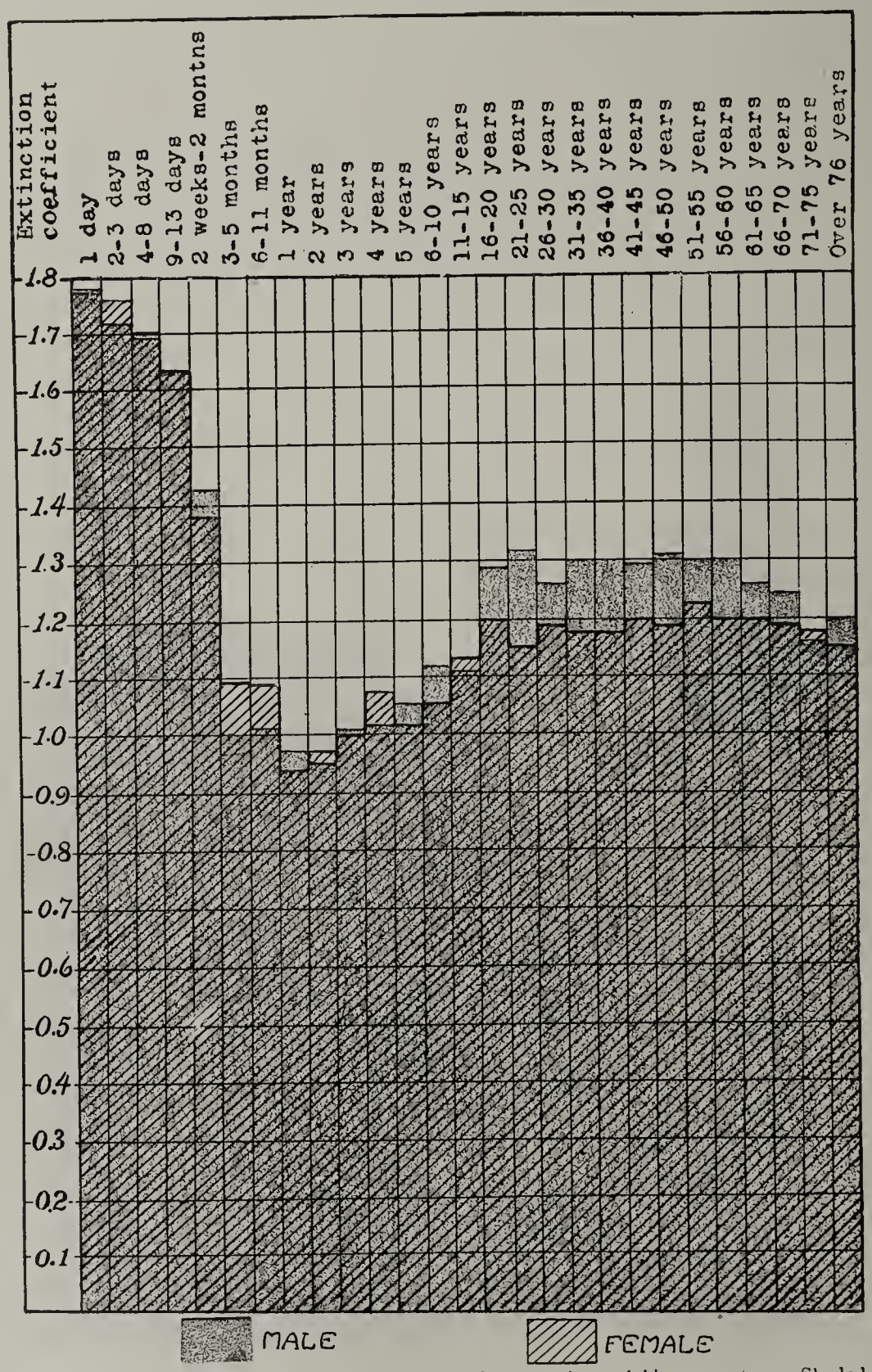


Fig. 2.—Curve showing influence of age and sex on hemoglobin percentage. Shaded areas indicate males; diagonal lines, females.

INFLUENCE OF SEX

It will be evident from the study of Curve 2 that the values up to the fifteenth year are almost precisely the same for both sexes. At birth the difference is so slight as to be difficult to portray graphically on our curve. It should be borne in mind that the figures on which the values for each sex are based represent only one-half the total number of cases, hence small variations are somewhat more likely to occur in these curves than when the figures for both sexes are combined in a common curve. One especially valuable observation was made on twins, a boy and a girl, both perfectly healthy, of approximately the same weight, whose blood was first examined when they were 5 hours old. The values were almost identical. In order to formulate more precisely the relative values for the two sexes up to puberty, we have calculated the average extinction coefficient for each sex separately. They are as follows:

From birth to 15 years the average extinction coefficient in males was 1.236; in females, 1.255.

It is evident from these averages that the variations which are due to sex are, up to the sixteenth year, scarcely greater than the error of the method, and that they are entirely negligible, from the practical standpoint.

From the sixteenth to the seventeenth the sex differences make themselves plainly manifest.

While there is comparatively slight variation for either men or women in these periods, the values for the women are in every instance considerably lower than those for the men.

It should be especially noted that from the fiftieth to the seventieth year, that is, after the cessation of menstruation, the differences between the two sexes still exists, although to a somewhat less degree than during the period of childbearing.

From 16 to 60 years the average extinction coefficient in males was 1.296; in females, 1.190.

From these figures it will be seen that from the ages of 16 to 60, inclusive, the hemoglobin of the two sexes varies decidedly, in the proportion of 1.296 to 1.190, or otherwise expressed, the females averaging 91.7 per cent. of the values of the males.

From 61 to 70 years the average extinction coefficient in males was 1.250; in females, 1.196.

From the figures given above, it will be seen that in the decade from 61 to 70, inclusive, the females still show lower values than the males in the foregoing proportion.

Expressing this proportion as a percentage, the females have 95.6 per cent. as much hemoglobin as the males.

Over 71 years the average extinction coefficient in males was 1.185; in females, 1.166.

It is thus seen that beyond 71 the values for the sexes so come together as to be practically identical.

BEARING OF THE RESULTS ON THE CLINICAL DETERMINATION OF HEMOGLOBIN

An inspection of the curves will make the following points perfectly evident.

1. No instrument which is graduated in percentages of a supposed average normal individual can be utilized for making determinations at different ages without correction.

2. For the period of life from 15 to 70 years the same instrument cannot be used for determinations in both sexes without correction.

3. In order to make the comparison of results possible, it is imperative to use an instrument which reads in absolute terms, that is, which expresses its results in grams of hemoglobin per hundred c.c. of blood.

4. By comparison of the figures obtained from a given determination with the average for that age and sex, as shown by the table, an accurate idea can be had as to the actual deviation from the normal in the particular case in question.

One or two simple examples suffice to illustrate these points. Let us say that a mother who is 22, and a father who is 24, and two children, a boy of 1 year, and a girl of 2 years, respectively, all being average normal individuals, have their blood examined with any one of the instruments which is graduated on the basis of an average normal adult. An inspection of the table with reduction to percentages will make it evident that the values will be, father 100 per cent., mother 87 per cent., boy 1 year 74 per cent., girl 2 years 74 per cent. It thus appears that the mother is anemic to the extent of 13 per cent. and that both children are markedly anemic, to the extent of 26 per cent. This is assuming that the instrument is graduated so that the father shows 100 per cent. The fact is that the mother and both children have the amounts of hemoglobin which they should have for their respective ages and sex. The anemia is merely apparent, and due to the fact that the hemoglobinometer was not calibrated to read in absolute terms, and that the physician did not take the age and sex variation into consideration.

As regards the accuracy of calibration of the various hemoglobinometers in common use, the only point we wish to make is that it is extremely difficult to compare them with each other, since in many instances no statement is given as to what standard was used by them. Assuming that a given instrument has been properly standardized, as for instance by the spectrophotometric method, its scale should be so arranged as to read in grams of hemoglobin per hundred c.c. of blood. For ordinary clinical purposes it is, of course, quite unnecessary, even were it practical, to use so delicate an instrument and one requiring so much preliminary study as the spectrophotometer. Most of the better class of instruments will be fairly satisfactory as regards their ability to detect variations of sufficient amount to be clinically important. Their unsatisfactory character lies in the fact that the basis of standardization is an unsatisfactory one, since there is no such thing as a perfectly normal individual, with a particular concentration of blood, to which the concentration of all normal blood at all ages should conform. Whatever hemoglobinimeter is used it must read in absolute terms, and clinicians must accustom themselves to the variations in hemoglobin at different ages, and to the allowance for sex at certain periods.

ABSTRACT OF DISCUSSION

DR. THOMAS ADDIS, San Francisco: Dr. Williamson is to be congratulated on the accomplishment of this work, which is of fundamental importance, both from a physiologic and a clinical point of view. I should like to ask him two questions: first, what degree of variation he finds in adults in the different age groups, and second, whether he has any evidence that alteration in blood volume is an important factor in the variations of hemoglobin concentration at different ages?

DR. CHARLES SPENCER WILLIAMSON, Chicago: The question of Dr. Addis is quite appropriate, and I have touched on it in the full report. As I must speak from memory, it is hard to say just what the variations are, but I can indicate them more or less approximately. At birth the variations are 10 or 12 per cent., and in adult life perhaps as much as 15 per cent. The greatest variations are from 3 to 5 months, when they occasionally reach 16 or 17 per cent. The smallest variations occur in old people. As one gets past 70, for instance in institutions, the uniformity of the blood is remarkable.

I remember going over to the Jewish Old People's Home and getting several samples. I thought I had measured the first blood a second time, which was not possible because we had only sufficient blood in a sample to make a single examination. In the entire number from that institution there was not 5 per cent. variation. The variations in the prime of life, from 50 to 60, are moderate. The greatest variations are from 2 or 3 months to 1 year of age. This paper is intended as a preliminary report, but in the complete paper I shall append to these tables the variations in each group. I feel that having now acquired a standard, we are in position to say whether an individual in a given group is normal. As to speculation, I hope to carry on a few experiments, taking strong normal breast-fed infants who have low hemoglobin compared with adults, and then with iron see if we can make their blood increase in hemoglobin. For it is recognized that the blood will only take up a definite amount of iron. The low values found in children in this investigation have nothing to do with undernourished children. I have been at considerable pains comparing the thriving normal children from certain institutions with big, strong, sturdy children in private practice, and I have found these institution children average just a little more than the children in private practice. That was a distinct surprise to me, and were it not based on so many cases I would be inclined to call it into question.

Notification of Venereal Disease in Norway.—The London *Lancet* quotes from an article by Y. Ustvedt in the *Tidsskrift for den Norske Lœgeforening,* 1915, that venereal disease is notifiable in Norway, and during 1914 just over 2,000 cases of gonorrhea and syphilis were reported in its capital, Christiania, which has a population of about a quarter of a million inhabitants. The notification is made by medical practitioners and hospitals, and over 23 per cent. of those notified were males; over a third of all the notifications were made in the month of December, June being the month with the next largest number of notifications. There were 556 cases of syphilis, and it is noted that the infection was extragenital in 20 of these, 6 males and 14 females, the tonsils or lips being the seat of infection in 11. There were 38 new cases of congenital syphilis, and it is recorded that a special hospital for the treatment of this condition, with 20 beds, was opened in 1914 by the Oddfellows' Lodge of Christiania. It appears that in only 78 cases was the infection acquired in some other town, a low proportion in a harbor visited by so many seamen as Christiania. In 78 instances evidence as to the source of infection was given, sufficiently definite to cause special inquiry to be made, and in 60 of these the inquiry gave a successful result. The law allows punishment up to three years of imprisonment to be given to any person who exposes another to venereal infection while knowing or suspecting that he or she has venereal disease himself or herself; 9 men and 18 women were prosecuted under this law, and 2 of the men and 7 of the women were convicted.

TUBERCULOSIS OF THE FRONTAL SINUS

REPORT OF TWO CASES *

JEROME B. THOMAS, A.B., M.D.
PALO ALTO, CALIF.

Tuberculosis of the frontal sinus, judging from the published reports, is an extremely rare disease, only five cases having been reported at the present date. Tuberculosis of other nasal accessory sinuses is relatively more common but is likewise rare, though in recent years observations increase rapidly to the effect that a large proportion of cases of chronic sinusitis occur in the tuberculous though the sinus discharge may not contain the tubercle bacillus. In this connection Hajek[1] remarks that it is likely the tuberculous lymphatic constitution disposes to the chronicity of empyema and that postmortem findings agree with this experience, proving the relatively frequent occurrence of accessory sinus inflammation in the tuberculous. Gleitsmann[2] and Collet[3] have collected from several authors the reports of 310 postmortem examinations of tuberculous cadavers, in ninety-one of which there was found accessory sinus disease. As to tuberculosis of the accessory sinuses recognized in the living, Collet[3] remarks that it is a rare disease and that only thirty observations are known. To these Doerner[4] has recently added four more, bringing the total up to thirty-four.

PATHOLOGY

It is generally agreed that tuberculosis of the sinuses is secondary, in practically all cases, to a general tuberculosis, or localized tuberculosis of neighboring parts, or to both. For example, Gleitsmann, in a study of the reports of twenty cases of tuberculosis of the maxillary antrum, found that twelve followed tuberculous lesions of the nose, or upper maxilla, and that the majority of the patients suffered from pulmonary tuberculosis. In only eight of the twenty were tubercle bacilli demonstrated in the antral secretion.

Perforation of the sinus walls as a rule occurs during acute attacks of sinusitis, with damming back of discharge, pressure necrosis, and thrombosis of the small vessels. Osteomyelitis, or infection of the orbit or cranium may follow. In cases of long duration exuberant granulations, pus, cheesy and necrotic masses are usually present in abundance. Sections of the affected mucous membrane may show typical tubercles and giant cells.

With this preliminary reference to the subject of tuberculous sinusitis in general, I shall describe briefly the five cases of tuberculosis of the frontal sinus hitherto published, before reporting my own two cases, and thus make a complete record of the subject up to the present time. I take these data from the original reports, with the exception of Panse's case, which I take from Gleitsmann's excellent review.

Panse's[5] case: This was in a 16-year-old girl, who had been operated on several times for nasal polypi. One month after the last operation she suddenly became blind. Antiluetic treatment was negative. The frontal and sphenoidal sinuses were opened and necrotic bone removed. No tubercle bacilli were found in the sinus contents, but giant cells were found. Later a more extensive operation was performed on all sinuses. A short improvement was followed by death.

Necropsy revealed tuberculosis of the apex of the right lung, cervical and bronchial glands; destruction of optic nerve, and a tuberculous cheesy focus in the left parietal bone.

Frank and Kunze's[6] case: The patient suffered repeated attacks of acute frontal sinusitis for about a year, ending with swelling over the frontal sinus. The diagnosis was based on the family history, on the general tuberculosis of the patient, the character of the cheesy masses found in the sinus, and the cheesy foci in bone. The wound of operation healed completely in eighteen days.

K. Vohsen's[7] case: The patient was a woman, aged 47, who had nursed her tuberculous son during his long, fatal illness. She had attacks of frontal pain, but no intranasal signs. After three years of severe frontal headaches, a fistula appeared in a small, depressed scar over the left frontal prominence, the result of an injury during childhood. The fistula was found to connect with the frontal sinus full of cheesy masses; the walls were carious. The sinus was "curetted." There was no more frontal pain, but she died of pulmonary tuberculosis one year later.

H. Schenke's[8] case: The patient was a boy, aged 18. He had tuberculous glands and chronic tuberculous otitis media. A small swelling slowly developed over the upper part of the left frontal sinus. He had headache and a discharge of pus from the nose, also diplopia. A mastoid fistula was found and curetted. Operation on the frontal sinus showed destruction of the anterior wall, cheesy masses, and pus rich in tubercle bacilli. The left frontal sinus was wanting. Death occurred in a few weeks. Necropsy revealed an abscess of the left mastoid process extending into the cranial cavity by way of the occipital foramen.[2]

This case may be fairly considered one of primary tuberculous bone involvement.

D. Doerner's[4] case: The patient was a woman, aged 31, with complete obstruction of the left naris during eighteen months, and left frontal headaches. The left naris was filled by a grayish-red mass, easily bleeding. Cheesy masses were washed from the antrum. There was an old healed lesion of the apex of the left lung. Wassermann's test was negative. A small fistula was found over the tear-sac. All sinuses and the septum nasi were involved; the diseased portions were removed by a very extensive operation. The mucosa of the frontal sinus was covered with fungoid granulations. Pain and nosebleed ceased. Recovery occurred in a short time, and there was no recurrence of the disease at the time the case was reported, seven months after operation.

REPORT OF AUTHOR'S CASES

Case 1.—Chronic frontal sinusitis, with perforation of the outer table in which operation was followed by recovery. The patient, Mrs. N. A. B., aged 47, attended her mother during the last years of a slow phthisis.

Previous History.—Both mother and grandmother died of tuberculosis. In 1899 the patient bruised her right, big toe against a door. This was followed by pain, inflammation and chronic suppuration, which was ended after ten months' duration by resection of the terminal phalanx of the toe.

The patient had Pott's disease of the spine at the junction of the dorsal and lumbar region, during 1901, and wore a spinal brace from January to June, 1902, after which she

---

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Hajek, H.: Pathologie und Therapie der Nebenhöhlen der Nase, 1909, pp. 10 and 414.

2. Gleitsmann, J. W.: Tuberculosis of the Accessory Sinuses of the Nose, Laryngoscope, 1907, xvii, 445. Gleitsmann's paper contains a bibliography on the subject up to 1907. I have appended to my report references to papers that have appeared since 1907 and a few previous to that date, collected by Collet and not given by Gleitsmann. For the sake of making my report complete, I have included the four titles of papers on tuberculosis of the frontal sinus, which appeared also in Gleitsmann's bibliography.

3. Collet, M.: Tuberculose des sinus de la face, Lyon chir., 1912, viii, 518.

4. Doerner, D.: Ueber Tuberculose der Nasennebenhöhlen, Arch. f. Laryngol. u. Rhinol., 1913, xxvii, 446.

5. Panse, R.: Ein Fall von Kiefer und Keilbein Tuberculose mit tötlichen Ausgang, Arch. f. Laryngol. u. Rhinol., 1901, xi, 478.

6. Frank, J., and Kunze, S.: Tuberculosis of Frontal Sinus, New York Med. Rec., Nov. 3, 1894.

7. Vohsen, K.: Durchleuchtung der Highmonshöhle und des Sinus Frontalis zur Diagnose ihrer Erkrankungen und Operativen Behandlung, Verhandl. X internat. Med. Kong., Berlin, 1890, iv, Part 12, p. 33.

8. Schenke, H.: Ueber die Stirnhöhlen und ihre Erkrankungen, Dissertatio, Jena, 1898.

spent a year in bed. A psoas abscess of the left side was opened about May, 1904, and continued to discharge for two months. No further manifestations of Pott's disease occurred except the resulting spinal deformity. She had a severe cough and was much emaciated at the time of the attack of Pott's disease.

In May, 1912, about four months before consulting me, the patient suffered severe pain in the midfrontal region, a little to the right of the median line, which was followed and relieved by a mucopurulent discharge from the right nostril.

Sept. 16, 1912, there was an acute outbreak of the frontal sinusitis with fever, severe pain, edema of the lids, and a red, tender elevation about 2 cm. in diameter, in the center of the forehead. The patient had borne the pain for several days and permitted the inflammation to extend, rather than submit to operation.

Operation.—Sept. 21, 1912, the right frontal sinus was opened at its nasal third and a large amount of thick mucous membrane and débris was curetted from the sinus and nasofrontal duct. The outer table of the frontal bone was perforated by an erosion about 1 cm. in diameter. The edges of this were curetted. Drainage was maintained through the nasofrontal duct, and a tube was inserted from a counter opening in the skin over the frontal erosion down through the inner angle of the wound.

This operation was soon found to be insufficient, and the only excuse for stopping short of a radical resection was a desire to avoid extensive deformity of the patient's face, and the hope that all the diseased tissue could be removed through a small opening into the sinus.

Second Operation and Result.—After several months of comparative comfort, during which, however, there continued a chronic discharge from the wound, in January, 1913, I operated after the method of Kuhnt, making a vertical incision in the center of the forehead from the inner end of the horizontal incision, up to the area of bone destruction, and dissecting back a triangular flap of skin and soft parts. Most of the outer wall of the right sinus was removed and all remaining mucous membrane lining the sinus was curetted away. The sinus was very large, extending from 2½ to 3 cm. above the supraorbital arch and outward nearly to the external angular process of the frontal bone. There was no communication with the left sinus, which transillumination showed to be equally large, but clear and bright. No further destruction of bone had occurred since the first operation; there was, however, an effort at repair about the curetted edges of the perforation. All other walls of the sinus appeared healthy after removal of the mucous membrane. The wound was packed open with iodoform gauze and allowed to heal from the bottom.

At the end of two months the sinus was filled with healthy granulations, except a few large flabby ones at the inner angle of the wound. The scar was depressed at the inner and lower angle; but there was surprisingly little deformity, considering the extent of the tissues removed; a plastic operation would doubtless lessen the deformity still more. A few drops of pus discharged at times from the inner angle.

At the time of writing (May, 1915) the patient is in good general condition, is of normal weight, and the fistula at the lower angle of the scar over the sinus has been closed for about eighteen months. A small quantity of mucopus drains daily from the anterior ethmoidal region into the right naris. No tubercle bacilli were found in the discharge, of which about 10 c.c. have been examined by the antiformin and sedimentation method.

To make the operation a complete success a submucous resection of the nasal septum, with removal of some of the anterior ethmoidal cells should be done, but has not been urged because the patient feels well, does her daily work with comfort, and has only a slight nasal discharge.

There was no history of lues in this case, and a Wassermann blood test made in January, 1914, by a competent pathologist was practically negative; a suspicious reaction in the most sensitive tube being explained by the anticomplementary condition of the blood specimen.

No animal inoculation with pus from this case was made; but in view of the family history of the patient, her previous attacks of wasting cough and chronic bone disease, the negative Wassermann, and the character of the material curetted from the sinus, I believe we are justified in regarding the frontal sinusitis as a tuberculous process.

CASE 2.—Tuberculous frontal sinusitis, with osteomyelitis, epidural, subdural and cerebral abscesses resulting in death, a necropsy being held.

The patient, J. V., a man, aged 30, consulted me March 24, 1913, for frequent pains in his temples and in the frontal region, occurring at shorter intervals during the past five months. An extensive intranasal operation was done two years ago.

Present Condition.—No tenderness on pressure or tapping over frontal sinuses exists now, but this sign was present several days ago. Temperature 101, pulse 120. He is pale and thin but has no nausea or vertigo.

Nasal Examination.—Offensive pus exuded from both middle and upper nasal fossae. Both middle turbinates had been resected, and there was a large hole in the nasal septum. Polyps were seen at the entrance to each nasofrontal duct. Both antrums and frontal sinuses were very dark on transillumination, and there was a probable pansinusitis. The patient refused to submit to further operations and returned to his home. I saw him a few times with his family physician, from whose notes I take the balance of the history.

The patient had advanced pulmonary tuberculosis. A Wassermann blood test, made March 26, was negative.

April 4 to 7: Temperature 98.8 to 101.8. Severe frontal headache is present. An abscess is pointing in the frontal region. A large quantity of pus is discharged daily from the nose.

April 8: The patient is sweating, and has noisy delirium.

April 10: The frontal abscess has been incised.

April 19: The temperature ranges from 97 to 100.4. There is headache and swelling over the left ear.

May 6: The first convulsion, lasting seven minutes, occurred.

May 7: Six convulsions occurred during the night, from 5 to 25 minutes apart. There is right hemiplegia.

May 8, 9 and 10: Temperature from 101 to 102.8. Convulsions occurred every few minutes, lasting from one-half to five minutes.

May 11: Death.

A guinea-pig was inoculated with pus from the frontal abscess, incised April 7, with positive results, a postmortem examination of the animal, revealing marked general tuberculosis.

Necropsy.—At necropsy, May 12, only a partial cranial resection was permitted. The anterior bony wall over the left frontal sinus and over one-third of the right sinus was entirely destroyed, leaving an opening in the frontal bone about 5 by 7 cm. No vestige of bony septum existed between the sinuses. Extensive erosion of frontal bone was found, extending from the edges of the opening. All the posterior bony walls of both frontal sinuses were destroyed, except two thin, sieve-like sequestra from 12 to 18 mm. in diameter, adhering to the meninges, islets of soft bone in a lake of pus. Pus had burrowed under the scalp back to the left parieto-occipital region. The meninges were very thick. On opening the dura, there was a large amount of pus on the surface of the left frontal lobe; the dura was not adherent to the surface of the brain. After wiping away the superficial pus, from 60 to 100 c.c. welled up from a deep incision into the left parietal lobe. No communication was found between the epidural and the subdural spaces.

CONCLUSIONS

There are several factors that tend to protect the frontal sinus from tuberculous infection, including such common factors as the cilia, mucus, tears and the bactericidal action of the mucous membrane, supplemented by the high position and natural drainage of the frontal sinuses. However, a study of the statistics of sinus disease observed in bodies dead of

tuberculosis strongly suggests the probability that tuberculous sinusitis does occur much more frequently than it is recognized.

The diagnosis depends on careful bacteriologic examination of the sinus secretion in suspected cases, securing as large a quantity of secretion as possible and using sedimentation. The so-called antiformin method is a good one. Animal inoculation should be resorted to if the simpler methods fail, care being taken to remove the secretion directly from the sinus if possible, to avoid accidental tubercle bacilli present in the nose.

Tuberculin may serve as a valuable diagnostic aid, though I have seen no reference to its use for that purpose.

In more advanced forms of tuberculous frontal sinusitis, the middle turbinal and adjacent ethmoid cells are apt to be involved and sections of mucous membrane or fungoid growth may demonstrate typical tubercles or giant cells. Fungoid and cheesy degeneration of the lining of the sinus, even in the absence of demonstrable tubercle bacilli, has a high diagnostic value.

The symptoms do not differ from those of simple chronic sinusitis until advanced bone involvement or general tuberculosis add their factors to the symptom-complex.

A history of previous bone disease in a tuberculous subject suffering from chronic sinusitis should lead one to suspect the bony walls of the sinus. A negative Wassermann reaction of course lends great weight to the differential diagnosis.

CEREBRAL COMPLICATIONS OF FRONTAL SINUSITIS

Hajek[1] states that the commonest cerebral complication in empyema of the frontal sinus is brain abscess. Of the eighty-eight cases in Dreyfuss' statistics of cerebral complications, not less than thirty-three were brain abscess, with or without meningitis, and abscess of the temporosphenoidal lobe occurred once. Postoperative meningitis has become an occasional complication since the introduction of the radical operation on the frontal sinus. However, only ten such cases are reported as undoubted in the revision of Dreyfuss.

Unfortunately, in my case, the incomplete necropsy prevented our localizing the cerebral abscess accurately, but it was in the parietal region near the horizontal ramus of the fissure of Sylvius. Owing to the advanced stage of bone destruction it was not possible to determine the route of cerebral infection.

TREATMENT

This should be early and surgical. If the anterior wall is perforated, practically the entire wall must be removed in order to eradicate all diseased tissue. Kuhnt's triangular incision accomplishes this result most effectively in a large sinus with bone destruction. Killian's incision is too low freely to expose the diseased areas under such conditions. If necrosis of the posterior wall of the sinus is found, the dura should be exposed, and if diseased, circumstances must determine whether or not it must be opened to search for deeper complications.

ABSTRACT OF DISCUSSION

DR. J. A. PRATT, Aurora, Ill.: I would like to report one case that was secondary to a primary local infection. A young woman came with some irritation there, and with all symptoms of tuberculosis of the lung. The sputum was examined and tubercle bacilli found; but later she developed an acute frontal sinus condition, which I was able to wash out by removing the anterior part of the middle turbinate. She was put on tuberculin, lived for two years, and then died of tuberculous peritonitis.

DEFECTS OF THE SINGING VOICE DUE TO NASAL AND ACCESSORY SINUS DISEASE*

JOHN J. McLOONE, M.D.
PHOENIX, ARIZ.

The subject of voice production from both the physiologic and pathologic standpoint has been a matter of more or less discussion among both laryngologists and teachers of singing. Some lay a great deal of stress on one phase of the subject, passing over lightly or ignoring other factors equally important. To enter into a description of the various details which distinguish good from poor singing is beyond the scope of this paper. However, in confining myself to the part played by the nose and accessory sinuses in the art of vocalization, I do not in any way wish to minimize other requirements which the singer must possess if he would make his song melodious to the human ear.

Voice is a complex mechanism, depending for its production on a motor element supplied by the lungs, a vibratory element supplied by the larynx, and a resonant element which is derived from the cavities of the chest and head. We have, therefore, as the result of the physiologic action of these organs on the air blast, three fundamental attributes of voice, namely: intensity, pitch and resonance.

The vocalist must adhere to certain scientific principles, if he wishes to reach the higher art standards. Properly functioning vocal organs, as well as a practical understanding of their use, must form the working basis and foundation of truly artistic singing. As there is a close physiologic relationship between the various parts of the vocal apparatus, it can readily be seen how a pathologic condition of the one may easily affect the function of the other.

An old Italian master has said that he who knows how to breathe, knows how to sing. In making this remark, he probably had in mind the development of the respiratory organs to a high degree of efficiency. Breathing for singing purposes is a considerable amplification of the ordinary act of respiration. Sufficient lung capacity and power must be possessed by the singer to insure the proper amount of air intake as well as the exercise of control of the expiratory blast. Whatever may be said of the merits of the different methods of breathing for vocal purposes, the respiratory function of the nose must be conceded as occupying an important place in each. Sir Morell Mackenzie[1] remarks in this connection: "It can hardly be necessary to say that the breath must be taken in noiselessly. Nothing can be more distressing than the gasps which often break a flood of vocal melody, like the creaking of the bellows of an organ. The air should be drawn in by the natural channel, which is the nose; the mouth

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Mackenzie, Morell: Hygiene of the Vocal Organs, New York, E. F. Werner, 1899.

being used only as a subsidiary passage when absolutely necessary."

A nasal lesion obstructive in character is a serious handicap to the singing voice, inasmuch as it interferes with the respiratory act and results in diminished intensity as well as range. Dr. Ricardo Botey reports some cases of singers who after operation for their nasal affection increased their respiratory capacity 300 to 500 cm. and added two or three notes to their upper register.

A predisposition to a subacute laryngitis and more frequently to a chronic pharyngitis often follows in the wake of an antecedent nasal disease. This is partly due to impairment of one of the main functions of the nose, which is to warm and moisten the inspired air, and partly to the presence of irritative postnasal secretions coming in contact with the pharyngeal wall, as the result of an accompanying sinusitis. One of the usual manifestations of a chronic pharyngitis is a huskiness and fatigue of the voice after slight use. These latter are among the more salient symptoms to which our attention may be drawn by the patient suffering from vocal troubles. A little less than a year ago I was consulted by a vocal student whose chief complaint was a more or less constant sense of irritation in the throat, much increased after using the voice. Persevering application in vocal culture for the previous year, under a competent instructor, had been almost barren of results. Examination of the throat revealed a granular pharyngitis. Intranasal examination showed the usual signs of a chronic hypertrophic rhinitis. The nasal septum was deflected high up on the right side with a bony ridge on the lower left side. Further questioning elicited a history of frequent colds with a consequent increase of nasal stenosis and postnasal dropping. A submucous resection of the septum was performed, for the purpose of establishing sinus drainage and ventilation. The turbinal turgescence gradually disappeared shortly after operation, as did also the pharyngitis with a short course of local treatment. This voice, previous to operation, was thin, weak and lacking in resonance. As the patient put it, "There was no place for the tones to go." Following the correction of the nasal trouble, the voice became gradually stronger. At present the range has increased from about one and one-third to two and one-half octaves. The volume has markedly improved with a decided gain in resonant quality. I have mentioned this case in order to bring to mind the etiologic relationship of intranasal defects to one of the most prevalent pharyngeal affections among singers. Ballenger claims that a chronic rhinitis and especially sinusitis, affecting the posterior ethmoidal cells and sphenoidal sinus, is very frequently the chief cause of a chronic pharyngitis.[2]

In order that the voice may be pleasing to the ear, it is necessary that the vibrations, produced by the action of the vocal cords on the expiratory blast, be reinforced by sound waves from the cavities of the chest and head. The fundamental tone would be wanting in resonance and volume, were it not for the sympathetic echoes, derived from certain spaces above and below the glottis, which are given the name of the vocal resonators. Above the larynx, these are: the supraglottic space, the pharynx, the epipharynx, the mouth, the nasal passages and the sinuses of the skull. They act on the fundamental tone produced by the larynx in such a way as to develop overtones which give color or timbre to the vocal sound. The resonant element in a large measure determines the beauty and charm of the singing voice. We are here principally concerned with the part played by the nose and accessory sinuses as vocal resonators.

That they have an important bearing on artistic vocalization can be readily appreciated by noting the absence of one of the most agreeable qualities of the voice, which results from nasal occlusion or sinus obstruction. A diminished sweetness and purity of tone will be especially marked, when the voice is used in the upper register. Sir Morell Mackenzie[3] claims that *timbre* is largely dependent on physical structure and is no doubt often inherited. He refers to the aborigines of New Zealand, in whom the sinuses of the skull are poorly developed, as having voices remarkably deficient in resonance.

There is a difference of opinion as to the manner in which the reinforcement of the fundamental tone is effected by the sound waves, which are set into vibration in the resonating chambers of the head. The mode of action of the soft palate as a nasopharyngeal valve in the production of the higher tones, as well as in the enunciation of nasal and nonnasal sounds, has been a subject of close observation by various investigators. Thrasher[4] is inclined to the belief that there must be at least a small opening between the soft palate and pharyngeal wall, "otherwise the vibrations must pass through the velum palati, which is a thick muscular curtain, and apparently poorly adapted to act as a vibrating medium." Frank Miller[5] has shown that in the production of overtones the palatine muscles are arranged in such a way that an air space exists on either side of the median raphe, which regulates nasal resonance.

Passavant has demonstrated a fold or ridge formed by the musculature of the posterior pharyngeal wall. This ridge serves to supplement the action of the soft palate toward making its closure more absolute. He claims that it appears only during the vocalization of nonnasal sounds. Froeschels[6] also undertook some experiments along the same line and gives roentgenograms of the skull, taken during the enunciation of different sounds. He found a ridge similar to that described by Passavant, but it appeared with nasal as well as nonnasal sounds. It was formed at the line of articulation between the pharyngeal wall and velum palati. Its thickness varies, averaging from 3 to 4 mm. As it appeared also during nasal sounds, its function cannot be to produce occlusion.

The action of the soft palate in regulating vocal resonance as well as in the proper enunciation of different sounds, is dependent on its degree of mobility. As this organ is largely under the control of the will it is amenable no doubt to a high degree of training. Its function may be interfered with by adenoid vegetations or such other postnasal obstructions as hypertrophy of the posterior portion of the inferior turbinates, or polypoid growths. An irritating postnasal secretion, due to a chronic rhinitis, is a frequent cause

2. Ballenger: Diseases of the Nose, Throat and Ear, Philadelphia, Lea and Febiger, 1914, p. 351.

3. Mackenzie, Morell: Hygiene of the Vocal Organs, p. 44.

4. Thrasher: The Effect of Intra-Nasal Obstructions on the Singing Voice, Lancet-Clinic, 1892, xxiv, 484.

5. Miller, Frank: Vocal Art Science from the Standpoint of the Use and Abuse of the Voice, Laryngoscope, 1913, xxiii, 39.

6. Froeschels, Emil: Ueber die Klangverhaltnisse in der Nase beim Sprechen und Singen und über das Vorkommen und die Bedeutung des Passavantschen Wultses, Arch. f. Laryngol. u. Rhinol., 1911, xxv, 420.

of a relaxed condition of the soft palate resulting in an impairment of its function for the singing of the softer and medium tones. Miller claims that as the palatal muscles "have a typical natural quality in tone production, on derangement they produce false sounds easily detected by the ear. If the levator or tensor palati become relaxed, the tone will have a relaxed sound. Should the palati pharyngei become relaxed or stretched, the top of the tone will seem to have a hollow sound.[5] Professor Bárány distinguishes two kinds of rhinolia clausa, one due to changes in form within the nose and nasopharynx, and the other to irritation of the velum palati. He gives these the names of rhinolalia clausa nasalis and rhololalia clausa palatina. As the result of interference with the tractability of this organ, the beneficial effect of the nasal-accessory sound is often lost and there is an absence of sonority in speech and song.

It is hardly necessary to mention the various intranasal deformities which interfere with the functions of the nose and accessory sinuses, and either directly or indirectly give rise to some defect of voice. Deviations of the nasal septum, hypertrophy or hyperplasia of turbinates, polypoid growths and adenoids are among the most frequent pathologic conditions which we encounter.

There are quite a number of cases on record, of singers, who after the correction of their nasal troubles, have gained not only a voice of better *timbre* and have added richness and volume to their tones, but have even increased their vocal compass two or three notes. The amount of benefit to be derived from intranasal surgery for the correction of vocal defects, must of course be measured according to the degree of nasal stenosis present, as well as the relative position of the obstruction. Its character and its location in the nares determine to what extent the respiratory, phonotary or resonant function of nasal origin may be affected. Those pathologic conditions which render the nasal passages impervious and at the same time interfere with the proper adjustment of the palatal muscles, are perhaps the most detrimental to the singing voice.

A slight septal deflection disadvantageously placed may result in a marked lessening of vocal quality. I have frequently been impressed with the deficiency of resonance in singers, while using the voice in the upper register, which could be traced primarily to a high deviation of the septum. An accompanying hypertrophic rhinitis, with narrow nasal passages, no doubt contributed to an increase of vocal difficulties in three cases which I have in mind. In two of these patients, one a tenor, the other a mezzo-soprano, correction of the septal deformity resulted in an increase of range of voice and a marked improvement in the resonant quality. The third case to which I refer, is that of a vocal teacher, whose chief complaint was an inability of achievement of a sufficient degree of resonance for his upper tones, to which he as a tenor naturally aspired. Examination of the nose disclosed a high deviation of nasal septum on right side, with a thickening of the vomer, which impinged against the left inferior turbinate. Removal of septal obstruction, although not increasing the range of voice, resulted in a most beneficial effect on resonance and volume. A greater ease of production was enhanced by an added richness and sweetness of tone in the entire compass of the voice.

I have endeavored to point out briefly in this paper a few of the more prevalent voice defects, with their relative etiologic bearing on nasal and sinus disease. As the vocal apparatus is intricate in its physiology, diseased conditions which at first sight give the appearance of pathologic entities, will on closer investigation often prove to be the source of functional impairment, in a part of the mechanism, farther removed. There are other elements of a more ethereal nature, on which I have not dwelt, that have to do with artistic singing, and which are essential to successful vocal attainments. The acquisition of these will depend on individual adaptability as well as correct training in voice culture, and in no small measure on the possession of properly functionating vocal organs.

215 O'Neill Building.

INVOLVEMENT OF THE URINARY TRACT AS A RESULT OF FOCAL INFECTIONS IN CHILDREN *

CLIFFORD G. GRULEE, M.D.
AND
F. W. GAARDE, M.D.
CHICAGO

During the past year and a half we have been observing cases of hematuria which seemed to us to have a distinct clinical history. These have not been numerous, but they have occurred, perhaps, oftener in the last six months than previously, and there seems to us to be a distinct sequence of symptoms, and a clinical history and laboratory findings which might be regarded as distinctly significant. For this reason we present the following cases which typify this condition.

Case 1.—William M., aged 3½ years, about one week previous to entrance into Mercy Hospital on Jan. 9, 1914, had been taken ill with a severe cold and an acute tonsillitis, with a temperature of 105 F. This temperature had subsided, the child showing no other symptoms until the day before entrance, when the temperature again rose and the urine was shown to be distinctly bloody. This was so bloody, in fact, as to suggest a hemorrhage into the bladder, such as might be caused by a renal or vesical calculus, or in some instances by tuberculosis. During this time he had a severe dry cough and some difficulty in swallowing. During the previous winter he had had a bronchitis and croup. During the period in the hospital, which lasted six days, the temperature ranged from 101 to 102 F., gradually falling to normal on the day on which he left. On entrance, the urine was found to contain a large amount of blood, some pus, and some blood casts. This gradually changed until the blood had practically disappeared and the pus was present in abundance, the urine clearing up within two weeks after leaving the hospital. There has been no further recurrence of this condition, although specimens of urine have been examined at repeated intervals since. The blood showed a leukocytosis of 21,000, the reds being 4,000,000 and the hemoglobin 80 per cent. The treatment consisted of hexamethylenamin, 1 grain, and sodium salicylate, 3 grains, every three hours for four doses, the day after entrance. Fischer's solution was given rectally by the drop method. The child made an uninterrupted recovery. The quantity of urine on the day after entrance was 410 c.c. During the twenty-four hours previous to departure, the quantity of

* Read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

urine increased to 4,015 c.c. A culture made from the urine showed *Staphylococcus albus*. The test for tubercle bacilli was negative.

CASE 2.—Christopoulas A., aged 24 months, entered Presbyterian Hospital, Chicago, March 23, 1914. The child had been healthy up to two days previous to admission, when it suddenly developed a fever and simultaneous swelling on the left side of the neck. The mother noticed that the urine at that time was dark and smoky. The child vomited once or twice at the onset. When examined the child was normal, except for an enlarged actively infected tonsil and a few palpable glands in the neck. His temperature on admission was 102 F., and for the first few days ranged from normal to 104 F. Hemoglobin ranged from 75 to 80 per cent.; reds, 4,600,000; whites, 19,600 (polymorphonuclear leukocytosis). The urine on repeated examination showed serum and nucleo-albumin present, a few hyaline and granular casts, and many red blood cells in the uncentrifuged specimen. The urine culture showed *Staphylococcus albus*. The blood culture was negative. The treatment consisted of rest, bland diet, and urinary antiseptics. At the end of eight days under this treatment, the temperature was normal. The blood had appreciably diminished in the urine, and the throat infection had markedly subsided.

CASE 3.—Sam S., aged 6, entered the Presbyterian Hospital, Dec. 7, 1914. For the month previous to entering the hospital, the child had had a sore throat and for the two weeks previous to entrance had had a discharge from the left ear. There had been some pain in the left side of the head for the past three days. The past history of the child was negative, except for repeated attacks of sore throat. The child remained in the hospital seven weeks. During that time the temperature ranged from 98 to 100 F. The pulse was 88 to 102. The blood examination showed hemoglobin 85 per cent., red cells, 4,720,000; whites, 15,350 (polymorphonuclear leukocytosis). The urine on repeated examination showed serum albumin and nucleo-albumin, granular and hyaline casts, a moderate number of red cells and leukocytes. The physical examination was completely negative, except for an otitis media and a subacute tonsillitis. The otitis media was treated locally by irrigations, hexamethylenamin and sodium bicarbonate, given alternately for five weeks, but at the end of this time the urinary disturbance had only partially cleared. There was still present some albumin and casts, and not a few red cells. At this time the tonsils and adenoids were removed. Following this procedure the abnormal findings in the urine rapidly diminished. At the end of one week the urine showed complete absence of albumin, casts and red blood cells. The urine culture was negative; the blood culture showed *Staphylococcus albus*.

CASE 4.—Francis L., aged 3½ years, entered the Presbyterian Hospital, Feb. 5, 1915. The child had had a severe coryza for a month, and one week before admission to hospital this became more acute and his temperature rose to 100 F. Six days after the onset of this condition, the urine was found to be tinged with red. There was nothing else of importance in the past or family history. On physical examination, nothing was found except the watery discharge from the nose and enlarged infected tonsil. This child remained at the hospital for seven weeks, during which time the temperature varied between normal and 100 F. In the early stage the blood showed a hemoglobin of 88 per cent.; red cells, 5,000,000; whites, 26,900. The urine on repeated examination showed nucleo-albumin and serum albumin, many hyaline and granular casts, many leukocytes and red blood cells. When he was discharged from the hospital, the boy's urine was absolutely normal. A blood culture showed nonhemolytic streptococci. The urine culture showed streptococci producing a small zone hemolysis.

CASE 5.—Willis A., aged 5, entered the Presbyterian Hospital, April 26, 1915. The child had a sudden onset of severe tonsillitis, and complained bitterly on swallowing food. He had a high temperature for two or three days. On the sixth day he had apparently recovered. On the seventh day, the fever again rose and the mother noted that every specimen of urine voided was tinged a bright red. Previous to the tonsillitis the child had been in perfect health. Physical examination showed nothing, except the throat findings and slight systolic murmurs. The pharynx was a bright red. The tonsils were enlarged and showed marked evidence of an acute cryptic infection. The temperature on admission was 104 F. This gradually decreased to normal by the seventh day. As to the blood, the reds were normal, the whites were 18,200. Urine examination showed nucleo and serum albumin, many red blood cell casts, and myriads of red blood cells in the uncentrifuged specimen. The urine culture showed *Staphylococcus albus* and *Streptococcus hemolyticus*. A throat culture showed *Staphylococcus albus* and *Streptococcus hemolyticus*. The child left the hospital ten days after admission and a specimen obtained on May 22 showed perfectly normal urine, the general condition of the child being normal. Treatment in this case consisted of urinary antiseptics in the form of hexamethylenamin, 2 grains three times a day.

CASE 6.—Herbert C., aged 6, entered the service of Dr. Shambaugh at the Presbyterian Hospital on May 1, 1915. Two weeks previous to entrance, the right ear had begun to discharge. Two days later the left drum membrane was punctured and a purulent discharge resulted. Ten days before the ears began to run the child had had measles. The discharge from both ears had lessened during the two days previous. A mastoid condition developed the day before entrance. At that time the uncle, who was a physician, noticed that there was albumin and blood in the urine. During two weeks previous to entrance the child had a temperature of 98 to 101.6 F. Physical examination showed nothing further than the involvement of the ears with some slight puffiness under the eyes. The lungs, heart and abdomen were negative. On the day of entrance, the child was anesthetized, the mastoid cells were drained, the lateral sinus being exposed. The hemolytic streptococcus was isolated from this abscess. The temperature came down to normal on the fifth day, and remained so during the rest of the time of the hospital stay. The urinary findings on entrance were: serum albumin ++, no casts, many erythrocytes and leukocytes. On the following day, nucleo and serum albumin were present in large amounts, as were hyaline and granular casts, the number of erythrocytes being somewhat reduced. By May 4, the urine had absolutely cleared up. On May 2, the white cells numbered 30,850. On the next day these were reduced to 28,600. The urine culture was negative on the third day.[1]

A review of these six cases shows that in every case the acute attack of hematuria followed some infection of the nasopharynx or tonsil. In two of these cases recovery was almost immediate, following, in the one instance, the removal of the tonsil and, in the other, the drainage of the mastoid. In two cases the culture from the urine was negative; in both of these the culture was made several days after the onset of the condition. In two of the other cases the *Staphylococcus albus* was found, one a streptococcus producing slight hemolysis, and in the other a *Staphylococcus albus* and a *Streptococcus hemolyticus*. The blood

1. It was impossible to obtain reliable blood cultures on all these children, sometimes because they were so young, and also because of parental objection. The method of blood culture employed was that of Rosenow.

Fifteen to 30 c.c. of blood are drawn from a vein and decalcified by adding a solution of 2 per cent. sodium citrate in sodium chlorid solution, in the proportion of 5 c.c. of blood to 1 c.c. of solution. The citrate of blood then lakes with ten times its volume of sterile water. With sterile precautions it is transferred to large centrifuge tubes of 25 to 30 c.c. capacity, and centrifuged at high speed for twenty minutes. This throws down a fine sediment which will contain any bacteria present. The supernatant fluid is then decanted, which serves as a means of getting rid of the hemoglobin and serum. In this way we probably eliminate certain of the immune bodies which would retard the growth of bacteria. The sediment is taken up in a few c.c. of sterile broth and shake cultures are made in tall columns (10 to 20 cm.) of ascites dextrose (1 per cent.) agar, on blood agar slants and plates, Loeffler's serum, broth and ascites broth. Aerobic and anaerobic cultures are made on each kind of medium. Blood cultures by this method have been positive in many instances in which the ordinary methods have failed repeatedly.

culture in one instance showed an organism similar to that found in the urine. When taken, the organisms obtained on the cultures from the throat showed a great similarity to those obtained in the urine. It is significant that five of these cases occur in boys, varying in age from 2 to 6 years. As to the clinical picture, the following may be said: With the exception of one case, the tonsillitis which preceded the condition had practically subsided before the appearance of the hematuria. With the exception of this case, the tonsillitis preceded the hematuria six or seven days. The hematuria came on suddenly and was accompanied by albumin and casts. In general, it showed a tendency to rapid remission, so that within two or three weeks the urine was clear. There seemed to be a tendency for the leukocytes in the urine to increase in number with the disappearance of the red cells, which in turn disappeared. The temperature was high and irregular in the acute stages, coming to normal with the disappearance of the urinary findings. There was practically no disturbance of the general condition of the patient, the amount of prostration being surprisingly slight. There was no edema in any of these cases, except for a very slight swelling of the eyelids in the case which followed the mastoid involvement. In none of the cases was there a history of the giving of drugs, such as hexamethylenamin, which might produce temporary hematuria.

The blood showed a very slight anemia in all cases, the reduction in the hemoglobin of the red cells being so slight as to be negligible. In all cases there was a distinct leukocytosis of the polymorphonuclear variety. This varied between 15,000 and 30,000.

We have had to do here with some form of acute nephritis of a hemorrhagic type. The rapid recovery without the appearance of secondary symptoms seems to us to be quite characteristic. That the condition is not one of the acute hemorrhagic nephritis following a mild case of scarlet fever the following points confirm:

1. In none of these cases was there such edema or pallor as is so characteristic of the scarlatinal nephritis.

2. In none was there a uremic condition, or anything simulating uremia.

3. In spite of the fact that these children were in contact throughout the course of their trouble with children of their own age, both in the wards and in the homes, there is no instance in which scarlet fever developed.

Very little definitely can be said concerning treatment. In view of the fact that so many of the cases showed positive urine cultures, it was thought wise to give urinary antiseptics. There is some reason to doubt whether such antiseptics were of much value in the treatment, but it is altogether likely that they at least did no harm. Fisher's solution was made use of in two cases. In one case the effect was very slight, in the other the urine was already clearing up after the mastoid operation before the solution was given. Removal of a focus of infection brought excellent results.

CONCLUSIONS

1. There is a form of acute hemorrhagic nephritis occurring in children which usually follows six or seven days after an acute tonsillitis, and is accompanied by high rise in temperature and hematuria.

2. In some cases the removal of a focus of infection is followed by immediate clearing up of the urinary findings. In many instances cultures from the blood and from the throat agree very well with the urinary cultures.

ABSTRACT OF DISCUSSION

Dr. W. D. Ludlum, Brooklyn: I am surprised at the small doses of hexamethylenamin that Dr. Grulee uses. From 35 to 75 grains a day are necessary if it is to be of any value in rendering the urine antiseptic. Enough must be given to provide an efficient concentration of formaldehyd in the urine. These small doses do not supply that.

Dr. Frank C. Neff, Kansas City: Dr. Grulee's paper shows the importance of locating the focus of infection, and this is especially important in cases that do not respond to therapy with hexamethylenamin and similar drugs. One is apt to conclude that urinary infection is the primary and only condition present, when it may be only one feature of a general infection. One sees this frequently with acute intestinal disorders in infancy.

Dr. L. T. Royster, Norfolk: I would like to ask if any one is getting good results from the vaccine treatment in cases such as Dr. Grulee reported, and whether any one has had experience with acid sodium phosphate for acidulating the urine. All those from the East know that there is a vast amount of discussion with reference to the diarrheas of summer, and it has been brought out that a certain number of cases present exacerbations after the blood and mucus have disappeared from the stools and the physical examination of those cases will be negative. One should always examine the urine in the early stages of an infectious diarrhea, and, moreover, one should examine two or three specimens before concluding that there is no trouble there. Examining specimens every two or three days to a week apart, one will find a number of cases of pyelitis and the laboratory tests will show that there is a colon bacillus infection. This is but one interesting feature of the part played by the colon bacillus in infectious diarrhea.

Dr. C. G. Grulee, Chicago: As to the hexamethylenamin perhaps Dr. Ludlum is correct in his general theory, but it will not work out in practice. The hexamethylenamin will not be broken up in large quantities. More than two or three grains will not be broken up. It is difficult to prove just how we get results from the small amounts, but I have found that the urine clears up equally well after small doses, and the large doses may be responsible for hematuria. As to Dr. Royster's remarks, they were directed to a condition different from that referred to in the paper; it did not refer to colon bacillus pyelitis. In some of the cases I found nothing definite, but I got no colon bacilli from the blood or urine. As to the acid sodium phosphate treatment, that has no relation to these cases, but is adapted to the colon bacillus pyelitis. In the latter condition we have prepared vaccines and used them wherever possible, but never with any particular success in the acute stages. In subacute cases we have used them as a protective agent with somewhat more success. In one case vaccines brought results where nothing else had had any effect. As to the frequency of colon pyelitis, we get this in almost 25 per cent. of the cases in the Presbyterian Hospital during the warmer months, following diarrhea and often following operation for harelip and cleft palate. The route by which the colon bacillus gets into the kidney has occasioned considerable discussion. Some think that it is by an ascending infection through the urinary tract, but it seems to me much more probable that it is through the lymphatics for there is a chain of lymphatics leading from the cecum to the right kidney and this is probably the course that the infection takes.

Tuberculosis and Culture.—The spread of tuberculosis throughout the world is closely connected with the degree of culture and the extent of commercial exchange obtaining in each country.—A. Calmette-Lille.

EXPERIMENTS ON ANIMALS, AND THEIR INFLUENCE ON MORTALITY*

J. H. LANDIS, M.D.
Health Officer

CINCINNATI

The mental attitude of those opposing vivisection furnishes a rich field for the psychologist.

Sporadic outbreaks against vivisection may be expected to occur, just as do sporadic outbreaks of smallpox or other acute infections. They occasion a flurry of excitement, temporarily obstruct progress, and are then brushed aside.

To the antivivisectionist, the experimenter looms large as a monster of cruelty, running amuck among animals with a red hot poker in one hand and red hot pincers in the other, gouging out eyes or twisting out livers, kidneys, hearts, lungs and other anatomic parts for the pure joy of maiming and killing.

This delirium tremens attitude toward vivisection seems to be a source of so much real comfort to those who oppose experiments on the lower animals that it is almost an act of cruelty to try to enlighten them; their delusions are so fixed that attempts to dissipate them are almost as hopeless as to convince a maniac behind crossed bars that he is an exceedingly humble member of the Smith family instead of King Solomon.

Medicine and surgery have reached their present state through a long line of experiments on man and the lower animals. Ideas which have resulted in lengthening the average duration of life over twenty years, during the past century, had their inception in the laboratory and were confirmed at the bedside.

When the Almighty gave man "dominion over them," the lower animals, He named no restrictions and, when He placed Adam in a deep sleep and extracted a rib, He qualified as the first and greatest vivisectionist of all time.

The prevention of suffering, disease and death, and the prolongation of life can be said to be the objects sought by those experimenting on the lower animals.

Not idle curiosity nor a Jesse Pomeroy capacity for cruelty, but a desire to make this world a better place to live in, for both animals and man, is the motive inspiring the experimenter.

Man is not the sole beneficiary. The lower animals also have their lives prolonged, and are saved from needless suffering as a direct result of these experiments.

A few years ago, anthrax killed millions of dollars' worth of stock. In England alone, pleuropneumonia caused a loss of $450,000,000 in the first quarter of the nineteenth century through the death of cattle due to this cause. Introduced into the United States, it threatened to ruin the cattle industry of the country. Experiments carried on in France demonstrated its infectious character; the application of this knowledge entirely eliminated it in the United States, and was accomplished in six years at a cost of $1,500,000, an infinitesimal outlay for the results obtained.

In the old days, glanders claimed thousands of horses; Texas fever, thousands of cattle; hog cholera, hundreds of thousands of hogs; and bovine tuberculosis, untold thousands of domestic animals. These diseases are now understood and their prevention is being brought about, thereby not only adding to the comfort of the animals but also saving millions of dollars' worth of food from destruction.

During the late eighties, von Behring conceived the splendid idea that diphtheria might be robbed of many of its terrors. The carrying out of this idea meant the use of animals for experimental purposes, and a number of horses and a considerable number of guinea-pigs were used.

It may be of interest to compare two five-year periods in Cincinnati's death rate from diphtheria and croup, one before, the other after antitoxin had been discovered. From 1876 to 1880 inclusive, with a population of 245,000, 872 children died of diphtheria and croup. From 1909 to 1913 inclusive, with a population of 380,000, 227 children died from the same causes. During the first five-year period the average annual death rate per hundred thousand of population was 71 and during the second five-year period, 12.

In 1912, the Bureau of the Census based its vital statistics on a population of 95,545,336. Assuming that similar results in the treatment of diphtheria and croup were obtained throughout the country, this one series of vivisection experiments saved the lives of 56,345 children last year, as many children, almost, as are attending the public and parochial schools of this city. According to the Committee of One Hundred on Conservation, this represents an economic saving for the whole country of $227,750,000 in one year from one disease alone.

To those who place a higher value on the life of a rabbit than they do on that of a child, these figures will mean nothing. To those parents, however, who have had a child rescued from death by slow suffocation or from blood poisoning, it means a foretaste of heaven.

To the old-time doctor it means the difference between a losing fight in 40 per cent. of his cases and a practically uninterrupted series of victorious conflicts with one of the greatest scourges of childhood.

The prevention of lockjaw and hydrophobia has been perfected through experiments made on animals. The cure of these diseases can be discovered only by a continuance of these experiments. The Pasteur treatment has reduced the number of cases of hydrophobia in persons bitten by rabid dogs from between 6 and 12 per cent. to less than 1 per cent. To those who always base their conclusions on the exception to the rule, this will mean nothing; but to one who has seen some poor unfortunate racked by the convulsions of hydrophobia, it means more than words can convey.

The prevention of lockjaw was entirely due to experiments on animals. Before this great discovery was made, the annual celebration of the Fourth of July ushered in a series of dreadful tragedies. Young America paid dearly for its patriotism. In hospitals and private homes throughout the land, the victims of lockjaw passed through the agonies of recurrent convulsions until outraged Nature closed the scene with the death of the victim.

Vivisection has changed the course of events, and a death from lockjaw now is almost sufficient ground on which to base a suit for malpractice. A few animals were used to bring about this change. Their use for that purpose has been challenged by the antivivi-

* Read before the Health Officer Section of the American Public Health Association, Jacksonville, Fla.

sectionist; but to one who has stood by the bedside of some child and witnessed his last few agonizing hours, the change wrought in the prevention of this disease is like a beautiful morning after a night of frightful dreams.

During 1912, an average of 398 funerals due to tuberculosis and 190 due to cancer were held in this country every day. A large proportion of the deaths due to tuberculosis occur at a time when the victim is at the most productive period of his life. According to the estimate of the Committee of One Hundred, the deaths due to tuberculosis represent an annual economic loss of over $727,000,000. Physicians are familiar with the methods which have proved efficacious in the cure of some cases, but a specific cure, one which shall be to tuberculosis what quinin is to malaria, remains to be discovered. This cure can come only through experiments on animals, and the final crucial experiment must be on man. Is the end desired worth while? Are investigators to have their activities paralyzed, and is Western medicine to enter on a sleeping contest with that of China? The tragedies represented by those 145,000 deaths leave the imagination staggering and impotent. Are the necessities of helpless women and children to have no weight in the balance? Is the life of a guinea-pig to stand between young men and women and bar them from a fair chance in life? Shall we continue to stand by the bedside of those dying from this cause and merely dream of a cure, or shall we continue experiments the results of which, experience leads us to believe, will be as great a blessing to the human race as are those now enjoyed through diphtheria antitoxin?

To the antivivisectionist, the convulsions incident to tuberculous meningitis mean nothing; the days and nights of torture incident to hip joint or spinal disease mean nothing; the weeks, months and years of cough, fever and slow starvation due to consumption of the lungs mean nothing; but to the physician scientist they are goads that sting and lacerate, urging, always urging, him to solve the problem of dying thousands.

Cancer comes later in life, as a rule, and its drain economically is not so great as that of tuberculosis. Its capacity for torture, however, is limitless and ends only with the death of the victim. The 69,000 deaths reported in 1912 represent untold agonies to those afflicted and to their families. In some it meant death by starvation, in others a slowly advancing ulcerative process that consumed the face, the eyes, the nose, until the victim was transformed into a horrible caricature of a human being. Woman was its favorite victim; her organs of reproduction and the infants' source of food supply its favorite choice of location. Thousands of women who were indispensable to growing children, and who had reached a period when fortune seemed ready to dispense its choicest favors, saw the grim reaper beckon them into the dark shadows from which they never returned.

There is an element of mercy in the deaths caused by the acute infections, for the end comes quickly. In cancer there is no mercy shown, for the disease counts its victim's life blood drop by drop and rots his tissues until he becomes a loathsome decomposing mass. The cause of cancer is unknown; its cure can be brought about only through the continuance of experiments. In the meantime, for reasons not clearly understood, the problem is becoming progressively greater, for each year records a higher mortality from this cause. The discovery of a cure will add almost a decade to the average duration of life, and reduce the total mortality about 6 per cent. Are these objects worth working for, and, if so, are the lives of a few animals to stand in the way? Permit the question to be answered by those who would be benefited. If the records of the Cincinnati Health Department can be taken as an index to conditions over the entire country, one out of every eighteen people now living in this country face a lingering death from this cause. Do the other seventeen care to take the chance that they will not be the one to solve the great mystery this way?

The great advances in surgery were brought about through experiments made on animals. The buried suture cost the life of one horse; the catgut ligature the life of one calf!

Had Lister's discoveries been given to the world before our Civil War, they might have saved the lives of 1,142 who died of gangrene, 2,747 who died of blood poisoning, over 90 per cent. of those who died of wounds implicating joints, and practically all of the 1,497 who died of secondary hemorrhage. Lister's experiments, making modern surgery possible, involved the use of so few animals that one stands appalled at the idea that similar beneficent results in other diseases may be halted through the pernicious activity of a few individuals in whom two ideas simultaneously entertained would produce symptoms of compression of the brain.

But for Lister and his followers, appendicitis, gallbladder disease, the various conditions in the digestive tract amenable to surgical treatment, and those peculiar to women would be claiming their thousands. In fact, modern surgery with its wonderful life-saving devices would be unknown. If the time ever comes when it becomes necessary to settle this question of vivisection, let those who live today because of past experiments be heard and marshal the spirits of the thousands sacrificed because of lack of knowledge during the Civil and Spanish-American wars. The living and the dead testify to the beneficent results!

Cholera, the plague, smallpox, malaria, yellow fever and epidemic cerebrospinal meningitis have been conquered through knowledge gained experimentally.

Control over the plague cost the lives of a large number of rats and a still larger number of fleas. Control over smallpox costs the lives of a considerable number of calves each year. It is said on good authority that control over malaria has cost the lives of a vast number of perfectly innocent mosquitoes, and the same can be said of yellow fever.

The discovery of the Flexner treatment for epidemic cerebrospinal meningitis was secured by a series of experiments on twenty-five monkeys and 100 guinea-pigs. Before this was done, seventy-five out of every hundred attacked by the disease died, and many of those who escaped with their lives were left helpless dependents, some blind, some deaf, some idiotic, some paralyzed. Since the perfection of Flexner's plan of treatment, the figures are exactly reversed, 75 per cent. being quickly cured, practically none left dependent.

When the court decides whether or not experiments shall continue, introduce the testimony of those who

have been saved, marshal the living from the blind and insane asylums who might have been saved from a fate worse than death, and the records of those dead from this cause.

Flexner's fame will stand with that of Jenner, Pasteur, von Behring and Lister, and, throughout the coming centuries, will grow greater, while the bodies of his detractors rot in forgotten graves.

Keen is authority for the statement that maternity hospitals at times lost as high as 75 per cent. of their inmates from child-bed fever, and that a mortality of 3 per cent. in general practice was considered about normal. To Pasteur and Lister belongs the great credit of practically eliminating this disease so that the mortality has fallen to less than 1 per cent. Without the knowledge gained through their experiments, Cincinnati's loss from this cause in 1912 would have been about 223 instead of twenty.

When the question of vivisection comes up for final settlement, let 389 mothers with babies in their arms march before the jury and then show by statistics that, but for experimentation, eleven of these mothers would be in their graves.

In the olden days, the majority of operations for cesarean section resulted fatally, and one successful operation was enough to establish a surgeon's reputation. Now practically all cases are successfully performed, and a failure raises the question of the surgeon's efficiency. A few years ago, ruptured tubal pregnancy was almost necessarily fatal; now it has come to be one of the safest operations in surgery, and annually saves the lives of thousands of women.

The successful removal of ovarian tumors is of so frequent occurrence that the reporting of a case in a medical society is usually prefaced with an apology for consuming the members' time. In the good old days, before experimentation made this result possible, the victim "passed out" through weary years of suffering.

When the evidence is submitted to the court, present pictures of advanced cases or, preferably, the living case, and then pass before the judge those who have been rescued from untimely graves. The years of usefulness added to the life of woman through this one operation would aggregate hundreds of thousands. While this operation antedates the experiments making modern surgery possible, the almost uninterrupted series of recoveries are entirely due to facts established by these experiments.

Anesthesia, local and general, owes its development and perfection to experiments. Many heads, supposedly wise ones too, wagged solemnly when ether was introduced as an aid to surgery, but the experiments were continued and different technic and materials tried out until, at present, postoperative pain, nausea and discomfort are practically eliminated from the clinical history.

In the olden days (when, according to some people, all of the good things happened), the patient was roped and thrown like a steer at a round-up. His body was strapped to a table, and whatever was necessary to do was done despite his struggles. If it was an amputation, the bleeding stump was thrust into boiling pitch to check hemorrhage. A little later, the actual cautery was used for this purpose; a little later, torsion, and finally, the ligature. These advances constituted steps in the series of experiments necessary to save life and, doubtless, were bitterly condemned at the time.

I have heard the description of an amputation of the breast done nearly a hundred years ago by Dr. Hancock of Milleville, Butler County, Ohio. The woman went through the operation with but one evidence of pain and that was a sharp, hissing intake of the breath when the first incision was made. This operation, like all others done before anesthesia was discovered, was probably delayed so long that permanent recovery was not to be expected.

Fifty years ago, many parts of the body were considered beyond the reach of the surgeon. Experiments on the lower animals have brought them, one after another, into his field. Even the heart itself is laid bare, and lives saved by closing stab wounds heretofore considered necessarily fatal. The brain is no longer forbidden territory and, through the knowledge gained by experiments, tumors are located and removed and abscesses drained, thereby saving many valuable lives.

In the past seven years, more has been learned concerning the cause and accurate diagnosis of syphilis than was learned during the preceding four centuries. With the cause isolated, past experience leads us to hope that a quickly acting cure will be perfected. What was learned during the past seven years was wholly due to experiments on animals. The working out of a cure must come through a continuance of these experiments.

When vivisection is arraigned before the court, call the roll of the innocent victims of man's immorality. Millions will answer who died before they were born, and countless thousands of women whose husbands were damaged goods at the time of marriage. Take the court to the nearest asylum and show those hopelessly insane from this cause, and then let the court know that vivisection aims to replace a stillbirth with a healthy living child, childless women with happy mothers, the hopelessly insane with normal men and women.

Some advances have been made toward perfecting a specific cure for gonorrhea; further advances can come only through a continuance of these experiments. When the testimony is introduced in this court scene, gather the blind from the asylums and let the court look into their sightless eyes.

Smallpox, a little over a century ago, was one of the greatest causes of infant mortality. An adult without a pitted face was a curiosity. In the century antedating Jenner's discovery of vaccination, fifty million lives were lost in Europe from this cause alone. There has never been an epidemic since vaccination was discovered that has not illustrated its protective value, and yet people exist who are color blind to facts and who believe, or profess to believe, that doctors advocate vaccination for the fee that is in it. Slander's venomous tongue never fashioned a more malicious falsehood. In all the annals of the race, there is nothing surpassing the unselfish attitude of the physician whose whole life is dedicated to an effort to bring about conditions that actually threaten his livelihood. Treating one case of smallpox is worth more, in fees, than is received for vaccination in the course of several years.

Trying out vaccination meant experimenting on human beings. The beneficent results obtained are

seen on every hand in the faces of the people and in a study of mortality records. In the old days about 90 per cent. of the people had the disease, and from 25 to 40 per cent. of these died. At present the immunity enjoyed through vaccination is so universal that the disease hardly figures in mortality records and, when it does, nearly 100 per cent. of the deaths are in unvaccinated individuals. All advances in therapy, whether due to specific serums, vaccines, antitoxins or drugs, are the direct result of experiment.

The first doctor to administer quinin for malaria was experimenting with his patient. Has the result justified the experiment? The first one to give thymol in hookworm disease was experimenting. Ask the millions of cured anemics from this cause if the results have justified the experiment. The first one to give mercury and potassium iodid for syphilis experimented with the patients, and so the list might be continued indefinitely with practically an unbroken series of affirmative answers to the question.

Life is an experiment. When Fulton saw the first steamboat advancing against wind and tide, it was the result of an experiment. When Morse flashed messages over wires between widely separated points, that was the result of an experiment. When Marconi harnessed the ether waves and talked across the ocean, that was the result of an experiment. When Edison reproduced the sound of the human voice, that was the result of an experiment. When the Wright brothers, in the face of incredulity and almost insurmountable obstacles, conquered the air, that was the result of an experiment. Bessemer, Burbank, Bell and the thousands of others who have unlocked Nature's storehouse and given her secrets to be the servants of man have all been experimenters. What they are in their chosen fields, Lister, Pasteur, Ehrlich, Wassermann, Flexner, Jenner, von Behring, Reed, Carroll, Lazear and thousands of others are in the field of medicine.

Research work in preventive medicine requires genius, imagination and industry. When the goal is attained, the reward, while not a material one, is "enough to overpay lifetime toil and sacrifice." It is like that which "comes when some patient watchman of the universe at last beholds the light we call discovery, or when the chance rock in some derided student's pathway tells the secret we know as science."

Shall we gradually retrograde to a stone age period of living, or shall we continue to experiment along lines that will ultimately make man absolute master of his environment?

The discovery of methods of immunization against disease has been made possible wholly through experiments. In the Civil War, typhoid fever and dysentery killed more men than did the bullets of the enemy. If the men rendered unfit for duty during that period in either of the armies could have been kept well and fit while those diseases ran riot in the other, the end of the war would have come much sooner; and, had the South possessed the advantage, the result would probably have been reversed.

Typhoid vaccination has eliminated that fever from our army and navy and has saved many lives in civil life. Dysentery is not the scourge to troops in the tropics that it was twenty years ago. These changes have been brought about by experiments on animals.

The relationship between infant mortality, due to intestinal diseases, and a polluted milk supply has been established by experiments. The application of the knowledge gained has gradually reduced the mortality from this cause in Cincinnati from 103 per hundred thousand of population in 1910 to 57 in 1914. The animals used in assembling the proof have been few in number compared to the lives saved, and it is a conservative statement to say that for each guinea-pig used, a thousand babies have been saved from death.

To the antivivisectionist, the experimenter is the last word in selfishness, his own body the one thing in the world too sacred for experimental purposes.

History records no more convincing evidence of devotion to an idea than appears on almost every page of the history of medicine. Our literature is rich in material calculated to inspire the heart and brain of poets and writers of romantic fiction.

The work of Carroll and Lazear furnished an example of heroic self-sacrifice that is hard to duplicate in the annals of the race. Carroll deliberately subjected himself to the bite of a mosquito thought to be infected with yellow fever. The disease resulting therefrom placed his life in jeopardy for days, and left him with a damaged heart that ultimately caused his death. Lazear deliberately permitted a mosquito to feed on his hand, and a week later was a martyr to science. The names of those other heroes who took similar chances in establishing the method of transmission of this disease should be inscribed on the same tablet with those of Carroll and Lazear. In making this great sacrifice, these men saved the lives of thousands of others and removed the tropics' most pitiless scourge. But for their work, the Panama Canal would be a dream instead of a reality, and the southern portion of this country would be devastated periodically by the yellow plague. If experiment had only this one great achievement to its credit, the continuance of others along similar lines would be a thousand times justified.

Several years ago Mrs. Carroll sent me a copy of a portion of a paper in Dr. Carroll's handwriting. Two paragraphs from this will indicate the sublime heroism inspiring this series of experiments:

> Before the mosquito experiments were finally agreed upon, Dr. Carroll suggested twice to Drs. Reed and Lazear that they themselves submit to the inoculation as the best atonement they could offer for subjecting others to the risks entailed thereby.
>
> As an earnest of our appreciation of the absolute necessity for using human beings and of our sincerity and willingness to assume the same risk that we were compelled to impose on others, it was agreed among the three American members of the board that they would submit themselves to the same risk and mode of attempted inoculation.

These three American members of the commission are in their graves. It would be an interesting fact to relate at this time that a grateful country had provided generously for those left dependent. One would assume, without investigation, that Southern boards of trade had voluntarily made it their business to place the families of these benefactors beyond the reach of want. As neither of these conditions has been brought about, however, it must be stated with humiliation and shame that the proverbial ingratitude of republics is still in evidence.

Reed, Carroll and Lazear freed a large portion of the Western hemisphere from the danger of yellow

fever, and made the new South and the new tropics possible. Modest pensions have been given their families, but, from reliable information, it appears that the children of Dr. Carroll are being denied opportunities for a liberal education because of lack of funds.

In a paper of this character, it may be permissible to refer to the men of the Public Health Service who have risked their health and lives while investigating "the major pestilences" or while maintaining quarantine regulations. These men are highly trained experts, and their chief duty is to prevent the introduction of diseases from foreign countries into the United States. They may be said to form the "far-flung" skirmish line in our constant battle against disease. They literally rub elbows with death every day in the year, and have their roll of honor on which appear the names of those who have died or become infected in the service.

Let us call the roll:

McClintock died of Rocky Mountain spotted fever while investigating that disease in the Bitter Root Valley.

Wightman died of yellow fever at Guayaquil, Ecuador, while in a fight against yellow fever, smallpox and plague in order to prevent their introduction into the United States!

Groenvelt, Glazier, Brannon, Bratton all died of yellow fever!

Miller died of typhoid fever while investigating that disease!

Richardson died of typhoid fever during a yellow fever campaign! Other names that could not be secured belong on this roll.

Of those living, Lloyd, McKeon, Glennan, Guthrie Rucker, Goldberger and many others have had yellow fever!

Long and McLaughlin have had cholera!

Holt and Nydegger have had amebic dysentery!

Goldberger, McCoy, Amesse and several others have had dengue!

Goldberger has had typhus!

The value of the work done by these men cannot be measured in dollars and cents, or figured in human lives. Every step of it depended on experiments, the results of which indicated the logical method of excluding diseases from our shores.

Shall we call a halt on future experiments or "be here dedicated to the great task remaining before us" and, "from these honored dead take increased devotion to that cause for which they gave the last full measure of devotion"?

Vivisection! It has revealed man at his best, almost on a par with the Man of Calvary.

It has done much, and points the way for much more than remains to be done.

It has replaced conjecture with fact, substituted cold logic for a suspicion of the truth, transformed a figment of the imagination into a reality.

It has substituted hope for despair, exchanged funeral trappings for the laughter of children.

It has relegated to the dark ages the monstrous belief that somewhere beyond the clouds lives a being so steeped in envy that he rebukes love for children by unloosing the plagues. It has robbed God of those human attributes, malice, envy, hatred and revenge.

It has substituted exact laboratory methods for incantations and charms; a quarantine based on exact knowledge, for one founded on brute force and fear.

It has removed the greatest obstacle to the South's material development and made the tropics a white man's country, where he can take up his burden unafraid. It has gathered the plagues from the four corners of the earth and safely imprisoned them in laboratory test tubes.

This record of achievement is our justification for past experiments, our argument for their continuance.

IS INSANITY ON THE INCREASE?

A. J. ROSANOFF, M.D.
First Assistant Physician, Kings Park State Hospital

KINGS PARK, N. Y.

During the past several decades the number of insane in institutions has been increasing at a faster rate than the general population. Thus, according to the United States census statistics there were, in 1880, 81.6 patients in institutions for the insane per hundred thousand of the general population; in 1910 the number had risen to 204.2. To what extent, if any, does this fact indicate an actual increase in the prevalence of insanity in the American population?

There can be no doubt that, at least to some extent, the increase of patients in institutions is due merely to the general improvement in the kind and adequacy of facilities for their care; and if the statistics of various states for any one year are compared with one another, marked differences are found, corresponding to stages of progress in social organization, and altogether analogous to those shown by the entire country in years separated by decades.

Thus, for instance, in 1910 there were in the state of Oklahoma 67 patients in institutions per hundred thousand of the general population, while in the state of Massachusetts there were 344.6; and between these extremes all degrees of transition were presented by the statistics of other states.

It is obvious, therefore, that the number of patients in institutions, either in the entire country at different times or in different parts of it at any one time, cannot be taken as a correct measure of the prevalence of insanity among the people.

For this reason, attempts have been repeatedly made to enumerate the total number of insane persons both in and out of institutions in the various states.[1] The resulting data were, however, so manifestly untrustworthy that eventually it became apparent that the difficulties inherent in such an undertaking were greater than, for the present, we can cope with successfully, and such attempts have, accordingly, been given up.

Of these difficulties the greatest and, perhaps, the sole insurmountable one is that of formulating such a definition of insanity as to enable enumerators readily and uniformly to distinguish between sane and insane persons under all conditions.

Furthermore, whoever is familiar with psychiatric clinical material knows that, owing to the nature of things, even if it were possible to formulate a definition and thereby draw a line sharply distinguishing,

1. U. S. Census from 1850 to 1890.

for practical purposes, sanity from insanity, the line could be thus drawn only in relation to some more or less arbitrary standard of normality.

The need of standards of normality is felt not only in connection with attempts of enumeration of the insane in communities, but also in daily practice in connection with every case of alleged insanity in which commitment to an institution is sought; and in this respect the practice of the various states, varying as it does within wide limits, indicates the application of a whole series of fairly distinct, though not readily definable, standards.

Thus, referring again to the instances presented by Oklahoma and Massachusetts, significance attaches mainly to the consideration that there are undoubtedly many persons residing in the former state who are at large and whom, moreover, their fellow citizens do not consider proper subjects for an insane hospital, who would be promptly committed if they took up their residence in the latter state. In the last analysis, it is a difference in tacitly accepted standards of normality that accounts largely for the fact that in Oklahoma, as already stated, there were but 67 patients in institutions per hundred thousand of the general population, while in Massachusetts there were no less than 344.6; and similar differences in standards no doubt account for the analogous contrasts presented by statistics of the insane in institutions in the entire country at different times.

Persons are placed in institutions when, by reason of some mental defect or disturbance, their adaptation to their environment fails. The environment of a highly organized community with high standards of living is, of course, more exacting than that of a community characterized by a more primitive organization and lower standards.

Whatever may be one's theoretical conception of insanity, the line of division between it and the normal condition, as it is indicated by the practice of communities, is a shifting one, moving from the abnormal toward the normal extreme with the progress of civilization and the concomitant elevation of social standards.

These considerations are of importance, as they point a way to an indirect method of investigating the question which is before us, Is insanity on the increase? For, although it would be, of course, impossible to apply a newly selected standard to conditions in the remote past concerning which we have no information other than that recorded by contemporary observers, it is at least within the bounds of possibility to apply such a standard in studying conditions in various parts of the country as they exist in our own time.

The states east of the Mississippi River may be divided into a Northern group, comprising Connecticut, Illinois, Indiana, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont and Wisconsin; and a Southern group, comprising Alabama, Delaware, Florida, Georgia, Kentucky, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia and West Virginia.

Facilities for the care of the insane have at all times been relatively more ample in the Northern group of states, and, accordingly, the number of patients in institutions in relation to the general population has always been greater, as shown in the accompanying table.

The difference between these two groups of states is certainly very striking. From what has been said, it would follow that the question, To what extent does this difference correspond with a real difference in incidence of insanity? is lacking in definiteness. It may be better expressed as follows: If the populations of the two groups of states, or representative portions of them, were exposed to the same environmental conditions, would there still be a difference between them as to the proportion of patients contributed to insane hospitals; and, if so, which group would contribute the higher proportion and how great would be the difference?

One advantage in thus expressing the question is that it affords a suggestion of a method for seeking an answer.

A number of circumstances, such as availability of good statistics, the prevalence of high social standards, the composition of the population which is in certain respects peculiar, etc., combine to make the experience of the state of California worthy of special study in this connection.

The growth of the population of that state has for a number of decades been in large part by immigration from other states, especially those east of the Mississippi River. This fact has created an opportunity of making a comparison such as we desire to make, in order to find an answer to the question that is before us, by noting the number of admissions to the state hospitals of California contributed by natives of the above-mentioned two groups of states who have taken up their residence in California.

NUMBER OF INSANE IN INSTITUTIONS PER HUNDRED THOUSAND OF THE GENERAL POPULATION IN CERTAIN YEARS IN TWO GROUPS OF STATES EAST OF THE MISSISSIPPI RIVER

	Census Years			
	1880	1890	1904	1910
Northern group	104.9	145.1	230.7	256.6
Southern group	48.8	79.7	117.5	132.3

If the incidence of insanity differs materially in these two groups of states, it would seem that the difference should be revealed by this comparison—one that is made on the basis of a standard which, though not to be theoretically formulated, is nevertheless fairly definite, uniform and readily applicable, namely, the standard of the prevailing environmental conditions of California.

During the biennial period ending June 30, 1910,[2] the natives of the Northern group of states residing in California furnished 147.3 admissions to the state hospitals of California per hundred thousand of their general population. During the same period the natives of the Southern group of states furnished 166.7 admissions per hundred thousand: a difference of 13.1 per cent.

In other words, as far as may be judged from these statistics, the Southern states east of the Mississippi River, which have had for many years, and still have, poorer and less adequate facilities for the care of their insane than the Northern, now show a higher incidence of insanity in their population.

Thus it would seem that the much greater relative number of insane in institutions in the Northern group of states is but an indication of a more thoroughly

2. Seventh Biennial Report of the State Commission in Lunacy of California.

carried out policy of segregation, and appears to have already produced a demonstrable eugenic effect: for the application of a common standard to representative portions of the two population groups reveals evidence showing that the incidence of insanity is actually greater in the Southern group.

Similarly, it would appear that the progressive increase in the relative number of institution inmates, observed throughout the country during the past several decades, is also but an indication of more thorough segregation which has, in all probability, been attended by the same eugenic effect.

I conclude, then, that such evidence as is available, far from showing that insanity is on the increase, tends to show rather that it is on the decline.

THE VALUE OF A SANITARY SURVEY IN THE TEACHING OF HYGIENE

MILTON J. ROSENAU, M.D.
BOSTON

It may be a surprise to the readers of THE JOURNAL to learn that hygiene is included as a major subject in the curriculum of only three medical schools in this country, namely, the University of Pennsylvania, the University of Michigan and Harvard.

The teaching of hygiene is becoming increasingly difficult, on account of the widening scope of the subject, including preventive medicine, sanitary engineering, vital statistics, epidemiology, industrial hygiene and public health activities generally. It has become necessary to establish special schools with graded courses to meet the demand of training men to become public health officers. It is slowly being recognized that the training received for the M.D. degree, even in our best medical schools, does not properly fit a man to enter public health work. Sanitation and hygiene has become a separate profession.[1]

At the Harvard Medical School, the teaching of hygiene in the required course consists of (*a*) lectures and demonstrations; (*b*) laboratory work; (*c*) sanitary excursions, and (*d*) sanitary survey. This required course comes in the second year of the medical curriculum. Special emphasis is laid on the laboratory work and the sanitary survey, for these exercises are regarded as the backbone of the course. As to the sanitary excursions, I take the class to the Antitoxin and Vaccine Laboratory, to a large city milk plant, to quarantine and other places of sanitary interest that may be examined to better advantage by a personally conducted tour than by individual visits. In addition to the required course, a fourth year elective is offered for those who desire to dip a little deeper into some phase of the subject.

The sanitary survey was first used as a method of instruction in the School for Health Officers of Harvard-Technology and met with such signal success that I later introduced it into my course in preventive medicine and hygiene at the Harvard Medical School.

Each student in medicine is required to make a sanitary survey of some city or town and to submit a report thereon. The report must consist of three elements: A, collection of data; B, interpretation of the facts; C, criticisms and recommendations. From the following outline, which is placed in the hands of each student, some idea of the general plan and scope of the sanitary survey may be obtained:

WATER:

(a) The water shed—sources of pollution, methods of collection, storage, purification.
(b) Public or private wells.
(c) Examine a sample of the water in your laboratory exercise; interpret results.

SEWAGE:

(a) System—if purified or treated, how?
(b) Efficiency.
(c) Relation to health of this or other towns.

GARBAGE, REFUSE, ASHES:

(a) Method of collection.
(b) Disposal.
(c) Relation to health.

VITAL STATISTICS:

(a) Death rate.
(b) Infant mortality.
(c) Specific rates for:
  (1) Typhoid.
  (2) Tuberculosis.
  (3) Measles.
  (4) Scarlet fever.
(d) Submit samples of blanks used by the department of health, especially those for deaths, births, marriages, and notifiable diseases. Fill out a death certificate and a birth certificate. Give a list of the diseases, notification of which is required by the board of health. Give criticism of activities, including distribution of educational and other pamphlets issued by the board of health.

MILK:

(a) Report on the sanitary condition of one farm and one dairy. Use score card.
(b) Amount of milk pasteurized and by what method.
(c) Amount of milk "certified." If possible visit and report on farm producing it.
(d) Examine a sample of the milk in your laboratory exercise; interpret results.

SANITARY NUISANCES:

(a) Sources of odors.
(b) Dust—causes and method of prevention.
(c) Rubbish and general cleanliness. Empty lots.
(d) Flies and mosquitoes.
(e) Rats and vermin.
(f) Stable and manure.
(g) Breeding places of mosquitoes.
(h) Smoke.
(i) Unnecessary noises.
(j) Piggeries.
(k) Legal definition of a nuisance, and method of preventing or abating nuisances.

INDUSTRIAL HYGIENE:

(a) Sanitary condition of one tenement, based on an inspection.
(b) Ventilation of one large building.

TUBERCULOSIS:

What measures are taken to prevent its spread?
Should some other disease be prevalent, what measures are taken to control it?

SCHOOLS:

(a) Visit and report on one school—ventilation, lighting, temperature, cleanliness, toilets, playgrounds, etc.
(b) Medical inspection of schoolchildren. How conducted?
(c) Diseases for which children are excluded from school.

1. Rosenau, M. J.: Courses and Degrees in Public Health Work, THE JOURNAL A. M. A., March 6, 1915, p. 794.

MISCELLANEOUS:

(a) Markets.
(b) Provision stores.
(c) Slaughter houses.
(d) Cold storage plants.
(e) Kitchens of hotels and restaurants.
(f) Wharves.

SUMMARY—Including:

(a) Criticisms of health activities and administration.
(b) Recommendations.

Boston is favorably circumstanced for an exercise of this character, there being fifty-two cities and towns within 15 miles of the State House. Students are encouraged to select small communities rather than towns or cities. The student's home town or the place in which he is living may be selected with particular advantage. Some students prefer to make their sanitary survey during the pleasant days of summer, after they return home, and thus devote more time to it than is possible during the busy school term.

No special instructions are given to the student as to how to proceed with the sanitary survey, it being the intention to place the student on his own initiative, in order to bring out tact and self-reliance. Students are simply advised, first, to get acquainted with the town and some of its people; to find out something about its history, geology and geography; then to take up the water supply, sewage disposal, milk supply, schools, industries, tenements, nuisances, etc.; finally, to visit the health officer, when the student not only will be prepared to profit by the information given, but also will probably be in a situation to surprise the health officer with some facts about his town which have escaped notice.

One happy result has been that some towns have employed the student making the sanitary survey as health officer. This has been the case with William E. Brown, at York, Maine, Charles Francis Horan, at Watertown, and Andrew F. Allen, at Waltham, Mass., all of whom were students in the School for Health Officers of Harvard-Technology. The survey designed primarily as an educational excursion for the student has therefore carried the doctrine that "public health is purchasable" into many places, some of which have at once realized that the best way to obtain the benefits of preventive medicine is through the agency of a well-qualified and full-time health officer.

In the crowded medical curriculum, little time can be spared for an exercise of this character. All the students in the second year class at the Harvard Medical School, however, have in some way found the time. A few afternoons during the course are set aside for the purposes of the survey, but much of the work is actually done on Saturday afternoons, Sundays and holidays. The students themselves feel that the benefit derived fully compensates for the extra work. A certain amount of the work, such as visiting water sheds, dairies, looking for nuisances, etc., is done in the spirit of a walking excursion or a picnic.

Some of the reports prepared by second year medical students are splendid contributions, giving a complete account of all the important sanitary and hygienic features of the place studied. Many of the reports are enlivened with photographs showing good and bad sanitary conditions. Most of them have carefully prepared charts showing morbidity and mortality rates; and some of them have a judicious summing up, with a well-considered criticism of the defects in the health administration of the town.

Another advantage of the sanitary survey is that it adds much interest to the course in hygiene and helps enliven the laboratory exercises. This correlation between the field work and the laboratory work is accomplished in part by having students bring a sample of the water supplied the town they are studying, when they make a water analysis in the laboratory. The same applies to samples of milk, of air and other specimens for sanitary analysis.

The world-old questions of pedagogics have arisen anew to plague those who are devoting their attention to teaching the new profession. The use of the sanitary survey as a pedagogic instrument is worthy of consideration by teachers of hygiene.

ABORTIVE TREATMENT OF TYPHOID FEVER BY SENSITIZED TYPHOID VACCINE SEDIMENT*

FREDERICK P. GAY, M.D.
BERKELEY, CALIF.

A historical survey of attempts at specific therapy in typhoid fever shows that two distinct eras may be arbitrarily noted. Beginning with the work of Fraenkel[1] (1893) until 1912, there were numerous reports on the somewhat favorable action produced by ordinary killed or even living typhoid vaccines. The results obtained by a number of observers in about 800 cases are by no means striking, but indicate that the subcutaneous injection of various typhoid vaccines would seem to shorten the course of the disease, to lessen the number of relapses and complications, decrease the mortality, and to lead to some symptomatic improvement. In a few instances, abortive cures have been mentioned, which apparently bear a relation to the injection of the vaccine; but such cases are known to occur without any specific treatment.

In the last two or three years, certain modifications have been used in the vaccines and far more convincing results obtained, and we have been led to hope that a true specific therapy may eventually be possible. These modifications are, first, the introduction of the intravenous injection instead of the subcutaneous, and, second, the use of sensitized vaccines. Kraus,[2] among others, has reported a relatively large number of abortive cures following the intravenous injection of Vincent's typhoid vaccine, and still more favorable results have been reported by Ichikawa,[3] who used typhoid bacilli that had been treated with the serum of patients convalescent from typhoid fever (sensitized vaccines). Both of these results have since been confirmed by the work of Ditthorn and Schultz,[4] Goldscheider and Aust,[5] Paltauf[6] and others.

---

* From the Hearst Laboratory of Pathology and Bacteriology, University of California, College of Medicine.

* This work was planned and begun in collaboration with Edith J. Claypole, whose regrettable death on March 26, 1915, deprived the author of an invaluable associate, and medical science of an able and inspired contributor.

1. Fraenkel: Deutsch. med. Wchnschr., 1893, xix, 958.
2. Kraus: Wien. klin. Wchnschr., 1914, xxvii, 1443.
3. Ichikawa: Sei-I-Kwai Med. Jour., 1915, xxxiii, 73.
4. Ditthorn and Schultz: Med. Klin., 1915, xi, 100.
5. Goldscheider and Aust: Deutsch. med. Wchnschr., 1915, xli, 361.
6. Paltauf: Wien. klin. Wchnschr., 1915, xxviii, 125.

Following our work on the experimental prevention, or cure, of the typhoid carrier condition in rabbits, Dr. Claypole and I[7] expressed our intention of transferring our results to the treatment of typhoid fever in human beings, largely on the basis of the phenomena of specific hyperleukocytosis which we have described. We found, in brief, that the injection of typhoid bacilli in immunized rabbits, or the injection of sensitized typhoid bacilli in normal rabbits, gave rise to a hyperleukocytic crisis which occurred about eighteen hours subsequently, and was accompanied by a complete destruction of the injected living bacteria in the animal's body. Although we had in mind the treatment of patients by means of the killed, sensitized typhoid vaccine sediment, which we had developed for the prophylactic immunization of human beings, before the publications of Kraus and of Ichikawa, it is only recently that it has been possible to carry out our intention. Owing to the courtesy of a number of physicians in Oakland, Berkeley and San Francisco we have been able to treat twenty-two cases of typhoid fever by the intravenous injection of this modified, sensitized vaccine. In all cases the diagnosis was verified by blood culture and Widal reaction. In seventeen of these cases it has been possible to carry out the treatment exactly as intended, and in this limited number we have produced an abortive cure in eight, or 47 per cent., following either a single or two or three injections. The average day, in these cases, on which the temperature reached normal permanently and the patient was symptomatically well, was the nineteenth. In no case have dangerous symptoms, referable to the vaccine, been noted when moderate doses were used. The best dose, apparently, corresponds to about 300 million micro-organisms, and this dose, in an adult produces the characteristic reaction on which the abortive cure apparently depends. This reaction, as other recent observers have mentioned, consists in a chill within half an hour following the injection, accompanied by a rise in temperature of 1 or 2 degrees, followed by a fall in temperature to normal or subnormal in from twelve to twenty-four hours. We find that the initial rise in temperature is accompanied by leukopenia and the corresponding fall by hyperleukocytosis which, in some cases, has reached as high as from 20,000 to 40,000 per cubic millimeter. The increase is due almost entirely to polymorphonuclear leukocytes. The fall in temperature is invariably accompanied by symptomatic amelioration, and in successful cases the temperature either remains normal, or with a few fluctuations reaches a permanent normal in a day or two. We are not able to state, as yet, what relation the presence or degree of hyperleukocytosis may bear to the recovery.

Another significant fact is that the cases which were apparently cured by this treatment have all given a positive Widal reaction, and usually in high dilutions, for example 1:320 or 1:640. In two of the nine cases that were not abruptly cured, the Widal was negative in a dilution of 1:10 and remained so, and in none of these cases did it exceed a dilution of 1:80. This suggests, at least, that the cure is due to the cooperation of the hyperleukocytosis and the presence of substances antagonistic to the typhoid bacilli in the serum. Such a combination would give the ideal condition for the destruction of the typhoid bacilli which may exist in the patient's body. These observations further suggest that a higher percentage of successful results might be obtained by treating patients, particularly when the Widal is negative, by a combination of sensitized vaccines and immune serum.

7. Gay, F. P., and Claypole, E. J.: Specific Hyperleukocytosis, Arch. Int. Med., November, 1914, p. 662.

A SIGN DIAGNOSTIC OF HYPERPLASTIC THYMUS

HARRIS A. HOUGHTON, A.B., M.D.
BAYSIDE, N. Y.

Following light ether and oxygen anesthesia and the enucleation of enlarged tonsils, a young woman, aged 22, under my care at the Flushing Hospital (private, serial No. 251), developed severe reactive symptoms which led to a diagnosis of hyperplastic thymus. In this manner, my attention, like Crotti's,[1] was called drastically to the possibility of discovering this condition prior to operation. Since that time, several cases have been studied, methods of diagnosis perfected and the following sign, which appears during fluoroscopic examination of the chest, uncovered.

Delicate shadows corresponding to the lateral borders of the thymus and the shadows internal, move outward and inward with each cardiac systole and diastole. In uncomplicated cases, there is no movement with respiration even when a deep breath is taken. On the contrary, shadows which represent the bronchial tree move upward and downward with each inspiration and expiration and show only slight cardiac movement in the immediate neighborhood of the lung roots.

By Roentgen ray, no two thymus glands present the same outline. They may be classified, however, according to their apparent position into two varieties. The first, smaller, rounded, lies just below the "critical space of Grawitz" or the superior outlet of the thorax. The shadow of the upper border is lost behind the sternoclavicular articulations and that of the first ribs. Laterally, this shadow appears in the second interspace, more particularly toward the left. It encloses on the left the shadow of the aortic arch, and as that organ moves in young persons, it gives movement to the thymus shadow. There is little or no movement in the right interspace. The lower border of the thymus in this type rarely reaches lower than the lower border of the third rib.

The second type fits over the base of the heart like a toboggan cap. The lower border may reach downward as low as the sixth rib. Laterally, the shadow will be found to conform to the percussion boundaries usually given in the textbooks on medicine.

Usually, though not always, the shadow is more marked toward the left; I have seen one case in which the left lateral border measured 4½ inches from the median line. Toward the right the border may extend 3½ inches from the median line. The appearance of such a shadow is apparently characteristic. It is denser than contiguous lung tissue. The portion overlying the left auricle moves outward and upward; that overlying the left ventricle, outward and downward; that overlying the right auricle moves to a less extent than the portions previously men-

1. Crotti, André: The Roentgen Ray in Intrathoracic Goiter and Thymus Hyperplasia, THE JOURNAL A. M. A., Jan. 11, 1913, p. 117.

tioned, but the movement is distinctly outward and slightly upward. The movements of each segment differ in time, conforming to the movement of the segment of the heart beneath.

Occasionally a thymus will be found which gives four lateral borders by fluoroscope and plate, two on each side. The pair internal lie close to the borders of the sternum. The second pair is seen at a considerable distance externally. It has been supposed that the two inner lines represent the lateral borders of a median lobe, and that the lines external represent the external lateral borders of two lateral lobes.

I have attempted to conform Boggs' sign[2] to this method of examination, but have failed to confirm it. Boggs asserted that the percussion border of the hyperplastic thymus moves upward and downward with extreme extension and flexion of the head. This sign is sometimes obscured by evidences of former tuberculous processes, and especially pleural adhesions. A study of the movements previously detailed considered in connection with evidences of such conditions will lead to a correct interpretation.

Possible sources of error should be kept in mind as follows:

1. A hyperplastic third or inferior lobe of the thyroid sometimes occupies a position in the critical space of Grawitz. I have not seen such a case, but on theoretical grounds believe that the shadow would be more dense than a thymus persistans. It should not be forgotten that at least 90 per cent. of enlarged thyroids are accompanied by hyperplastic thymus glands. The shadow of a thyroid lobe in this position should rise and fall in the act of swallowing.

2. The absence of a characteristic thymus shadow does not exclude its presence. Hyperplastic thymus tissue sometimes extends from the base of the tongue to the apex of the heart. It may hide behind the sternum, so far as the fluoroscope is concerned, enlargement having taken place in an anteroposterior direction (Halsted[3]).

3. A thymus shadow may be cast by the fat which replaces the lymphoid tissue during the normal involution of that gland. It appears doubtful if this could cause confusion to the extent of a positive error in diagnosis. It should not be forgotten that hyperthymization (Svehla) may possibly arise from a very small and insignificant persisting remnant, the presence of which could not be directly diagnosticated by any method now available.

4. The differential diagnosis between thymus hyperplasia and mediastinal tumors presents no unusual difficulties. The appearance of pressure on the bronchial tree is conclusive. The obstruction which blood presents to the passage of the Roentgen ray gives a characteristic appearance to aortic aneurysms.

2. Boggs: Tr. Assn. Am. Phys., 1911, xxvi, 353.
3. Halsted: Harvey Society Lectures, 1913-1914, Series 9, p. 241.

The Mental Hospital of the Future.—In the hospital for the insane of the future there will be no locks and bars or secured doors and windows. For these means of restraint there will have been substituted plain, human, socialized intelligence. Wards will be on the ground floor. Physicians and nurses will be, not only technically trained in a distinct and recognized profession, but they will have received in addition a knowledge of practical psychology and sociology. The social problems involved in the insane and in their care and treatment, will be given as careful consideration as the medical problems.—*Institution Quarterly* (Ill.)

STUDY OF LATER CASES OF SCARLET FEVER OCCURRING IN BROOKLYN

B. FRANK KNAUSE, M.D.
Borough Chief, Bureau of Preventable Diseases, Department of Health, City of New York

NEW YORK

In an article by G. B. Young,[1] Commissioner of Health of Chicago, justification is apparently furnished for the classified quarantine of cases of scarlet fever and diphtheria as enforced in that city at the present time. Statistics given by Young are reproduced in Tables 1 and 2.

TABLE 1.—SCARLET FEVER IN CHICAGO, MARCH 15, 1914, TO NOV. 1, 1914 (FROM YOUNG)

	No. of Cases	Secondary Susceptibles	Secondary Cases	Secondary Per Cent.
A Quarantine	92	112	1	1.087
B Quarantine	306	234	16	5.22
C Quarantine	870	865	60	6.9
Hospitalized	430	315	10	2.32

TABLE 2.—SECONDARY CASES OF SCARLET FEVER IN NEW YORK CITY (FROM YOUNG)

	No. of Cases	Secondary Cases	Secondary Per Cent.
Quarantined at home	1,003	91	9
Removed to hospital	327	20	6

The statistics quoted under Table 2, showing secondary cases in New York City, were so out of proportion to those of Chicago, as shown in Table 1, that a study was undertaken of 1,610 cases of scarlet fever occurring in Brooklyn at about the same period, namely, March to December, 1914.

The term "later cases" has been used in preference to "return cases," which is evidently a misnomer as applied to cases of scarlet fever. The term "later cases" as used in this study applies only to those later cases whose onset is subsequent to the first report received by the department of health of a case of scarlet fever. If four cases in a family were reported by the attending physician at the same time, even though the onset of each varied, they were considered as four primary cases, provided no previous case had been reported in this family. This procedure is justifiable inasmuch as this study is one to determine the value of quarantine in relation to later cases, and the responsibility of the department of health begins from the date of receipt of the first report of a case.

The health department of the city of New York maintains only two classes of quarantine, namely, "observation" and "supervision" cases.

A. *Observation Cases.*—Cases which require infrequent visits to maintain proper isolation. This may mean a number of things. The house may be a private dwelling, two-family house or tenement, but the intelligence of the people and their desire to maintain isolation must be evident. A trained nurse may or may not be in attendance. The number, location of rooms, size of family and the presence of susceptibles are considered in determining if the case should be considered as an observation case.

B. *Supervision Cases.*—Those in which it is evident that proper isolation will not be maintained without careful watching on the part of the field force. In these cases, when violations of proper isolation

1. Young, G. B.: Occurrence of Return Cases of Scarlet Fever and Diphtheria, The Journal A. M. A., Feb. 6, 1915, p. 487.

are noted, the attending physician is first notified and a patrolman sent to warn the family that removal to the hospital will be forced if a second violation occurs. On the second report of failure to isolate properly, removal to the hospital is forced.

The determination as to class of case is left entirely to the judgment of the field worker, the district nurse. At the time of her first visit in making out her history card, Form 20-J, she notes on the reverse side "observation" or "supervision" case and the date on which the patient is to be revisited. The supervision case must be visited every two or three days, while an observation case may be completed in two visits—the primary visit when history is taken and the final visit when case is terminated. As the quantity of work is very large at times, the number of field workers too meager; and as nurses are human, the temptation to consider cases as "observation" instead of "supervision" occurs, and the lack of proportion between the two classes of cases, as shown in the study, is evidence that it has been easy to yield to temptation.

Quarantine, as understood by the district nurse, applies to the patient alone; others, with the exception of attendants, are kept from coming in contact with the patient who is considered the source of infection.

TABLE 3.—CASES STUDIED

Character of Dwelling	Number of Cases	Adults	Susceptible Children	Later Cases	Removed to Hospital	Quarantined at Home	Observation Cases	Supervision Cases	Percentage of Later Cases to Reported Cases	Percentage of Later Cases to Susceptible Children
Tenement houses..	1,000	1,887	1,310	46	239	761	641	120	4.6	3.51
Private houses....	237	563	318	6	24	213	203	10	2.53	1.88
Two-family house	352	679	520	18	35	317	291	26	5.11	3.07
Boarding house...	17	70	18	0	12	5	4	1		
Lodging house....	0	0	0	0	0	0	0	0		
Miscellaneous.....	4	8	5	0	0	4	4	0		
Total.....	1,610	3,207	2,171	70	310	1,300	1,143	157		

A hanging card is left with the family giving instructions under the head of "Precautions" as follows:

During the illness, all unnecessary furniture, such as curtains, carpets and pictures, should be removed from the sickroom.

Dogs, cats and other pets should be kept out of the sickroom, as they often carry the disease to others.

Discharges from the mouth, throat and nose should be received on cloths and immediately burned or boiled.

Bed linen, towels, napkins, etc., should be disinfected by soaking in a solution of 2.5 per cent. carbolic acid. This should be done before goods are removed from sickroom. These goods should then be boiled in soap suds for one-half hour. The patient's nightgowns, sheets, etc., should be soaked in the solution of carbolic acid and washed in hot soap suds.

Dishes and utensils used by the patient should be kept in the sickroom until recovery, unless scalded with boiling water before removal. The nurse or attendant, while in the sickroom, should wear a special gown or outer garment, completely covering her clothing. On leaving the room, she should soak her hands in a disinfecting solution and then wash them in hot soap suds. Urine and stools, immediately after being received in a vessel, should be covered with an equal quantity of a solution of one tablespoonful of chlorid of lime in one quart of water, and allowed to stand fifteen minutes before emptying.

Upon recovery, the patient should be bathed and hair washed in warm soap suds, then dressed in clean clothes which have not been in the sickroom.

The members of the family and the attendant are not prevented from using public halls, and entering public conveyances or places of assembly. If the patient is properly quarantined, children in private houses may attend public school on special school per-

TABLE 4.—PERCENTAGE OF LATER CASES

	Number of Cases	Later Cases	Percentage
Observation	1,143	46	4.02
Supervision	157	13	8.28
Entered Hospital	310	11	3.54

TABLE 5.—LATER CASES

Case Number	Age, Years	Onset of Primary Case	Date of Placarding	Onset of Later Case	Primary Case Removed to Hospital	Observation	Supervision	Character of House	Number in Family	Number of Rooms
1	2	6/19	6/22	7/ 9	....	Yes	....	Ten.	5	4
2	7	8/13	8/15	8/26	....	....	Yes	Ten.	7	4
3	4	7/16	7/18	8/10	....	....	Yes	2 Fam.	8	6
4	7	6/25	6/27	6/30	....	Yes	....	2 Fam.	6	7
5	9	8/23	8/25	8/31	8/25	....	....	2 Fam.	6	5
6	14	8/13	8/18	8/16	....	Yes	....	2 Fam.	7	5
7	7	6/22	8/18	8/13	....	Yes	....	2 Fam.	7	5
8	3	8/13	8/18	9/ 2	....	Yes	....	2 Fam.	7	5
9	4	7/26	7/30	7/31	....	Yes	....	Ten.	6	4
10	16	6/14	6/20	7/ 3	....	Yes	....	2 Fam.	7	6
11	5	6/24	7/ 7	7/10	....	Yes	....	Ten.	6	8
12	3	6/24	7/ 7	7/10	....	Yes	....	Ten.	6	8
13	20*	6/24	7/ 7	7/10	....	Yes	....	Ten.	6	8
14	7	4/20	4/25	4/27	....	Yes	....	P. H.	10	6
15	4	4/20	4/25	4/27	....	Yes	....	P. H.	10	6
16	2	5/27	5/29	6/ 6	....	Yes	....	Ten.	4	4
17	3	5/26	5/29	5/30	....	Yes	....	2 Fam.	6	6
18	6	4/ 6	4/10	4/19	....	Yes	....	P. H.	6	10
19	13	4/21	4/28	5/ 6	....	Yes	....	P. H.	6	8
20	4	5/ 5	5/13	5/13	....	Yes	....	Ten.	8	5
21	6	3/12	3/16	3/18	....	Yes	....	2 Fam.	6	7
22	4	4/29	5/ 4	5/15	....	Yes	....	Ten.	4	4
23	2½	4/14	4/20	4/27	....	Yes	....	Ten.	5	4
24	8	4/14	4/20	4/20	....	Yes	....	Ten.	5	4
25	9	4/20	4/22	5/14	....	....	Yes	2 Fam.	6	4
26	3½	4/20	4/22	5/13	....	....	Yes	2 Fam.	6	4
27	3	4/ 1	4/ 4	4/14	....	Yes	....	2 Fam.	6	4
28	2	4/ 1	4/ 4	4/14	....	Yes	....	2 Fam.	6	4
29	10	6/ 3	6/ 5	6/13	6/ 5	....	....	Ten.	5	5
30	6	6/13	6/15	6/28	6/15	....	....	Ten.	5	5
31	3	5/23	5/26	6/ 7	....	Yes	....	Ten.	5	4
32	2	4/ 8	4/11	4/17	....	Yes	....	P. H.	7	10
33	5	4/ 8	4/11	4/30	....	Yes	....	P. H.	7	10
34	10	3/15	3/18	4/16	....	....	Yes	Ten.	9	6
35	12	3/15	3/18	4/18	....	....	Yes	Ten.	9	6
36	8	5/ 7	5/ 8	5/17	....	Yes	....	Ten.	4	5
37	1	5/ 7	5/ 8	5/17	....	Yes	....	Ten.	4	5
38	3	4/15	4/18	4/22	....	Yes	....	Ten.	5	4
39	5	3/25	4/11	4/20	....	Yes	....	Ten.	6	7
40	2	3/25	4/11	4/20	....	Yes	....	Ten.	6	7
41	9	3/18	3/21	3/31	....	....	Yes	Ten.	13	5
42	3½	3/10	3/11	3/31	....	Yes	....	Ten.	6	6
43	1½	3/10	3/11	4/ 1	....	Yes	....	Ten.	6	6
44	9	3/10	3/11	4/10	....	Yes	....	Ten.	6	6
45	5	4/ 9	4/14	4/16	....	Yes	....	Ten.	5	4
46	9*	4/ 9	4/14	4/16	....	Yes	....	Ten.	5	4
47	1½	5/21	5/25	5/27	6/ 9	....	....	Ten.	4	4
48	6	3/28	3/31	4/ 1	4/ 2	....	....	Ten.	5	2
49	10	4/27	5/13	5/24	....	....	Yes	Ten.	3	6
50	5	5/ 4	5/ 7	5/28	....	Yes	....	Ten.	7	4
51	17	4/23	4/27	5/13	....	....	Yes	Ten.	5	4
52	2	4/24	4/29	5/ 9	....	Yes	....	Ten.	8	6
53	8	3/24	3/27	4/ 1	....	Yes	....	Ten.	6	2
54	6	3/24	3/27	4/ 1	....	Yes	....	Ten.	6	2
55	16	5/ 3	5/ 4	5/ 5	5/ 5	....	....	Ten.	6	5
56	16	4/15	4/22	4/22	....	Yes	....	2 Fam.	5	6
57	7	6/16	6/19	6/22	6/23	....	....	Ten.	5	3
58	9	5/28	6/ 1	6/ 3	6/ 5	....	....	2 Fam.	6	6
59	7	6/ 2	6/ 5	6/ 5	6/ 7	....	....	2 Fam.	6	6
60	4	6/ 5	6/ 8	6/12	6/27	....	....	2 Fam.	6	6
61	3	5/ 4	5/ 5	5/10	....	....	Yes	Ten.	4	4
62	2	5/ 2	5/ 9	5/13	....	....	Yes	Ten.	5	6
63	8	4/ 8	4/10	?	....	Yes	....	Ten.	7	4
64	10*	4/ 8	4/10	?	....	Yes	....	Ten.	7	4
65	6	4/ 8	4/10	?	....	Yes	....	Ten.	7	4
66	11*	6/ 8	6/11	6/13	6/17	Yes	....	2 Fam.	6	7
67	6	4/ 7	5/11	6/ 3	6/ 3	....	....	Ten.	5	4
68	3	3/25	3/30	4/11	....	....	Yes	Ten.	6	6
69	6	11/ 1	11/ 4	11/21	....	Yes	....	Ten.	4	4
70	7	11/12	11/14	11/19	....	....	Yes	Ten.	6	3

* Months.

mit without change of domicile, provided they are not susceptible or that the incubation period of five days has expired.

During the period during which this study was made, the duration of quarantine for scarlet fever was thirty-five days from the onset of the disease, provided there were no purulent discharges, and desquamation had ceased. At present this period has been decreased to thirty days, in accordance with the rules of the New York State Department of Health. There is no placarding of private houses or of two-family houses where there is separate entrance or exit to apartment. Tenement houses are placarded on the door opening into the public hall. In Table 3 is shown the number of adults in the family without reference to their susceptibility, as these data have not been required on history cards, and for this reason cannot be given.

In the seventy later cases there are twenty-five that appeared within five days from the date of placarding as follows:

1 day	7
2 days	9
3 days	2
4 days	3
5 days	4
Total	25

The incubation period of scarlet fever being taken as from one to five days, responsibility for the occurrence of the later cases cannot be charged against any method of quarantine. There are also other cases which should not be charged to faulty quarantine, as in Cases 11, 12, 13, 63, 64 and 65, and in which diagnosis was made by observing the presence of desquamation. In these cases the later cases, taking the date of their report as a guide in terming them such, are really the primary cases, and the case first reported the later one.

Cases 6 and 7 are also of interest and should be eliminated. In these cases the original case was diagnosed as diphtheria by the attending physician, cultures negative, onset June 22, placarded June 26, and terminated on negative cultures without fumigation July 23. Cases 6 and 7 were reported August 18 and placarded the same date.

Cases 36 and 37 are not chargeable to faulty quarantine methods. Primary case was diagnosed and reported as measles by attending physician, May 7, and placarded as such. The case was terminated in five days, and Cases 36 and 37 were not reported until May 21, with an onset May 17. Case 67 shows onset of primary case April 7, terminated and fumigation performed May 11, and onset of later case was June 3.

In Case 5, the primary case was removed to the hospital, and fumigation was done August 25. Onset of later case was August 31. In Case 29, the primary case was removed to the hospital June 5, and fumigation was performed June 6. The onset of the later case occurred June 13. In Case 30, the primary case was removed to the hospital and fumigation was performed June 15. Onset of the later case occurred June 28. In a study to determine the value of quarantine in preventing the occurrence of later cases, it is fair to eliminate these thirty-nine cases.

Of the remaining thirty-one cases, certain cases are of considerable interest. In Case 1, the residence of the susceptible child was changed at the time of placarding the primary case June 22. The onset of the later case was July 9, seventeen days subsequent to change of address. This would indicate a long period of incubation or that infection had been carried. Cases 2, 3, 25, 26, 34 and 35 were supervision cases. Violation of quarantine had been observed; a patrolman of the health squad was sent to warn, but before the cases could be forced to the hospital according to the present procedure, the later cases developed. Two cases occurred in children under the age of 1 year. One case (Case 51) occurred over the age of 16 years.

Thirty-one later cases occurring in 1,610 reported cases gives a percentage of 1.925 against 1.087 in Grade A quarantine in Chicago.

The proportion of later cases to susceptibles, *adults and children* in Grade A of the Chicago study is 0.8929 per cent. The proportion in the Brooklyn study, 2,171 susceptible children and thirty-one later cases, is 1.4279 per cent. This should not be considered proof of the efficacy of the Grade A quarantine of Chicago, however, as our study does not include adults, of whom there were 3,207, because we have no data to show the exact number who were susceptible. Furthermore, the percentage shown in the Brooklyn cases includes observation and supervision cases as contrasted with Grade A alone.

Finally, attention is called to the statement in the article by Dr. Young: "By 'secondary case' is meant one occurring among the susceptibles in the family at a date at least two weeks beyond the usually recognized limits of the period of incubation." It is extremely difficult to understand why this arbitrary limit of "two weeks beyond the usually recognized limits of the period of incubation" has been established by Dr. Young in the determination of later cases. This would be a period of nineteen days, and out of the seventy cases studied in Brooklyn, there were only ten occurring after this period. It seems evident that this is an error and that the method of quarantine may be questioned in any case occurring after the period of incubation has expired from the date that the case was quarantined and placarded, with certain exceptions as in cases noted above.

During the years from 1907 to 1914, the quarantine period for scarlet fever in Brooklyn was thirty-five days. No children in the infected family were permitted to attend school though residence was changed. On first evidence that isolation was not proper, without warning, the case was forced to the hospital. In view of the large increase in population and the fact that in 1914 the present liberal quarantine was in effect, the following statistics are of interest if the number of cases reported is in direct relation to the grade or excellence of quarantine:

Year	Cases	Year	Cases	Year	Cases	Year	Cases
1907	5,471	1908	8,236	1909	4,490	1910	6,810
1911	6,449	1912	4,649	1913	4,614	1914	3,716

The question presents itself: Is the present system of quarantine in New York City satisfactory? Two criticisms may be offered in reply to this question:

A. In six cases out of thirty-one, violations were noted and later cases developed before forcible removal could obtain. This would seem to indicate some modifications of the present procedure of forcible removal similar to Grade C of Chicago.

B. Out of 1,610 cases, 1,300 of which were quarantined at home and 761 of these in tenements with

2,575 susceptible children, only 157 were supervision cases.

The difficulty here is not in the spirit but in the number of field workers. Studies are made in a congested district, by a clever, bright, capable nurse, skilled in every way for the work in hand. On the basis of the number of calls which can be made by this trained observer, the number of field workers is determined, and it is evident that the same work cannot be accomplished by nurses of average ability in districts which are less congested.

The present system certainly interferes less with the school attendance of children and offers less hardship to the family. The study of 1,610 cases may not be sufficient to arrive at definite conclusions but it offers sufficient evidence to cast doubt on the conclusions that the system of classified quarantine in Chicago has justified itself. The weight of evidence would tend to show that the liberal quarantine of the health department of New York is the more justifiable, but this judgment should be supported by the study of a larger number of cases.

THE DIAGNOSIS AND TREATMENT OF GONOCOCCAL VULVOVAGINITIS IN INFANTS AND YOUNG CHILDREN

CHARLES C. NORRIS, M.D.
PHILADELPHIA

The frequency with which gonococcal vulvovaginitis is seen in the young, the difficulty often experienced in demonstrating the specific micro-organism, and the extreme chronicity of this form of neisserian infection are known to most workers in this field of medicine. Vulvovaginitis may be due to various organisms, but, unfortunately, in the large majority of cases occurring among children, the gonococcus is the exciting factor. The combined statistics of Hurdon,[1] Koplik,[2] Romniceanu and Robin,[3] Dukelski[4] and Plomley[5] show that, in a large series of cases, 80.29 per cent. were due to the gonococcus of Neisser. For this reason, and because of the difficulty with which, as a rule, the organism can be demonstrated, all suspicious cases of inflammation in the vulvovaginal region should be treated as if they were of specific origin, until they are proved to be nonspecific. This is especially important in institutional work, in which the danger of transmitting the infection to other children is great.

During the acute stage of the attack, the gonococcus is usually readily isolated; later, however, when the disease has become chronic and the discharge is scanty, the organism can be demonstrated only with great difficulty. Not only is the demonstration of the gonococcus of importance in making the diagnosis, and, as a result of this, instituting appropriate treatment and safeguarding others against infection, but also it is of equal importance to determine from its absence, after a course of treatment, when a cure has been effected. In recent years the complement fixation and the cutaneous tests have proved of great value in the diagnosis of gonorrhea. Unfortunately, however, in the case of vulvovaginitis, the negative results obtained by these tests cannot be accepted as giving a free bill of health to the child. On the other hand, positive results are to be regarded as diagnostic in practically all cases in which the tests have been carried out by an experienced bacteriologist. It follows, therefore, that these tests are of secondary importance in determining when a cure has been effected — a point of great practical importance. In order to decide this question, we are, therefore, still compelled to rely, at least to a large extent, on the bacteriologic examination.

I have previously mentioned the difficulty with which the organism is demonstrated in chronic cases. This difficulty is increased in those cases which have received proper treatment, for the physical signs are often practically absent, and there may be little or no appreciable discharge. If, under such circumstances, the organisms are present in spite of the fact that they cannot be detected microscopically, treatment is likely to be discontinued, and, as a result, the disease assumes renewed activity, and the infection is greatly prolonged. It is of the utmost importance, therefore, for the clinician to be able to determine when the organisms are absent, and when they are present.

In 1910, Van Gieson[6] suggested a method of determining the presence of the gonococcus by examining the centrifuged washings of the vagina. I have employed this method for years in all doubtful cases, and have found that, by its use, the gonococcus can more readily be demonstrated. The following technic is employed: The child is placed in the Sims left lateral position, or, in the case of an infant, is held in the nurse's lap, with the buttocks elevated. The external genitalia are exposed and wiped with a cotton sponge wet with mercuric chlorid solution. The labia are next separated, and if any discharge is present, this is removed by means of a dull knife-blade or any similar instrument. The cotton swab usually employed for this purpose is of lessened value, since it tends to retain within the meshes of the cotton the cellular elements of the discharge, the most valuable elements, the demonstration of the organism intracellularly being of prime importance. Furthermore, the act of rubbing the swab over a glass slide has a tendency to destroy the pus-cells, so that when the smear is examined, more extracellular organisms will be found to be present. The smear obtained may be examined at once, and if found negative for gonococci, or if only an insufficient amount of discharge for examination can be secured, the following procedure is employed:

The patient is placed in an elevated position, so that the solution will not run out of the vagina, and with a soft, all-rubber eye syringe, about one-half ounce of 1 : 5,000 mercuric chlorid in normal salt solution is injected.[7] If the patient is in the proper position, and the bladder and rectum are moderately empty at the time of examination, the vagina will be ballooned out by the atmospheric air. This is an important detail. With the vagina thus partially filled with solution and thoroughly distended, a smooth glass rod is introduced and the various parts of the vagina are rubbed with it. This procedure is done for the purpose of detaching any adherent secretion. In cases in which

1. Hurdon, E., in Kelly and Noble: Gynecology and Abdominal Surgery, Philadelphia and London, 1907, ii.
2. Koplik: Jour. Cutan. and Gen.-Urin. Dis., 1893, ii.
3. Romniceanu and Robin: Wien. med. Presse, 1901, xlii, 1970.
4. Dukelski: Jahrb. f. Kinderh., 1904, lix, 397.
5. Plomley: Australasian Med. Gaz., Sept. 20, 1906, p. 455.
6. Van Gieson: Med. Rec., New York, June, 1910.
7. The making up of the mercuric chlorid in salt solution was suggested to me by Dr. John A. Kolmer. The organisms stain better and the pus and epithelial cells are fixed more readily with the salt solution than when a watery mercuric chlorid solution is employed.

the hymen is sufficiently stretched, the gloved index finger may be substituted for the glass rod. In a further effort to obtain material, the solution may be somewhat vigorously forced in and out a number of times with the syringe. The solution thus obtained is centrifuged for fifteen or twenty minutes at high speed, and the sediment examined in the usual way.

In suspected cases that yield negative findings by the means just described, or as a final measure to make assurance doubly sure, before discharging the patient as cured the following method is recommended: On the day prior to the bacteriologic examination, the entire vagina is painted with a moderately strong solution of silver nitrate, the strength of the solution varying somewhat with the age of the patient and the condition of the vaginal mucosa. Usually a 5 or 10 per cent. solution is sufficiently strong — it should be strong enough to produce a distinct reaction. On the following day, washings from the vagina are obtained, and these will often show gonococci that have been undemonstrable by other methods. In twenty-one chronic cases in which the method just described was used, the following results were obtained, demonstrating the value of the procedure: simple smear, positive, 45 per cent.; washings, 75 per cent.; washings preceded by chemical irritation, 97 per cent.

TREATMENT

In this, as in the treatment of any form of gonorrhea, cleanliness is of the utmost importance. The tendency of gonorrhea to become chronic is undoubtedly due to a large extent to the more or less constant reinfections by organisms from the depths of the infected tissues. The treatment here outlined is based on the following facts: Desiccation quickly destroys the gonococcus. The organism does not thrive on squamous epithelium, except that of the immature variety, such as is found in the vaginas of the young. Despite the fact that virulent organisms are constantly being deposited on the vulva and in the vagina, gonococcal inflammation of these areas is unusual in the adult. With these facts in mind, it is evident that cleanliness, drying, and the development of the vaginal mucosa should be important factors in the treatment.

TECHNIC

With the patient in the knee-chest or in the Sims position, or, in the case of an infant with the buttocks elevated by a nurse, the vagina is ballooned out until it is well distended. This occurs as soon as the intestines gravitate out of the pelvis, and the labia are separated. In the majority of instances, it is wise to sacrifice the hymen as soon as the diagnosis has positively been established, for its retention interferes materially with the treatment. In older children, this can be done under cocain anesthesia. The first one or two treatments may well be devoted to this step. In the case of older children, it is extremely important that the child's confidence be obtained, for only in this way will the physician secure cooperation in the treatment. This is best done by avoiding, so far as possible, the infliction of pain in the treatment. With the hymen obliterated, better drainage, more thorough treatment, and a greater degree of cleanliness can be maintained. The vagina is thoroughly washed with a weak solution of potassium permanganate. It is then swabbed with a 25 per cent. argyrol solution. The latter is employed chiefly as a cleansing agent. After the argyrol has been applied, the vagina should be dried as thoroughly as possible, a thin strip of gauze being used for the purpose, this having been found superior to cotton swabs. To complete the drying, an empty atomizer is used. In some cases it has been found necessary to insert a small wire speculum to maintain the dilatation of the vagina.

If the child is in the knee-chest position, it may now assume the Sims posture, which is more comfortable. The latter position is maintained for from twenty to thirty minutes, care being observed during this time to keep the vagina well distended with air. When this has been done, the vagina should be absolutely dry. As a final step, and with the vagina thoroughly distended, it is flooded with a weak solution of silver nitrate. At first about a 1 or 2 per cent. solution is employed, but as the vaginal mucosa becomes more fully developed, stronger solutions may be utilized. The addition of a little glycerin to the silver solution is of advantage. The treatment here described is administered three times a week, and during the interim the vagina should be washed out daily by the mother or nurse with either a weak potassium permanganate or an argyrol solution, a soft rubber eye syringe being employed. This is not a therapeutic, but a cleansing measure. When the case is in the hands of a nurse or of an intelligent mother, and especially in the case of children of from 5 to 10 years of age, the attendant may be taught to place the child once or twice daily in the Sims position, and to separate the vulva slightly, so that the vagina will become distended with air. This procedure not only tends to destroy all surface organisms, but also develops the squamous epithelium lining the vagina.

Much of the success of the treatment is dependent on the thoroughness with which the technic is carried out. If any detail is omitted, the cure will be delayed. This form of treatment is not, as a rule, applicable to dispensary patients, owing to the time required and the difficulty generally experienced in persuading the parents of these children to bring them regularly for treatment. The general history of these cases as commonly encountered is one of attacks of discharge, etc., interspersed with periods of more or less quiescence, during which the discharge is scanty or absent, and few or no subjective symptoms are present. Usually dispensary patients will bring their children for treatment only so long as the disease is active, and, as soon as the subjective symptoms are overcome, they neglect further treatment, with the result that an exacerbation subsequently occurs and the entire procedure has to be repeated.

It is safe to consider that a cure has been effected when negative findings are obtained after three consecutive bacteriologic and physical examinations, at two-week intervals, during which time no treatment has been employed, the last examination being preceded by the chemical irritation with silver nitrate previously described. As a matter of fact, four, or sometimes five, consecutive negative examinations are made, for washings are usually examined every two weeks, and treatment is continued until not only physical signs are absent, but also the washings prove negative. The first of the three test examinations is then made two weeks later. A cure was established in fourteen cases as the result of the preceding method of treatment in an average period of twelve weeks, the cure being regarded as dating from the day of the

first of the three consecutive negative examinations. Two weeks should be subtracted from this, owing to the fact that the first negative examination was made at that time. The most persistent case in the series lasted eighteen weeks, recurrence having taken place after two negative examinations, gonococci being found in the final test that had been preceded by the silver nitrate irritation. In this series no case was included that had not been treated regularly.

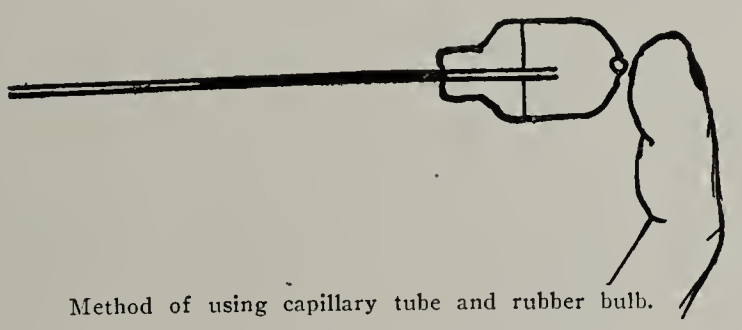
At the risk of repetition, I wish to emphasize again the necessity for observing thoroughness and regularity in carrying out the treatment. The disease is usually most persistent at or about the external os, the cervix being infected in practically all cases. The simple instillation into the vagina, often at irregular intervals, of various solutions, as frequently practiced, is, in my opinion, of little value in the treatment of this disease.

1503 Locust Street.

A SIMPLE OUTFIT FOR THE DISTRIBUTION OF TOXIN FOR THE SCHICK TEST*

ABRAHAM ZINGHER, M.D.
NEW YORK

Owing to its reliability, the Schick test has found a constantly increasing field of application. In the Research Laboratory of the New York City Department of Health it has given us the greatest possible help in connection with work carried on at the Willard Parker Hospital during the past eighteen months. We[1] have tested 1,300 scarlet fever cases and have found 700 which gave a negative reaction. Not one of the negatively reacting patients developed clinical diphtheria, although they had received no immunizing injections of antitoxin and were constantly exposed in the wards to cases of diphtheria, and a certain proportion of them had become carriers of virulent diphtheria bacilli.



Method of using capillary tube and rubber bulb.

We therefore feel confident that a negative reaction means immunity, while a positive reaction indicates a probable susceptibility to diphtheria.

The great difficulty in popularizing the test and placing it within the reach of the general practitioner has been, on the one hand, the inconvenience of handling the undiluted toxin, and, on the other hand, the rapidity with which the diluted toxin deteriorates on keeping, either in solution or in tablet form. The outfit here described has been devised to furnish a standard amount of undiluted diphtheria toxin, which remains of fairly constant strength when kept in the icebox, and can be readily diluted when required. The outfit is supplied by the Department of Health free of charge in New York City. We have every reason to believe that it will be found convenient and reliable.

The operator should be skilled in the intracutaneous injection, and should consider all reactions as true unless able to differentiate the positive and pseudoreactions. A 1 c.c. record tuberculin syringe and a fine platinum-iridium or steel needle will be found suitable for the test. If the injection has been properly made, a small wheal-like elevation appears, which shows the distinct markings of the openings of the hair follicles. This elevation persists for two or three minutes. A positive reaction, which indicates that the individual is not immune to diphtheria through antitoxin at least, appears in from twenty-four to forty-eight hours, as a distinctly circumscribed area of redness and slight infiltration, which measures from 1 to 2.5 cm. in diameter. The redness increases in intensity during the next three or four days, persists for another week, and on fading gradually gives place to a brownish pigmentation, which always shows superficial scaling. The true reaction is characteristic of the irritant action of toxin on tissue cells, when there is no antitoxin to protect them. In the case of a negative reaction, which indicates an antitoxin immunity to diphtheria, the skin remains normal in appearance. The pseudoreaction, seen occasionally in older children and in adults, is not due to the irritant action of toxin, but is an anaphylactic response of the skin to the protein substance of the diphtheria bacillus, which is present in solution in the broth used for toxin. A similar reaction can be obtained with a dilution of the autolysate of the diphtheria bacillus, in which no toxin is present. The pseudoreaction can generally be distinguished clinically from the true reaction. It appears earlier, is less sharply circumscribed, and usually disappears in from three to four days. It is characterized by a central area of redness of varying size, surrounded by a secondary areola. On fading it leaves only a faintly pigmented area, which soon becomes invisible. As already stated, it will be safer, however, for those insufficiently experienced to regard pseudoreactions as true reactions.

The outfit for the Schick test consists of a capillary tube and a small rubber bulb, such as are employed in the distribution of vaccine virus, and a bottle containing 10 c.c. of sterile physiologic saline solution (with 0.025 per cent. phenol). The capillary tube contains 2 minimum lethal doses for the guinea-pig of undiluted diphtheria toxin. This toxin should not be a freshly prepared lot, but ripened for at least a year. The capillary glass tubes are filled by means of a 0.25 c.c. record syringe and a fine needle, two minimum lethal doses of toxin being carefully measured into each tube. The ends of the capillary tubes are then sealed in the flame.

DIRECTIONS FOR USE

Break off one end of the capillary tube, and push the broken end carefully through the neck of the rubber bulb until it punctures the diaphragm within, and enters the cavity of the bulb; then break off the other end of the tube. Hold the bulb between thumb and middle finger, place the index finger over the opening in the larger end of the bulb and expel the toxin into the saline. Rinse out the capillary tube by drawing up saline several times, then cork the bottle and shake the diluted toxin. Inject exactly 0.1 c.c., representing

---

* From the Research Laboratory of the New York City Department of Health.

1. Park, W. H.; Zingher, Abraham, and Serota, Harry M.: The Schick Reaction and Its Practical Applications, Arch. Pediat., 1914, xxxi, 481. Park, W. H., and Zingher, Abraham: Practical Applications Obtained from the Schick Reaction, Proc. New York Path. Soc., October, 1914. Park, W. H.; Zingher, Abraham, and Serota, Harry M.: Active Immunization in Diphtheria and Treatment by Toxin-Antitoxin, THE JOURNAL A. M. A., Sept. 5, 1914, p. 859.

1/50 minimum lethal dose for the guinea-pig, intracutaneously on the flexor surface of the forearm or arm. The contents of the bottle are sufficient for about eighty tests. On account of the fairly rapid deterioration, it is not advisable to use the diluted toxin after twelve hours. The outfit must be kept in the icebox to prevent deterioration.

A 1 c.c. record tuberculin syringe and a fine platinum-iridium needle (No. 22, Burroughs Wellcome & Co.), or steel needle (No. 3, B. W. & Co.) are preferred. An ordinary hypodermic syringe, unless graduated to 0.1 c.c., is not satisfactory.

3915 Broadway.

ACUTE YELLOW ATROPHY OF THE LIVER IN A CHILD OF FOUR

William H. Mayer, M.D., Pittsburgh

History.—Katherine S., a well-nourished white child, aged 4 years and 2 months, weighing 38 pounds, had the following family history.

Her father, aged 37, and mother, aged 34, one brother, aged 10 and one sister aged 7 are living and healthy. Two brothers died in the first year of life from unknown causes. The paternal grandfather and greatgrandfather died from gastric carcinoma. The patient was a full-term child, weighing 9 pounds at birth. Except for a slight gastro-enteritis at the age of 3 years, there has been no illness.

Present Illness.—Jan. 22, 1915, the child was brought to me by her father, who stated that he had noticed a yellowness of the conjunctiva for several days. There were no other symptoms, the appetite was excellent, the child had been in good spirits and had had no signs of gastric disturbance. When questioned, the father stated that she had consumed a considerable quantity of chocolate candy recently.

Physical Examination.—The child was well nourished, robust and apparently 5 years of age. The conjunctiva and the skin showed a faint icterus. The tongue was coated and the breath fetid. The heart and lungs were negative; the hepatic margin was not palpable. Temperature, 98.2; pulse, 78; respiration, 22.

The urine was straw colored with acid reaction. Specific gravity, 1.014. There was a faint trace of albumin. Test for sugar was negative, for bile and indican positive. Microscopic examination showed no casts, no crystals and few epithelial cells.

Even in the absence of the typical gastric symptoms a diagnosis of catarrhal jaundice was made, and the routine treatment instituted with the addition of moderate alkalines. The customary dietary restrictions were made.

Treatment.—When the patient was first seen, the treatment was the following: According to time-honored custom a course of calomel, followed by a saline purgative, was given, and sodium bicarbonate, 6 grains, three times a day. In addition, sodium bicarbonate was added to the drinking water to render it alkaline. A daily dosage of sodium phosphate sufficient to produce at least two bowel movements was ordered. This treatment was continued until the acute symptoms developed. The diet was restricted to skimmed milk, and made low in carbohydrates, the proteins being increased. The very mild symptoms in the first stage did not necessitate any of the more radical measures suggested for their relief.

In the acute stage all the supportive measures were brought into play, but of course gained nothing. Hypodermoclysis and enteroclysis were used.

One week later the icterus remained and the child had suffered no further symptoms. The stools were typical, and the treatment was ordered continued.

Until February 11, there was no change in the condition, the appetite was good and the bowels responded well to purgation; the stools were, however, the same. On this day, the child was restless and vomited several times. On the next day the symptoms were the same and on February 12 the child was delirious at times.

Physical examination, February 12, revealed the icterus markedly deepened. The pupils were widely dilated and the patient was very irritable. The hepatic margin was now palpable three finger breadths below the costal margin. Temperature, 98; pulse, 100; respiration, 26. The urine was brown with acid reaction. Specific gravity, 1.032. There was a marked cloud of albumin. Test for sugar was negative; for bile, positive. Microscopic examination revealed few hyaline and blood casts and red blood cells. Crystals of leucin and tyrosin were present in abundance. Sarcolactic acid was not found.

Toward midnight the patient grew very restlesss and complained of severe abdominal pain, the pulse rate grew more rapid and the temperature was subnormal. The hepatic margin was four finger breadths below the costal margin, and tenderness was elicited on slight pressure. The abdomen was markedly distended.

At 3 a. m., February 13, delirium was noted, and this grew rapidly in intensity until it was maniacal. At 8 a. m. the patient grew comatose.

Vomiting of a "coffee ground" material began at this time, and later, free blood. This continued until death. Examination showed the hepatic margin to be receding, and at 6 p. m. it was no longer palpable. The pupils remained widely dilated, the pulse rate increased and the temperature was subnormal until several hours before death, when it rose to 103 F. (agonal rise). In attempting to cause a cessation of hematemesis a foreign serum was suggested, but before it could be procured and administered the patient died.

Necropsy.—Only a partial necropsy was permitted, and this was done by Dr. E. C. Ritchey and myself. The findings were as follows:

On opening the abdomen small hemorrhagic areas were noted everywhere. The parietal, visceral and peritoneum showed petechiae. Along the mesenteric border were several large hemorrhages. The intestinal contents were black and the mucosa showed petechiae. There were no abnormalities of the appendix. The liver was not appreciably decreased in size from the normal (weight not determined). The surface was a light red, and several large areas of hemorrhage were present under the capsule. The gallbladder was collapsed and the gallduct patent. On section the tissue was friable and the surface yellowish, with a number of areas of small punctate hemorrhages. The kidneys were enlarged and presented the characteristics of an acute nephritis.

The microscopic examination (by Drs. H. H. Permar and W. W. G. Maclachlan) revealed the condition to be acute yellow atrophy of the liver.

Rolleston reported twenty-two cases of this disease in children under 10 years of age. This case, however, is unusual on account of the extreme rapidity after the first acute symptoms, death occurring in thirty-six hours. This will also explain the findings of the pathologists, who report that the degeneration was only partial in certain areas. The urinary findings early in the disease were not unusual, and except for the entire absence of gastro-intestinal symptoms there was nothing to alter a diagnosis of catarrhal jaundice. In the last twenty-four hours, however, the diagnosis was evident.

212 Charles Street.

The County as the Unit in the Tuberculosis Campaign.—George J. Nelbach of the New York State Charities Aid Association says that the tuberculosis problem is one largely for local authority and that the county as a political unit has great responsibility in the antituberculosis movement. On account of the immensity of the problem and the great expense connected with it the county is the most practical unit to deal with it, and as already provided for in some states, the county should not only establish an institution for the care and treatment of tuberculosis, but such hospitals should be the center of the organized movement against the disease in the community. It should assume complete responsibility for the discovery and diagnosis of cases and for their care, for the friendly oversight of discharged cases, for the sanitary and medical supervision of patients in their homes, and for a continuous campaign of health education.

Special Article

PRACTICAL PHARMACOLOGY *

(*Continued from page 251*)

XXIX

ASTRINGENTS

Astringents precipitate proteins and cause shrinking of mucous membranes. When applied to inflamed surfaces they cause diminished permeability of the smaller superficial vessels and allay pain due to sensory irritation. They lessen the secretory activity of the gastro-intestinal and other mucous glands, this action being of some importance when the astringents are used in the treatment of diarrhea.

The vegetable astringents act mainly by means of tannins, a group of ill-defined substances characterized by an astringent action and the property of forming black precipitates with ferric salts.

The official tannic acid is soluble in the gastric juice, and in solution combines with the proteins present in the stomach or attacks the gastric mucous membrane. The tannin of gambir (gambir replaces catechu of the Pharmacopeia of 1890), however, is protected by the presence of gum and extractives. When gambir is administered it passes into the intestine, on which it exerts its astringent action, lessens the intestinal secretion and modifies the conditions under which bacteria develop during the inflammation of the mucous membrane.

Certain of the metallic albuminates, such as that of mercury, are soluble in the tissue fluids and by means of its corrosive action the metal destroys cells with which it comes in contact, this action being especially pronounced with mercuric chlorid and zinc chlorid. Albuminate of lead is insoluble in the tissue fluids and when the lead salts are applied in suitable concentration they form an impervious protective coating to the inflamed surface.

The actions of astringents, irritants and caustics differ largely in degree, many of the caustics being astringent when applied in sufficiently dilute solution, and the astringents causing irritation when they are used in too great concentration.

THERAPEUTIC USES

Tannin as such, or in one of the preparations of gambir (catechu), kino or krameria, is sometimes used internally in the treatment of diarrhea; but owing to its tendency to cause nausea and vomiting, especially when given in too great concentration, one of the combinations of tannin with protein, such as tannalbin, is commonly preferred.

Tannin is used in the form of a gargle or troches in relaxed conditions of sore throat. A solution is sometimes used to harden the skin over bony protuberances to prevent bed-sores.

Tannin is sometimes used in the form of an ointment (20 per cent.) or of suppositories, each containing 0.3 gm. (5 grains) for the relief of painful bleeding internal piles, and for prolapse of the rectum. It is irrational to employ opium locally in this way, despite the fact that the well-known galls and opium ointment does afford relief, since the ointment of tannin alone is equally efficacious.

Tannin is frequently directed to be used as a precipitant in poisoning with alkaloids, but the official tannin is not usually readily available in the household and tannin-bearing household articles, such as tea and coffee, are not dependable for this purpose.

Tannin is widely distributed in the vegetable kingdom and many pharmaceutic preparations of vegetable drugs have a wide range of incompatibilities. It is therefore better to avoid prescribing ferric salts and alkaloids especially with such preparations.

The systemic actions of iron, lead and other metals have been discussed, but their uses as astringents and styptics remain to be considered, lead being employed therapeutically only for its astringent action.

Lead acetate is sometimes used with opium in the treatment of diarrhea, but its use should not be long continued lest chronic poisoning be induced. A dilute solution of lead subacetate is used in inflammations and for sprains and bruises, but it should not be applied to the broken skin.

The well-known lead and opium wash is popular as a local application, but the alkaloids of opium are not absorbed to any appreciable extent under these conditions and they have no local analgesic action. A compress wet with lead water will probably answer any purpose that the lead and opium wash serves, and it is more cleanly.

Alum is seldom used internally, though a solution containing from 1 to 5 per cent. is sometimes used as a gargle, but the teeth should be protected against its injurious action. Exsiccated alum is actively astringent and even caustic; it is applied to cankers in the mouth and to chronic ulcers.

Aluminum acetate solution is widely used as an astringent application to infected wounds.

The irritant action of copper sulphate and zinc sulphate explains the use of those salts as emetics. Dilute solutions of zinc acetate and sulphate are used as astringent applications in the urethra, in the eye and in the vagina.

The chlorid of zinc is corrosive; the oxid and stearate are mild astringents and are used as dusting powders on ulcers and inflamed surfaces of the skin.

The tincture of ferric chlorid is commonly used in gargles for sore throat, especially in combination with potassium chlorate. It has been suggested that the alcohol in the tincture be evaporated and replaced with water, the resultant mixture to be used on tampons for checking uterine hemorrhage. The tincture of ferric chlorid or the solution of the subsulphate is sometimes added to glycerin and painted on the throat.

A hot saturated solution of potassium chlorate has often been used as a gargle and mouth wash. Tincture of myrrh is sometimes added to mouth washes and gargles.

In recent years potassium chlorate has been used as the active constituent of tooth pastes and powders. The assumption is that in contact with putrefying organic matter the salt liberates nascent oxygen and thus acts as an antiseptic as well as an astringent. This theory is highly improbable.

Bismuth subcarbonate, subgallate and subnitrate are commonly discussed among the astringents. Their use, however, in the treatment of diarrhea seems to depend on their capacity for forming a mechanical protective covering for the intestinal mucous mem-

* This is the twenty-ninth of a series of articles on useful drugs — on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form. The book, entitled "Pharmacology of Useful Drugs" will be ready about September 1st.

brane rather than on any slight astringent action that they may exert. Bastedo states that they act in a purely mechanical manner as a protective and demulcent to the mucous membrane of the stomach and intestine.

More than twenty-five years ago Harnack called attention to the neglect of certain well-known drugs by clinicians and attempted to explain the therapeutic actions of lime water in the treatment of diarrhea and as a solvent for diphtheritic false membrane. It is unfortunate that more pharmacologists and clinicians do not devote their energies to the investigation of some of the simple remedies of proved value, but which we understand all too little.

Lime water is useful in the treatment of infantile diarrhea because of its astringent effect, and in some cases, because it neutralizes the acid secretions attending the condition. The insoluble calcium salts formed serve to close the finer openings through which bacteria would penetrate. They lessen excretion in the same way, and further, they form a protective covering for the mucous membrane.

The calcium soaps formed with the higher fatty acids are insoluble and have a caoutchouc-like consistency. It has been suggested that their action on the cell lipoids and intercellular substance is a toughening one. Calcium salts are supposed to lessen the permeability of the smaller blood vessels even in those parts of the body that they reach only through the circulation. This systemic action may be induced and the intestinal catarrh controlled when lime water is taken by the mouth, though this action must be rather slight, for, as already stated, most of the calcium is converted into insoluble salts in the intestine — but not in the acid secretions of diarrhea.

Harnack emphatically praises lime water in the treatment of diphtheritic sore throat, in which it dissolves the mucin in the false membrane, permitting the fibrin to fall apart, after which the lime water acts as an astringent. Lime water is sufficiently alkaline to be irritant to a sore throat.

Ichthyol penetrates the unbroken skin to some extent and constricts the superficial blood vessels, hence it is used to lessen hyperemia in a variety of inflammatory conditions of the skin including erysipelas, and acne vulgaris. Grossly exaggerated therapeutic claims have been made concerning its use in a wide variety of conditions, but it has not gained greatly in favor during the past few years.*

RUBEFACIENTS

Inflammation is a local reaction to irritation that tends to limit the area of injury, to remove the injurious substance and the tissues that may be destroyed, and to repair the damage. There is increased permeability of the smaller vessels with the other well-known symptoms of inflammation including redness, heat, swelling and tenderness or pain.

While inflammation is sometimes a useful process it may be present when it is not useful or it may exceed the limits of usefulness.

Evidence is abundant that inflammation results from the irritation of sensory nerves, but the precise mechanism by which this is brought about is not understood. In therapeutic practice irritants of various types are used to induce different stages of inflammation, most frequently that of redness only, and the agent so used is termed a rubefacient. If a somewhat more intense action is elicited, a blister is formed by the collection of the transudate under the horny layer of the skin. This is termed vesication. Pus formation is rarely induced intentionally at present, but pustulants were formerly used to some extent. Caustics destroy the tissue to which they are applied, hence they are used mainly for the removal of callus and for application to small areas when it is desired to remove exuberant growth.

Rubefacients are applied to the skin for the purpose of causing an increased blood supply to relieve organs in which congestion due to diminished circulation has caused inflammation to reach the stage of pain. Since this is accomplished through causing irritation at the seat of application such agents are called counter-irritants.

Ross, Mackenzie, and more especially Head, have put the use of rubefacients on a rational basis. Ross observed the location of painful cutaneous areas complained of by patients who suffered with visceral disease and he suggested that pain was referred along the distribution of somatic nerves which came off from the same part of the cord as the sensory sympathetic fibers to the organs affected. Head was stimulated (to use his own expression) by Ross' suggestion to make careful observations of the areas of cutaneous tenderness in sixty-two cases of herpes zoster, and was surprised to find that these areas correspond exactly with those with which he was familiar in visceral disease. Head mapped out the cutaneous surface of the body and limbs, dividing it into areas each of which corresponds to the distribution of nerve fibers given off from a segment of the spinal cord.

He suggested that the skin is tender in visceral disease because impulses (not painful) pass up the sensory nerves from the diseased organ and set up a disturbance in the segment of the cord to which they are conducted. When a secondary impulse from the skin is conducted to that disturbed segment of the cord the impulse will be altered and exaggerated, so that a stimulus that would not be painful under ordinary circumstances now becomes so, for example, the application of slight warmth then causes a burning sensation.

When there is congestion of an internal organ the application of a rubefacient or more active irritant to the corresponding area of the skin causes vasodilatation in the viscus with relief of the congestion and the attending pain. We do not know the exact mechanism by which this is accomplished, but we do know that the application of rubefacients does often relieve pain and congestion in internal organs in this way.

Head suggests that the head of a common pin—not the point—be used in eliciting tenderness in the skin, or that this may be done by pinching the skin gently between the thumb and forefinger.

The number of irritants is very large and the choice is often determined by convenience of application, care being taken to limit the action of the more active members of the group when they are used.

Among the rubefacients most commonly used are: Alcohol, ammonia, camphor, chloroform (causes blistering readily), capsicum, iodin, menthol, mustard

* Owing to lack of space the materia medica of this and the following groups is omitted from THE JOURNAL. It will be included when this series is published in book form.

and oil of turpentine. Croton oil is sometimes used as a rubefacient but it tends to produce pustulation. Heat in its various forms is probably the most commonly used of the rubefacients.

The various therapeutic applications of the rubefacients cannot be discussed in this place, but an understanding of the principles involved is necessary for their rational use. Nearly all textbooks of therapeutics and pharmacology give the cutaneous areas corresponding to the internal organs as determined by Head.

VESICANTS

When it is desired to carry irritation to the stage of vesication cantharides or cantharidin is commonly used. The action develops slowly, eight hours being frequently required before vesication is induced. When cantharides is employed for a short time it acts as a rubefacient, but in such cases it has no apparent advantage over the more rapidly acting members of the group, such as mustard.

Cantharidin, the active principle of cantharides, is excreted by the kidneys after its absorption into the circulation and gives rise to irritation of the genito-urinary tract—a circumstance that has led to its abuse in some instances.

Cantharides is sometimes added to liniments and to hair tonics, and while it may enhance the rubefacient action of these it probably has no specific action on the scalp or hair follicles, and is therefore probably useless as a hair restorative.

CAUSTICS OR CORROSIVES

Strong acids and alkalies and certain of the metallic salts destroy the tissues and dissolve them. Phenol in concentrated solution precipitates the proteins of cells and destroys them.

Acids, alkalies, phenol and certain other caustics are of some toxicologic interest because of the frequency with which they are swallowed accidentally. In such cases the gastro-intestinal injury may result in shock or in perforation with peritonitis. The corrosive action in the mouth and throat may be followed by cicatricial contraction, and esophageal stricture has frequently resulted from swallowing concentrated alkalies and acids and perhaps from phenol.

The stomach should be washed as promptly as possible after a corrosive has been swallowed, using a large amount of water and the appropriate antagonist in dilute form. Thus, if a mineral acid has been swallowed, a weak alkali such as magnesium oxid, lime water or weak soap solution, should be added to the water used to wash the stomach; if a caustic alkali has been swallowed then a weak acid, such as dilute vinegar, should be administered with the wash water. After the stomach has been washed, demulcents, including butter, cream, milk, white of egg or a bland oil, such as olive oil, should be administered. Bismuth subcarbonate suspended in water affords a useful protective covering for the mouth, throat and mucous membrane of the stomach in such cases.

It is generally held that sodium bicarbonate liberates too much gas to justify its use after a caustic acid has been swallowed, but it is commonly at hand in the household and it should be employed in an emergency if lime water, magnesia or pure castile soap is not available.

Strong nitric or glacial acetic acid is sometimes used for the removal of warts. The surrounding tissue is coated with petrolatum and the acid applied to the wart with a stick or glass rod for a short time.

Corns are commonly treated with salicylic acid dissolved in collodion, which insures the continued caustic action of the acid. The coating is removed after having been applied for about twenty-four hours. The treatment is painful, however.

Lunar caustic, or molded silver nitrate is a convenient caustic for the destruction of exuberant granulating tissue.

Concentrated solutions of silver nitrate, even up to 50 per cent., are used in the treatment of sore throat and tonsillitis. The solution is painted on the throat or swollen tonsils and the throat is immediately gargled with salt solution in order to neutralize the excess of silver nitrate by converting it into the insoluble and harmless silver chlorid. This is said to be especially efficacious in severe forms of tonsillitis. Extreme care must be taken to insure that none of the solution is swallowed and that the excess of the caustic is neutralized immediately with sodium chlorid solution.

(*To be continued*)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. ITS ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

ENZYMOL.—An extract prepared from the fresh animal stomach, stated to contain the activated gastric enzyme in association with the soluble constituents with which the pro-enzyme is naturally associated. It is free from alcohol, contains a trace of thymol, and has an acidity due to combined hydrochloric acid equivalent to 0.26 to 0.3 per cent. of actual hydrochloric acid. It is adjusted to a definite proteolytic power by the U. S. P. assay method for pepsin, and contains 25 per cent. of glycerin by weight.

Actions and Uses.—Enzymol is stated to be useful as an application to old sores, ulcers and slow-healing wounds. It is said to correct offensive odors, to exert a solvent action on pus and sloughing and necrotic tissue, and to impart a healing stimulus. It is stated to have been effective in cases which have long remained unhealed and have resisted treatment.

Dosage.—It is made ready for use by the addition of one-half to one or two volumes of water; for the solution of necrotic and carious bone, and in some large abscess cavities, it is advised that the preparation be diluted with two volumes of 0.2 per cent. solution of hydrochloric acid. A small vial, containing diluted hydrochloric acid and a pipette for measuring accompany the package.

Manufactured by Fairchild Bros. and Foster, New York. No. U. S. patent. U. S. trade-mark No. 44,769.

Enzymol is a light straw-colored fluid.

The presence of the various groups of proteins is shown by the following reactions: Upon heating to boiling the fluid gives a copious coagulation; the filtrate from this gives a marked precipitate with phosphotungstic acid; the protein derivatives remaining in solution may be determined by silver nitrate and barium oxide according to Hall and by the ester method of Emil Fischer. Alcohol in excess likewise gives a copious precipitate. The proteolytic power when acidified and tested by the method of the U. S. P. for pepsin should be such that 4 Cc. will dissolve 800 Gm. of coagulated egg-albumin in two and one-half hours.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, JULY 24, 1915

A REVIEW OF THE FOOD AND DRUG SITUATION

Even the casual observer of public sentiment and activities in the United States, during the past decade, cannot have escaped noting the steadily increasing interest on the part of the people at large in the educational work of the American Medical Association and other forces directed against frauds in medicine. The Board of Trustees of the Association has evidently felt, as is indicated in a recent special report,[1] that the time has come to survey the situation and inquire whether the vigorous protests so long made by the Association against the exploitation of both the medical profession and the public by proprietary interests have borne fruits. At junctures such as this, it is sometimes helpful to view the situation with different eyes, to let independent observers present their aspect of the story, and, further, to take account of the work still undone as well as the tasks accomplished. Such an opportunity is offered by the latest report of the Connecticut Agricultural Experiment Station,[2] an institution long identified with the progressive movement for the betterment of the food and drug situation.

Many of the facts presented and the opinions ventured in Street's Connecticut report for 1914 are familiar to the readers of The Journal's Propaganda for Reform. It is gratifying to learn from an independent source, however, that a comparison of the newest analyses of proprietary medicines sold in a definite section of the country, with those made at the time of the passage of the national Food and Drugs Act of 1906, shows a wholesome change in many instances. Habit-forming and other dangerous drugs are far less common in the nostrums than they were ten years ago. Street notes that the average sufferer, unless he is a drug habitué, generally takes alarm at the words "morphin," "opium," "heroin," "cocain" and even "alcohol," and fears to use remedies whose labels bear these words. The manufacturer dare not withhold this information, and in many cases has made substitutions to allay the public distrust. The patient, failing to obtain the customary effect of the active and dangerous drug, discontinues the use of the medicine. As a result, it may be observed that certain of the once most widely advertised nostrums are gradually being withdrawn from public sale.

The situation in Connecticut is revealed by the statement that, out of 130 so-called "patent" or proprietary medicines examined in that state last year, thirty-five might be passed "as possessing some merit." This group includes for the most part toilet preparations sold at a high price. The Journal's experience is in accord with that of Street in showing that it is unsafe to depend on former analyses of many of the secret remedies. The formulas are frequently changed, usually without notice to the public, which continues to purchase the supposedly "old and tried prescriptions."

That over sixty of the analyzed proprietary medicines are found to be out-and-out fakes will, of course, surprise no one who has studied the columns of The Journal in recent years. It may be more unexpected, however, to learn that more than a quarter of the preparations still contain dangerous drugs, most of which do not come within the group which the laws require to be stated on the label. It is a long list, including compounds of mercury, lead, silver, barium, arsenic and bromin, as well as diverse organic poisons.

To any one familiar with the prevailing situation, some of the advertising features are not devoid of elements of humor. Thus, one preparation is recommended for alcoholism, and likewise for the production of cocktails and "excellent highballs" — on one and the same label. The label of a "hair tonic" makes the apparently damaging statement that its use brings "the removal of dandruff, and the vitality and lustre of the hair soon follows." Possibly, Street adds, here the manufacturer's English is more at fault than his preparation! Again, there is among long familiar names a "Prescription for the Skin and Scalp" which "cures" eczema in all forms. It contained chloral hydrate, phenol (carbolic acid) and oil of wintergreen, not one of which is found in the list of sixty-five drugs referred to in the U. S. Dispensatory as useful in the treatment of eczema. Freckle lotions containing over 0.5 per cent. (5.3 parts per thousand) of mercuric chlorid are sold without a poison label.

With respect to the cod liver oil wines, there is an accumulation of evidence that they do not possess the nutrient qualities of the oil itself.[3] Any one using them in place of the oil is likely to be grievously disappointed.

The use of wheat bran and of agar agar in the treatment of certain forms of constipation has given an

1. Special Report on the Work of the Council on Pharmacy and Chemistry, The Journal A. M. A., July 3, 1915, p. 67.

2. Report of the Connecticut Agricultural Experiment Station, New Haven, Conn., Food Products and Drugs, 1914. Copies of this report, by John Phillips Street, from which we quote freely, are distributed free by the station on request.

3. Street, J. P.: The Comparative Nutrient Value of Cod Liver Oil and Cod Liver Oil Cordials, The Journal A. M. A., Feb. 20, 1915, p. 638. Oilless Cod Liver Oil, editorial, Feb. 20, 1915, p. 647.

impetus to the production of preparations in which these are claimed or implied to be incorporated. Even here no dependence can be put on the label. One brand of biscuits clearly designated as Agar Agar Wafers certainly contained less than 1 per cent. of the seaweed carbohydrate. Disguised by a fancy trade name, the latter reaches a price of nearly three dollars per pound in some packages.

In the field of diabetic foods, there is evidence of gradual improvement out of the chaotic condition which was revealed by successive reports from the Connecticut station in previous years. It is stated that, while the present European war will doubtless interfere with the importation of many brands from abroad, the production of good products will be, and apparently is being, stimulated in this country.[4]

Out of twenty-three samples of "malt extract," only two have any claim whatever to the name. The other samples were merely more or less concentrated beers, or diluted extract. A genuine malt extract, as defined by the U. S. Pharmacopeia, should contain all the soluble principles of malt in a permanent form. Street remarks that to confuse the spurious extracts with the genuine U. S. P. extract constitutes a serious abuse.

Although most of our food products are showing improvement in the direction of purity, the end is not yet in sight. Street has tersely interpreted the situation by remarking that we are now in the era of legal food, rather than pure food. This is a step forward, but it throws an added responsibility on the consumer. He must learn to read and understand the label; otherwise the protection given to him under the law confers little benefit. The day may arrive when "legal" and "pure" will be synonymous terms in relation to foods and drugs.

ACID PRODUCTION IN THE LIVER IN NARCOSIS

The changes following prolonged administration of chloroform, namely, multiple hemorrhages, edema, fat infiltration and necrosis of the central portion of the liver lobule, have long been known. Little has been done, however, to determine the factors responsible for these changes. A correct explanation would be important, not only as regards chloroform, but also on account of the fundamental processes involved, which are probably identical in poisonings with salvarsan, arsenic, phosphorus, many narcotics and most bacterial toxins. Recently Graham[1] has brought forward strong evidence that liver necrosis in chloroform poisoning is due to the action of acid, mostly hydrochloric acid. Likewise, bromoform and iodoform, which in their breakdown yield hydrobromic and hydroiodic acids, respectively, are able to produce such necrosis.

The most satisfactory evidence that the liver changes following chloroform narcosis result from acid would be the demonstration of free hydrochloric acid in the liver parenchyma. This is impossible by present methods. By the use of acid indicators, however, reactions were obtained in the center of the liver lobule which could have resulted only in the presence of acid of a considerable concentration. Blue litmus paper, not a delicate indicator, was turned red by application to the cut liver surface. To eliminate the possibility of these results being due to asphyxial acids, the procedures were completed within two minutes after removing the liver from the narcotized animal. Control tissues from normal animals did not give an acid reaction.

By oral and intraperitoneal introduction of hydrochloric acid in dogs (from 10 to 15 c.c. of 0.5 to 1 per cent. solutions) and rabbits (from 1 to 2 c.c. of a 1 per cent. solution by mouth), all of the changes induced by chloroform poisoning resulted. Here, however, the liver necrosis occurred at the periphery of the lobule. This variation from the central necrosis of chloroform poisoning is to be expected, since by the arrangement of the blood supply, the periphery of the lobule is first reached.

If the liver necrosis is chiefly a result of acid, then alkalies given at the same time should modify the degree of necrosis. Sodium carbonate was given intravenously in hypertonic salt solution, and in some instances entirely inhibited the narcosis, while in others it greatly lessened it. The narcotic power of chloroform is probably not concerned with its breakdown into acid, since narcosis is not altered by the presence of alkali.

Other substances yielding in their breakdown acids similar to hydrochloric acid were used, namely, ethyl chlorid, ethyl bromid and ethyl iodid. All produced the characteristic changes following chloroform intoxication, and here also there was evidence that free acid had been liberated in each case. Neutral salts of these different acids were found in the urine. Such a salt could not have been present unless the corresponding acid had existed somewhere in the body.

Other members of the chloroform group have been found to produce this necrosis, and the amount of necrosis is dependent on the theoretical number of hydrochloric acid molecules which may be derived from each member of the group. Tetrachlormethane (CCl_4) gives most marked results, because in its breakdown it probably yields four molecules of hydrochloric acid, while dichlormethane (CH_2Cl_2) has least effect, since it is capable of yielding only two molecules of hydrochloric acid. Chloroform ($CHCl_3$) is intermediate between the two, as it yields three molecules of acid.

4. This does not apply to the Dieto Flour and other Dieto products newly examined and found to be composed, in some instances, of from 50 to 60 per cent. of starch. One would have believed that the day for such "diabetic foods" was past.

1. Graham, E.: Jour. Exper. Med., 1915, xxi, No. 7.

The objection has been raised that these tissue changes are due to the chlorin atoms liberated in the dissociation of chloroform in the body, rather than to hydrochloric acid. Graham has refuted this by deeply narcotizing animals with chloral hydrate. In its breakdown, each molecule of this drug liberates three atoms of chlorin, which is excreted mostly as urochloralic acid in the urine. None of the changes characteristic of chloroform intoxication were present, and the conclusion may be justly drawn that chlorin atoms alone do not produce such changes.

Recently it has been shown that narcosis, regardless of how produced, induces severe tissue asphyxia; that is, the cells lose their power to take up and use oxygen. As a result, lactic and some organic acids are formed. Since acids give rise to asphyxia, and asphyxia in turn results in acid production, it is not reasonable to assume that these changes are entirely due to acid. It is possible that the primary results are asphyxial, the acid effects following later. The location of the necrosis in the central portion of the liver lobule is probably due to the fact that this region is farthest removed from the oxygen supply, and most distant from inhibitory substances carried in by the blood. It is the region where asphyxial changes would be most marked. But since considerable amounts of asphyxial acids are not present until from two to six hours after death, Graham believes that the liberation of hydrochloric or other halogen acids in cases of chloroform or allied narcotic intoxications is the chief factor in producing the changes, and the evidence which he has accumulated certainly points in that direction. Of special interest is the possibility of applying certain fundamental considerations evolved from this work in the treatment of bacterial and other intoxications.

THE HOROWITZ-BEEBE TREATMENT FOR CANCER

Numerous requests for information have been received by The Journal concerning a new "treatment for inoperable cancer" which, during the last two months, has been widely acclaimed in the lay press and in some medical journals. The first public announcement of this treatment appears to have been published in the New York *Times*, Feb. 19, 1915, and was to the effect that a "new cancer serum" (called by the newspapers "autolysin") had been devised at the General Memorial Hospital in New York City and used with curative effect in hopeless cases in the last stages of the disease. As the General Memorial Hospital is a research institution associated with the Cornell University Medical College, the report received more attention than it might otherwise have achieved. March 6, 1915, a statement, signed "for the Medical Board of the General Memorial Hospital" by James Ewing, W. B. Coley, Richard Weil and S. P. Beebe, appeared in several medical journals. It said:

> While it is impossible to discuss in detail every error in the report, it is possible to deny categorically the chief assertions made in the article.

Among the other statements made in this denial is the following:

> "We know of nothing that seems likely to prove a constitutional remedy for advanced cancer. All we hope to do at the General Memorial Hospital is in the line of painstaking study of different forms of cancer, the persistent application of *well attested* remedies and palliatives in the disease, and the investigation of such other methods as present a *sound theoretical basis* always with strict regard to the *interests* of the individual patient." [Italics ours.—Ed.]

Nevertheless, in spite of the statement of this committee, there appeared shortly afterward an article signed by S. P. Beebe,[1] entitled "A Treatment for Inoperable Cancer—A Preliminary Report." The other members of the board of the Memorial Hospital do not appear as co-authors.

As a scientific contribution, this article is a remarkable statement, especially when it is kept in mind that the author was connected as professor of experimental therapeutics with a leading medical school. The author describes the introduction of the system of treatment by "Alexander Horowitz, Ph.D., an Austrian biologist and chemist," and its trial at the General Memorial Hospital. Despite the previous reference to "sound theoretical basis," there is no statement made of preliminary investigations of the action of this therapeutic agent or its multitudinous components on anything except human patients, although coincident experiments with sarcoma rats are mentioned. The composition of the preparation is not disclosed as to quantities, but it is said to be made from the following drugs: *Menyanthes trifoliata, Melilotus officinalis, Mentha crispa, Brassica alba, Anemone hepatica, Viola tricolor,* anthemis, fructus colocynthidis, lignum quassiae, *Urtica dioica,* radix rhei and hedge hyssop. *Menyanthes trifoliata* is a little-used drug called buckbean. *Melilotus officinalis* is the common yellow sweet clover growing in waste places. *Mentha crispa* is a variety of mint which grows in Europe. *Brassica alba* is better known by its common name, white mustard. *Anemone hepatica* is the ordinary spring flower generally called liver leaf. *Viola tricolor* is pansy; it has been tried and discarded repeatedly as a "cure" for cancer. Anthemis is Roman camomile. Fructus colocynthidis and lignum quassiae are terms used for colocynth and quassia, respectively. *Urtica dioica* is common nettle.

The reader may be able to recall some other unused "herbs" that are not mentioned in this list, especially if he attended medical school thirty or forty years ago. As one critic of the matter has said, apparently the only ingredient overlooked in the preparation of the new remedy was a rabbit's foot.

---

1. Beebe, S. P.: A Treatment for Inoperable Cancer, New York Med. Jour., 1915, ci, 981.

Beebe goes on to state that "a poultice is prepared for application by the usual methods," which are described in brief. Also an extract is prepared for injection, the method not being given "because it is still the subject of experiment," although here we are enlightened by the information that the initial dose of this undefined extract is from 5 to 7 minims. For the most part, the extract is used for direct injection into the tumor, causing an inflammatory reaction which is described in some detail, although it scarcely seems necessary to state that white mustard (*Brassica alba*) will cause an inflammatory reaction, to say nothing of the nettle, the colocynth and the spring hepatica. The statement is also made that subcutaneous injections remote from the tumor cause local reactions in the tumor, but this procedure is apparently not relied on in the cases reported in this article. These cases number sixteen. Three were superficial skin cancers, which are said to have been completely healed under the influence of the poultice, as, of course, they might well have done under any escharotic application, a fact which is admitted. In only one of the cases mentioned in this article, however, are any data whatever given as to the length of time the patients have been under observation — but evidently this is far too brief for any one to draw conclusions as to results. Another group of seven "hopelessly incurable and inoperable" cases is next mentioned. Of these, five patients died under treatment and the other two refused to continue it, although amelioration is said to have occurred in three of the seven. The remaining six cases were treated by Beebe and J. Wallace Beveridge in another hospital by injections of the extract into the tumor tissue, with the production of necrosis and diminution in size of the tumors in some cases, although one of these patients died.

Aside from this very unpromising report, apparently all that has been published in any medical journal are stereotyped excerpts from it which have appeared simultaneously as abstracts in several medical journals. If this were all that had been published, there would probably not be the prevailing excitement over the subject. The greatest marvel, perhaps, was why this report was published at all, dealing as it does with only sixteen cases, under only a short period of observation, with results that are apparently no better than could be secured by applying arsenic paste or injecting a solution of any escharotic substance into the tumors. What is there of scientific interest or therapeutic advance in such a procedure? Why should any person with critical judgment or scientific training of the slightest degree rush into print with a cancer treatment of but a few weeks' or months' trial, and founded on nothing more theoretically sound or inspiring than a Chinese materia medica? Why, too, should the lay press be furnished with literary articles on the subject by some of those engaged in promulgating this treatment, and why should these articles be embellished with exquisite half-tone reproductions of the features of the experimenters?

The status of the Horowitz-Beebe method of treatment of cancer can be estimated by applying an average knowledge of pharmacology, sociology, psychology and, above all, we fear, economics.

THE CORPUS LUTEUM AND SECONDARY SEX CHARACTERS

Each year is bringing new evidence in regard to the importance of the tissue included in the corpus luteum[1] for certain of the animal functions. It undoubtedly contains substances which inhibit ovulation, in illustration of which the novel effect of injection of extracts of desiccated substance of the corpus luteum of the cow on ovulation in fowls has already been described.[2] The assertion has frequently been made that the chief factor in exciting the growth of the mammary glands during pregnancy is some chemical substance — a so-called hormone — reaching the blood stream from an organ associated with the maternal functions. Included in the suggested sources of this stimulating product has been the corpus luteum — the tissue produced in the ovary as the result of the discharge of an ovum. Evidence has been brought forward that the corpus luteum may cause a certain degree of hypertrophy of the mammary glands in the entire absence of any product of conception in the uterus. Such phenomena as the limited growth of the mammary glands which occurs at puberty call for a causal explanation independent of the presence of a fetus in the body. Here the stimulus has been ascribed by some authors to the growth of the tissue of the corpus luteum, resulting from the beginning of the discharges of the ova.

A remarkable instance of the correlation of the corpus luteum with the secondary sex characters has been described by Drs. Pearl and Surface[3] of the Maine Agricultural Experiment Station at Orono. A cow which had produced three calves and given an abundant flow of milk suddenly ceased to produce the secretion from the mammary gland. The udder rapidly shrank to a small size and the animal began to show the external characteristics of a bull. After a lapse of eight months the assumption of the male characters in various regions of the body was complete and perfect. A necropsy showed as the only gross abnormality a simple cystic condition of the ovaries. Histologically and cytologically these organs differed from the normal cow's ovary in only one essential respect, namely, that they had no corpora lutea.

These phenomena remind one of the remarkable reverse transformations of secondary sex characters

1. The Functions of the Corpus Luteum, editorial, THE JOURNAL A. M. A., July 4, 1914, p. 32.
2. The Corpus Luteum and Ovulation, editorial, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2232.
3. Pearl, R., and Surface, F. M.: A Case of Assumption of Male Secondary Sex Characters by a Cow, Science, 1915, xli, 615; Sex Studies, VII, Ann. Rep. Maine Agricultural Experiment Station, 1915.

that have been accomplished by castration and transplantation of ovaries.[4] The seat of the control of the characters in the case here reported is apparently narrowed to the lutear tissue, for the interstitial secreting mechanism of the cow's ovaries was entirely normal in respect both to the number of cells and to the cytologic characteristics of the individual cells. This testimony in the present instance is not the hearsay sort but comes from competent observers in the field of genetics. The germinal mechanism of the transformed animal was perfectly normal up to the point at which ovulation should occur. It then failed to separate the ova from the ovary. Cystic ovaries are not uncommon. No one can read the interesting report of this unusual manifestation without suggestion of what the findings may mean in relation to human experience.

SOME FEATURES OF SURGICAL SHOCK

Surgical shock is a clinical entity; but when one attempts to formulate a definition of what is meant by this expression and to establish the criteria by which it is determined, almost insuperable difficulties at once arise. Few topics in recent experimental medicine have been the subject of more acrimonious debate, not to say misconception. If the nature of shock were merely a theme of academic interest, it might be an attitude of discreet wisdom to avoid discussion of the problem before an audience of practitioners. But the picture of "a state of general apathy, reduced sensibility, extreme motor weakness, great pallor, very rapid small pulse, thready soft arteries, irregular gasping respirations and subnormal temperature" [5] is sufficiently familiar to every one of our readers to justify occasional essays into the questions of dispute. Most of these have at length been worked out by physiologists and pathologists to a point at which they can be considered from the broader standpoint. For the nature of what is represented as shock is evidently not simple or uniform. It may arise in the course of various diseases or of surgical operations, or may result from accidents or intoxications. Indeed, a recent writer has appropriately remarked that the use of the word "shock" is comparable to that of the word "rheumatism." [6] The latter formerly included every disease of the joints, and many other diseases besides, but has gradually been restricted to very narrow limits.

It is essential, in view of what has just been said, that in the future the discussion of the genesis of shock shall be guarded by a more exact definition of the phenomena which are under consideration. Investigations in which the problems of shock are being experimentally unraveled are commonly carried out on anesthetized animals. The results are often strictly comparable to what may be observed in human patients during operation; nevertheless they do not apply to the cases of so-called "pure" shock sometimes encountered under conditions of ordinary life. At times a hysteria or "psychic" shock is meant; again, still other complex agencies seem to be involved; sometimes the word is merely a cloak for ignorance as to a prevailing condition.

Dr. Frank C. Mann[6] of Indiana University has pointed out that it is impossible to reduce an anesthetized animal to a state of shock by any degree of sensory stimulation, provided all hemorrhage is prevented and its abdomen is not opened. He also excludes the probability that acapnia—a greatly diminished content of carbon dioxid in the blood—is a controlling factor in shock, which has been asserted by some experimenters in recent years. Neither is shock due primarily to a disturbance of respiration, although the respiratory center is more quickly injured than any other vital center by shock.

A favorite hypothesis in the past has charged the phenomena of shock to a depression or fatigue of the vasomotor center, leading to the characteristic low arterial blood pressure. The work of Porter and others may be taken as finally dispelling this familiar assumption. Even the cardiac centers which have been supposed to lose their tone may be intact in the deeply shocked individual. With respect to the blood vessels themselves, it is by no means certain that they uniformly lose their muscular tone; at any rate, it appears as if arterial tone is not wholly lost. The venous pressure in shock follows the downward course well recognized in the case of arterial pressure, and recent experiments suggest that the blood becomes stagnated in the dilated veins. The evidence furnished by Morison and Hooker[7] indicates loss of venous tone, which would predicate failure of the venopressor mechanism and a stagnation of venous blood. It is this consequence which earlier led Henderson to maintain that the fatal outcome is due to a failure of the heart to fill in diastole.

Inasmuch as the effect produced by exposure and trauma of the abdominal viscera—the easiest and most certain way of producing surgical shock—is not due alone to a paralysis of the vasomotor mechanism of the splanchnic area, Mann[2] has charged it to the tremendous loss of red cells and fluid from the blood, due to the reaction of the great delicate vascular area to irritation. In the course of operations in which the abdomen has not been opened, the loss of fluid, etc., from the blood is comparatively unimportant. There is no comparable stasis, diapedesis, exudate, endothe-

4. Steinach, E.: Willkürliche Umwandlung von Säugetiermännchen in Tiere mit ausgeprägt weiblichen Geschlechtscharacteren und weiblicher Psyche, Arch. f. d. ges Physiol., 1912, cxliv, 71.

5. Meltzer, S. J.: The Nature of Shock, Arch. Int. Med., July, 1908, p. 571.

6. Mann, F. C.: The Peripheral Origin of Surgical Shock, Bull. Johns Hopkins Hosp., 1914, xxv, 205.

7. Morison, R. A., and Hooker, D. R.: The Vascular Tone and the Distribution of the Blood in Surgical Shock, Am. Jour. Physiol., 1915, xxxvii, 86.

lial change or similar involvement of local inflammatory nature. Contributory factors which help to produce the condition of shock need not be overlooked. Muscular relaxation, decreased intra-abdominal pressure and impaired respiration all help to decrease the amount of blood returned to the heart. Hemorrhage greatly facilitates the incidence of shock. The degenerative changes described in the cells of the nervous system are without doubt the result and not the cause of shock.

The use of the word "shock" should be avoided, Mann[6] writes, and instead an accurate and detailed description of the patient's condition should be given. He suggests that, if the term be used at all, it should be applied to the condition in which, without any grossly discernible hemorrhage having occurred, the amount of circulatory fluid is greatly diminished on account of stagnation of the blood in the smaller veins and capillaries, or by exudation from these of the fluid and cellular elements of the blood.

SERUM SICKNESS AND ITS PREVENTION

Soon after the introduction of diphtheria antitoxin, and before its value in the treatment of diphtheria and for prophylactic purposes had been generally recognized, reports appeared regarding certain disagreeable clinical manifestations occurring several days after administration of the serum. The death of an individual following the use of antitoxin was reported, which, with the clinical reports, tended for a time to restrict the use of this new therapeutic agent. Careful observations by clinicians and biologists, however, soon allayed the fears of those who were inclined to attribute the ill effects to the antitoxin; they showed that the antibodies had no part in the reactions, that they were due to some property in the serum itself, and that this property existed in the serums of all animals independent of antitoxic properties.

The symptoms of the ordinary form of what is now known as the "serum disease" or "serum sickness" are familiar to all who have had occasion to administer therapeutic serums. The various clinical manifestations of the serum disease are shown by the presence of one or more or all of the following symptoms: eruptions of different types, fever, edema, and pain in the joints, occurring some time after the injection of serum. The severity of the symptoms within certain limits is, as a rule, proportionate to the amount of serum administered, although it has been shown that the serum of certain horses is more apt to cause serum sickness than the serum of others.

The work of von Pirquet and Schick, Rosenau and Anderson, Otto, Besredka, Weaver and others has shown that the disease is a true anaphylactic phenomenon, although certain writers have been inclined to attribute the severe cases and occasional instances of death following the parenteral administration of serum to anaphylaxis and to consider serum sickness as a different condition. It would seem that the two reactions are the same, and are true anaphylactic phenomena.

The greater number of severe cases of serum sickness, and practically all of the few fatal cases, have been in persons who have had but a single injection. In some way the individual has become exquisitely sensitized to horse serum, so much so that many of these persons are subject to hay-fever-like or asthmatic attacks when in the vicinity of horses or stables.

One of the first to report such cases was Gillette,[1] and it has since become established that the administration of serum to such individuals and to asthmatics may result in serious symptoms or even death. In the ordinary form of serum sickness, the symptoms develop, as a rule, from the eighth to the twelfth day, unless the person has received an injection of serum from two weeks to less than a year previously, in which case symptoms develop in twenty-four to forty-eight hours. This is known as the "immediate reaction." If the first injection had been given twelve months or more previously, the reaction is delayed from four to seven days; this is known as the "accelerated reaction." These reactions following second injections, while unpleasant and at times disquieting, are seldom alarming in character.

Much research has been devoted toward devising methods by which the primarily sensitive individual may be detected and to prevent attacks of serum disease following the second injection of serum in persons not primarily sensitive. The skin reaction for the diagnosis of serum hypersusceptibility in man was first employed by Moss,[2] and is of value but does not detect all susceptibles. The attempts to prevent the ordinary form of serum disease have not produced satisfactory results. Among the measures which have been suggested are the preliminary injection of a small amount (0.5 c.c.) of serum, followed several hours later by the full dose, the idea being that the preliminary injection would induce antianaphylaxis. Based on experiments, principally on guinea-pigs, the use of atropin sulphate has been suggested as a method of combating the constriction of the smooth muscle fibers of the bronchioles; but it must be admitted that none of the different procedures is wholly satisfactory. Except in asthmatics and those known to have a hypersensitiveness to serum, the great benefits to be derived from diphtheria antitoxin so far outweigh the discomforts of an attack of the ordinary form of "serum sickness" that physicians should have no hesitancy in the prompt and free use of antitoxin.

---

1. Gillette, Herbert F.: Diphtheria Antitoxin in Bronchial Asthma, THE JOURNAL A. M. A., Jan. 4, 1908, p. 40.
2. Moss, W. L.: A Cutaneous Anaphylactic Reaction as a Contraindication to the Administration of Antitoxin, THE JOURNAL A. M. A., Aug. 27, 1910, p. 776.

The routine use of the Schick test for immunity to diphtheria reduces the number of those requiring the prophylactic use of diphtheria antitoxin, and it should be applied to all "contacts."

THE MEDICAL RESERVE CORPS INSTRUCTION CAMPS

Since the Medical Reserve Corps of the Army was established in 1908, the government has done little until this season to instruct the officers in their duties. Practically no action has been taken by the officers of the corps to learn their duties, except in the three organizations which have been formed in New York, Chicago and St. Louis. These bodies have arranged for lectures at rare intervals by officers of the Army Medical Corps; further, individual members of the corps who have taken unusual interest in the work have endeavored at times to obtain the desired knowledge from medical officers or at military posts. Although all the members of the corps are furnished by the War Department with certain standard books, only an exceedingly small percentage of the corps have profited by this attempt of the government to furnish technical information as to their duties.

In consequence of the apparent lack of interest on the part of the corps and the lack of definite policy of the government, the organization has accomplished practically nothing; and lack of progress always means retrogression.

This year summer camps of instruction were established in several places. While the attendance at these camps has not been large, they are undoubtedly a step in the right direction; they are evidence that the government appreciates the necessity of giving to reserve medical officers technical instruction in their duties and that the officers themselves welcome the long-deferred instruction. Realizing that much could not be expected from nonmilitary medical men who wished to become soldiers, the instructors did not attempt to feed them with higher tactics, but began with the simpler litter drill, and similar elementary work.

The work of these camps of instruction, while relatively elementary, is as necessary to the medico-military neophyte as is the study of anatomy to the medical student or the "three R's" to the school child. It is hoped that the handicap which existed this year will be removed before next summer, and that the officers of the Medical Reserve Corps, who wish to learn more of the duties pertaining to their position, may not be obliged to furnish their own transportation and subsistence, but may be placed for purposes of training on the active list of the Medical Reserve Corps and thereby be entitled to transportation and the pay of their grade. If opportunity should be given to all officers of the corps to come under instruction next summer, the additional expense to the government would be repaid many times by the enthusiastic cooperation of the officers who take the course, and by their increase in efficiency.

The interest manifested by the officers who took the course of instruction this summer, the eagerness with which they absorbed information, the desire shown by many to return for subsequent courses, all indicate that the Medical Reserve Corps of the Army, inactive list, takes its position seriously and believes that it is its patriotic duty to become efficient, so that in time of its country's need it will not be found wanting.

Current Comment

PUBLIC HEALTH LEGISLATION IN ILLINOIS

For many years Illinois has been a dark spot on the public health map. Originally a leader in sanitary legislation, in the times of Rauch a pioneer in many lines of health work, Illinois seemed to have settled down into a condition of chronic inertia from which it was impossible to expect any advance. Opinions will probably differ widely as to the reasons for such a situation. Fortunately for the people of the state, however, a new era seems to have dawned. The recent session of the Illinois legislature, however barren it may have been in other directions, was certainly productive of needed public health measures. In no other state this year was so much important public health legislation enacted. Many measures long desired and earnestly worked for, but which have failed in former sessions, have been enacted into law, notably a comprehensive and very excellent vital statistics law, based on the model law drafted by the committee of the American Medical Association and recommended by the U. S. Bureau of the Census; a tuberculin test law; a school sanitation law; a law for the prevention of blindness from ophthalmia neonatorum; a strong antinarcotic law; a law providing for the confinement of dangerous feebleminded persons; a law restoring power to the State Board of Health to revoke licenses issued prior to 1899; a law for the establishment of tuberculosis sanatoriums by counties; a revised occupational disease law, and several others of minor importance. To any one who has followed the efforts to secure better conditions in Illinois during the last twenty years, it is unnecessary to do more than present this list of achievements. Illinois is today the only state of the first rank that is without a modern system of birth and death registration. The passage of the model bill insures Illinois admission into the registration area of the United States Census. The passage of the amendment to the medical practice act gives the state board of health jurisdiction over all licenses issued by the board under previous laws; this power has been lacking since the decision of the state supreme court in the case of the *State* v. *Reed* in 1901. In addition, the legislature appropriated funds sufficient to enable

the board to reorganize the medical field service, to district the state, to man it with district health officers with an epidemiologist in charge; to establish a well-equipped sanitary engineering bureau, with a state sanitary engineer in charge; to enlarge the diagnostic laboratories, providing one in each extremity of the state; to improve and extend the free distribution service with respect to antitoxins, vaccines, etc., adding smallpox vaccine to the list of serums and vaccines now furnished; to organize a vital statistics service which will be efficient and up to date, and to improve the office service. This record, almost if not quite unparalleled in the enactment of constructive legislation, is one of which the State Board of Health and its secretary may well be proud. Illinois is to be congratulated on her progress, which all friends of public health will hope is only a promise of better things in the future.

BUTTERMILK AND BACTERIA

The popularity of buttermilk as a food and a beverage is attested by its widespread sale. Any drink which can succeed in invading the precincts of the saloon and compete for sale, as buttermilk now does, side by side with alcoholic beverages deserves attention. The plan of allowing milk to undergo fermentation of such a character that the products are not unpleasant or unwholesome for human consumption, yet serve as preservatives to prevent undesirable types of decomposition, is not new. The fermentation product chiefly depended on in such cases is lactic acid, although, in certain types, alcoholic fermentation may also be in evidence. Buttermilk belongs to the acid type; it usually contains from 0.6 to 0.9 per cent. of acid. Strictly speaking, buttermilk is a by-product of butter-making; but with the development of the milk industries, the demand for buttermilk has frequently been met by fermenting the skim or separator milk which remains as a by-product of the cream trade. The fermented product is not literally buttermilk, but it may be indistinguishable from the latter in composition and properties. The use of these fermented milk products has been favored, not alone for their intrinsic food value, but also for accessory reasons. The specific fermentation products have been reputed to have a "tonic" action in the digestive tract. Special virtues have been attributed to the lactic acid bacteria, particularly in relation to putrefactive changes in the alimentary tract. Aside from any alleged therapeutic virtues, there can be no doubt of the nutrient value of the beverages. With the growing attention devoted to the bacteria which milk may harbor, and the recognition of the dangers which they may entail, it is not strange that buttermilk also should demand bacteriologic consideration. Heinemann,[1] of the Department of Bacteriology and Hygiene at the University of Chicago, has demonstrated that, although some acid-tolerant cells of *Bacillus coli* survived the presence of 0.6 per cent. of lactic acid in milk, *B. dysenteriae, B. typhosus, B. diphtheriae, B. paratyphosus* and *Spirillus cholerae* were destroyed by the presence of 0.45 per cent. of lactic acid. It is now realized that some strains of these micro-organisms can resist even greater amounts of acid. Whether or not the presence of saprophytic bacteria in buttermilk may have some influence, favorable or otherwise, on pathogenic bacteria remains to be decided. The smaller the initial amount of lactic acid, the more likely is the growth of acid-tolerant strains. Consequently the slower milk sours, the greater is the danger of pathogenic bacteria surviving. Acids other than lactic acid are frequently present in buttermilk. This beverage, Heinemann reminds us, should therefore be looked on with suspicion, especially if heavily polluted, unless it has been prepared from pasteurized milk. There is, however, a remnant of satisfaction to all lovers of the fermented product to learn that the chances of buttermilk becoming a carrier of infection are small.

1. Heinemann, P. G.: The Germicidal Effect of Lactic Acid in Milk, Jour. Infect. Dis., 1915, xvi, 479.

SAFE ICE CREAM

With the coming of summer there is, naturally, a largely increased consumption of iced products. Conspicuous among these is that ever delightful commodity, ice cream. Unfortunately, however, there are as many formulas for the preparation of this delicious and highly edible substance as there are manufacturers who make it. A note in the current issue of the *Bulletin* of the North Dakota Agricultural Experiment Station calls attention to a few of the modifications extant in that state:

> Ice creams in this state are supposed to contain 14 per cent. of butter-fat. This corresponds with the standard in a majority of other states. There are those, however, who furnish a product containing from 6 to 10 per cent. of butter-fat, using a thickener, gelatin, gum, rennet, etc., for the purpose of giving the cream the appearance of richness. This is a fraud and works a hardship upon the man who is endeavoring to produce a good article. On the other hand, there are those who do not take sufficient interest to know what they are doing or are not posted as to the fat content which they use and so are giving to the public ice cream containing from 18 to 22 per cent. of butter-fat. Such ice cream is too rich and is not as satisfactory as that containing approximately 14 per cent.
>
> If fruit is used, then the per cent. of butter-fat is slightly reduced to 12 per cent.
>
> Pure ice cream should contain no gelatin, but if gelatin is used then the product must be labeled, sold or dispensed as gelatin ice cream.
>
> A great deal is said about the necessity for gelatin. The writer has not been able to follow all of the arguments in favor of gelatin, but in a number of instances is convinced that the use of gelatin is for the purpose of selling more air at ice cream prices. Ice cream is sold by the measure and if you can work in enough air so as to convert one gallon of ice cream into two gallons, there is a big profit, and that is one of the reasons for using gelatin.

The question of the preparation of a satisfactory ice cream involves the consideration of numerous factors, including not only the type of milk or cream which forms the basis, but also the use of thickeners and the various methods of preparation. The possible entrance of numerous bacteria must be considered. Physicians should interest themselves, and make sure that the material offered for their own consumption, and for that of their patients, is in accord with the highest standard set for such products.

THE RATE OF ABSORPTION OF ALCOHOL

The nature of the tolerance acquired toward such substances as tobacco, opium and alcohol will not be clearly understood until the physiologic behavior of the active compounds present in these typical habit-forming products is more precisely known. Inasmuch as alcohol is perhaps the most widely used of all substances toward which a considerable degree of tolerance seems to be established, its performances in the living organism deserve careful consideration. The conditions under which it gains entrance into the circulation, the concentration in which it travels through the body and appears in the circulating fluids, and the speed with which it is oxidized or excreted, as the case may be, deserve investigation. A chapter in this story has been written by Völtz and Dietrich[1] of the Institute for Fermentation Industries at Berlin. They have found that the rate of absorption of alcohol is noticeably higher in animals that have been accustomed to alcohol than in those which have never received any. The differences between the two groups are not inconsiderable. At the end of an hour after the intake, they may be represented by such figures as 66 and 87 per cent., respectively. The speed of oxidation, that is, of disappearance of alcohol in the metabolism, is also somewhat greater in the individuals accustomed to that substance. In this respect, however, the differences are by no means so conspicuous as in relation to the comparative rates of absorption.

ECHINACEA

Among the plant products which the Council on Pharmacy and Chemistry has in recent years declared to be without therapeutic merit is the root of *Brauneria angustifolia*, more commonly designated as Echinacea, and popularly known as the coneflower or black sampson.[2] Preparations of the root, usually the fluidextracts, have been recommended with a variety of claims of familiar sound: antiseptic, aphrodisiac, febrifuge, analgesic, alterative. It is stated on good authority that there is a sufficient demand in the pharmaceutic market to warrant active trading in the plant among agriculturists in the Middle West. In view of this fact, it is interesting to learn the outcome of an investigation of the chemical properties and possible therapeutic potency of Echinacea in the laboratories of a pharmaceutical manufacturer.[3] Since no one would bring an accusation of unfavorable bias under such circumstances, we are glad to quote the results verbatim. "No physiologically active substance was isolated, and the results may, therefore, be considered as partially confirmatory of the report of the Council." Authoritative evidence for the value of Echinacea, so far as we can learn, is yet to be presented.

1. Völtz, W., and Dietrich, W.: Ueber die Geschwindigkeit der Alkoholresorption und -Oxydation durch den an Alkohol gewöhnten, bzw. durch den nicht daran gewöhnten tierischen Organismus; Die Beteiligung des Alkohols am Gesamtstoffwechsel, Biochem. Ztschr., 1915, lxviii, 118.

2. Echinacea Considered Valueless, Pharmacology, The Journal A. M. A., Nov. 27, 1909, p. 1836.

3. Heyl, F. W., and Hart, M. C.: Some Constituents of the Root of Brauneria Angustifolia, Jour. Am. Chem. Soc., 1915, xxxvii, 1769.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ILLINOIS

Personal.—Dr. Augustus W. Chandler, formerly of Dixon, now in charge of the Lincoln Hospital, Rochelle, fractured three ribs in the overturning of an automobile, July 5.——Dr. Chester H. Latham, Pecatonica, is reported to be critically ill with nephritis in St. Anthony's Hospital, Rockford.——Dr. Arthur J. Dalton, St. Joseph, has returned home after an absence of two months during which he was recuperating after an operation for appendicitis.

Cause of Typhoid Epidemic Found.—The superintendent of health of Oak Park, after a persistent investigation as to the cause of typhoid fever which has been epidemic in that suburb of Chicago, announces that he has found the typhoid carrier in the person of Mrs. Mary Burke, who for three years has been at work in the lunch room of the Oak Park High School in which so many cases of the disease occurred. She is now detained under police surveillance in the Oak Park Hospital.

Relief Work in Belgium.—The lecture room of the Evanston Women's Club was crowded, July 8, when Dr. Caroline Hedger, Chicago, gave a talk on the relief work in Belgium. During her stay of six months in Belgium, Dr. Hedger was a member of a commission to find work and shelter for the homeless Belgians, made several thousand inoculations of antityphoid serum and worked in a large soup kitchen. The points which most impressed Dr. Hedger were the deep gratitude of the Belgians toward the American people and the doctrine of hate which she believes may not be eradicated for decades or perhaps for generations.

Wants Equal Standards.—The committee on medical education of the Illinois Medical Society in its last report calls attention "to the inequitable provision in the Illinois statutes which exacts certain requirements of preliminary education and prescribed medical courses of applicants for medical licensure, while practitioners of other systems of healing and midwives are required only to pass an examination without preliminary educational requirements. It certainly looks like class legislation and legislation which does not conserve the health and lives of the people. If the state board has power under the present practice act, and we think that it has such power, to exact similar educational requirements of other practitioners and midwives, we hereby recommend that this be done, to the end that all licensures shall be placed on an equitable footing."

Chicago

Personal.—Dr. Charles F. Sanborn has been appointed superintendent of the new Green Point Hospital, Brooklyn, under the department of charities of New York City.——Dr. Hugo V. Pribyl, who was bitten by a rabid cat, recently, is taking the Pasteur treatment.

Protecting Foods.—The city council has passed an ordinance requiring the covering of foods on sale in grocery stores, fruit stores, stands, windows, sidewalks, on push carts or peddlers' wagons. They must be covered by a complete and impervious covering, except in the case of fruits, bakery and other goods subject to sweating. Ventilation may be allowed by a 20-mesh-gauze screen not to exceed 10 per cent. of the sides of the case in which they are contained. All foods kept for sale outside of buildings or in a part of a store, restaurant or lunch room to which the public have access, shall be kept at least 18 inches from the floor, unless such food is in tight containers, or in containers the openings of which are at least 18 inches above the level of the floor or sidewalk. The ordinance does not affect the necessary exposure of food while in process of handling or serving out.

INDIANA

Individual Drinking Cups.—The State Board of Health has requested that all street venders must have individual drinking cups and serving cups for beverages. Hereafter circus and other kinds of lemonade will have to be served in individual cups of paper or other material.

Free Lunches Abolished.—According to a late ruling of the State Board of Health, all free lunches in Indiana have been abolished unless they meet the requirements of the board, which are most rigid in regard to sanitation. This does not necessarily abolish the free lunch but requires every saloonkeeper to make it sanitary.

Personal.—Capt. Frank W. Foxworthy, M. C., Ind. N. G., Indianapolis, has passed his examination for promotion and has been commissioned Major M. C. and put in command of the Field Hospital, No. 1, Indianapolis.——The Field Hospital and Ambulance Company will attend the maneuver camp at Sparta, Wis., from July 21 to 31.——Dr. Simon Reisler and Dr. Harold W. Nimal, Indianapolis, have passed the examination for first lieutenant, Medical Corps, Indiana National Guard.——Dr. Robert L. Nattkemper of Terre Haute, a graduate of the Indiana State University, 1912, has been appointed a Junior Lieutenant in the Medical Department of the United States Navy and assigned to the recruiting service in Milwaukee.

IOWA

Pathologic Laboratory for Waterloo.—The Waterloo Medical Society has provided a fully equipped laboratory for bacteriologic and pathologic work for the use of physicians of Waterloo and the vicinity. A committee appointed by the society has purchased an equipment costing more than $5,000 for this laboratory.

State Board Election.—At the annual meeting of the State Board of Health in Marshalltown, July 5 to 8, Dr. Walter L. Bierring, Des Moines, was reelected president; Dr. John L. Tamisiea, Missouri Valley, vice president, and Dr. Guilford H. Sumner, Des Moines, was reappointed secretary for a second term of six years.

New Hospital Assured.—The canvas for the subscription to ensure the building of the new hospital at Centerville to cost $60,000 has been completed and the building is assured; of this amount $15,000 has been contributed by the citizens, the remainder being provided by the Sisters of Mercy who will have charge of the institution.

Sanitary Survey Work.—The State Board of Health has made extraordinary efforts to secure funds and assistance from the legislature to allow the cooperation of the United States Public Health Service in the work of sanitary surveys and the sanitary inspection of public buildings and surroundings. Dallas County has been selected as a typical county for the health survey.

Personal.—Dr. William G. Carhart, Marion, has been elected president of the Iowa Union Medical Society.——Dr. John E. Howe, Greenfield, has been elected chairman of the reorganized state parole board.——Dr. Cleanthus E. Birney, Estherville, has resumed practice after illness with tetanus.——Dr. Philip A. Reppert, Burlington, who was operated on recently at St. Mary's Hospital, Rochester, Minn., is reported to be convalescent.

Health Car Wanted.—Dr. Guilford H. Sumner, Des Moines, secretary of the State Board of Health, is planning the purchase of a special car for the board to be used in health demonstration work throughout the state, and the state board on July 7 approved of this plan. The car will have berths at one end and the remainder will be fitted as a health exhbit, including a moving-picture outfit. Dr. Sumner is enthusiastically in favor of a state-wide movement for the celebration of public health day.

KENTUCKY

State Board Receives Awards.—The exhibit of the Kentucky State Board of Health at San Francisco has been awarded a gold medal and a prize of $1,000 on account of its completeness and efficiency.

Sanitary Survey.—P. A. Surg. L. R. Thompson, U. S. P. H. S., and Sanitary Engineer R. E. Tarbett of the same service are making Louisville their temporary headquarters for a survey or reconnaissance of the sanitary condition of the water sheds of the Ohio River and its tributaries.

Trachoma Hospital Opened.—The London Trachoma Hospital was formally opened June 15 and is under charge of a physician and two nurses and Surg. John McMullen, U. S. P. H. S., who will make regular visits to the institution and to the other institutions of similar nature which he has established at Jackson and Hindman.

Alumni Meeting.—At the annual meeting of the Alumni Association of the University of Louisville, the following officers were elected: president, Dr. Henry A. Cottell; vice president, medical department, Dr. E. P. Posey; chairman of the executive committee, Dr. Charles W. Hibbitt; chairman of the finance committee, Dr. William O. Roberts, and member Dr. Henry Enos Tuley. Dr. Cottell read an eulogy of Dr. James M. Bodine.

Personal.—Dr. Henry Enos Tuley, dean of the medical department of the University of Louisville, was operated on recently at the Norton Infirmary for an infected bursa of the right shoulder.——Dr. Abraham J. Keightley, Louisville, was struck by an automobile July 9, and slightly injured.——Dr. Elbert W. Jackson, Paducah, has succeeded Dr. Clarence P. Burnett, Paducah, as local registrar of vital statistics for the State Board of Health.——Dr. Charles H. Todd, Owensboro, was the guest of honor at a banquet given by the physicians of Owensboro and Daviess County, June 16, in celebration of the fiftieth anniversary of his settlement in Owensboro.——Dr. Thomas O. Helm, Bowling Green, has sold St. Joseph's Hospital in that city but retains possession of the institution under a lease.——Dr. Overton L. Conrad, Wilsonville, who was placed under restraint in Shelbyville awaiting an investigation as to his sanity, has been taken to Beechhurst Sanatorium, Louisville.

LOUISIANA

Ratproofing Ordinances Passed.—Without opposition, the three ordinances for the extermination of rats, which were introduced before the city council of New Orleans, were adopted June 22. These ordinances provide for fending ships from the docks, require the use of covered garbage cans, and provide other regulations for the disposal of garbage.

Conference Successful.—The health conference held at New Orleans July 15 and 16, under the auspices of the Louisiana State Board of Health and under the direction of its president, Dr. Oscar Dowling, was a marked success both as regards the attendance and the quality of the work done. In the two days' conference, pellagra, malaria, tuberculosis, rural sanitation, water supply and sewerage disposal were discussed. Of the sixty-four parishes in the state, forty-two sent representatives and there was a remarkable unanimity of opinion.

Personal.—Dr. Henry B. White, Gueydan, has been selected to succeed Dr. Sidney D. Porter, New Orleans, resigned, as health inspector, and will be attached to the staff of the health train of the State Board.——Dr. K. Winfield Ney, Madisonville, in charge of the surgical clinic of the Presbyterian Hospital, has started for Paris to work in an American Red Cross Hospital, in France.——Dr. J. Philip Lobenhoffer, on June 15, completed fifteen years of continuous service as chemist at the Touro Infirmary, New Orleans. He was presented by his assistants with a gold smoking set and the board of directors adopted a resolution expressing their keen appreciation of his services.——Dr. William T. O'Reilly, president of the New Orleans Board of Health, has filed suit at Great Falls, Mont., to be declared heir to a cattle ranch near Belt, Mont., the estate of his uncle. The value of the estate is said to be $30,000.

MARYLAND

Laboratory Addition to be Built.—Plans have been made for an addition to the medical laboratory of Johns Hopkins Medical School, to cost about $50,000.

New Surgery Opened.—The new surgery of the Maryland General Hospital, which was recently completed at a cost of $15,000, was opened to the inspection of the medical profession, July 15, and on the following day was opened for public inspection.

County Doctors Meet.—Surgery in a big steel plant and ridding Baltimore and vicinity of mosquitoes were the subjects discussed at the meeting of the Baltimore County Medical Association, held on July 21, at the Sparrows Point Club, Sparrows Point. Dr. Robert W. Johnson, Baltimore, read a paper on surgery, and William D. Wrightson, sanitary engineer, spoke of the mosquito campaign.

Personal.—After having taken an active part in the ambulance corps in France at the beginning of the war, William H. Buckler, the Baltimore scientist, is now in charge of the Austrian embassy in London. The direction of all foreign affairs in the British and European capitals has been turned over to the United States, and Mr. Buckler was considered admirably equipped for his present post.——Dr. William Burdick, Baltimore, director of the Public Athletic League, who has been in Boston in conference with school authorities

there concerning an invitation to become director of school hygiene in that city, has returned to Baltimore. Dr. Burdick has not yet reached any decision regarding the invitation. ——Dr. Frederick A. Conradi, for thirty-six years a practicing physician in East Baltimore, is seriously ill at Mercy Hospital, suffering from a complication of diseases.——Dr. Hoagland C. Davis, Baltimore, who has been critically ill at the Union Protestant Infirmary, is reported to be improving.

MASSACHUSETTS

Creel's Appointment Confirmed.—The appointment of P. A. Surg. Richard H. Creel, U. S. P. H. S., as commissioner of health of Boston, was confirmed July 8, by the civil service commission.

Tuberculosis Hospital Opened.—The new tuberculosis hospital at Everett was formally opened, July 16. The hospital has accommodations for twenty-four tuberculosis patients and an isolation ward for contagious cases.

Floating Hospital Starts Season.—The Boston Floating Hospital has opened its twenty-second annual season. The ship has been overhauled during the summer. Dr. Henry I. Bowditch is again chief physician and Dr. Paul W. Emerson has been reappointed house physician.

Personal.—Dr. Walter C. Bailey, Boston, has resigned as chairman of the board of trustees of state hospitals for consumptives.——Dr. Worthington W. Miner, Ware, has been reappointed medical examiner for Hampshire County. ——Dr. Oliver H. Howe, Cohasset, has been reappointed medical examiner for Norfolk County.——Dr. Arthur K. Stone, Boston, has been appointed a trustee of the state hospitals for consumptives.——Dr. Joe V. Meigs, Jr., Lowell, has been reappointed medical examiner for Middlesex County.——Dr. Otho L. Schofield, Wellesley, has been appointed trustee of the Norfolk State Hospital, vice Dr. William H. Prescott, Boston, resigned.——Major Dunlap P. Penhallow, Boston, who is now stationed at the American Woman's War Hospital, Paignton, South Devon, England, has been promoted to director of Unit D.

MINNESOTA

Mrs. Mayo Dies.—Less than two months after the imposing ceremonies which attended the unveiling of the statue of the late Dr. William W. Mayo at Rochester, Minn., his widow, Mrs. Louise Mayo, who was present at the ceremonies, died.

Posters to Succeed Bulletins.—Health epigrams posted in street cars are being used by Dr. Edward W. Fahey, public health director of Duluth, instead of the monthly public health bulletins, and the change is saving the city $62.50 a month.

Personal.—Dr. Harold W. Stone, Minneapolis, has sailed for Liverpool on his way to France to work under the American Ambulance in Paris.——Dr. Harold E. Robertson, Minneapolis, head of the department of pathology in the University of Minnesota, has returned home after ten months' stay in Germany.

No Federal Health Survey.—Dr. Henry M. Bracken, St. Paul, secretary of the State Board of Health, has received notice that the United States Public Health Service will not be able to make any special investigation of sanitary conditions in Minnesota this year on account of the lack of sufficient funds to conduct the work.

Contracts for Sanatorium Awarded.—Contracts were awarded by the State Board of Control, June 24, for the construction of and installation of a heating plant in the tuberculosis sanatorium at Crookston, to be constructed jointly by Polk and Norman counties and to cost $72,000, one-half of which will be paid by the state.

Southern Minnesota Medicine Men to Meet.—The midsummer meeting of the Southern Minnesota Medical Association will be held in Red Wing, August 3 and 4, under the presidency of Dr. Franklin A. Dodge, LeSueur. The Goodhue County Medical Society has charge of the entertainment of the members and has provided for a banquet, a midday luncheon and an automobile trip, and Drs. William J. and Charles H. Mayo, Rochester, will entertain the members and their wives on their steamer *Oronoco*.

Hospital News.—The Northfield Hospital Association was reorganized June 12 when the board of directors was enlarged from five to fifteen members, twelve to be elected and the remaining being the mayor of the city, the president of the Hospital Aid Association and the president of the Commercial Club. Dr. John G. Phillips, Northfield, has been elected vice president, and Dr. Warren Wilson, Northfield, secretary of the association.——A new hospital three stories in height, fire proof, 50 by 124 feet, is to be erected in the near future at Little Falls by the Franciscan sisters.

Free Antitoxin.—After August 1, as the result of an appropriation by the legislature of $5,000 for the purpose, the state will begin the free distribution of diphtheria antitoxin. The machinery for the service is being provided by the State Board of Health. At least one free antitoxin station will be established in each county, with two or more in the larger counties, and the antitoxin will be given out on the application of physicians, who must sign a receipt giving name and address of the patient for whom the antitoxin is intended. The attending physician is to determine whether or not the patient is entitled to the remedy free.

NEVADA

Personal.—Drs. Henry Bergstein, Martin A. Robison and William L. Samuels have been elected members of the Board of Health of Reno. Dr. Samuels has been selected as secretary of the board.

State Society Meeting.—The twelfth annual meeting of the Nevada Medical Association was held in Reno, June 17 to 19. On June 20 the visiting physicians were the guests of the Nevada members on a trip to Lake Tahoe and most of them went on from there to San Francisco.

NEW YORK

College Course for Health Officers.—Health Officer Frederick W. Sears of Syracuse is advocating the establishment of a special course for the health officers at the medical college of Syracuse University. He proposes that this course should cover about six weeks.

Commitment Law Enforced.—The monthly report of Iola Sanatorium, Rochester, shows that the law governing the commitment to sanatoriums of all persons suffering from tuberculosis, is beginning to be enforced. During June one man was committed to the sanatorium for carelessness in habits and for being a menace to the public health.

Personal.—Dr. F. LeRoy Purdy, Hornell, is reported to be seriously ill with typhoid fever at the Buffalo General Hospital.——Dr. John A. Sampson, professor of gynecology in the Albany Medical College, has had conferred on him the honorary degree of master of arts by Williams College.—— Dr. William G. Bissell, bacteriologist of the Buffalo Health Department, has been reappointed a member of the State Board of Medical Examiners for a term of four years.

Qualifications of Health Officers Under the State Board.—According to the decision of the New York State Public Health Council local health officers appointed after Nov. 1, 1916, shall have the following qualifications:

(1) They shall be graduates of medicine of not less than three years' standing; (2) They shall when appointed be not less than 24 nor more than 65 years of age; (3) They shall have complied with one of the following requirements: (*a*) They shall have taken a correspondence course in public health of one year with at least one week of practical demonstrations in laboratory and field work, both correspondence course and demonstrations to be approved by the Public Health Council, with examinations and a certificate; (*b*) They shall have taken a course in public health of at least six weeks, including practical laboratory and field work with lectures and reading at an educational institution, such course to be approved by the Public Health Council, with examinations and a certificate; (*c*) They shall have submitted evidence satisfactory to the Public Health Council of special training or practical experience in public health work, with examination if required by the council. Under special conditions, however, specified in writing by the local board of health or other appointing power or by the health officer, any of these qualifications may be waived by the Public Health Council. The council has also recommended to boards of health that in appointing health officers previous to November 1, 1916, they specify that the appointee agrees to conform to the requirements within the first year of the new term.

New York City

Norwegian Hospital to Build.—It has been decided to build an addition at a cost of $100,000 to the Norwegian Hospital, Brooklyn. The addition will be five stories in height and will cover almost as much ground as the hospital proper.

Floating Hospital Begins Season.—The *Helen C. Juillard*, the floating hospital of St. John's Guild began her trips to the Seaside Hospital at Newdorp, S. I., on July 6. The boat starts from East River piers on Mondays and Thursdays; North River piers, Tuesdays and Fridays, and Brooklyn piers Wednesdays and Saturdays.

Fire in Bellevue College.—A fire that started from unknown cause in the basement of the New York University and Bellevue Hospital Medical College, 443 First Avenue, July 1, did damage amounting to about $2,500 and caused excitement. The Bellevue Hospital on the other side of the street from the college, was not endangered by the fire.

Degree in Public Health.—It is announced that New York University has joined with the city and state health officers to fight contagious diseases and will undertake to train health officers in their work. A new degree, that of Doctor of Public Health, will be awarded to those to take the two years' course required and pass a satisfactory examination.

Fight Against Ragweed Approved.—The city board of health has adopted resolutions looking toward the eradication of ragweed from the parks in all the boroughs. At the recent meeting of the United States Hay Fever Association at Fire Island, resolutions were passed expressing the appreciation of this body of Dr. Sigismund S. Goldwater's move in this direction.

Rockefeller Institute Appointments.—Dr. Frederick Burr La Forge of the staff of the Rockefeller Institute for Medical Research has been appointed Expert in Organic Chemistry in the United States Department of Agriculture.——Dr. Benjamin S. Kline also of the staff of the institute has been appointed resident pathologist of the Montefiore Home for Chronic Invalids, and in connection with this appointment he has also undertaken work in the department of pathology of the College of Physicians and Surgeons, New York.

The Teeth and Tuberculosis.—A recent bulletin of the department of health stated that since it is of paramount importance that the teeth be kept in good condition in those suffering from pulmonary tuberculosis, all patients admitted to the various sanatoriums and tuberculosis hospitals must have their teeth placed in proper condition. For those unable to afford the services of a private dentist, the department provides the necessary treatment free through a dentist stationed at the Hospital Admission Bureau. During 1914 the number of patients thus treated was 2,688.

Fourth of July Casualties.—An investigation by the department of health showed that there were no fatal casualties attendant on the celebration of the Fourth of July, but there was an alarming increase in the number of accidents resulting from the misdirected enthusiasm of the younger celebrants, in fact, there was an increase of over 100 per cent. over similar accidents in 1914. It has been found that most of the accidents were caused by the use of blank cartridges. The board of health is of the opinion that an effort will have to be made to restimulate interest in a safe and sane Fourth.

Retail Druggists Endorse Patent Medicine Campaign.—At a meeting of the pharmacists of the city, July 2, under the auspices of the Bronx County Pharmaceutical Association, resolutions were adopted endorsing the health department's campaign against fraudulent patent medicines. This change in the attitude of the pharmacists of the city is most gratifying to the department and it is hoped that the pharmacists will now do all in their power to uphold the department of health in its endeavor to discourage the sale of the many fraudulent cure-alls foisted on the public by unscrupulous manufacturers.

Personal.—Dr. Philip Van Ingen received severe injuries in an automobile accident near Roslyn, L. I., July 13. He is at present in a critical condition.——Dr. Frederick Sefton has sailed for Liverpool on the American liner *New York*. Dr. Rosalie S. Morton has sailed on the Red Cross liner *Stephano* for Halifax and Newfoundland.——Dr. John von Schaick, who has been doing relief work among the Belgians under the Rockefeller Foundation, has returned home.——Dr. Lyman G. Barton, Jr., Willsboro, and Dr. Max A. Almy, Corning, returned from France on July 13.——Dr. William C. Sandy, Jr., of the Kings Park State Hospital, Kings Park, has been appointed medical director of the State Hospital for the Insane, Columbia, S. C.——Dr. H. Sheridan Baketel has been elected head of the department of hygiene and public health in Long Island College Hospital, Brooklyn.——Dr. Samuel Sherwell, Brooklyn, who was on duty in Paris in the Anglo-American Ambulance Corps, during the Franco-Prussian War, is revisiting Paris.

NORTH CAROLINA

Antityphoid Vaccination.—During the first two weeks of the antityphoid vaccination campaign in North Carolina, under the auspices of the State Board of Health, 17,383 persons were vaccinated in the five counties being systematically worked.

Hospital Changes Hands.—The recently completed Irvin Memorial Hospital, Mt. Airy, has recently changed hands, and will now be operated under the direction of Dr. Moir S. Martin, Stuart, Va. It is three stories in height and of first-class construction.

County Superintendent Retires.—Dr. Aristides S. Harrison, Enfield, who has served for fourteen years past as county superintendent of public schools, has retired much to the regret of a large portion of the county's best citizens who believe in direction of public school work by competent professional men.

Honor to Stiles.—Medical men in North Carolina, as well as other Southern states will read with interest the news that Yale University at its recent commencement conferred on Dr. Charles W. Stiles (for several years stationed in Wilmington, N. C., making that his home during the four years' work of the "hookworm" work in the South, who made many friends while there), the honorary degree of Doctor of Science.

PENNSYLVANIA

Personal.—Dr. J. Elmer Porter has been elected president of the staff of the Pottstown Hospital.——Dr. William W. Jenkins, Olyphant, was seriously injured at Riverside, June 21, in a collision between the motorcycle on which he was riding and a railway train.

Red Bank Opens.—The *Elizabeth Monroe Smith*, the new steamboat given for the poor children of the city by Mrs. John F. Combs, made its first trip to Red Bank Sanatorium on the Delaware River, July 14, and was dedicated at exercises which marked the thirty-ninth annual opening of the institution.

Epidemic Cost High.—The epidemic of foot and mouth disease which began in 1914 prevailed on 788 farms in thirty-four counties. More than 15,000 head of cattle and 13,000 head of swine had to be killed as a result. By the time the state and federal governments pay the bills for cattle and property taken to check the disease, it is estimated that the cost will exceed $1,350,000. This sum does not include loss to farmers or cattle raisers. Thus far the State Live Stock Sanitary Board has disbursed about $650,000, of which $445,000 was spent in appraisement of cattle for which the state paid one half and the federal government a like part and $38,000 for property destroyed. The state also paid $50,000 for disinfecting and disposing of cattle. The legislature appropriated but $625,000 for meeting the cost of the epidemic.

Philadelphia

Sanitation Parade.—Boys of the College Settlement who have been banded into a Junior Sanitary League paraded the streets near the settlement house. Their organization was formed under the direction of the division of sanitation of the Bureau of Health and the Child Federation. The banners bore various devices, such as "Swat the Fly" and "To Be Healthy, You Must Be Clean."

Personal.—Dr. James K. Young has been appointed visiting chief of the orthopedic staff of the Philadelphia General Hospital.——Dr. John H. Lock, a member of the common council of Philadelphia, is a member of the party accompanying the Liberty Bell on its journey to the Panama-Pacific Exposition.——Dr. Russel A. Smith has been appointed a resident physician at the Scranton (Pa.) State Hospital, succeeding Dr. Joseph A. Wall, New York.——Dr. Edward E. Montgomery, who was operated on for hernia a week ago in Jefferson Hospital, is convalescing.

Navy Aids War on Drugs.—On July 13, a movement was started among the officers of eight United States warships, now at League Island, to devise some means to keep the sailors from frequenting tenderloin resorts. The movement is the result of an investigation into the death of a sailor on board the Battleship Illinois, who was drugged by women of the Chinatown district. In order to end any incipient drug habit among the men as a whole, John W. Glover, a deputy internal revenue collector, furnished the officers with a list of all places where drugs are sold in Philadelphia within the knowledge of the Internal Revenue Office.

Keen Fellowship Established.—Prof. William W. Keen has established the Corinna Borden Keen Research Fellowship in Jefferson Medical College, the income from which now amounts to $1,000. The gift provides that the recipient of the fellowship shall spend at least one year in Europe, America or elsewhere (wherever he can obtain the best facilities for research in the line of work he shall select,

after consultation with the faculty) and that he shall publish at least one paper embodying the results of his work as the "Corinna Borden Keen Research Fellow of the Jefferson Medical College." Applications stating the line of investigation which the candidate desires to follow, should be forwarded to Dr. Ross V. Patterson, Sub-Dean, Jefferson Medical Medical College, Philadelphia.

TENNESSEE

Leper Sent to Louisiana.—Curley Nickol, a leper of Dickson County, after investigation has been sent to the leprosarium in Louisiana.

Personal.—Dr. Guy O. Shirey, Memphis, has returned after several months in the war zone.——Dr. Oscar Nelson, a recent graduate of the medical department of Vanderbilt University, Nashville, has been assigned to the Methodist-Episcopal Hospital, Huchow, China, and will sail from San Francisco, August 25.——Lucius P. Brown, state food and drug commissioner of Tennessee, has resigned to accept the directorship of the bureau of food inspection of the New York Department of Health.——Dr. John D. Brewer, Newbern, has been appointed a member of the State Board of Examiners for Nurses.——Dr. Walter J. Miller, Johnson City, has been appointed a member of the State Board of Health.

CANADA

University News.—According to a special war issue of *Varsity*, the official organ of the students of the University of Toronto, 1,868 students were enrolled last session in the Canadian officers' training corps. Of that number 349 furnished the department of medicine.

Gazetted to the R. A. M. C.—The following medical men attached to the Canadian medical corps have been gazetted to temporary lieutenancies in the royal army medical corps: A. M. Fisher, S. S. King, C. D. Hamilton, W. J. Grant, G. A. Greaves, W. C. Gowdey, H. Lasnier, C. W. Morris, A. J. Lomas, T. J. Costello, W. W. Patton, J. J. Thomson, W. F. McDonald, F. J. Brodie, W. P. Macksiy, G. W. Whitman, H. S. Moore, B. Lang, A. F. Thompson, J. S. Chisholm, G. F. Hill, H. M. Godfrey, N. Macdonald, R. E. Johnston, and the following noncommissioned officers and men of the Canadian army medical corps have been gazetted to temporary lieutenancies: Sergeant-Major Kidd, Sergeant MacLachlan, Sergeant McQuay, Corporal Coulter, M. C. Burke and A. D. Forbes.

Hospital News.—The Gore Street Church, Hamilton, Ont., has been turned into a military hospital with accommodation for fifty patients. The medical officers are Drs. Douglas G. McIlwraith and Wellington M. Carrick.——Dr. Charles J. C. O. Hastings, M. O. H., Toronto, strongly favors the amalgamation of the Western, Grace and the Orthopedic hospitals, Toronto.——The Brockville General Hospital will have paid to it in October next $400,000, a bequest from the estate of the late Senator Fulford of that town. The money is to be expended in erecting and maintaining an aged women's home in connection with the hospital.——Through the efforts of the College of Physicians and Surgeons of Saskatchewan, the government of the province has offered to equip and maintain a field hospital during the war.——The Canadian Red Cross Hospital at Cliveden, England, is the recipient of $60,000 from Mr. and Mrs. A. S. Hardy and Mrs. Fulford, Brockville, Ont.; Colonel and Mrs. Gooderham, Toronto, have given to the same hospital $2,500 for a recreation room; the Misses Janes, Toronto, have equipped the operating room at a cost of $2,100. There are now about 1,000 beds in the hospital.——The New Brunswick branch of the Canadian Red Cross Society has provided eighty-two beds for the Duchess of Connaught Hospital and a special New Brunswick ward has been organized.

Personal.—Dr. Edward Kidd, Trenton, Ont., has gone to the front with the army medical corps as lieutenant-colonel. ——Hon. W. H. Montague, M.D., formerly minister of public works in the Rodmond cabinet, Man., and some time secretary of state for Canada, has gone to the front with the army medical corps.——Dr. Barritt E. Kelly, Peterborough, Ont., joined the army medical corps at Folkstone, England, and is now in France.——Dr. Alexander Fisher, formerly superintendent of the Port Arthur General Hospital, has been appointed medical superintendent of the hospitals in Calgary, Alta.——Lieut.-Col. George Atchison, M.D., is in charge of a recruiting office in Hamilton, Ont.——Drs. Forbes E. Godfrey, Mimico, Ont., and Harvey Clare, Toronto, have returned from the Barbadoes.——Hon. Dr. Thomas S. Sproule, M. P., Markdale, Ont., speaker of the Canadian House of Commons, after having represented East Grey continuously for thirty-seven years in the house, has announced his retirement. Dr. Sproule is mentioned for a seat in the Canadian senate.——Dr. Robert Hutton, Rosthern, Sask., passed through Toronto recently on his way to England to volunteer for service in the British army medical corps.——Dr. Roland W. Young, Oshawa, Ont., failing to secure an appointment for service in Ontario, has gone to England to volunteer for the British army medical corps, or for service in Serbia.——Hon. Robert A. Payne, M.D., Toronto, minister of education for Ontario, who is in England in connection with the offer of the Ontario government to establish a hospital there for wounded soldiers, has been gazetted lieutenant-colonel for the army medical service and honorary colonel of the Canadian militia.——Prof. Irving Heward Cameron of the University of Toronto, who has been in England some weeks as honorary consulting surgeon to St. George's Hospital, London, has been gazetted lieutenant-colonel of the British army medical corps.

GENERAL

Obstetricians and Gynecologists to Meet.—The American Association of Obstetricians and Gynecologists will hold its twenty-eighth annual meeting at the Hotel Schenley, Pittsburgh, September 14 to 16, under the presidency of Dr. Charles L. Bonifield, Cincinnati. An attractive program has been prepared.

Eye, Ear and Throat Specialists to Meet.—The twentieth annual meeting of the American Academy of Ophthalmology and Oto-Laryngology will be held in Chicago, October 5-7, under the presidency of Dr. Joseph C. Beck. On the day before the meeting and the two days following, clinics will be held at the various Chicago hospitals where members are expected and will be welcome. The headquarters will be at the Hotel Sherman.

Central District Association Meeting.—The annual meeting of the Iowa and Illinois Central District Medical Association was held in Davenport, July 8, and the following officers were elected: president, Dr. Charles S. Young, Geneseo, Ill.; vice president, Dr. David S. Fairchild, Clinton, Iowa; secretary, Dr. Lawrence W. Littig, Davenport, Iowa; treasurer, Dr. Frank H. First, Rock Island, Ill., and reporter, Dr. William D. Chapman, Silvis, Ill.

Tri-State Society Meeting.—The annual meeting of the Tri-State Medical Society of Arkansas, Louisiana and Texas will be held at Marshall, Tex., December 14 and 15. At this meeting three medals will be awarded for the three best essays on original work done throughout that year. The contest is limited to physicians residing in Arkansas, Louisiana and Texas. For particulars apply to Dr. Jacob M. Bodenheimer, secretary-treasurer, Shreveport, La.

Northern Tri-State Physicians Meet.—The forty-second annual meeting of the Northern Tri-State Medical Association of Michigan, Ohio and Indiana, was held in Ann Arbor, Mich., July 14. Toledo was selected as the place for the semiannual meeting in January and the following officers were elected: president, Dr. Frederick Shillito, Kalamazoo, Mich.; vice president, Dr. Julius H. Jacobson, Toledo, Ohio; secretary, Dr. George W. Spohn, Elkhart, Ind.; and treasurer, Dr. Joseph A. Weitz, Montpelier, Ohio.

Bequests and Donations.—The following bequests and donations have recently been announced:

Lincoln Hospital, Durham, N. C., a donation of $1,500, to pay a part of the expense incurred in erecting a dormitory for nurses, from Messrs. B. N. and J. B. Duke.

Lowell, Mass,, General Hospital, $50,000; House of Mercy Hospital, Pittsfield, $50,000, by the will of Frederick S. Pierson, Great Barrington, Mass., who lost his life on the *Lusitania*.

For the construction of hospitals at Milton and Duxbury, Mass., two funds of $6,000 each, by the will of William Bradford Weston, Milton. These funds remain in trust for 100 years at 4 per cent. interest. New England Hospital for Women and Children, for a Charlotte Louisa Weston free bed; Massachusetts General Hospital for a William Bradford Weston free bed and Vincent Memorial Hospital for a William Bradford Weston free bed, each $15,000, payable twenty years after the death of the last of the thirty-one relatives named in the will. The testator directs that the Duxbury Hospital be named the King Caesar Hospital, after his great, great grandfather, and that the Milton Hospital be known as the Weston Hospital.

Jefferson Hospital, Philadelphia, a contingent bequest of $15,000, to establish three beds to be known as the "Wilson Memorial Beds for the Benefit of Reduced Gentlemen," by the will of Annie M. Wilson.

Jewish Hospital, Methodist Hospital, Jewish Maternity Hospital and Episcopal Hospital, Philadelphia, each $5,000, by the will of Mrs. Mary Van Beil, for the endowment of beds in memory of her husband, David Van Beil.

Jefferson Hospital, Howard Hospital and Hospital for Diseases of the Lungs, Philadelphia, each $500, by the will of the Countess Galli.

Tufts College, Boston, Mass., $500,000, by the will of Dr. Frederick S. Pierson.

FOREIGN

Our Yucatan Exchange.—The January, 1915, number of the *Revista Medica de Yucatan* is issued under date of June 5, with an apology saying that the abnormal circumstances through which the country is passing, the lack of paper, and the difficulty in getting printing done have all contributed to the delay. The *Revista* is the organ of the Yucatan Medical Association, and the leading article in this January to June number is by the president and editor, Dr. H. Ayuso, on the value of strychnin in reviving and regulating the breathing when in the course of disease the respiration has become shallow and fast. He has also found strychnin invaluable in hysteria and in nervous collapse from overwork or emotional stress. He reports five typical and illustrative cases.

WAR NOTES

Surgical Unit Returns.—The Harvard Surgical Unit, which has been stationed at the American Ambulance Hospital, Paris, during April, May and June, terminated its service, July 1, and has returned home.

Epidemic Diseases in the War Zone.—It is reported that Asiatic cholera and smallpox are raging in Galicia; that 120 cases of cholera were reported from Lemberg on July 13, and 419 cases of smallpox in the province between July 4 and 10. ——Cholera is said to be increasing among the Austrian troops, especially those which have recently returned from Galicia.

Gratitude for Medical Supplies.—A letter has been received by Mrs. Francis McM. Bacon, Jr., of the New York Vacation War Relief Committee, from Captain Conrad G. Geggie of the Canadian army medical corps, thanking the committee for medical supplies which were received at a time when the Canadian division assisted and supported by the territorials had just been in a series of attacks on the enemy's lines during which casualties were very heavy.

Fighting at the Front.—This was the subject of an address which Dr. William Ahlstrom delivered at the weekly meeting of the University Forum of America. Dr. Ahlstrom has been working with the Red Cross in the American Ambulance Corps in France. He stated that there were now 600 beds and fifty surgeons in the American Hospital. The hospital fed 700 daily. Practically all the wounds which were treated were infected. The men were eager to return to the firing line and some came to the hospital and returned to the lines as many as five times.

Baby Hospital in Serbia.—The American Red Cross has made arrangements for the establishment of a baby hospital in Serbia, which will be known as the Mabel Grouitch Baby Hospital in recognition of the Red Cross activities of Mme. Slavko Grouitch, wife of the under secretary for foreign affairs of Serbia. The hospital will be in charge of Dr. Louise Taylor Jones, Washington, and Dr. Catherine H. Travis, New Britain, Conn., who sailed on the Greek steamer *Constantinos*, from New York for the Piraeus, July 19. Dr. Jones will act as medical director of the hospital and expects to return to Washington in October, leaving the hospital in charge of Dr. Travis. Through the American Red Cross, $6,300 has been contributed thus far for the baby hospital. On July 30, two American Red Cross trained nurses will be sent to join the hospital and will carry with them additional supplies.

Lipton Praises American Surgeons.—Sir Thomas Lipton, in a recent communication, classes the work of the American surgeons and nurses in Serbia as miraculous. "The first time I was at Ghevgheli," Sir Thomas wrote in picturing the transformation in Serbia, "there were 1,400 patients there, mostly with typhus. When I was there the other day there were only three typhus cases." He described as "miraculous" the work of Dr. Richard B. Strong, the Harvard professor of tropical diseases, in charge of the American sanitary commission in Serbia and Montenegro, and his staff. "Their work is miraculous. Many hospitals where they have been working which I visited the last time I was in Serbia were full of typhus cases, but when I called this time they had no typhus cases. At Uskub, Dr. Strong's headquarters, some of the hospitals are closing up. I could hardly believe that the staff you sent out here could have made such a change. The terrible sights that I witnessed in connection with typhus when I was in Serbia the last time now are finished. What is now badly needed is for the country to be put in a proper sanitary condition to prevent these epidemics in the future."

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending July 17, 1915, lists the following contributions:

Muskegon-Oceana Medical Society, Muskegon, Mich.	$ 25.00
Dr. Robert F. Taylor, Philadelphia, Pa.	5.00
Dr. Francis Reder, St. Louis, Mo.	10.00
Dr. Charles D. Lockwood, Pasadena, Calif.	5.00
Dr. J. W. Ellenberger, Harrisburg, Pa.	5.00
Dr. Charles N. Dowd, New York, N. Y.	25.00
Receipts for the week ending July 17	$ 75.00
Previously reported receipts	7,625.84
Total receipts	$7,700.84
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
353 standard boxes of food at 2.28	804.84
Total disbursements	7,310.04
Balance	$ 390.80

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

LONDON LETTER

LONDON, July 9, 1915.

The Substitutes for Salvarsan and Neosalvarsan

At a meeting of the London Dermatological Society, Major E. G. Ffrench, of the army medical corps, made an important communication on this subject. He referred to the report by the secretary of the National Medical Research Committee appointed to inquire into the substitutes for salvarsan and neosalvarsan which had been rendered necessary when the war cut off the supply of the German preparations. The substitutes are kharsivan and neokharsivan (manufactured in this country) and novarsenobenzol "Billon" (manufactured by Poulenc Frères, France). It may be remembered that it was stated in a previous letter to THE JOURNAL that the chemistry of kharsivan and neokharsivan is identical with that of salvarsan and neosalvarsan. The committee concluded that the substitutes might safely be used in the treatment of syphilis. However, some clinicians maintain that the new preparations are more toxic. Major Ffrench said that after treating over 100 cases of syphilis in all stages with the substitutes he came to the conclusion that kharsivan and neokharsivan are somewhat more toxic than salvarsan and neosalvarsan. Of 136 injections of kharsivan, 60 per cent. gave no reaction; 27 per cent. gave slight reaction, such as headache, slight temperature, vomiting, rigor and diarrhea, and 13 per cent. gave a severe reaction of the symptoms mentioned. Of 124 injections of salvarsan, 63 per cent. gave no reaction, 33 per cent. a slight reaction, and only 4 per cent. a severe one. Of twenty-five injections of neokharsivan, 32 per cent. gave no reaction, 40 per cent. slight reaction, and 28 per cent. severe. Of seventy-five injections of neosalvarsan, 72 per cent. gave no reaction, 21 per cent. slight, and only 7 per cent. severe. Of novarsenobenzol, forty-two injections were given; 76 per cent. gave no reaction, 19 per cent. slight reaction, and 5 per cent. a severe one. Major Ffrench has not experienced any serious results in the use of these substitutes, and believes that kharsivan and neokharsivan are excellent substitutes for salvarsan and neosalvarsan. So far as his experience has gone, they may be safely recommended for the treatment of all forms of syphilis.

Conscription and Eugenics

It is often pointed out that the war is taking its death toll from the best of our population—healthy men in the prime of life who have volunteered to serve their country in the hour of danger, while it leaves the unfit and the pusillanimous. Major Darwin in his presidential address on "Eugenics During and After the War" delivered before the Eugenics Education Society said if conscription were adopted future wars would produce less injury to the race, because the casualty lists would more nearly represent a chance selection of the population, though whether a conscript army would ever fight as well as our men were doing in France was very doubtful. Military training was eugenic if the men were kept with the colors only for short periods. Officers must, of course, be engaged for long periods, and among them the birth rate was very low. An increase of pay would be beneficial in this respect if given in the form of an additional allowance for each living child. In the hope

of increasing the birth rate attempts were likely to be made to exalt the "unmarried wife," a detestable term against which he protested. Promiscuous intercourse unfitted persons for married life and increased the spread of sterilizing disease. A special effort ought now to be made to maintain the high standards of home life which had been in large measure the basis of our social and racial progress.

Anthrax and Shaving Brushes

At an inquest on a lawyer clerk, aged 38, it was stated that he had a pimple on the neck after shaving, and the following day his neck swelled so badly that he went to the West London Hospital, where he died. An examination of the blood was made and anthrax bacilli were discovered. There was no evidence that he had been in contact with any animal. A London county council veterinary surgeon said that there had been no case of anthrax north of the Thames since last August. The disease was generally conveyed by personal contact with animals. It might have been conveyed by means of a shaving brush, for the hair of various animals was used in the manufacture of shaving brushes. He could not account for the infection in any other way. The moral seems to be that when one buys a shaving brush one ought to disinfect it before use.

PARIS LETTER

Paris, July 1, 1915.

The War

Reduction of the Hospital Period in Cases of Soldiers Affected with Chronic or Relapsing Conditions

The minister of war has just called the attention of all the military physicians to the necessity of avoiding unnecessary encumberment of the hospitals and expense to the government by reducing, as much as possible, the number of men retained in hospitals for chronic conditions which do not require immediate attention. Some of these men have no lesions or functional troubles sufficiently important to keep them from, at least, the auxiliary service. Others are affected with persistent or easily relapsing conditions which are serious enough to disqualify them for regular service and which do not appear likely to improve rapidly and permanently under treatment. These men should be given a furlough or even discharged. The circular calls attention to the fact that many men affected with cutaneous diseases, such as discrete psoriasis, light impetigo or dry eczema, come within one or another of these categories. The circular recommends the employment of suitable doses of mercurous iodid at regular intervals in many syphilitics to prevent the reappearance of contagious lesions which would necessitate patients being sent to the hospital.

The Employment of War Cripples

To aid in the study of the question of the employment of war cripples, many of whom are compelled to change their occupation, the administration has just addressed to the chambers of commerce, associations of employers and workmen and heads of industries a list of questions with the following objects: (1) to ascertain the possibility of the cripple's pursuing his former occupation to a greater or less extent; (2) if this is impossible, to learn occupations in which after a new apprenticeship, he would be able to gain a complete or partial livelihood. The circular contains a list of important mutilations (loss of an eye, an arm, etc.), and opposite each one is to be noted the possibility or impossibility of following the occupation in question entirely or partially and in the latter case the loss of industrial value expressed by a decimal fraction. The data thus gathered will make it possible to take measures for the foundation of workshops for training cripples.

Treatment of Ardominal Wounds in Ambulances at the Front

At one of the last sessions of the Société de chirurgie, Professor Quénu reported some observations on abdominal wounds which had been sent to him by Agrégé Professor A. Schwartz and Drs. Bouvier and Caudrelier. Schwartz reported nine operations for abdominal wounds and Bouvier and Caudrelier reported thirty-two. These forty-one observations bear on a question which, after eleven months of war, divides surgeons of the highest reputation.

The nine cases of Schwartz comprised eight cases of perforation of the small intestine and one case of wound of the spleen, mesocolon and the large epiploon. From the nine operations there were two complete recoveries, two operative recoveries (one death from tetanus and one from progressive exhaustion) and five relapses, one of which was perhaps attributable to the patient's imprudence. As bearing on these results, Schwartz reports ten cases of abdominal wounds in which he did not operate either because it was too late or because he thought operation too precarious. Three of these patients recovered under expectant treatment. From the crude statistics alone the proportion of recoveries is about the same in the series of ten cases in which operation was not performed as in the series of nine operative cases. Notwithstanding, Schwartz is a decided advocate of operation in abdominal wounds.

Thirty-two laparotomies performed by Bouvier and Caudrelier comprised seventeen cases of perforation or laceration of the small intestine and five cases of perforation of the large intestine, etc. Altogether, these thirty-two laparotomies resulted in fourteen recoveries and eighteen deaths, that is, 45 per cent. of recoveries. This is a very good percentage. It may be said that Bouvier and Caudrelier were much favored by the exceptional situation of their ambulance in proximity to the trenches. This is true, but, on the other hand, they also had the disadvantage of the situation. They operated systematically in all cases no matter how serious they were. Certain patients who had lesions such as a severed external iliac artery or renal artery, a rupture of the liver, eight cases of severed small intestine with three cases of severed transverse colon, etc., would certainly have not been operated on if they had had to undergo transportation for any distance whatever. They would have died early without operation and would not have burdened the statistics of an ambulance placed a little further in the rear. While its statistics have not benefited by delay, by transportation or by selection, it is true that the ambulance benefited from its proximity to the trenches which not only permitted the patient to be brought promptly to the surgeon, but also avoided the evil results to a patient with a perforated intestine from long transportation which would have permitted the diffusion of fecal matter in the abdomen. Operation does not seem to have been conducive to death in any case. It was perhaps useless in three cases, but it saved at least eleven or twelve lives. This confirms the opinion of Schwartz as to the necessity of operating in abdominal wounds. A good surgeon may, if he operates soon after the wound and under good conditions, ensure recovery in cases of abdominal wounds which otherwise would be fatal. Given a good surgeon and a suitable equipment, the question of early operation depends, evidently, on the character of the battle, possibility of relief and the rapidity and suitability of means of transportation. Abdominal surgery cannot fail to profit by the new surgical automobiles which I mentioned in a previous letter (The Journal, May 29, 1915, p. 1861).

Marriages

Felix Gray Smith, M.D., Long Beach, Cal., to Miss Emilie Mae Smith of New Haven, Conn., at Los Angeles, June 19.

Arnold Frotcham Furrer, M.D., to Helen Hempstead, M.D., both of Cleveland, at Meadville, Pa., June 29.

Robert Granville Hall, M.D., to Edith Adelle MacDowell, M.D., both of Portland, Ore., June 30.

Charles Nash Meader, M.D., Denver, to Miss Marian L. Learned of Colorado Springs, Colo., July 6.

Kate McCool Taggart, M.D., and Mr. Arthur Albert Schley, both of Beaver Falls, Pa., June 1.

William Franklin Molt, M.D., to Miss Olive Richards, both of Indianapolis, at Boston, July 6.

Henry Ellis Peterson, M.D., Graceville, Minn., to Miss Jennie Marie Auld of St. Paul, June 30.

Horace Lee Gallaway, M.D., to Miss Lillian Sherwood Gray, both of Anthony, Kan., June 3.

Theodore John Gunther, M.D., to Miss Minnie Albrecht, both of Sheyboygan, Wis., recently.

James Joseph Murphy, M.D., to Miss Mae Peterson, both of Cedar Rapids, Iowa, July 1.

Earl R. Dezell, M.D., to Miss Ethel Tryphena Monahan, both of Minneapolis, in June.

Felix J. Maciejewski, M.D., La Salle, Ill., to Miss Angela Piszczek of Peru, Ill., June 2.

Deaths

Francis Delafield, M.D. College of Physicians and Surgeons in the City of New York, 1863; aged 73; emeritus professor of medicine in his Alma Mater; who was made surgeon to the New York Eye and Ear Infirmary and pathologist to the Roosevelt Hospital in 1871; became physician to Bellevue Hospital three years later and consulting physician in 1885, holding this position until his death; also consulting physician to St. Luke's Hospital; adjunct professor of pathology and practice of medicine, from 1875 to 1882, and professor of these subjects in the College of Physicians and Surgeons until 1901; president of the Association of American Physicians in 1886; author of several standard text books on pathological anatomy and physical diagnosis; died at the home of his sister in Noroton, Conn., July 17.

Robert Hugh Mackay Dawbarn, M.D. College of Physicians and Surgeons in the City of New York, 1881; aged 55; a Fellow of the American Medical Association; a member of the New York Surgical Society, American Association of Anatomists, and New York Academy of Medicine; clinical professor of surgery in Fordham University School of Medicine, New York City, and emeritus professor of surgery in the New York Polyclinic Medical School; local surgeon of the New York and New England Railway; visiting surgeon to the New York City Hospital and consulting surgeon to the New York Polyclinic Hospital; well known for his work in plastic surgery; died at his home in New York City, July 18.

Rell Madison Woodward, M.D. Miami Medical College, Cincinnati, 1887; aged 53; surgeon in the United States Public Health Service with last station at San Francisco in charge of the hospital at the Panama-Pacific Exposition; a Fellow of the American Medical Association; who had been in the Public Health Service since 1887, devoting his time and attention chiefly to the reorganization and administration of hospitals; died in Rochester, Minn., about July 16, after an operation for the closure of a discharging sinus remaining after an operation on the gallbladder. The body was taken to Anderson, Ind., for interment.

Frederick T. Bicknell, M.D. Rush Medical College, 1870; aged 73; a Fellow of the American Medical Association; once president of the Southern California Medical Society and the Los Angeles County Medical Association; one of the organizers of the Medical Department of the University of California and for many years professor of gynecology in that institution; a veteran of the Civil War; for ten years president of the California Hospital Association; died at his home in Los Angeles, July 6, from pneumonia.

James Albert Bennett, M.D. New York Homeopathic Medical College, New York City, 1871; aged 72; who soon gave up the practice of medicine to become an official of the Consolidated Gas Company of New York and for the last twelve years has been its treasurer; also treasurer of the Astoria Light, Heat and Power Company; and an official and director in a number of similar enterprises and banks; died at his home in New York City, July 7.

Charles Upham Shepard, M.D. University of Göttingen, Germany, 1867; aged 71; known as the "father of the tea industry in America" because of his success in growing tea on a large scale in the United States for the commercial market; a specialist in physiologic chemistry and an extensive investigator and writer on chemical and agricultural subjects; died at his home, the Pinehurst Tea Farm, Summerville, S. C., July 4.

Lewis H. Adler, M.D. University of Maryland, Baltimore, 1859; Jefferson Medical College, 1871; aged 73; surgeon of U. S. Volunteers during the Civil War; a retired practitioner of Philadelphia and for many years a member of the staff of Jefferson Hospital; president of the Alumni Association of the University of Maryland School of Medicine; died in the Methodist Hospital, Philadelphia, July 15, from uremia.

Erasmus Newton Sartell, M.D. Rush Medical College, 1893; aged 58; of Janesville, Wis.; a member of the State Medical Society of Wisconsin; formerly health officer of Watertown, Wis., and surgeon for the railways centering in that city, and local surgeon of the Milwaukee, Lake Shore and Western Road at Janesville; died in the Mendota (Wis.) State Hospital, July 1, from pneumonia.

Mary E. Jackson, M.D. Physio-Medical College of Indiana, Indianapolis, 1887; Chicago College of Medicine and Surgery, 1895; aged 64; of Hammond, Ind.; professor of electro-therapeutics in her Alma Mater; an ardent temperance advocate and one of the organizers of the National Congress of Mothers; died in the Lutheran Deaconess Hospital, Chicago, from sarcoma, July 7.

Edward C. Schoonmaker, M.D. University of Minnesota, Minneapolis, 1899; aged 43; a Fellow of the American Medical Association; formerly surgeon to St. James' Hospital and village physician and chairman of the Board of Health of Perham, Minn.; died at his home in Mercedes, Texas, July 4, as the result of a gunshot wound of the head, self-inflicted it is believed with suicidal intent.

Frank Homer Dent, M.D. College of Physicians and Surgeons, Chicago, 1906; aged 36; a Fellow of the American Medical Association; a veteran of the Spanish-American War; for several years a practitioner of Wabash, Ind., but for the last year a resident of Kokomo, Ind.; died in the Methodist Hospital, Indianapolis, July 9, eight days after an operation for intestinal adhesions.

James Bertrand McEvoy, M.D. Fort Wayne (Ind.) College of Medicine, 1896; aged 41; a Fellow of the American Medical Association; first intern at the Indiana School for Feeble-Minded Youths; died at his home in Fort Wayne, July 7. At a meeting of the Fort Wayne Medical Society, July 8, resolutions were adopted voicing the esteem and regret of the local profession.

Everett Alanson Sherill, M.D. University of Maryland, Baltimore, 1912; aged 29; for a year and a half assigned to the care of the tuberculosis division of Bellevue Hospital, New York City, where he contracted tuberculosis; since that time in pursuit of health at Saranac Lake, N. Y., and Black Mountain, N. C.; died at his home in Statesville, N. C., July 1, from tuberculosis.

Charles W. Evans, M.D. Starling Medical College, Columbus, Ohio, 1887; aged 53; a Fellow of the American Medical Association; for fifteen years a practitioner of Russellville, Ohio, but since 1903 a resident of Los Angeles; for nine years physician for the Hollenbeck Home for the Aged, Los Angeles; died at his home, June 14, from tuberculosis of the lungs.

James Howard Taylor, M.D. Bellevue Hospital Medical College, 1871; aged 64; a member of the State Medical Association of Texas; chief surgeon of the Texas Southern Railway; physician of Harrison County, Texas; for twenty years Grand Medical Advisor of the Ancient Order of United Workmen; died at his home in Marshall, Texas, July 5.

Charles H. Burvenich, M.D. Central Medical College, St. Joseph, Mo., 1897; aged 39; a Fellow of the American Medical Association; contract surgeon in the Army during the Philippine campaign and also transport surgeon in the British service during the Boer War; died at his office in Denver, July 2, from acute dilatation of the heart.

Alonzo Irie Goddard, M.D. Jefferson Medical College, 1913; aged 32; who after an internship in New York City located in Hutchinson, Kan.; died in Stewart Hospital, Hutchinson, July 6, two weeks after an operation for appendicitis. At a special meeting of the Reno County Medical Society, resolutions of condolence were adopted.

Josiah Jones, M.D. Rush Medical College, 1890; aged 50; of Tacoma; a member of the Washington State Medical Association; and a well-known specialist on diseases of the eye, ear, nose and throat; was almost instantly killed, July 5, on the Tacoma-Seattle highway, by the overturning of his automobile.

August F. Kerstan, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1879; aged 77; of Beirne, Ark.; assistant city physician of Beirne; surgeon to the municipal prison and formerly physician and surgeon to the City Hospital, Atlanta, Ga.; died at his home, July 6.

Theodore Writer, M.D. Bellevue Hospital Medical College, 1866; aged 77; a member of the Medical Society of the State of New York, and for many years a practitioner of Otisville, N. Y.; died, July 9, in a hospital at Chautauqua, N. Y., where he had gone for a surgical operation.

Sherman Kemlo Ingle, M.D. Indiana University School of Medicine, Indianapolis, 1909; aged 42; a Fellow of the American Medical Association; for five years a resident of Evansville, Ind.; died in Hot Springs, Ark., July 1, from chronic interstitial nephritis.

William S. Armstrong (license Oregon, 1903); aged 52; of Portland; a practitioner since 1889 and formerly assistant local surgeon of the C. & E. Railway; a specialist on diseases of the eye, ear, nose and throat; died in the Portland Surgical Hospital, July 3.

William T. Harris, M.D. Homeopathic Medical College of Missouri, St. Louis, 1888; aged 73; for many years a practitioner of Keosauqua, Iowa, but for the last year and a half a resident of Galesburg, Ill.; died at his home in that place, June 27.

Thomas Doolin, M.D. Hospital College of Medicine, Louisville, 1879; aged 78; a member of the Missouri State Medical Association; fell from a window of his office in Ash Grove, Mo., July 6, and died from his injuries a few hours later.

Victor Albert Ellsworth, M.D. University of Buffalo, 1876; aged 69; for twenty-one years superintendent of the Washingtonian Home, Boston; and an ardent temperance advocate; died at his home in Boston, July 4, from nephritis.

Thomas Aloysius Maloney, M.D. New York University, 1898; aged 40; of Springfield, Mass.; a Fellow of the Massachusetts Medical Society; died at the home of his mother in New Britain, Conn., July 13, from a nervous breakdown.

John A. Reyburn, M.D. Medico-Chirurgical College of Philadelphia, 1889; aged 46; a member of the West Virginia State Medical Association; died at his home in Ravenswood, W. Va., about July 5, from carcinoma of the stomach.

Menotti Mazza, M.D. Royal University, Naples, Italy, 1896; aged 46; a prominent Italian practitioner of Philadelphia; president of many Italian philanthropic and benevolent institutions; died at his home, July 5, from sarcoma.

Susan McGlaughlin Snyder, M.D. University of Michigan Homeopathic Medical College, 1887; aged 54; for twenty years supreme physician of the Royal Neighbors of America; died at her home in Council Bluffs, Ia., July 6.

Abraham Lewis Lengfeld, M.D. Cooper Medical College, San Francisco, 1871; aged 64; a Fellow of the American Medical Association; also a druggist; died at his home in San Francisco, June 19, from myocarditis.

Francis Embury Tibbitts, M.D. Western Reserve University, Cleveland, 1888; aged 49; a Fellow of the American Medical Association; died at his home in Geneva, Ohio, July 5, from heart disease.

John S. Graves, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1885; aged 53; of Inman, Kan.; died in the McPherson Hospital in that city, from the effects of gallstones.

Samuel L. Merrill, M.D. University of Nashville, Tenn., 1865; formerly of Jefferson County, N. Y.; surgeon of volunteers during the Civil War; died in North Adams, Mass., July 8.

John E. McTaggart, M.D. University of Buffalo, 1871; aged 76; formerly of Marine City, Mich., and later of Detroit; died at his home in Detroit, May 12, from senile debility.

Herbert B. Thomas, M.D. North Carolina Medical College, Charlotte, 1898; aged 40; died at his home in Burgaw, N. C., April 10, from pneumonia.

Elmer Elwood Hall, M.D. Chicago College of Medicine and Surgery, 1903; aged 50; died at his home in Chicago, June 21, from tuberculosis.

John A. Johnson, M.D. Atlanta (Ga.) Medical College, 1855; aged 79; formerly of Calhoun, Ga.; died at his home in Atlanta, June 30.

Robert Peel Aikman, M.D. Victoria College, Coburg, Ont., 1868; aged 73; died at his home in Grimsby, Ont., April 13, from pneumonia.

Alliston Chester Wilbur, M.D. Boston University, 1895; aged 45; died at his home in Middleboro, Mass., June 24, from nephritis.

James C. McDade, M.D. Medical College of Georgia, Augusta, 1872; aged 68; of Cecil, Ala.; died in Montgomery, Ala., June 23.

Daniel V. Seay (license, Tennessee, 1889), aged 87; formerly of Nashville, Tenn.; died in Philadelphia, about June 20.

Joshua M. C. Burger, M.D. University of Nashville, Tenn., 1869; aged 78; died at his home in McMinnville, Tenn., June 27.

John S. Meeks, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1883; died at his home in Gunter, Tex., July 2.

Charles Wesley Adkins, M.D. University of Louisville, Ky., 1868; died at his home in Scottsboro, Ala., June 24.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

CONVICTIONS UNDER THE FOOD AND DRUGS ACT

O'NEIL'S MALT WHISKEY

In October, 1913, several cases of a product labeled "O'Neil's Pure Malt Whiskey" were shipped from the state of Illinois into the state of Michigan. In April, 1914, the United States attorney filed a libel for the seizure and condemnation of this product charging that the stuff was misbranded in violation of the Food and Drugs Act. Some of the claims that appeared on the labels and circulars around the bottles were:

"The World's Best Medicine."

"An invaluable remedy in all cases of Consumption, 'Grippe,' Coughs, Colds, Dyspepsia, Bowel Trouble, Catarrh and all Bronchial Affections."

"It restores lost vitality, quiets the nerves, tones up the entire system and retains the freshness and vigor of youth."

"As a preventive of Catarrh, O'Neil's Pure Malt Whiskey is very successful."

"It is in this great work of preventing consumption . . . that O'Neil's Pure Malt Whiskey is making a great record."

These were but some of the absurdly fraudulent claims made for the nostrum. The government officials contended that the product was misbranded as analysis revealed that "it was not a medicinal substance or mixture of substances that could be relied on for the prevention or treatment of tuberculosis." Furthermore, the analysis proved that the stuff was of such composition that "it was utterly inefficient of itself for the treatment of, or for the prevention of, tuberculosis or for the prevention of catarrh."

In September, 1914, no claimant having appeared for the property, the judge ordered the stuff condemned and forfeited. After the objectionable medicinal claims had been obliterated from the label and the circulars accompanying the bottles had been destroyed, the court authorized "the distribution of the product to a certain charitable institution in Detroit."—[*Notice of Judgment, 3603.*]

MOUNTAIN VALLEY SPRING WATER

Some "Mountain Valley Spring Water of Arkansas" was shipped in interstate commerce with the following claims appearing on the packages:

"World's best water for kidney and bladder troubles."

"Is Radio-Active Mountain Valley Water."

"A Remedy for Bright's Disease, Diabetes, Cystitis and Rheumatism."

This product was declared misbranded by the federal authorities on the ground that the statements that the water was radio-active and was "a remedy for Bright's Disease, Diabetes, Cystitis and Rheumatism," were false, fraudulent and misleading. The government further declared "said water was not radio-active, and was not a remedy for Bright's disease, diabetes, cystitis and rheumatism." The Mountain Valley Water Company admitted the allegation and judgment of condemnation and forfeiture was entered. The company paid the cost of the proceedings, and after executing a bond in the sum of $500 was permitted to take possession of the water.—[*Notice of Judgment, 3627.*]

STAFFORD MINERAL SPRINGS WATER

Several carboys of a product known as "Stafford Mineral Springs Water" were shipped in interstate commerce by Colburn, Morgan Co., Inc., operating as the Stafford Mineral Springs & Hotel Co., Ltd., Vosburg, Miss. The water bore claims to this effect:

"A remedy for all Kidney Diseases, Bright's Disease, Diabetes, Dyspepsia, Rheumatism, Torpid Liver, Calculi, Insomnia, Nervous Prostration, Etc."

In view of these false and fraudulent claims the government declared the stuff misbranded. Colburn, Morgan Co., Inc., having admitted the allegation, and consented to a decree, judgment of condemnation and forfeiture was entered. It was ordered by the court that after the water had been properly relabeled and the company had paid the cost of the proceedings the product should be delivered to the claimant after bond had been given in conformity with the act.—[*Notices of Judgment, 3648 and 3649.*]

SA-YO MINT JUJUBES

Sa-Yo Mint Jujubes were manufactured by Wallace & Company of New York City. A number of cases having been shipped in interstate commerce, the federal authorities filed a libel for their seizure and condemnation, alleging that the stuff was misbranded under the Food and Drugs Act. Some of the claims made on the trade packages were:

"An Unfailing Relief for Coughs & Throat Irritations."
"Recommended by physicians as a prompt and effective relief for all coughs and bronchial troubles."
"Quickly removes attacks of indigestion."
"Most efficacious in all conditions requiring relief."
"As an effective remedy for coughs and throat irritations they are unequalled."
"Sa-Yo Mint Jujubes cure coughs and throat irritations."

The federal authorities declared that each and every one of the above claims was false and fraudulent. No claimants appeared for the property and the court entered judgment of condemnation and forfeiture and ordered the United States marshal to destroy the product.—[*Notice of Judgment, 3660.*]

HOUCHENS' "FAMILY PHYSICIAN"

The Houchens Medicine Company of Baltimore, Md., shipped in interstate commerce a product called the "Family Physician." Some of the claims made for this preparation were:

"It will positively relieve malaria, scarlet fever, typhoid, bilious and intermittent fevers, coughs, colds, cold on the liver and kidneys, diphtheria and sore throat."
"Also a wonderful and positive remedy for dyspepsia, keeps measles out nicely, regulates the bowels without trouble, and by purifying the blood prevents your liability to disease."

A sample of the product was examined by the Bureau of Chemistry which reported that it was a sirup containing 19.2 per cent. nonvolatile matter, 8.9 per cent. alcohol, anise and a vegetable cathartic drug. The federal officials declared the stuff misbranded in that the claims made were false and fraudulent and "were applied to said article knowingly and in reckless and wanton disregard of their truth or falsity." The Houchens Medicine Company pleaded guilty and were fined $75.—[*Notice of Judgment, 3688.*]

DR. MARTEL'S FEMALE PILLS

Dr. Martel's Female Pills, Knickerbocker Remedy Company of New York, distributors, were sold as "a preparation for disturbances of the menstrual functions." The government declared the drug misbranded "in that the package containing the same bore a certain statement which was false and misleading, and for the further reason that the package containing said drug contained a circular which contained statements regarding the curative or therapeutic effect of said drug which were false and fraudulent."

No one having claimed the property seized by the government, the court entered judgment of condemnation and forfeiture and ordered the United States marshal to destroy the product.—[*Notice of Judgment, 3690.*]

QUICKSTEP, FRYE'S REMEDY

Laura M. Frye of Lynn, Mass., trading as the Frye Remedy Company, shipped in interstate commerce a product called "Quickstep, Frye's Remedy." The preparation contained a number of false, fraudulent and misleading claims on the trade package. Some of these were:

"Cures Rheumatism, Headache, Constipation, Indigestion and Dyspepsia."
"Best Blood Purifier in the World and Leaves no injurious Effects."
"Cures when everything else fails."
"Prevents appendicitis by purifying the blood and keeping the bowels clear and clean."

The stuff was analyzed in the Bureau of Chemistry and the chemists reported that examination showed it to consist of:

Rochelle Salts.....99.81 per cent.
Granulated sugar, colored pink.

As Rochelle salts and pink sugar will not cure rheumatism or prevent appendicitis the federal authorities, very naturally, declared that the stuff was misbranded. Laura M. Frye entered a plea of nolo contendere "and the same was placed on file by the order of the court."!—[*Notice of Judgment, 3692.*]

GRAY'S GLYCERINE TONIC

On Aug. 5, 1914, the United States officials filed in the District Court of the United States two libels for the seizure and condemnation of twenty-four cases each containing one dozen bottles of "Gray's Glycerine Tonic Compound." Twelve of these cases had been shipped by the Purdue Frederick Co., manufacturers of Gray's Glycerine Tonic to C. B. Smith and Company, Newark, N. J.; the other twelve cases had been shipped to Roeber and Keubler Company, Newark, N. J. The libel charged that the preparation was misbranded in violation of the Food and Drugs Act, as amended.

Some of the claims made on the labels and circulars around the bottles were:

"It is especially efficient in diseases of the chest and throat and in cases where cod liver oil is not tolerated. In anemia, melancholia, its beneficial effects are noticed almost immediately."
". . . by virtue of the selective restorative influence of its ingredients upon the stomach all the functions of this organ are reestablished; appetite is created, digestive powers are restored, and assimilation of food — to replace waste of flesh and strength — is assured."
". . . an effective, reliable tonic in nervous exhaustion, general debility, impoverished conditions of the blood and nervous system, Bright's disease, diabetes, diseases of the liver, disorders of the urinary organs, etc."
"In tuberculosis of the lungs (consumption) Gray's Glycerine Tonic Comp. is one of the best remedies."
"It always agrees with the stomach and enables the patient to eat, digest and assimilate food; it causes an increase in flesh and strength."
"It is unequalled as a tonic for the vocal organs. It 'clears the throat' and renders the voice clear and resonant. It is endorsed and used by leading singers and speakers."
"Dyspepsia manifested by loss of appetite, inability to digest food, uneasiness and distress after eating, nausea, belching, water-brash, heartburn, vomiting, etc.; it promptly relieves these symptoms and effects a complete cure."

These are by no means all of the absurd claims made for this nostrum as set forth in the government bulletin; they are, however, typical. The federal authorities declared the stuff misbranded on the ground that, as Gray's Glycerine Tonic "did not have the curative and therapeutic effect claimed," the statements made on the label and circulars "were false, fraudulent and misleading."

On Oct. 19, 1914, the two claimants, C. B. Smith & Co., and Roeber & Keubler Co., having consented to a decree, judgment of condemnation and forfeiture was entered, and the court ordered that the product should be delivered to claimants on their payment of the costs of the proceedings, after each had given a bond in the sum of $250.—(*Notices of Judgment, 3680 and 3681.*)

Rural Health and the Nostrum Evil.—The patent nostrum evil is more difficult. In many instances, it is a habit, unconscious it may be, but nevertheless a habit. The man or the woman accustomed to the effect of a "dope" drink wants to believe that it is relieving pain or assisting nature. The pleasant sensation is an incident which lightens the routine of a dull, monotonous day. I see no way to put out of business these partners with poverty and death but to enlist in the cause the country editor. If he could be persuaded or made to cut out the advertisements of quack remedies and paid to run a half column each week of pertinent, reliable information on the so-called remedies most used in his territory, it would be effective to a degree. . . . The control, however, of use of patent medicines is largely in the power of the practitioner. He is the main factor in the education of the people as to harmful results and folly of spending money for these concoctions of alcohol, burnt sugar and other substances with no therapeutic value.—Oscar Dowling, *American Journal of Public Health*, May, 1915.

Correspondence

Shall Progress in Medical Education be Arrested?

To the Editor:—The contention of Dr. Rodman in his presidential address at San Francisco (THE JOURNAL, June 26, 1915, p. 2107) that the medical schools of the United States have advanced their standards too rapidly, and should now "mark time," ought not to go unchallenged. It seems strangely anomalous that such a plea should come from the President of an Association which has stood since its inception for progress in medical education. It is unfortunate, because it may serve as an excuse for some of the laggard schools to defer the much to be desired; and soon to be inevitable advance in their requirements for admission. Fortunately, with thirty-nine medical colleges now demanding two years of premedical work in college, while in nine states no applicant for licensure to practice is eligible unless he presents evidence that he has had at least this amount of preparation, the forward movement has gained too much momentum to be long arrested.

Dr. Rodman is in error when he states that "the present standard of the Council (four years in an accredited high school, one year in the basic sciences of chemistry, physics and biology) is on a parity with that of Canada and Great Britain and with European countries." In Germany the standard is distinctly higher. Graduation from the German gymnasium secures an education—a mental training—fully equal to that obtained at the end of the sophomore year in the best American colleges. After completing the gymnasium course, the student spends six years in medical study. In the Scandinavian countries the requirements are still higher. The admission standards in Great Britain are not at all uniform, and are, according to Dr. Flexner, not satisfactory nor such as should be emulated by our own schools.

Dr. Rodman says that "medicine is not a thing apart but only a link in the educational chain, and should be based upon and correlated with the secondary schools, colleges and universities of the country." But the plan which Dr. Rodman advocates for the premedical year must have the effect, if, indeed, it be not its purpose, to eliminate the college entirely from the scheme of medical education. We cannot afford to dispense with the college. Whatever the shortcomings of the American college may have been, it is the crowning feature of our educational system; it affords a kind of preparation for professional vocations, and especially for medicine, which no other institution can offer. Two years of such work constitutes by no means the ideal preparation for medicine; every student whose age and other circumstances permit should spend three and, if possible, four years in premedical college work. One of the chief advantages of insisting that the premedical science work shall be taken in a college or university, and not in a high school or medical college, is the fact that it gets every prospective medical student into the atmosphere of the college, and once there, he is apt to prolong his residence and secure a broader, more thorough preparation for his future work than is afforded by the minimum requirement of the medical school.

Of course, such a plan reduces the possible clientele of the medical schools greatly because less than 15 per cent. of high school graduates, at the present time, ever go to college.

It is this fact, more than any other, which impels some of our medical schools to resist any movement which will compel *all* medical students to take some premedical college work. It has resulted (in every school which has adopted this requirement) in a reduction of the number of students of from 50 to 90 per cent. Few of these schools, however, were financially any better able to stand this reduction in number of students and in income, than the schools which have lagged behind and have resisted every step in the forward movement which has been taken. So far as the medical profession and the public are concerned, there is no need to fear any dearth of medical students and physicians for many years to come.

The notion that *adequate* preparation in physics, chemistry, biology and modern language can be secured in the high school, either now or in the near future, is an idle dream. Less than half a score of the 13,000 high schools in the United States have made any attempt to extend the high school work to six years, corresponding to the completion of the sophomore year in college. The difficulty which has been experienced in many states in advancing the high school course from three to four years, and in maintaining a satisfactory standard of instruction in the face of the opposition of complaining taxpayers, discourages any hope that we shall see five or six year high schools anywhere outside of a few large cities, for many years to come. There is justice in the demand that before the high school shall add expensive fifth and sixth years for the few students who might desire to attend them, any available funds shall be spent in making the earlier years in the high school and in the grades more effective.

It is very probable that one or two years may be saved to the average student, by a rearrangement of the curriculum. Such an experiment has been made by the University of Chicago High School with apparent success. It is certain, however, to be some years yet before this plan becomes generally adopted. Meanwhile, the student preparing for medicine must secure adequate preparation in the fundamental sciences, even though such a course ushers him into medical practice a year or two later than we might desire.

As between the choice of inadequate preparation and graduation at 25, or a thorough grounding in these fundamental sciences and graduation a year later, there can be no room for question. Under existing conditions there is no reason why the average American boy should not graduate from the high school at 17 or 18, take two or three years of premedical college work, five years in medical school and hospital and enter into the practice of medicine at the age of from 25 to 27. Furthermore, there never has been a time when it was easier than it is now for the poor boy to put himself through college.

The attempt of the detached medical school to provide a submedical year in physics, chemistry and biology is by far the most unsatisfactory solution of the problem. It has been aptly designated by President Pritchett as "a parasite on our educational system."

After all, the individual most concerned in this matter is the student himself. I have had occasion to interview many earnest and ambitious medical students, who, ignorant of the importance of adequate premedical education, badly advised and seduced into a low grade medical college, have discovered the mistake they had made, and were seeking admission to some medical school with higher standards. The amendment of their deficiencies involved in such a transfer meant, at that late stage in their career, an expense in time and money which often seemed to them almost insurmountable. What some of these students had to say about their advisers would not look well in print.

One of the great needs in this country is a universal dissemination among young men and women who are planning to go into medicine of all the facts in reference to medical education and medical schools, which will enable them to choose wisely, and this the Council on Medical Education is undertaking to do. Every student who enters a lower grade medical school should do so with his eyes open.

No such school has a moral right to receive a student without the assurance that he knows the facts in the case. He should know that the "ideal plan" of the Council on Medical Education, proposed as such eleven years ago, when the Council thought, rightly no doubt, that too rapid an advance would antagonize a great many of the medical colleges, is no longer an "ideal" scheme. No curriculum which fails to qualify those students who have pursued it to practice in several states, can in any proper meaning of the word, be designated as "ideal."

If Dr. Rodman is really content to have the school with which he is connected continue a standard of admission

comprising only one year of premedical work beyond the four year high school course, will he undertake to see that there is printed in bold type, in a conspicuous place in the annual announcement of the college, and in all of its advertisements, some such legend as this: "Thirty-nine other medical schools require more adequate preparation for entrance, and therefore insure to their students a better preparation for the study and practice of medicine. Nine states—Alabama, Colorado, Indiana, Iowa, Minnesota, New Hampshire, New Jersey, North Dakota and South Dakota, refuse to license physicians—graduating after 1915 to 1919, who had less than two years of premedical college work. Graduates of this Medical College are therefore not eligible to practice in these states"?

Will Dr. Rodman further use his influence to see that every other medical school requiring only one year of college premedical work posts a similar notice?

JOHN M. DODSON, M.D., Chicago.

Phosphorated Oil

To the Editor:—In reading the special article on "Practical Pharmacology" (THE JOURNAL, July 3, 1915, p. 28), it occurred to me that others may have experienced the same difficulty that I have with the filling of the prescription there recorded:

Phosphorus	0.01 gm.	1/6 grain
Cod liver oil	to make 100 gm.	3 fluidounces

Free the oil of contained air by heating to 150 C., and allow to cool, then add the phosphorus . . . warm to about 80 C. and shake until the phosphorus is entirely dissolved.

This is a remedy of high repute in rickets, and being therefore commonly used for little children and so potent a drug, the accuracy of dosage is of first importance. Phosphorus must be weighed under water, and one-sixth grain so required does not meet a cheerful response from the druggist. I have therefore joined the safety first movement, using the 1 per cent. oil of the National Formulary, and write the prescription as follows:

Phosphorated oil	1.
Cod liver oil	100.

This gives the same composition and greater assurance of accuracy in the majority of cases.

I believe the safety to the patient, convenience to the dispenser and resultant comfort to the prescriber justify the suggestion submitted. A. E. HEDBACK, M.D., Minneapolis.

[COMMENT.—The suggestion is interesting. It carries with it, however, the danger that an old, and hence worthless phosphorated oil may be dispensed.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

A DEFINITION OF "ANAPHYLAXIS"

To the Editor:—Please give me the generally accepted definition of the word "anaphylaxis." It seems to me that different authors, who contribute to THE JOURNAL, have different conceptions of its meaning. Has the meaning of the word changed since it first came into existence?

F. E. B., M.D., Wilmington, Va.

ANSWER.—By the word "anaphylaxis" is understood generally the more severe phenomena that appear when an animal previously influenced ("sensitized") by a foreign protein, introduced into the blood and tissues by injection or otherwise, after a suitable interval again receives the same protein into its blood and tissues as the result of injection or otherwise. Anaphylactic shock in the guinea-pig is the classical example. As these phenomena are regarded currently as the result of an intoxication with the products of protein splitting, anaphylaxis may be looked on as a protein intoxication occurring when a prepared animal receives the proper protein into its system.

At first the word anaphylaxis was used to describe the condition in which severe, violent phenomena occur on reintroduction of toxic proteins (eel serum, actinea poison) in animals previously injected with these substances for purposes of immunization. This was contrary to expectation; the previous injections, it had been assumed, would produce a condition of protection, a prophylaxis; as the directly opposite action resulted, the word anaphylaxis, meaning the reverse of prophylaxis, was coined to designate the condition. Before long, hypersusceptibility was introduced as synonymous with anaphylaxis. As a clearer insight into the nature of the condition was gained, especially through the work of von Pirquet on serum disease in man, it developed that in reality it does not concern the reverse of prophylaxis or hypersusceptibility to poisonous substances, but a change in the powers of the body to react on the introduction of foreign proteins. In order to indicate the nature of this conception, von Pirquet coined the word "allergy," which means altered reactivity. At present there is general agreement that phenomena as different as the experimental anaphylactic shock in guinea-pigs, the various manifestations, mild and severe, of serum disease in man, various "food idiosyncrasies," such as egg asthma, poisoning by cow's milk, etc., and the tuberculin and similar reactions are all due to an altered reactivity of the body, altered by previous influence of the foreign proteins concerned on the antibody-producing tissues so that when the conditions are right the foreign proteins are broken up in such a way as to produce poisonous effects that manifest themselves in different ways, depending on quantitative and other relations. Hence the word "allergy" would appear to be the best word we have for the condition because there is in reality no increased susceptibility to any particular poisons, nor is it true that the reverse of prophylaxis exists, because the allergic (anaphylactic) phenomena are the result of reactions between antibody and antigen, incidents, so to speak, in the course of immunization. Accordingly, anaphylaxis, hypersusceptibility and allergy are being used more and more as synonymous terms, anaphylaxis being applied perhaps more to the severer general symptoms, of which anaphylactic shock is the classical example, and allergy to the milder phenomena illustrated by ordinary serum disease, tuberculin reactions, gonococcal reactions, etc. From what has been said, we see that anaphylaxis, although applied to the same sort of phenomena as when introduced by Richet, no longer has the interpretative significance of its derivation and first usage.

DENATURED ALCOHOL NOT PERMISSIBLE FOR MEDICINAL USES

To the Editor:—1. Is it permissible to use denatured alcohol in the preparation of tincture of iodin to be used as a skin disinfectant in operations?

2. Is denatured alcohol toxic when used as an alcohol rub?

3. Are there any laws governing the use of the various alcohols?

4. My conception of the various alcohols is the following: Commercial alcohol is 98 per cent. ethyl alcohol or grain alcohol. Denatured alcohol is derived from commercial or ethyl alcohol. Wood alcohol is methyl alcohol, a poisonous product, unfit to be used not only internally, but also externally. EDWARD H. MCINTYRE, M.D., Virginia, Minn.

ANSWER.—1. Tincture of iodin prepared with denatured alcohol would not conform to the requirements of the federal Food and Drugs Act or to the legal requirements of most states. Since ethyl alcohol is denatured for ordinary commercial purposes by the addition of methyl alcohol, tincture of iodin prepared with such denatured alcohol would probably be unsafe for use on or near open wounds.

2. While the chances of serious toxic results from the use of ordinary denatured alcohol for massage are probably not great, it is better to avoid such chances altogether by the use of pure ethyl alcohol.

3. The status of alcohol in drugs is defined by Regulation 28-a, issued by the Department of Agriculture for the enforcement of the Food and Drugs Act, June 30, 1906, as follows:

> The term alcohol is defined to mean common or ethyl alcohol. No other kind of alcohol is permissible in the manufacture of drugs except as specified in the United States Pharmacopeia or National Formulary.

Neither denatured alcohol nor wood alcohol is recognized in the U. S. Pharmacopeia or National Formulary.

Some states—New York, for instance—forbid the use of methyl alcohol in all medicines except veterinary liniments. It should be noted, by the way, that, although the U. S. commissioner of internal revenue has approved a number of special formulas for denaturing alcohol for antiseptic

purposes with other substances than methyl alcohol, such formulas may not be employed except by hospitals or sanatoriums which have been licensed to use them, and the product may not be used for ordinary medicinal purposes.

4. Your conception of the various alcohols is essentially correct, except that commercial alcohol usually contains only about 95 per cent. by volume of absolute ethyl alcohol.

USE OF RED CROSS

To the Editor:—What is the distinguishing mark of a physician's automobile, a red or a green cross? Is it not a fact that the American National Red Cross Society has objected to the use of the red cross on the automobiles of physicians who are not members of the society? What is meant by the St. Andrew's green cross, and why should that typify a physician's car? J. L. Sims, Jr., M.D., Weleetka, Okla.

To the Editor:—Recently I wrote to a firm, advertising in The Journal, regarding an emblem for the radiator of my car, and in return, they sent me two designs, one a red cross and the other a green St. Andrew's cross. Will you please tell me which, if either, is official, and which one you recommend? I had supposed that the red cross was used with authority only by the American National Red Cross, but I am unable to find any reference connecting the green St. Andrew's cross with the medical profession. Frank P. Goodwin, M.D., Jamestown, N. Y.

Answer.—There is no mark which has been universally decided on as distinctive of a physician's automobile. A number of hospitals and physicians have taken the green cross, formed of five squares, sometimes called the Geneva cross, as their insignia. Generally speaking, the red cross should not be used as a distinguishing mark even by physicians who are members of the American Red Cross. This insignia was created to designate relief in time of war or in time of great disasters. Under war conditions it cannot be used as a brassard, or on vehicles near the front without the consent of the War Department. The Treaty of Geneva, which the United States has signed with other countries, compels protection of the insignia, because its misuse leads to nullification of its protection. Certain manufacturers secured the use of the red cross as a trademark previous to 1905, and it has been impossible to do away with these special cases.

TINCTURE OF IODIN AND MERCURY IN DISEASES OF THE SKIN

To the Editor:—1. Are tincture of iodin and mercury in combination ever used as a local application in diseases of the skin?

2. Are tincture of iodin and mercury incompatible?

3. If so, in the following instance would they be considered incompatible, and what would be the injurious result, if any, of their incompatibility: An area of tinea circinata having first an application of tincture of iodin followed by an application of an ointment of mercury or an ointment of ammoniated mercury? E. R. C., Shakopee, Minn.

Answer.—1. Stelwagon (Diseases of the Skin, Ed. 7, 1914, p. 1135) states that in obstinate cases of ringworm he used among other measures tincture of iodin containing from 1 to 3 grains of mercuric iodid to the ounce.

2. Trituration of solid iodin with metallic mercury results in the formation of iodid of mercury, mercuric iodid being the result if the iodin is in excess, while mercurous iodid is produced when the mercury is in excess. No doubt a similar reaction will take place when tincture of iodin is brought in contact with mercury.

3. While the fat of the ointment may retard the reaction to a greater or less extent, it is probable that in both cases iodid of mercury will be produced. The effect will be the same as the original employment of a preparation of iodid of mercury.

ANIMAL IMMUNITY TO SYPHILIS

To the Editor:—Is there any animal known that is immune to syphilis, or that, on attempts to infect, has not contracted syphilis?
Amos T. Fisher, M.D., St. Joseph, Mo.

Answer.—Although most lower animals possess some degree of natural immunity against syphilitic infection, there is no experimental evidence at hand indicating that any animal is entirely immune. Careful inoculation experiments have been conducted by one or more investigators on many animals including the dog, cat, monkey, pig, rabbit, sheep and guinea-pig, and in all these animals some form of syphilis has been produced. Metchnikoff and Roux, however, and others have demonstrated that certain species of apes (mandrills and maimons) are so highly resistant to infection with syphilitic material that, in rare instances in which inoculation has been successful, all evidence of the disease disappeared with the healing of the primary lesion.

Medical Education and State Boards of Registration

Higher Standards Adopted

Official announcements just received state that beginning in 1916 three more medical colleges will require two years of collegiate work, including courses in physics, chemistry and biology, in addition to a four year high school course. These colleges are the College of Physicians and Surgeons, Medical Department of the University of Southern California, Los Angeles; the Boston University, School of Medicine, Boston, and the Medical College of the State of South Carolina, Charleston. This makes a total of forty-five medical colleges which are now requiring or have adopted this higher entrance standard. There are nine states in which the licensing boards are now enforcing or have adopted two years of collegiate work as the minimum standard of preliminary education. These states and the years when the requirements became or will become effective are as follows:

State Examining Board of	Number of Years Required	Affects Students Matriculating	Affects All Applicants
Alabama	2	1915-16	1919
Colorado	2	1910-11	1914
Indiana	2	1911-12	1915
Iowa	2	1911-12	1915
Minnesota	2	1908-09	1912
New Hampshire	2	1915-16	1919
New Jersey	2	1917-18	1921
North Dakota	2	1908-09	1912
South Dakota	2	1911-12	1915

Rules Governing Clinical Work

The following are the recommendations for the conduct of clinical work in the College of Medicine, University of Iowa, which were adopted at the meeting of the Iowa State Board of Education, June 16, 1915:

1. That the privilege of both private and clinical wards be limited to the staff of the University Hospital.

2. That the hospital staff shall consist of the following departments:

(1) General Medicine, including Neurology and Psychiatry.
(2) Dermatology.
(3) Pediatrics and contagious diseases, including the care of medical children 12 years of age and under, and contagious diseases such as usually affect children of all ages.
(4) General Surgery, including Orthopedic and Male Genito-Urinary Surgery.
(5) Gynecology and Obstetrics.
(6) Ophthalmology, Oto-Laryngology and Oral Surgery.

3. The above division of work is in no way to interfere with the proper care of any patient in the University Hospital.

4. That this division of service holds for both clinical and private cases, except that the head of the Department of Gynecology may include in his private work in the hospital the surgery of the female abdomen.

5. That the assistants in the various clinical departments shall be nominated by the heads of the respective departments to the faculty and the dean for their approval before being recommended for appointment to the Iowa State Board of Education.

6. That all clinical teachers in the College of Medicine confine themselves in their private work as well as in their clinical practice to their specialty as indicated by the subjects taught, in so far as this is practical.

7. Only individuals who are willing to make private practice wholly secondary to teaching are to be members of the clinical teaching force. The chiefs and assistants must be individuals who have as their main object teaching. An extensive, time-consuming private practice is not permissible.

8. Every person connected with the clinical teaching must spend on an average of three hours per day during the college year in the University Hospital. It is assumed that not

only will the necessary teaching work and the care of the patients be carried out, but that the work will be completed from a scientific standpoint.

9. When there is a question of sufficient room in the University Hospital clinical patients shall always have precedence. When the head of a department considers it advisable any private case which would naturally belong to his department may be used for clinical teaching.

Medicolegal

Rules as to Courts Ordering Physical Examinations—Proper Case for Refusal

(Kokomo, Marion & Western Traction Co. vs. Walsh (Ind.) 108 N. E. R. 19)

The Appellate Court of Indiana, Division No. 1, in affirming a judgment in favor of plaintiff Walsh for $2,500 damages for personal injuries received by her while a passenger on one of the defendant's cars, holds that there was no error in the trial court overruling the defendant's motion to appoint three physicians named to make a physical examination of the plaintiff. The court says that the record showed that the defendant, before the trial, requested an order for an examination of the plaintiff's injuries, and that pursuant to such request the trial court granted the order and appointed two reputable physicians to make the examination. During the progress of the examination, the physicians discovered that the plaintiff was a virgin, and they informed her and her mother that a further internal examination would require them to rupture the hymen. According to the affidavit of one of the physicians, the plaintiff and her mother then refused to allow them to rupture or break the hymen, and for that reason they did not proceed further with their examination. However, on this question the examining physician was contradicted by the plaintiff, her mother, and by another physician, who were present at the examination, they all swearing, in effect, that when the examining physicians discovered the condition of the hymen they declined to make any further examination for the reason that they did not desire to rupture it, and that neither the plaintiff nor her mother refused to permit such examination. It was not claimed by the examining physicians that they asked to make an examination with the virgin speculum and sound, or that they had such instruments with them. The court is of the opinion that the examination suggested after this, being one which would destroy the seal of the plaintiff's virginity and would cause pain and a flow of blood, it afforded justification for the plaintiff's refusal to submit to it. An examination which involves serious pain should not be ordered. As to the plaintiff not having advised the defendant that she had submitted to an internal physical examination by her physician in which a virgin speculum and sound was used, the answer is that she was under no obligation to furnish the defendant with information. The power of the court to grant an order requiring an examination of the plaintiff in such cases is based on the supposition that without its exercise injustice may be done the defendant. The court, however, in the exercise of such power should not look to the rights of the defendant alone. The age and sex of the person who is the subject of the examination, and the nature and character of the examination involved, will all be considered by the appellate tribunal in determining whether the trial court has abused its discretion in a given case. To say that an examination should be ordered in every case would be to give to the defendant in such cases a weapon which might be used to defeat justice rather than to prevent injustice to itself. The subject of the examination in the instant case, her age, and the character of the examination involved could not be ignored by this court in determining whether the trial court abused its discretion in refusing to order such examination. Whether these facts alone would warrant the ruling made this court need not, and does not, decide, because such ruling was not required to rest on such facts alone. The motion on which such ruling was based was a second application or motion, and in the absence of a showing of the necessity for, or good reason for a second examination it was properly refused. Furthermore, it has been held that a request for an examination by physicians selected by the defendant alone was properly refused. And in some jurisdictions the courts have held that three physicians is an unreasonable number to demand for such an examination.

Roentgenograms and Physicians' Records as Evidence

(Griffith vs. American Coal Co. (W. Va.), 84 S. E. R. 621)

The Supreme Court of Appeals of West Virginia holds, in this personal injury case, that Roentgen-ray, roentgenographic or shadow pictures are admissible in evidence when shown to have been made with trustworthy instruments, and properly taken, in connection with the evidence of witnesses expert in the use of such instruments and skilled in making, reading and interpreting such pictures. Where other expert physicians undertake to interpret the picture differently from the maker thereof, giving evidence of the external appearances of the plaintiff's body and the physical tests to which they subjected him, tending to contradict the maker of the roentgenogram, these conflicts are all for the jury to weigh and consider in reaching their verdict. The court also holds that, there being a dispute as to the age of the plaintiff, the account books or other books of the practicing physician or surgeon who attended the mother at the birth of her child, containing entries regularly made in due course of business, and the oral evidence of such practitioner verifying such record, were legal and competent evidence to go to the jury on the question of the date of the birth of the child. The evidence of the physician, and his book of entries, shown to have been a book of original entries, constituted under the authorities original and primary evidence. Such record entries, proved by the living entrant, constitutes not only legal evidence, but also evidence of a very high class when proved to have been contemporaneous with the transaction and there could have been no motive to misrepresent.

Physicians Appointed by Courts to Make Physical Examinations

(Gentry vs. Gulf & Ship Island Railroad Co. (Miss.), 67 So. R. 849)

The Supreme Court of Mississippi, in reversing a judgment rendered for the defendant in this personal injury case, says that, on application of the defendant, the trial court appointed two physicians to examine the plaintiff. The plaintiff was compelled to submit to a physical examination by the court's physicians. When these physicians were on the stand, testifying for the defendant against the plaintiff, it was made known to the jury that they were chosen representatives of the judge of the court. This was done over the objection of the plaintiff. It is quite clear to the Supreme Court that the quality of the testimony given by these experts was thus much magnified and unduly impressed on the minds of the jury. And this is one of the reasons why courts are denied the power to appoint expert witnesses and compel persons to submit their bodies to their inspection. The Supreme Court cannot admit that physicians, or other experts, appointed by a court at the request of a party to a lawsuit, are more reliable and more disinterested than are others of like attainments and professional standing, simply because the others have given expert testimony at the request of a party to the suit. There is nothing in the education and training of a judge that peculiarly qualifies him to discriminate in the selection of medical experts, and yet there is little room to doubt that the ordinary juror would give undue weight to the judge's nominee. In a recent case, this court has held that the trial judge is without power to appoint physicians and require parties to a suit to submit their bodies to the inspection of the physicians designated by the court. It was error for the trial court to assume this power in this case.

Society Proceedings

AMERICAN ASSOCIATION OF IMMUNOLOGISTS

Second Annual Meeting, held at Washington, D. C., May 10, 1915

The President, DR. GERALD W. WEBB, Colorado Springs, in the Chair

Election of Officers

The following officers were elected: president, Dr. J. W. Jobling, New York; vice presidents, Drs. George P. Sanborn and W. T. Councilman, Boston, and John A. Kolmer, Philadelphia; treasurer, Dr. Willard J. Stone, Toledo, Ohio; secretary, Dr. Martin J. Synnott, Montclair, N. J.

Value of Vaccines in Certain Diseases of the Ear

DR. GEORGE M. COATES, Philadelphia: Successful vaccine therapy does not consist in buying a bottle of mixed vaccines and giving hypodermics according to the label on the bottle. A stock vaccine may be used in cases in which an autogenous product cannot be obtained, as for prophylaxis. For immunization against acute rhinitis, in which a variety of organisms are usually found, a mixture of all these organisms is selected, and three or four injections given at three or four day intervals, the dosage depending somewhat on the individual, the age, the size, etc. Whatever the initial dose, it is usually doubled for each succeeding dose, unless there is too marked a local or general reaction. This should insure the ordinary person against an attack for some months, but in very susceptible individuals the entire course may have to be repeated. The treatment of acute rhinitis is exactly the same as for prophylaxis, except that it is pushed more vigorously and continued until the trouble has been conquered. Following the first dose, and this is true of all the conditions considered, there will probably be some exacerbation of the patient's condition, with increased discharge which soon clears up in favorable cases. This reaction is considered a favorable omen. In chronic rhinitis the treatment must be extended and the patient watched lest he be overtreated. Suppurations of the accessory nasal sinuses are not much relieved by vaccine therapy until adequate drainage has been secured, and in chronic sinusitis it is usually necessary to enlarge the normal ostium or make an artificial opening before much can be expected from these vaccines. In acute cases the results are good for the most part, and a stock suspension may be used in order to get quick results, at least until an autogenous one can be prepared. Recurrent furuncles about the alae nasi and alar cartilages, usually caused by one of the staphylococcus group, yielded in a most satisfactory manner to vaccine treatment. In atrophic rhinitis and hay fever the results are not particularly gratifying.

The treatment of diseases of the ear by bacterins has yielded surprisingly good results. In chronic catarrhal deafness and in acute suppurative otitis media of scarlatinal origin, most satisfactory results have been shown. During the past year we have made autogenous vaccines for about forty-two chronic cases of suppurative otitis media at the Pennsylvania and Polyclinic hospitals, and so far we have obtained dry ears in about 40 per cent. of the cases. These were selected cases which had resisted all the usual methods of treatment. There are many factors which militate against the potency of a vaccine, and in nose and throat work a frequent cause of error is in taking the culture. The external canal, membrana tympani and middle ear should be cleansed thoroughly by means of suction apparatus and cotton swabs. Alcohol and mercuric chlorid are then rubbed as far back as the drum to sterilize the external canal. By inflation through the eustachian tube or by suction to the external meatus, pus is forced from the recesses of the attic. The culture is then taken with a platinum loop or a very small amount of cotton on an applicator thoroughly sterilized.

DISCUSSION

DR. FREDERICK SONDERN, New York: I agree with what Dr. Coates said regarding the use of autogenous vaccines. I have seen good results follow their use. In ear cases, the successful outcome following the use of vaccines depends on the condition of the ear. If there is dead bone present, you will not get the desired results. This also applies to the use of vaccines in sinus disease and inflammations of the mucous membrane of the nose. I have seen very gratifying results following the use of the vaccines, but if the nose is so occluded that the patient cannot draw air through, especially if there is a sinus obstruction with pus present, the employment of the vaccines is useless.

DR. A. PARKER HITCHENS, Glenolden, Pa.: I have had a limited experience in the treatment of hay fever, but I have used the pollen extract in both the treatment and prevention of this disease. Just what the pollen extract does remains to be explained. If you give the specific pollen or protein, a dose is usually followed by a relief of the symptoms in nearly every case. The majority of the cases of hay fever are undoubtedly due to certain pollens. In the fall we meet with the ragweed; in the spring, orchard grass and red top are chiefly responsible. I had one patient with hay fever which probably resulted from proximity to magnolia trees. During the first year I treated him with injections every seven days, but I soon noticed that he began to have symptoms at the end of the fifth day. I then shortened the time of the injections to five days, and the patient then had no more symptoms. The rational treatment for the prevention of hay fever should be preceded first by the diagnostic test. However, the experience of many men with the ophthalmic reaction as used in tuberculosis will cause them to hesitate using this method in the eye, and I do not really think it is at all necessary to use the eye as a test. The intradermal test gives as good indications as the ophthalmic reaction. I have under my care a young woman afflicted with asthma. Following the use of small doses of autogenous vaccines once a week, the asthma disappeared. One of the most important points brought out by Dr. Coates was that the bacterial vaccine must be used with brains. No good can come from the use of the vaccines unless the antibodies formed come in contact with the bacterial factor. Every practicing physician should take this into account. I have given about 1,500 injections and have never had the slightest cause for alarm. Vaccines are valuable before operations for infections of the upper respiratory tract.

DR. E. C. L. MILLER, Richmond, Va.: Certain observations make it appear as though hay fever caused an anaphylactic reaction. After the injection of protein, the patient appears to be desensitized and more or less stimulated. If we continually inject patients with the same antigen, does this not increase the trouble?

DR. GERALD B. WEBB, Colorado Springs: It is a reproach to the medical profession that it has never dealt with the so-called "common colds." I believe that all of them have seen benefit result from the plan outlined by Dr. Coates. Perhaps the colds are not all caused by the organisms they thought they were. In London many cases of so-called colds were found to be due to pseudodiphtheria. It is well known that in Colorado influenza came in waves, yet we have not encountered the influenza bacillus in five years; but during this time we have seen cases that appeared to be grip, but there were no influenza bacilli present. Hay fever patients are susceptible to more than one pollen. Cottonwood causes the trouble in some cases. In the treatment we employ, we sometimes combine the catarrhal organism with the pollen vaccine, and in half the cases so far treated successful results followed.

DR. GEORGE MORRISON COATES, Philadelphia: Colds that are treated last about ten days; if untreated, they last probably eleven days. In all my operations for mastoiditis, cultures are always taken and vaccines administered regularly after the operation, and my patients seem to get well in a shorter period of time. McKernon of New York, in cases of mastoiditis following scarlet fever or measles, uses the

autogenous vaccines, and he believes that this reduces the time of healing to a considerable extent. In ear cases, the results of Nagel's work brought about much skepticism, but his work can be vouched for. In certain ear cases of the chronic type, even when necrosis is present, we can raise an artificial immunity and terminate the necrosis.

Pseudopositive Wassermann Reaction in a Case of Uremia and Intestinal Toxemia

DR. JUDSON DALAND, Philadelphia: My patient was a man, aged 55, whose illness began Jan. 16, 1911, when he felt as though a nail had been driven into his left knee, and a few minutes later swelling was observed in the feet and knees, rapidly involving the legs; this was soon followed by ascites. The physical examination showed extreme pallor, poor musculature, cyanosis and a few enlarged glands in the neck, axilla and groin. The pupils contracted equally and responded normally to stimuli. The teeth were absent. The apex of the heart was half an inch to the left of the nipple, and the impulse was heaving. The area of heart dulness was increased more especially to the left. The pulse was regular in force and rhythm, compressed with difficulty, and the radial arteries were sclerosed. The first sound was rough and accompanied by a blowing systolic murmur, transmitted to the left axilla. A similar murmur was heard over the aortic cartilage, and was transmitted to the neck. The aortic sound was accentuated. The liver was slightly enlarged. The diagnosis was chronic interstitial nephritis and uremia in association with intestinal toxemia. Four Wassermann tests taken at intervals during the two weeks following the patient's admission to the hospital showed one three plus Wassermann, two positive and one plus-minus reaction, this being the last of the four. The urine showed a moderate amount of albumin with hyaline and granular casts and a large amount of indican.

DISCUSSION

DR. JOHN A. KOLMER, Philadelphia: The other side of the question as to the specificity of the Wassermann reaction needs some defense. I have been interested in the question of the antigens, especially with the cholesterated extract, for several years, and I have followed many patients through the clinical course of the disease and made comparisons with the aid of several clinicians as to the Wassermann findings. I am of the opinion that this reaction is primarily due to a difference in the antigen. I do not believe that the alcoholic extract of a syphilitic liver is a specific antigen. This applies too as regards the aqueous extract of rabbits' livers. The antibody is a large part, or constituent, of the Wassermann test. For three or four years we used three different extracts; one to be reinforced with cholesterin; another, the alcoholic extract of syphilitic livers as used in the United States and in Germany, and an acetone which was insoluble, the extract prepared after the method of Noguchi. We found that the highest percentage of reactions was obtained when we followed the method of Dr. Uhle. The use of the alcoholic extracts of syphilitic livers yields the poorest results. Syphilis should be diagnosed in the laboratory. The statement that the patient did not have syphilis does not exclude this disease; many of these patients have their symptoms cleared up when under antisyphilitic treatment, which makes it presumably evident that the patient suffered from a true case of syphilis.

DR. J. J. KENYOUN, Washington, D. C.: I agree with what has been said regarding the specificity of the Wassermann reaction and the importance of reinforcing it with antigen. I believe that the discrepancies found in the laboratory are due to the fact that different antigens are used. The Wassermann reaction is much modified in those who partake of alcohol in considerable quantities.

DR. E. B. VEDDER, Washington, D. C.: I am in accord with what has been stated by Dr. Kolmer and especially that a diagnosis should not always be made on a positive Wassermann alone. Lesions of syphilis may occur without any history of the disease and without clinical signs being manifested. There are, I believe, a certain number of cases of syphilis that can be diagnosed only by the Wassermann test. With regard to the normal case in which the reaction varied from 0 to 10 per cent., I have just completed a series of surveys. Among 1,500 soldiers about 3 per cent. yielded a positive Wassermann.

DR. RICHARD DEXTER, Cleveland: I agree with Dr. Kolmer that antigens are a variable factor. The result of his observation showed that the cholesterin antigen gives a finer test than does others.

DR. JUDSON DALAND, Philadelphia: If I obtain a positive Wassermann reaction, it does not mean that the individual has syphilis; if I get a negative result, it does not necessarily mean that the individual does not have syphilis.

DR. A. A. UHLE, Glenolden, Pa.: Serologists wish to obviate the causes which give rise to a positive reaction. The workers in this field as yet have no specific antigen which they can rely on. In obscure cases of syphilis the use of an antigen is of great diagnostic value. What does it mean, sending samples from the same individual, the blood taken under similar conditions, to ten different laboratories and getting returns that, for instance, six were positive and four negative? In studying these cases it becomes clear that the discrepancies in the Wassermann reports, made by different serologists, were due to errors in technic, or to lack of proper standardization of the reagents. We should watch with care the work of the different workers in the laboratories and determine who does the best work and then rely on his interpretations. I recall one worker who was sent 103 specimens, and he did not fail once in making a proper interpretation.

A Study of Blood Counts in Relation to Vaccine Therapy; Autoinoculation in the Treatment of Mouth Infections

DR. JOSEPH HEAD, Philadelphia: We have found blood counts of value in the use of vaccines in that they have taught us to be more moderate in our dosage, and we have found that patients respond at least as well, if not better, when the doses are pushed to the point of getting marked reactions. I might cite a number of cases in which unquestionable injury might have resulted from excessive dosage with vaccines had it not been for the blood count. Lymphocytosis does not seem to be as much of a factor as I thought last year. With reference to the ameba, I have been using emetin (alkaloid), one-third grain, administered hypodermically in the arm or back, for ten successive days during the treatment. It is a great help to the vaccine treatment of mouth infections. However, we have had remarkably good results in cases in which the vaccines were used without emetin. As a real specific for pyorrhea, I recommend the autoinoculation produced by the use of floss silk and tooth brush. The usual methods of brushing the teeth are palpably defective. The brushes in common use are improperly constructed. They should be smaller and the bristles shorter if the real bristle friction is to be obtained. Another error is the impression that brushing the gums causes them to recede; they should be brushed vigorously. An effective method of cleansing the teeth is first, that the spaces between the teeth should be swept with dental floss so that all bacterial masses will be removed from the sides of the teeth and gums. This will at first cause bleeding and make the interdental spaces sore. If the infection has not spread beneath the gums beyond the reach of the floss silk, autoinoculation will soon cause a healing that is little short of miraculous. After using the floss, the short flat bristled brush should be used.

DISCUSSION

DR. C. C. BASS, New Orleans: The subject of pyorrhea alveolaris has interested me for many months. I am now studying the pathology of this disease, but later I expect to take up the study of its bacteriology, protozoology and treatment. It is impossible sometimes to make a correct diagnosis, and the diagnoses made by dentists are no better than the ones we make. The average dentist makes his diagnosis when he is able to squeeze pus from the gums or from a pocket around a tooth. Whenever he sees a drop of pus he makes a diagnosis of pyorrhea. This disease cannot be

cured by the giving of medicine alone. Surgical treatment is required. I have seen about 500 cases and in only two adults have I failed to demonstrate *Endameba buccalis* in the pus. The *Endameba buccalis* is the essential cause of pyorrhea alveolaris. It does not attack normal tissues; it is first necessary to have a damaged tissue, some particular tissue which is susceptible to infection. The *Endameba buccalis* lives and thrives and reproduces itself in the peridental membrane of the human being, and probably in other animals. The kind of cells they feed on are numerous in suppurations next to bone tissue. I do not believe in any treatment that does not take into consideration the rôle played by *Endameba buccalis*. I do not think that 5 per cent. of people escape this infection before they have grown. Not many people, however, lose their teeth before the age of 30, and the molars are the first to go. There is a long sloughing process lasting from five to fifty years. Everybody would lose their teeth from this disease if they lived long enough.

Further Experiments in the Production of Immunity to Tuberculosis

Dr. Gerald B. Webb and Dr. George Burton Gilbert, Colorado Springs: We have previously shown that a thick emulsion of blood platelets added to a lethal dose of tubercle bacilli appears to modify the course of the infection or to prevent it. However, this does not furnish a practical and safe method of inoculating living virulent bacilli for purposes of immunization. It seemed to us desirable to determine whether an emulsion of lymphocytes added to a lethal dose of tubercle bacilli could influence or prevent infection. The lymphocytes were obtained by injecting 4 c.c. of sterile Ringer's solution in the peritoneal cavity of guinea-pigs and about ten minutes later withdrawing some of the fluid by means of capillary pipets and immediately mixing with a definite number of bacilli obtained in a capillary pipet by means of the Barber method. After incubating for twenty minutes, this mixture was inoculated subcutaneously in the nipple area of adult guinea-pigs. Samples of the fluid obtained from the injected guinea-pigs when stained showed a practically pure emulsion of lymphocytes. Both normal and tuberculous guinea-pigs were used for obtaining the leukocytes in different experiments without appreciable difference in the results. In this series of five experiments no uniform and constant action by the lymphocyte emulsion so far as actually preventing infection could be detected, nor indeed any uniform modification of the course of the disease.

Occurrence of Tubercle Bacilli in Circulating Blood

Dr. Louis Hamman, Philadelphia: My investigation of this question, on patients in advanced stages of pulmonary tuberculosis and in animals inoculated intravenously, leads me to draw the following conclusions: Tubercle bacilli occur in the blood in sufficient number to be demonstrated by animal experiment only in the last stages of pulmonary tuberculosis in human beings, and then only infrequently. In animals they are constantly found when a large number of organisms is injected intravenously. When smaller numbers are injected, and the disease remains localized relatively to the lungs, no bacillemia occurs until toward the end of the investigation, when the disease becomes general.

DISCUSSION

Dr. Gerald B. Webb, Colorado Springs: It is puzzling to men who are working in tuberculosis to know how to interpret the various results they obtain regarding the occurrence of the tubercle bacilli in the circulating blood. Any one who studies the growth of the tubercle bacilli in the incubator realizes what a sticky mass he has to deal with. The typhoid bacilli, as you all know, do not make such a sticky emulsion. In our work in inoculating this bacillus, it is extremely difficult to do the work because of this stickiness. I believe the tubercle bacillus must get into the circulating blood and settle in certain regions. I should like to know more about the type of tubercle bacilli described by Landouzy, that is, the typhoid type of bacilli.

(*To be continued*)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

July, CL, No. 1, pp. 1-156

1 *Partial Resection of Lower Jaw for Cancer. E. M. Foote, New York.
2 Certain Medical Aspects of Recurrent Malignant Tumors. J. B. Herrick, Chicago.
3 Value of Radium, Supplemented by Cross-Fire Roentgen Rays in Treatment of Malignancy. R. H. Boggs, Pittsburgh.
4 Blood Transfusion: Indications; Results; General Management. R. Ottenberg and E. Libman, New York.
5 Gastric Glands in Meckel's Diverticulum. G. R. Callender, U. S. Army.
6 *Gastro-Intestinal Studies, No. X; Analysis of Achylia Gastrica. M. E. Rehfuss, Philadelphia.
7 *Alternation of Pulse; Common Clinical Condition. P. D. White, Boston.
8 Mode of Action and Use of Emetin in Entamebiasis. R. Lyons, New Orleans.
9 Treatment of Scoliosis. J. K. Young, Philadelphia.
10 Histopathology of Calcification of Spinatus Tendons as Associated with Subacromial Bursitis. E. Moscheowitz, New York.

1. **Partial Resection of Lower Jaw for Cancer.**—During the past three years this operation has been performed by Foote on fourteen patients, all men. The ages varied from 30 to 75 years, more than half of the patients being between 45 and 55 years old. As nearly as could be judged the growth started in the jaw (usually in its mucous membrane) in 8 cases; in the lining of the cheek in 3 cases; in the angle of mouth in 2 cases; while the spindle-cell sarcoma seemed to start just below the jaw, possibly from its periosteum. When they first came under observation nine of the patients had recurrent tumors following operation elsewhere. Two presented themselves with primary tumors of the cheek, which Foote excised without resection. In both of these cases subsequent removal of the bone failed to arrest the growth. In three cases resection was the first operation performed, and in these patients there has been no recurrence. Of the eleven resections performed for recurrence, four were known to be merely palliative, but even in these cases the operation seemed well worth while, as the patient was given a clean mouth for varying periods of time. Ten resections were performed with the hope of a permanent cure, three being primary operations and seven after recurrences from other operations. One of these patients died from operation and two others from recurrences, while the remaining seven are at present free from recurrence so far as physical examination can show, after periods ranging from six to thirty-three months.

6. **Achylia Gastrica.**—True achylia in which there is a total lack of acid and enzymes through the entire period of gastric digestion Rehfuss claims is exceedingly rare. By means of the fractional method he has been able to study the entire period of gastric digestion in cases of achylia. His studies show that the commonest form is a complete lack of gastric secretion through both phases (total achylia); two cases were encountered of true psychical achylia, but a pure chemical achylia was never encountered. Attention is called to spurious achylia, which is quite common, and in which there is an ultimate elaboration of juice late in digestion, and enzymes are always present. By means of the administration of parathyroid extract in two cases of bona fide achylia, one of over ten years' duration, a perceptible return of the gastric secretion was noted during the psychical phase. Dietetic and local treatment were instituted at the same time. The phase method of examination is held to be of great value in determining the type of achylia as well as the possibility that at some phase the secretion might still be active, as shown in several of the cases recorded. This finding distinctly improves the prognosis.

7. **Alternation of Pulse.**—True alternation of the radial pulse has been found in 71 of 300 cardiac and cardiorenal patients examined with the sphygmograph by White at the Massachusetts General Hospital in the course of eight

months. It has occurred as commonly as auricular fibrillation; 66 of 201 patients examined, who were suffering from cardiac decompensation in some degree, showed pulsus alternans; 65 others of the 201 showed auricular fibrillation; 15 of the patients having alternation showed it constantly, 55 after premature beats only, and 1 showed a phasic type. The finding of ventricular premature beats has been of considerable value in the present series, 77 per cent. of the cases requiring the premature beats before the alternation of the pulse was exposed. The condition was found most often in people in late middle life or in old age. Hypertension was associated with the alternation in 52 per cent. of the cases. Cardiac enlargement was practically a constant finding. Syphilis and rheumatism apparently played a less important part in the production of the myocardial weakness than did arteriosclerosis.

Electrocardiographic examination in 44 of the cases gave evidence of damage to the *A-V* conducting system in 15 cases, or 34 per cent. Electrocardiographic alternation was found in the *T* deflections after premature beats, in 7 of 18 cases which showed premature beats on the records obtained. Only in 3 cases was there any alternation of the *R-S* deflection after premature beats. Sinus arrhythmia occurred frequently in the series. Digitalis and rest in bed produced clinical improvement in 32 of 53 cases in which digitalis was administered, even though the pulsus alternans may have persisted. In 4 cases the alternation was diminished or banished after this therapy. Twenty-five of the 71 patients died within ten months from the beginning of this study, the majority of the deaths, so far as could be determined, attributable to the cardiac condition directly. The relationship of the degree of alternation to prognosis was as one would anticipate, the greater the degree the shorter the life after the pulse discovery. Arteriosclerosis of heart and kidneys was found only in the 3 patients examined postmortem.

American Journal of Physiology, Baltimore

July, XXXVIII, No. 1, pp. 1-161

11 *Respiratory Dead Space. Y. Henderson, F. P. Chillingworth and J. L. Whitney, New Haven, Conn.
12 *Variations in Effective Dead Space in Breathing. J. S. Haldane, Oxford, England.
13 *Physiology of Stomach. Tonus and Hunger Contractions of Stomach of Newborn. A. J. Carlson and H. Ginsburg, Chicago.
14 *Factors Affecting Coagulation Time of Blood. Influence of Certain Anesthetics. W. L. Mendenhall, Boston.
15 Calorimetric Calibration of Krogh Bicycle Ergometer. F. G. Benedict and L. E. Emmes, Boston.
16 *Effect of Epinephrin on Heart Rate. W. J. Meek and J. A. E. Eyster, Madison, Wis.
17 *Influence of Oil of Chenopodium on Circulation and Respiration. W. Salant and A. E. Livingston, Washington, D. C.
18 *Influence of Diiodotyrosin and Iodothyrin on Secretion of Cerebrospinal Fluid. C. H. Frazier and M. M. Peet, Philadelphia.
19 Response of Vasodilator Mechanism to Weak, Intermediate, and Strong Sensory Stimulation. E. G. Martin and W. L. Mendenhall, Boston.
20 *Spinal Anesthesia in Cat. G. G. Smith and W. T. Porter, Boston.
21 Conduction within Spinal Cord of Afferent Impulses Producing Pain and Vasomotor Reflexes. S. W. Ransom and C. L. von Hess, Chicago.
22 Rhythmical Contraction of Skeletal Muscle Tissue Observed in Tissue Cultures. M. R. Lewis, Washington, D. C.

11. **Respiratory Dead Space.**—The authors have employed five methods of determining on man the respiratory dead space, with generally concordant results and some significant differences. The results show that the dead space expands and contracts passively with the movements of the thoracic walls and lungs. At the level of ordinary breathing the dead space is about 150 c.c. (as practically all previous observers have found). At shallower levels, it is, however, considerably less, with deeper breathing it is much more (400 to 600 c.c.); and with the deepest breaths the (virtual) dead space may exceed a liter in volume. It is much more affected by diaphragmatic than by costal movements. The dead space is found to be of practically the same volume during rest and exercise, providing that the determinations are made at equal extents of chest inflation. This fact indicates that the enlargement of the dead space during hyperpnea is essentially a passive stretching and not an active bronchodilatation. The dead space for oxygen is always larger than that for carbon dioxid. This is shown to be due to the diffusion of carbon dioxid in considerable amounts from the walls of the mouth, trachea, bronchi, etc.

The dead space, even at a uniform extent of chest inflation, is continually undergoing active variations in volume. At times these variations exhibit a distinct rhythm of a period of several minutes. They may amount to as much as 30 per cent. of the mean volume of the dead space in quiet breathing. Some facts are reported which suggest that in a "close and stuffy" room the bronchi, etc., are constricted, and that a distinct chill constricts them further, while pleasantly fresh cool air, on the contrary, induces bronchodilatation. Experiments in a Turkish bath have not, however, afforded concordant results, except that they have shown that during profuse perspiration and cutaneous hyperemia there is a greatly augmented diffusion of carbon dioxid from the walls of the dead space. This doubtless indicates a hyperemia of the respiratory passages. As a part of the carbon dioxid given off in the passages is inspired into the alveoli before being expired, and as the alveolar respiratory quotient may be only a little above 0.7 when the quotient of the mixed expired air is considerably above 0.9 it appears that under such conditions as much as one half of the total carbon dioxid exhaled by the subject may come from the dead space. In asthmatics, the chronic dilatation of the chest stretches the pulmonary passages passively, and thus tends to compensate to some extent for their active contraction.

12. **Variations in Dead Space in Breathing.**—According to Haldane the effective dead space increases enormously with increased depth of breathing, apart from the existence of any hyperpnea or other causes which might also affect the dead space. This increase is apparently due to mechanical distention of the "atria" into which the terminal bronchioles open. The dead space of oxygen is greater than for carbon dioxid. The author maintains that estimates of the composition of alveolar air from the composition of the mixed expired air on the assumption of a constant dead space are fallacious.

13. **Contractions of Stomach of Newborn.**—Carlson and Ginsburg made observations on a number of newborn infants, and on two pups, born 8 to 10 days before term, with results showing that the empty stomach at birth and in the prematurely born exhibits the typical periods of tonus and hunger contractions of the adult, the only difference between infant and adult being the greater frequency and relatively greater vigor of these periods in the young. In the case of the two pups, and in some of the infants, the observations were made before their first nursing. It is thus clear that in the normal mammal the gastric hunger mechanism is completed, physiologically, and is probably active some time before birth.

14. **Influence of Anesthetics on Blood Coagulation.**—Sixty-three successful experiments were performed by Mendenhall. He found that coagulation time is little altered by chloral hydrate unless it is normally short, then it is prolonged. Coagulation time is affected by chloroform as by chloral hydrate, namely, if the process is affected at all it more usually is prolonged rather than hastened. Mendenhall suggests that the effects of chloral hydrate and chloroform are probably the result of disturbance and consequent interaction between two or more organs which are important in the coagulation process; probably liver (intestine?) and suprarenal glands. The evidence is not sufficient to prove that a retarding agent is produced. Coagulation processes are hastened by ether anesthesia. The effect of ether is exerted wholly through its action on the suprarenals.

16. **Effect of Epinephrin on Heart Rate.**—Meek and Eyster observed that the intravenous injection of physiologic amounts of epinephrin into intact unanesthetized dogs with good vagal tone invariably causes a decrease in the heart rate. The action of the epinephrin is doubtless twofold; it accelerates the heart by direct stimulation and inhibits it reflexly through

the vagus. In the authors' experiments the net result of this balanced mechanism was always a decrease in pulse rate. For this reason a secretion of epinephrin could hardly play a part in the immediate cardiac acceleration which follows moderate exercise. In exercise which has been pushed to an extreme degree, however, the accelerating action of epinephrin might well become predominant, for in this condition the authors note a great decrease in vagal tone. In regard to the heart rate then, epinephrin seems to act just as it does in so many other instances; that is, its stimulating effect becomes apparent at a time of great physiologic need.

17. **Pharmacologic Action of Oil of Chenopodium.**—It is shown by Salant and Livingston that the intravenous injection of doses of 0.02 to 0.085 c.c. of chenopodium per kilogram produced a fall of blood pressure in dogs, cats and rabbits. Recovery was observed. The effect was greater in dogs than in rabbits or cats. A second injection of the same dose produced a greater effect, but when this injection was repeated until the total amount reached about 0.2 c.c. per kilogram, no response of the circulation could be observed. This was especially the case in dogs, but to a much smaller extent in cats. This phenomenon was absent in rabbits. Fall of blood pressure was of cardiac origin, as the volume of the kidney decreased with the fall of blood pressure. Frequency of heart action was diminished after oil of chenopodium. A very marked decrease of vagus irritability was observed after oil of chenopodium. Respiratory depression such as decreased amplitude and rate, with apnea, was also caused by chenopodium, but this effect with small doses was less constant than that on the circulation. Cats react more readily than dogs. Small doses may stimulate respiration in rabbits. Apnea was very seldom observed in the rabbit, even after large doses. No methemoglobin or hemolysis was observed even after the intravenous injection of 0.02 or 0.024 c.c. per kilogram, or the introduction of 2 gm. per kilogram into the stomach or small intestine of the cat. Liberation of oxygen in the body by ascaridole is suggested as a possible cause of respiratory depression and apnea. Action of chenopodium on respiration is independent of its effect on the circulation. Reduction of sensitiveness of the respiratory center to carbon dioxid is not the cause of action of chenopodium on respiration. Amounts of chenopodium tolerated by intravenous injection varied in the same animals. The average is approximately 0.03 to 0.35 c.c. per kilogram in dog, cat and rabbit. The less depressant action of chenopodium on respiration in the rabbit is attributed to relatively larger amounts of carbon dioxid in the blood.

18. **Secretion of Cerebrospinal Fluid.**—Frazier and Peet noted that the intravenous injection of diiodotyrosin has an inhibitory influence on the rate of secretion of the choroid plexus. This decrease in rate usually appears in the first half hour after injection, but is not so marked as that obtained with saline extracts of fresh thyroid gland. Iodothyrin in solution, injected intravenously, has little influence on the rate of cerebrospinal fluid secretion when given in small amounts (0.05 gm.). In amounts of 0.3 gm. and 0.5 gm. there is some inhibition of the rate of choroid plexus secretion, but it is not so marked as that produced by diiodotyrosin or saline extracts of fresh thryoid.

20. **Spinal Anesthesia in Cat.**—In the authors' experiments on spinal anesthesia, there was, in twenty animals, but one case in which a moderate but adequate injection in the lumbar region caused a fall in blood pressure that might have been serious (to 55 mm.); and in eight cases in which no curare was used there was no paralysis of respiration after lumbar injection. Even after marked falls in blood pressure, partial but sufficient recovery took place in from thirty to ninety minutes. The duration of low blood pressure appeared to depend more on the amount of drug injected than on the site of the injection. In seven experiments, as the effect of the drug began to wear off, the stimulation of the sciatic nerve caused a fall of blood pressure instead of the usual rise. In these cases, the normal reflex rise returned before the blood pressure attained its original level. A greater fall of blood pressure occurred in the cases in which epinephrin was used in connection with tropacocain or novocain. Measures taken to raise the fallen blood pressure were of little value. It was easy to restore the blood pressure to normal but the normal level could be maintained but a few minutes.

American Journal of Roentgenology, Detroit

March, II, No. 5, pp. 675-707

23 *Some Experiments and Observations on Technic for Deep Roentgentherapy. G. E. Pfahler, Philadelphia.
24 Desirability of Complete Immobilization in Roentgenizations of Head. P. Brown, Boston.
25 Dark Room Illumination. E. W. Caldwell, New York.
26 Losses in Transmission. J. S. Shearer, New York.
27 Suggestion on Use of Coolidge Tube. J. S. Shearer, New York.
28 American Priority in Use of Bismuth for Examination of Human Stomach. A. W. Crane, Marion, Ohio.
29 Inexpensive Multiple Stereoscope and Fluoroscope. H. L. Sampson, Trudeau, N. Y.

23. Abstracted in The Journal, Oct. 10, 1914, p. 1321.

Boston Medical and Surgical Journal

July 8, CLXXIII, No. 2, pp. 37-74

30 *Use of Magnetism for Localizating Needles in Tissues; Report of Cases. G. H. Monks, Boston.
31 Pollen Therapy in Hay Fever. J. L. Goodale, Boston.
32 Leprosy and Its Relation to Massachusetts. J. A. Honeij, Boston.
33 Relation of Leprosy to Community. G. M. Katsainos, Boston.

30. **Use of Magnetism for Localizing Needles in Tissues.**—Although the brilliant and satisfactory results obtained through the use of the Roentgen rays apparently seem to have rendered unnecessary all other methods of localization, Monks feels that in certain cases, even in those in which a roentgenogram has been furnished, the magnetic test, if properly conducted, may be of distinct assistance to the surgeon. This test will probably be most successful in the following cases: 1. Cases in which the needle fragment is large enough to receive and to retain a charge of magnitism sufficient to attract the indicator needle. 2. Cases in which the needle fragment is near enough to the skin to be strongly magnetized, and also near enough to attract the indicator needle. 3. Cases in which, during the progress of an operation, the incision opens up the tissues in such a manner that the indicator needle may be brought very close to the foreign body. In all other cases, especially in those in which the needle fragment is very fine or very small, and also those in which it is far from the skin, the test is of doubtful value. (These remarks refer only to cases in which the foreign body is a needle, or a needle fragment, and they do not refer to cases in which ordinary fragment or steel or iron are imbedded in the tissues).

Bulletin of Johns Hopkins Hospital, Baltimore

July, XXVI, No. 293, pp. 241-272

34 *An Attempt to Immunize Calves Against Tuberculosis by Feeding Milk of Vaccinated Cows. W. L. Moss, Baltimore.
35 *Complement Fixation in Thyroid Diseases. S. R. Miller and R. E. Fairbank, Baltimore.
36 Two Physician Economists. J. H. Hollander, Baltimore.
37 *Common Organisms in Heated Milk; Their Relation to Its Reactions. L. P. Shippen, Baltimore.
38 *Relations of Splanchnoptosis to Gastric Acidity. E. P. Sandrock, Baltimore.

34. **Attempt to Immunize Calves Against Tuberculosis.**—Six calves of approximately the same age, weight and breed were selected from healthy, nonvaccinated cows. Three of these calves were fed from birth with the fresh mixed milk of several vaccinated cows. The three remaining calves were fed during the same period with an equal amount of fresh mixed milk from nonvaccinated cows, proved by the tuberculin test to be free from tuberculosis. At the end of several months all six calves were inoculated with a medium dose, lethal for normal calves, of bovine tubercle bacilli. The feeding of all calves was continued as previously until the termination of the experiment. At the conclusion of the experiment a necropsy was performed on one calf from each group and the lesions present compared. The calf which had received milk from immunized cows showed a small lesion at the site of inoculation, about 2 cm. in diameter, containing caseous material and surrounded by a thick fibrous wall.

The related axillary lymph glands showed small caseous nodules and there were a few caseous areas in the bronchial lymph glands. The control animal showed at the site of inoculation a caseous abscess, 6 to 8 cm. in diameter, with a thin wall. The related axillary lymph glands were enlarged and cascous, as were also the bronchial lymph glands and those in the region of the gallbladder. The liver contained from 15 to 20 caseous areas 1 to 5 cm. in diameter. The blood of the two sets of cows furnishing the milk for these experiments was tested for tuberculo-antibodies. No difference could be determined by means of the agglutinin, precipitin and complement-binding tests. Nor did similar tests show any difference between the blood of the two sets of calves. The result of the experiment seems to justify the conclusion that a relative degree of immunity against tuberculosis may be conferred on calves by feeding the milk of vaccinated cows.

35. **Complement Fixation in Thyroid Diseases.**—The results of the complement-fixation reaction studied by Miller and Fairbank have been consistently negative in all except the luetic cases. In other words, there has been no evidence of complement fixation except in the case of those serum or spinal fluids which were known to have had and were proved to have a positive 100 per cent. Wassermann reaction.

37. **Common Organisms in Heated Milk.**—Shippen found that in milk heated to 60 and 65 C. (140 and 149 F.) for fifteen minutes, *Streptococcus lacticus, Bacteria troilii* and the spore-bearers survive. They can be recovered from peptonized as well as from normally clotted milk, but their cultural activities do not completely explain the reactions of the milk in which they are found. Other nonspore-bearing organisms are encountered occasionally in milk heated to 60 C. Their scarcity makes it seem probable that they play an unimportant rôle in the reactions of heated milk. They were not encountered in milk heated to 65 C. No gas-producing aerobes were isolated from milk heated to 60 C. From milk heated to 70 and 85 C. only the aerobic spore bearers were recovered by the common method of plating. The cultural activities of this group do not explain the reactions seen in milk heated to these temperatures. *B. welchii* assumes the power of growth in milk under aerobic conditions when transferred to this medium with the common aerobic spore bearers or with *B. troilii* (Matzuschita). Under these circumstances its reactions overwhelm those of the bacteria with which it grows. When the organisms employed are heated to 60 C. *Streptococcus lacticus* inhibits the action produced on milk by *B. welchii* in the presence of *B. troilii* and the aerobic spore bearers, provided these are not markedly in excess. *S. lacticus* fails to inhibit this reaction when the aerobic spore bearers are present in vast numbers, or when no heat is applied. It does so after heating to 65 C. only in the presence of a slowly acting strain of *B. welchii*. The reactions observed in milk heated at temperatures ranging from 60 to 85 C. may be simulated in the presence of *B. welchii*, by the growth of the aerobes commonly surviving the temperatures considered, after the application of the desired degree of heat.

38. **Relations of Splanchnoptosis to Gastric Acidity.**—The free hydrochloric acid was found by Sandrock to be normal or diminished in 83 per cent. of all cases. The total acidity was normal or diminished in 75 per cent. of all cases. Therefore, it would seem quite conclusive from these figures that in ptotic stomachs there is a general tendency toward diminished acidity; and that hypochlorhydria and achylia are more frequenly met than hyperchlorhydria, the ratio being about 2:1. It is of interest to note that fifty cases complicated by marked atony gave a still higher percentage of diminished acidity than the cases in which atony was not so marked. Apparently the acidity in gastroptosis is largely influenced by the amount of associated atony—the greater the atony, the lower the acidity. Achylia was present in 12.5 per cent. of all cases. This at first sight seems to be a rather high figure. Lockwood, however, reports that in his experience achylia was present in nearly 7 per cent. of all patients applying for relief from gastro-intestinal disorders.

Iowa State Medical Society Journal, Des Moines

June, V, No. 6, pp. 215-262

39 Some Hospital Problems. L. W. Littig, Davenport.
40 Treatment of Pulmonary Tuberculosis at Home. J. W. Shuman, Sioux City.
41 Obstruction of Intestine. A. W. Sherman, Burlington.
42 Novocain as Used in Simpler Nose and Throat Operations. E. P. Weih, Clinton.
43 Orthopedics in General Practice. N. Schilling, New Hampton.
44 Importance of Clinical History. G. A. Plummer, Cresco.
45 Nitrous Oxid and Oxygen for General Anesthesia. H. Risk, Waverly.

Laryngoscope, St. Louis

May, XXV, No. 5, pp. 257-320

46 Psychology of "Deafness" with Suggestions as to More Comprehensive Plan of Treatment. P. D. Kerrison, New York.
47 Histopathology of Faucial Tonsil. T. E. Carmody, Denver.
48 Case of Temporosphenoidal Abscess with Unusual Complications. J. Leshure, New York.
49 Case of Multiple Abscess of Brain, Operation, Recovery. J. Guttman, New York.
50 Mastoiditis, Probable Cause of Acute Nephritis. G. F. Keiper, Lafayette, Ind.
51 Tonsillectomy in Adult. Are We Justified in Doing So Many Indiscriminate Tonsillectomies for Remote Infection. C. W. Richardson, Washington, D. C.

Maine Medical Association Journal, Portland

June, V, No. 11, pp. 395-430

52 Psychoses Following Surgical Operations. F. L. Hills, Bangor.
53 Symptoms and Their Interpretation. J. MacKenzie.

Medical Record, New York

July 10, LXXXVIII, No. 2, pp. 47-88

54 Tonsils and Struggle for Existence. R. G. Eccles, Brooklyn.
55 Fluoroscopic Bronchoscopy. E. F. Ingals, Chicago.
56 Carcinoma of Cecum with Extreme Ptosis of Abdominal Viscera. M. R. Smirnow, New Haven, Conn.
57 Syphilitic Reinfection with Notes on Immunity and Treatment. F. W. Smith, New York.
58 Wassermann Reaction According to Wassermann Himself. E. Palier, New York.
59 *Conservative Treatment of Enlarged (Tuberculous) Glands of Neck. L. B. Meyer, New York.
60 Contraindications to Intra-Abdominal Use of Oil. W. F. Burrows, New York.

59. **Treatment of Tuberculous Glands of Neck.**—It is Meyer's opinion that no case of enlarged glands of the neck (tuberculous or otherwise, and in a large percentage of cases a differential diagnosis is impossible without the removal of a specimen) should be operated on radically, without at the same time, or better, previously, correcting all pathologic conditions in the mouth and nasopharynx which might act as a source of infection. These glands frequently are simply inflammatory glandular enlargements, such as one finds anywhere in the body in glands which happen to be in the path of lymphatic drainage of an infection.

New Mexico Medical Journal, Las Cruces

June, XIV, No. 3, pp. 67-96

61 Tuberculin in Treatment of Tuberculosis. W. T. Murphey, Albuquerque.
62 Practicing Physician. J. W. Trask, U. S. P. H. Service.

New York Medical Journal

July 10, CII, No. 2, pp. 65-116

63 Senility, Premature Senility and Longevity. H. M. Friedman, New York.
64 Vaccine Therapy in Diseases of Nose, Throat and Ear. G. M. Coates, Philadelphia.
65 *Abdominal Tuberculosis. A. Bassler, New York.
66 Cancer of Bladder and Kidneys. V. C. Pedersen, New York.
67 Uterine Cancer. S. Dahl, Chicago.
68 Simple and Efficient Head Bandage. G. O. Jarvis, Ashland, Ore.
69 Elephant Hydrocele. A. H. Peacock, Seattle, Wash.
70 Increased Responsibility for Private Physicians. L. I. Harris, New York.
71 El Gebir, Visionary. I. L. Nascher, New York.
72 Surgical Course for Hospital Interns. A. E. Chace, Tarrytown.

65. **Abdominal Tuberculosis.**—Bassler has seen two cases of marked splenic tuberculosis (both painful) operated on, both ending fatally. In one the abdomen was dry and in the other a marked ascites existed.

Northwest Medicine, Seattle, Wash.

June, VII, No. 6, pp. 171-204

73 Anatomic Consideration of Visceral Ptosis. R. B. Dillehunt, Portland, Ore.

74 Roentgenoscopy of Gastro-Intestinal Tract. A. E. Rockey, Portland, Ore.
75 Roentgenoscopy of Gastroptosis Coincident with Coloptosis. J. P. Tamiesie, Portland, Ore.
76 Relation of Surgical Procedures and General Asthenic State. N. W. Jones, Portland, Ore.
77 Altered Condition of Neck and Chest Muscles and Subcutaneous Tissue Overlying Them as Important Aids in Early Diagnosis of Tuberculosis. F. M. Pottenger, Monrovia, Calif.
78 Tuberculosis Institutions of Washington. B. I. Beals, Seattle.

Ohio State Medical Journal, Columbus

June, XI, No. 6, pp. 361-420

79 Indications for Operations. J. C. Oliver, Cincinnati.
80 Anesthesia in Obstetrics. A. J. Skeel, Cleveland.
81 Brief History of Care of Insane in Ohio. C. S. McDougall, Athens.
82 Prostatectomy Under Spinal Anesthesia; Case Report. E. S. Brecse, Dayton.
83 Probable Cause and Logical Treatment of Epilepsy. C. A. L. Reed, Cincinnati.

Ophthalmic Record, Chicago

June, XXIV, No. 6, pp. 277-330

84 Vertex-Refraction in Its True Aspect. C. F. Prentice, New York.
85 Colloidal Theory of Pathology of Glaucoma. J. A. McCaw, Denver.
86 Advantage of Small Amount of Astigmatism with Rule. O. Wipper, Chicago.
87 Plea for More Uniform Reporting of Visual Acuity. H. S. Gradle, Chicago.
88 Operation for Prevention of Symblepharon. E. G. Starr, Buffalo.
89 Ciliary Processes in Pupillary Area. C. A. Clapp, Baltimore.
90 Improved Hatpin for Visual Field. E. E. Maddox, Bournemouth, England.

Surgery, Gynecology and Obstetrics, Chicago

July, XXI, No. 1, pp. 1-134

91 *Perinephritic Abscess. E. P. Richardson, Boston.
92 New Facts and Their Clinical Significance Concerning Cancer. W. C. MacCarty, Rochester, Minn.
93 Trauma Into and About Joints. C. E. Caldwell, Cincinnati.
94 *Diagnosis of Enteroliths by Means of Roentgen Rays; Report of Two Cases. G. E. Pfahler and C. J. Stamm, Philadelphia.
95 *New Method of Securing Bony Ankylosis of Spine in Pott's Disease by Means of Bone Transplant. A. E. Halstead, Chicago.
96 *Splenectomy for Hemolytic Icterus. C. A. Elliott and A. B. Kanavel, Chicago.
97 Blood Transfusion by Citrate Method; Report of Cases. R. Lewisohn, New York.
98 Plastic Operation for Buyo Cheek Cancer in Its Early Stage and Report of Buyo Cheek Cancer Cases. G. G. Davis, Chicago.
99 *Pulsion Diverticulum of Esophagus. O. C. Gaub and C. Jackson, Pittsburgh.
100 Cysts of Mesentery; Report of Three Cases. E. G. Jones, Atlanta, Ga.
101 *Treatment of Angiomata by Injection of Boiling Water (Wyeth Method). F. Reder, St. Louis.
102 Roentgentherapy in Nonmalignant Deep-Seated Lesions. J. T. Case, Battle Creek, Mich.
103 Disinfection of Hands and Abdominal Skin Before Operation. E. McDonald, New York.
104 Report on Skin Disinfection by McDonald's Solution. C. G. McMullen, Schenectady, N. Y.
105 Sterilization of Skin by McDonald's Germicidal Solution. E. MacD. Stanton, Schenectady, N. Y.
106 Cystalgia; Urethralgia. L. J. Roth, Los Angeles.
107 *Bulgarian Bacillus in Treatment of Cystitis and Pyelitis with Alkaline Urine. F. R. Hagner, Washington, D. C.
108 Cancer Destruction by Radium. J. B. Bissell, New York.
109 Modified Gas-Oxygen-Ether Apparatus. T. L. Dagg, Chicago.
110 *New Procedure for Cure of Chronic Synovitis. F. J. Cotton, Boston.
111 Suprapubic Prostatectomy Simplified. G. S. Peterkin, Seattle, Wash.
112 Goiter Operations with Simplified Technic. A. E. Benjamin, Minneapolis.
113 Treatment of Fractures by Autogenous Bone Transplants. F. G. Dyas, Chicago.
114 *Technic Used in Applying Anastomotic Buttons. R. Finochietto, Buenos Aires, Argentine.
115 Perineal Section in Boys. W. Van Hook, Chicago.
116 Acute Pyelitis; Its Diagnosis and Treatment. K. H. Aynesworth, Waco, Texas.
117 Position of Stability in Treatment of Fractures. E. B. Claybrook, Cumberland, Md.
118 *Improved Gastrostomy. M. R. Bookman, New York.
119 Non-Leakable Trocar. C. J. Miller, New Orleans.

91. **Perinephritic Abscess.**—Without minimizing the importance of infection of the perirenal fat from a distance through the lymphatics, and without implying the frequent participation of the kidney, Richardson calls attention to the following points: The commonest organism, the staphylococcus, producing "primary" perinephritic abscess is also the most frequent organism concerned in producing focal cortical abscess in the kidney. "Primary" perinephritic abscess occasionally follows peripheral pus foci. In such cases it is reasonable to suppose that infection has followed a metastatic hematogenous course. A urine normal on clinical examination does not exclude the possibility of cortical renal abscess. The previous occurrence of a peripheral pus focus due to the staphylococcus may be of some importance in the diagnosis of continued fever with leukocytosis and lumbar or abdominal pain. The mortality for fifty-nine cases was 10.2 per cent. with no deaths from secondary operations. The treatment in general has been simply to drain, reserving further measures for a secondary operation.

94. **Diagnosis of Enteroliths by Roentgen Rays.**—It is stated by the authors that enteroliths should be suspected when there is a movable mass in the abdomen, or when opaque bodies are found in the appendiceal region during the course of roentgenoscopy of the ureters. They can be definitely demonstrated by filling the colon with gas, or better by filling it with an opaque enema and demonstrating the mass within the lumen of the bowel. By means of glycerin enemas and manipulation these enteroliths in the bowel can probably be removed without operation.

95. **Ankylosis in Pott's Disease; Bone Transplant.**—Halstead describes his method as follows: In lateral prone position, an incision beginning on the median line above the kyphos is curved around this prominence and terminates below at the median line. A flap of skin and fascia is reflected back to the spinous processes: An incision is made along the lateral aspects of the tips of the spinous processes and extended for a distance of two vertebrae above and two below the diseased vertebrae. With a sharp chisel the soft tissues, including periosteum and the erector spinae muscles, are separated from the lateral surfaces of the spinous processes well down to the vertebral arch: After retracting outward, the tissue is separated from the spinous processes, the spines are sawed through at their bases, one above and one below the kyphosis: The severed spinous processes, with the connecting ligaments, are strongly retracted to one side and away from the bases. The prominent bases of the spinous processes at the apex of the kyphos are cut away with a chisel.

A bone transplant is removed from the tibia in the usual way. The transplant is of sufficient length to reach from at least one vertebra above the diseased bones to one below. It is also fashioned so that it will have periosteum on one lateral surface and on one border. From the lateral surface the periosteum is reflected back to the border to which the periosteum is attached. The transplant may be held secure in a small vise while it is cut to meet the requirements of the case. The transplant is inserted between the cut surfaces of the divided spinous processes. The border of the transplant to which the periosteum is attached is toward the side from which the soft tissues have been retracted. The transplant is held in place by replacing the retracted, detached spinous process, and secured by passing heavy chromicized catgut sutures through the periosteum of the detached spinous process, the periosteum of the free margin of the transplant, and then through the periosteum at the base of the spinous process. The deeper portions of the wound are closed by buried catgut sutures, and the skin by silkworm-gut sutures. The spine is immobilized by means of a plaster-of-Paris molded splint for ten weeks.

96. **Splenectomy for Hemolytic Icterus.**—Of the 48 cases collected by Elliott and Kanavel only 2 patients died, one shortly after operation, and the other in six weeks, from sepsis, a surprisingly good result when one considers the serious condition of some of the patients. As for the ultimate results, the 46 patients who recovered are reported as "cured"; that is to say, they were relieved of their jaundice and crises. The effect on the blood picture was immediate. In 7 cases reported in the first two weeks 4 gained from one to two million reds; in 8 cases reported in the third and fourth weeks 3 gained over a million, 2 over two million, and

1 over three million; in 9 cases reported in from three to six months 5 gained a million, 4 three million, and 1 five million; and, finally, of 10 reported after six months 1 gained one million, 5 two million, and 4 three million, leaving one that had not gained appreciably, but the blood count here showed four and a half million. These increases in every case brought the blood approximately to normal; in 22 cases it was above four million, and of these, in 17 above four and a half million, and, in 3, six million or over. The hemoglobin followed the rise in the number of reds. The white blood count was normal unless there were complications. The effect on the fragility of the red blood cells was less conspicuous. The fragility was increased before operation in every case, varying from 0.50 to 0.70. One case is mentioned in which the condition became normal in five weeks, but for the most part little change was noted before three months, when several are mentioned as being nearly normal. The jaundice decreased in most cases in the first few days, and in nearly all instances was absent at the end of two weeks, while the acholuric crises, with the attendant malaise, headache and fever ceased entirely.

99. **Pulsion Diverticulum of Esophagus.**—In the operation devised by Gaub and Jackson, having exposed the esophagus the surgeon asks the esophagoscopist to push out the diverticulum into the external wound. The surgeon seizes the bottom of the pouch with forceps. He then asks the esophagoscopist to insert the esophagoscope into the subdiverticular lumen of the esophagus. The surgeon then amputates the redundancy, being careful not to make undue tension in order to determine with precision the amount of tissue which really constitutes redundancy. Closure of the wound, dressing and after-care do not differ after this procedure from that of the usual operation.

101. Abstracted in The Journal, Jan 30, 1915, p. 464.

107. Abstracted in The Journal, Jan. 30, 1915, p. 465.

110. **New Procedure for Cure of Chronic Synovitis.**—In a case cited by Cotton the synovial membrane was pulled out through the cut in the fibrous capsule (a cavity of 1 by 1¼ inches) and then rolled back and carefully sutured (with catgut), so as to leave no exposed edge of synovial membrane. The joint was washed out with normal salt solution and left half full. The vastus internus muscle was brought together over the gap with lightly drawn mattress sutures of catgut, and the skin was closed in the usual way with interrupted sutures of silkworm gut. Thirty-nine days after the operation there was no fluid and no infiltration. Except for the recent scars, there was nothing to note except the quadriceps atrophy, still marked on both sides. There was a little grating of the now dry articular surfaces on motion. Motion was now much freer than before the relief of joint tension. The patient complained of no pain and there was no muscle spasm.

114. **Applying Anastomotic Buttons.**—Finochietto's method consists in pressing between the blades of a hemostatic forceps a designated portion of the wall of the stomach or intestine. Around the blades of the hemostat a purse-string suture is inserted. Through the zone pressed together by the hemostat, an incision is made, and the catheter or button is introduced into the bloodless incision.

118. **Improved Gastrostomy.**—In a case of inoperable mediastinal tumor (extra-esophageal), a circular purse string deep Lembert of Pagenstecher linen was placed by Bookman well up near the lesser curvature, the stomach opened, tube inserted, and the suture tied. The next suture was begun at least a half-inch below the tube and carried around in a circular manner so as to pass less than a quarter inch above the tube, then passed around to where the suture began and there tied. This pointed the tube within the stomach upward; two more sutures were placed in a like manner, the tube fastened to the stomach and abdominal wall, and the wound closed. As more of the gastric wall was utilized below than above, the lower part acted as a spring and forced the apex of the cone close to the anterior wall of the stomach, and the channel, being entirely within the stomach and movable, created a distinct valvular action.

Tennessee State Medical Association Journal, Nashville

June, VIII, No. 2, pp. 77-116

120 Relation of Practicing Physician to Public Health Administration. J. W. Trask, U. S. P. H. Service.
121 Hoary-Headed Heresy. W. K. Vance, Bristol.
122 Some Experiences in Drug Addiction. H. E. Goetz, Knoxville.
123 Focal Infections. J. B. Blue, Memphis.
124 Tendency Toward Drug Nihilism. H. Lockhart, Coalmont.
125 Pyloric Stenosis in Infants. O. W. Hill, Knoxville.
126 Plea for More Closely Organized Medical Profession. R. E. L. Smith, Doyle.
127 Drugs and their Administration. H. Hawkins, Jackson.
128 Kidney Colic. O. S. McCown, Memphis.

United States Naval Medical Bulletin, Washington, D. C.

July, IX, No. 3, pp. 353-546

129 Normal Heart in Navy. G. F. Freeman, U. S. Navy.
130 Surgical Diagnosis and Technic Involving Appendix. A. M. Fauntleroy, U. S. Navy.
131 Functional Testing of Ear. G. B. Trible, U. S. Navy.
132 Diagnosis of Gastric and Duodenal Ulcer by Means of Roentgen Ray. A. L. Clifton, U. S. Navy.
133 Damage of Syphilis to Navy. G. F. Cottle, U. S. Navy.
134 Recent Conceptions of Bronchial Asthma. M. H. Sicard, U. S. Navy.
135 Venereal Head. G. F. Cottle, U. S. Navy.
136 New Messing System for Naval Hospitals. F. E. Simmons, U. S. Navy.
137 Messing Arrangements in U. S. Naval Hospital, Philadelphia. H. A. Dunn and P. J. Waldner, U. S. Navy.
138 Castor Oil; Aseptic Dressing on Field of Battle. A. E. Gallant, U. S. Navy.
139 Case of Fracture Dislocation of Spine; Laminectomy. R. E. Ledbetter, U. S. Navy.
140 Case of Aneurysm of Left Posterior Inferior Cerebellar Artery. E. L. Woods, U. S. Navy.
141 Case of Malignant Endocarditis (Gonorrheal). M. E. Higgins, U. S. Navy.
142 *Possible New Roentgen Ray Sign of Tuberculosis. E. Thompson and H. L. Gall, U. S. Navy.
143 Case of Purpura Hemorrhagica (?) with Marked Leukopenia. W. L. Mann, Jr., U. S. Navy.
144 *Report of Twenty-Eight Cases of Pyorrhea Alveolaris Treated with Emetin Hydrochlorid. A. H. Allen, U. S. Navy.
145 Intravenous Injection of Neosalvarsan in Concentrated Solution. C. B. Camerer, U. S. Navy.

142. **Roentgen Ray Sign of Tuberculosis.**—A new condition was observed by Thompson and Gall which may be of some value in the diagnosis of local tubercular foci in the lungs. This condition consists of an irregularity in the rounded outline of the diaphragm line. Under normal conditions the diaphragm is sharply outlined as a smooth line of easy curves. The difference in density of the liver and lungs makes it very easy to observe any break or irregularity in the contour of the line. When viewed with the fluoroscope the diaphragm is seen making its excursions up and down and always preserving its general contour whatever it may be. In a great number of cases of pulmonary tuberculosis the plates do not show a smooth outline of the diaphragm. Irregularities are seen and large humps sometimes occur. These elevations are always above the general line of the diaphragm and are at the expense of the pulmonary side. In other words, it appeared that there might be a place to fill in to equalize the tension, and the diaphragm had bulged up to do it.

144. **Pyorrhea Treated with Emetin Hydrochlorid.**—A hypodermic injection of emetin hydrochlorid, one-half grain, was given daily by Allen in the arm for six days. Active antiseptics were used locally by the dentist in all cases. These included various antiseptic alkaline mouth washes and the local application of trichlorid acetic acid or tincture of iodin to the pus pockets. At the end of six days smears were examined, and if amebas were still present three more hypodermic injections of emetin were given. Nine injections has been the greatest number that have been given. In three cases in women, owing to the soreness of the arm resulting from the daily use of the hypodermic syringe, the injections were alternated with the administration of two Alcresta ipecac tablets three times daily. This work, started in January, 1915, has covered a period of five months. The use of emetin in conjunction with local measures has been beneficial in 77 per cent. of the cases although an actual cure was obtained in only 35 per cent.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Indian Journal of Medical Research, Calcutta

April, II, No. 4, pp. 823-1001

1 Spleen Rate and Other Splenic Indices; Their Nature and Significance. S. R. Christophers.
2 *Alkalinity of Blood in Kala-Azar and Cholera and Technic of Its Estimation. L. Rogers and A. J. Shorten.
3 Test for Residual Epidemicity. A. G. McKendrick.
4 *Quinoidin. A. C. MacGilchrist.
5 Vibricidal Power of Bile of Animals After Administration of Hexamethylene Tetramin and Its Compounds. E. D. W. Greig.
6 Cholera "Carrier" in Relation to Water Supply of Calcutta. E. D. W. Greig.
7 Experimental Transmission of Indian Kala-Azar to Animals. F. P. Mackie.
8 Insects and Kala-Azar. F. P. Mackie.
9 Causes of Monsoon Diarrhea and Dysentery in Poona. J. Morison.
10 Artyfechinostomum Sufrartyfex. C. Lane.
11 *Wassermann Reaction in Malaria, Kala-Azar and Leprosy. W. D. Sutherland and G. C. Mitra.

2. Alkalinity of Blood in Kala-Azar and Cholera.—A consideration of sixteen unselected cases by Rogers and Shorten brings out the striking fact that, apart altogether from the occurrence of uremic symptoms, there is a constant reduction of the alkalinity of the blood in cholera which is of a very marked character in all but the very mildest cases, and the degree of which increases steadily with the severity of the disease. A reduced alkalinity of the blood is, therefore, a most essential and important feature of the blood changes in cholera, and one which requires to be combated in the treatment of the disease. As a matter of fact, for several years past all the cholera cases have been given, as a routine measure, 40 grains of potassium citrate and 4 drams of liquor ammoniae acetatis with a view to maintaining the alkalinity of the blood, and in the hope of reducing the dangers of uremia. It is thus clear that more active measures are necessary if a dangerous reduction of the alkalinity is to be prevented in severe cases of cholera.

Injections of solutions of sodium bicarbonate are the most generally used and powerful means of raising the alkalinity of the blood, and have been given much in the treatment of the acidosis of diabetes and in postcholeraic toxemia with suppression of urine. The authors' observations furnish some data regarding the effect of such treatment in remedying the reduced alkalinity in this condition. In the first place, it should be noted that there is a natural tendency for the alkalinity to rise when free secretion of urine is obtained. The effect of sodium bicarbonate intravenously is evident. The data regarding the fatal cases of uremia indicate that when a very low alkalinity, such as hundredth normal and upward, has been reached, together with nearly or quite complete suppression of urine, for two or more days, even intravenous injections of sodium bicarbonate usually fail to avert death with uremic symptoms, although the alkalinity may have been much raised by the treatment and life considerably prolonged.

4. Quinoidin.—Laboratory and hospital results prove that quinoidin is much inferior to quinin as an antiprotozoal or antimalarial agent.

11. Wassermann Reaction in Malaria.—The blood of 50 patients in which malarial parasites were present, was tested by Sutherland and Mitra for a Wassermann reaction. Nine cases gave a positive reaction; at least 3 were probably syphilitic. The authors also examined the blood of 38 cases of kala-azar. In all of these the parasite had been found, by careful and competent observers, in smears taken from splenic material obtained by puncture. Of the 38 patients, 10 gave a positive and 28 a negative reaction. Of the 10 positive cases, only 2 gave a more than slightly positive reaction. They examined the serum of 34 patients of undoubted leprosy. Fourteen were of the anesthetic form; of these, 4 gave a positive and 10 a negative Wassermann. Of the remaining 20 patients, 7 gave a positive and 13 a negative Wassermann.

Journal of Tropical Medicine and Hygiene, London

June 15, XVIII, No. 12, pp. 133-144

12 Pigmented Parasites of Cold-Blooded Animals, with Some Notes on Plasmodium of Trinidad Iguana. C. M. Wenyon.

Lancet, London

June 26, I, No. 4791, pp. 1323-1382

13 Trypanosomes. D. Bruce.
14 Use of Magnesium Sulphate in Treatment of Tetanus. S. J. Meltzer.
15 *Study of Etiologic Factor in So-Called Cerebrospinal Fever. R. Donaldson.
16 Severe Case of Intractable Syphilis Treated Satisfactorily with Hectin. E. G. Ffrench and C. H. Mills.
17 *Vaccines in Treatment of Respiratory Diseases. R. J. Rowlette.
18 Roentgen-Ray Localization and Removal of Foreign Bodies on Roentgen-Ray Table. J. R. Caldwell.

15. Etiologic Factor in Cerebrospinal Fever.—Donaldson examined the cerebrospinal fluids from about seventy cases; with a view of obtaining organisms from the blood of these cases he withdrew a few cubic centimeters of blood from the median basilic vein of twelve patients at various stages of the disease. The blood was citrated at once, placed in nutrient broth with a + 10 reaction and incubated for several days. An interval of two or three hours elapsed between the sowing of the tubes and their arrival in the incubator. Within twenty-four hours on 1 per cent. glucose-agar there was a copious growth of colonies on each series of plates.

Donaldson suggests that the causal organism of the epidemic dealt with in his article is a diphtheroid rod closely related to the Klebs-Löffler bacillus, of which, indeed, it may actually be a variant, and that we are witnessing the struggle of a new disease to win a place among the great epidemics of the world. This diphtheroid rod is an extremely pleomorphous organism and may give rise to Hoffmann-like forms, to what appear to be meningococci, etc. It is probably very widely spread in Nature in one of its more resistant forms, and it is this form and not the meningococcal one which is transmitted from one person to another. It is also probably to be found more frequently among individuals than we imagine. The disease may give rise to the most diverse symptoms, evidently due to an actual invasion of the body by the infective agent, and not merely to the action of toxins manufactured locally. It is in this respect that it differs from diphtheria. In other ways, however, there is a certain similarity between the two diseases. The above hypothesis offers an explanation why serum fails so often in the treatment of so-called cerebrospinal meningitis, and the analogy to diphtheria suggests that treatment on similar lines should be adopted. It further suggests that fresh investigation must be made into the life history of the gonococcus, and offers an explanation of the failure of vaccines in that disease.

17. Vaccines in Respiratory Diseases.—The series reported on by Rowlette consists of fourteen cases: Chronic nasopharyngeal catarrh, 4; recurrent acute nasopharyngeal catarrh, 4; recurrent acute general catarrh with bronchitis, 3; chronic bronchitis, 2; and pulmonary abscess, 1. The 4 cases of chronic nasopharyngeal catarrh were of long standing, and all the patients had undergone local surgical treatment of various kinds. The infections were: in 1 case pneumococcus, in 1 pneumococcus and *Micrococcus catarrhalis,* in 1 streptococcus, and in 1 *Staphylococcus aureus* and streptococcus. The dosage employed was pneumococcus, 10-60,000,000; *Micrococcus catarrhalis,* 50-200,000,000; streptococcus, 10-25,000,000; and *Staphylococcus aureus,* 50-500,000.000. The number of injections varied from 6:18. The results in three of the cases were entirely satisfactory; in the fourth the treatment had no effect.

Four cases of acute recurrent nasal catarrh were treated. In 2 the infection was of *Micrococcus catarrhalis,* in 1 of streptococcus, and in 1 *Staphylococcus aureus.* Of the 3 cases of acute recurrent general catarrh, 2 were infections of *Micrococcus catarrhalis* and 1 of a staphylococcus. Rowlette has treated only 2 cases of chronic bronchitis, 1 with *Micrococcus catarrhalis* and 1 with streptococcus. He does not think that either case was benefited to any appreciable extent, but in neither case was a sufficient trial given. Taking his series as a whole, in 10 of the 14 cases treated the result was very satisfactory; in 1 there was a temporary improvement, and in 3 no result could be traced. Classifying the cases treated according to infection, the results are as follows: *Micrococcus catarrhalis* 5, of which 3 became quite well, 1 was

benefited and 1 unaffected; pneumococcus 2, both became well; staphylococcus 1, became well; streptococcus 3, of whom 2 became well, and 1 was unaffected; streptococcus and staphylococcus 2, both became well; *Staphylococcus aureus* 1, became well.

Sei-I-Kwai Medical Journal, Tokyo

June, XXXIV, No. 6, pp. 33-36

19 Acute Cholecystitis. T. Kiuchi.
20 Average Mortality of Tuberculosis Taken from Several Insurance Companies in Japan and Importance of Inspection for Early Diagnosis. I. Oyama.
21 Pain of Os Calcis. K. Kaneko.
22 Gummatous Arthritis. Y. Misumi.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

May, IV, No. 5, pp. 177-224

23 *Blood Pressure and Viscosity in Vomiting of Pregnancy and in Heart Disease. P. Pellissier.
24 *Disturbance in Motor Functioning Following a Confinement. (Troubles de motilité para-obstétricaux.) Gautiez and Tissier.

23. **Relations Between Blood Pressure and Viscosity.**—Pellissier refers in particular to conditions in this respect in the uncontrollable vomiting of pregnancy and heart disease. He first studied the relations between the blood pressure and the viscosity of the blood in healthy pregnant and nonpregnant women and then in five pregnant women with uncontrollable vomiting, in two cases of aortic insufficiency, in four of mitral stenosis, two of mitral insufficiency and two of other forms of heart disease. The findings in the various cases are related in detail, all showing how the blood pressure fluctuates with heart disease, early becoming irregular, while the viscosity increases as soon as the lesser circulation begins to suffer from it. When early in pregnancy there is prolonged vomiting and the blood pressure shows these changes and the viscosity of the blood becomes increased, the outlook is so grave that active treatment should not be delayed. Mild or well-compensated valvular defects do not influence either the blood pressure or the viscosity.

24. **Postpartum Motor Disturbances.**—Gautiez and Tissier have noticed in numbers of cases that women getting up from a confinement are liable to limp and stumble and to complain of pain in the feet or hands. Some of the women present disturbances like those of the painful flatfoot of adolescents, an actual tarsalgia. They explain it as the result of the abnormal way in which the foot is used during the last months of pregnancy. The weight is thrown more on the heels, to balance the heavy abdomen, and the bones and muscles undergo a special fatiguing strain. On this is superposed the general relaxation of the joints accompanying the delivery and the impeding of the circulation in the legs inevitable with a pregnancy. Under the rest in bed the overstrained and fatigued tissues display a tendency to rapid atrophy. When the woman tries to use the feet normally once more, the arch has lost its elasticity and there is functional disturbance with more or less deformity of the instep. The muscles must be toned up; electricity and massage will help in this; but the main reliance must be on an inner sole or other appliance to raise the inner side of the arch and throw the weight on the outer edge of the foot, or by elastic stepping on the front part of the foot or by lifting weights fastened to the toes, systematically increasing the weight. If the woman limps or drags one foot, a tender point can be found usually in the tendon of the rectus muscle, where it was overstrained or partly ruptured during delivery. Under repose and local heat, normal conditions are restored and the lameness subsides. The condition is like that when the abdominal muscles in an infant are weak and flabby; the child finds it difficult to learn to stand. The legs do not get the normal support from the flabby abdominal muscles.

In conclusion attention is called to the pain and impotence of the wrist sometimes complained of by women who have to lift heavy children or invalids. The repeated strain finally stretches the external ligament of the radiocarpal articulation. A tender point can be discovered at the juncture of the radius and the scaphoid bone. Under rest, moist heat and immobilization of the overstretched ligament, the condition soon rights itself if taken in time before inflammation has developed.

Bulletin de l'Académie de Médecine, Paris

June 8, LXXIII, No. 23, pp. 671-684

25 *Prognosis of Wounds of the Cervical Spinal Cord. P. Marie.
26 *Bacteriologic Control of the Pus in Wounds—Pyoculture—as Index of Efficiency of Treatment Adopted. P. Delbet.
27 Resection of the Knee May Render Amputation Unnecessary. (La résection du genou, dans certaines fractures infectées graves, peut remplacer l'amputation.) T. Tuffier.
28 *War Neuroses. P. Sollier.

25. **Prognosis of Wounds of Cervical Spinal Cord.**—Marie states that only five have died of the eighteen patients in his charge with paralysis of both arms and legs resulting from a gunshot wound of the cord in the neck. The quadriplegia kept up for weeks and months, with sphincter disturbance, but five of the men gradually recovered the use of their limbs in a few months; one is now able to run. The outcome is better the earlier these wounded are able to get special neurologic treatment.

26. **Bacteriologic Control of Wounds in War.**—Summarized in the Paris Letter, THE JOURNAL, July 10, p. 183.

28. **Neuroses Among the Troops.**—Sollier cites statistics from eight hospital centers which show that in about 16.2 per cent. of 2,435 wounded soldiers there was evidence of a traumatic neurosis, that is, a total of 395 cases. Excluding those with neuropathic antecedents, only 250 cases are known of a neurosis developing under the stress of war.

Journal d'Urologie, Paris

June, VI, No. 3, pp. 297-408

29 *Comparative Secretion in the Two Kidneys in the Dog. R. Lépine and R. Boulud.
30 Development and Comparative Histogenesis of External Genital Organs. E. Retterer. Commenced in No. 2.
31 Repair of Ruptured Urethra. Oudard.
32 *Stricture of the Ureter. (Rétrécissements de l'uretère.) E. Jeanbrau.

29. **Secretion in the Two Kidneys Compared.**—The research described was done on thirty-four dogs; nothing was observed that indicated alternate functioning on the part of the kidneys. There was very little difference between the amount of their secretion unless the right kidney possibly secreted more abundantly at times.

32. **Stricture of the Ureter.**—Jeanbrau discusses the pathologic anatomy of congenital and acquired stenosis of the ureter. The symptoms when there is no infection are exactly like those of intermittent hydronephrosis from kinking of the ureter. The only difference is that the portion of the ureter above the stenosis becomes distended first, while with hydronephrosis the pelvis shows the effect first. The pain consequently is felt a little lower down with stenosis of the ureter. Pain starting in the pelvic ureter and spreading toward the kidney suggests stenosis of the ureter. The onset of the pain almost at once after copious drinking is another suggestive feature of the clinical picture. In dubious cases copious drinking to elicit this pain is an aid in differentiation. The kidney is liable to become distended and atrophy, and the congestion in the kidney invites infection. Any tonsillitis, influenza or colon bacilli process anywhere is liable to start an infectious focus in the kidney as it is predisposed by the secondary congestion and distention. Nephrectomy then offers the only chance of a cure. All this can be avoided by an early diagnosis and slow and gradual dilatation of the ureter with much the same technic as for dilatation of stenosis in the urethra. If this fails, operative relief is necessary, cutting the stenosis from within or from without. If the stricture is close to the kidney pelvis or to the bladder, it is usually best to sever the ureter and implant it anew in the pelvis or bladder.

Presse Médicale, Paris

June 10, XXIII, No. 26, pp. 197-205

33 *Functional Substitution Relieves Crippling Traumatic Paralysis. (Adaptation fonctionnelle par suppléance dans les paralysies traumatiques des nerfs.) H. Claude, R. Dumas and R. Porak.
34 Vessels and Nerves of the Base of the Neck. L. H. Farabeuf and A. Broca.

33. **Recovery of Partial Function After Wounds of Peripheral Nerves.**—Claude calls attention to the way in which muscles may learn to do the work of certain paralyzed muscles, assuming tasks quite the opposite of their physiologic work. This substitute action is frequently mistaken, he says, for recuperation of function by the paralyzed muscle when in fact the paralysis has not been at all altered. The improvement in the use of the limb is then liable to be ascribed to the treatment that has been given, when, in fact, this has had no effect on the muscle to which it has been addressed. Intelligence and ingenuity aid in bringing this substitute muscular functioning into play; the men try and try again and again until they succeed in finding some way or position in which they can make use of the paralyzed limb. The lazy and apathetic do not succeed in the same way. Six illustrations are given showing some typical instances of what can be accomplished in this line with a paralyzed hand.

Berliner klinische Wochenschrift

June 7, LII, No. 23, pp. 597-624

35 Proposed "Albumin Marmalade" to be Made from Blood of Slaughtered Cattle. (Verwendung des Blutes der Schlachttiere als Nahrungsmittel.) E. Salkowski.
36 Digestibility of Mushrooms Not Enhanced by Pulverizing. (Verdaulichkeit der Pilze.) A. Loewy and A. v. d. Heide.
37 *Syphilis and Symptoms on the Part of the Stomach. T. Brugsch and E. Schneider.
38 *Necessity for Orthopedic Training in Hemiplegia. L. Mayer.
39 Roentgenology of the Esophagus. J. Schütze.
40 *Multiple Ligation of Varicose Vein. (Behandlung von Varicen an den unteren Extremitäten nach der Methode von Kuzmik-Schede.) K. Secher.
41 Consent to Operations. (Die Operationsfreiheit im Lichte fortschreitender Strafrechtsreform.) H. Lieske. Commenced in No. 22.
42 Syphilis and Scorbutus Ascribed to Eating Sugar. H. Schelenz.

37. **Syphilis and Stomach Disturbances.**—Among the differentiating points mentioned is that a syphilitic stomach lesion is generally associated with deficient or lacking acidity, while hyperacidity is more common with ordinary gastric ulcer. The syphilitic affection usually can be traced to a syphilitic gastritis during the secondary phase. Other characteristic features are the result of irritation of sensory nerves, periodically recurring pains and vomiting, with a sense of oppression in the stomach region. The effect of vigorous measures to combat the syphilis is peculiarly gratifying in this form. Gastric crises were pronounced in 37 per cent. of the 18 cases of tabes on which the article is based. In 6 the gastric acidity was normal, in 7 below and in 5 above normal. In an additional group of 7 other cases of tabes without gastric crises, but with various stomach symptoms, there was subacidity in all but one case. Thus there was subnormal gastric secretion in 52 per cent. of the total 25 cases. In 106 other syphilitics with more or less disturbance on the part of the stomach there was hyperchlorhydria in 15.1 per cent. and subacidity in 22.6 per cent.; symptoms suggesting irritation of the nerve roots in 18.9 per cent. and abortive gastric crises in 31.1 per cent. Achylia seems to be comparatively frequent in syphilitics. Chronic gastritis is probably responsible for it. Other characteristic features of syphilitic disturbance in the stomach are pains from irritation of the nerve roots; the pains have nothing really to do with the stomach but the patient refers them to the stomach. Also sensory phenomena from irritation of the vagus, which amount to actual abortive crises. Signs of irritation of motor nerves, outside of the typical crises, are also characteristic of syphilitic mischief. Hypersecretion and the accompanying symptoms, on the other hand, testify to an ulcer in the stomach regardless of whether syphilis is present or not.

38. **Orthopedic Treatment of Hemiplegia.**—Mayer declares that a man of 60 with hemiplegia from a cerebral hemorrhage requires orthopedic treatment just as much as a child with congenital or soldier with traumatic hemiplegia, and may respond well. That this fact is not generally appreciated was borne home to him particularly by two recent cases. The patients were men of 62 and 74 with hemiplegia for nine months and two years. They had been in the hands of various physicians and neurologists, but no one seemed to think there was any sense or use in correcting the resulting deformity. It was allowed to continue its progressive course, the consensus of opinion apparently being that the men were fortunate that they were not getting a second cerebral hemorrhage. Mayer applied a course of orthopedic measures, and within two months the deformity was almost entirely corrected and the gait very much improved. He gives illustrations of the spiral spring contrivance he uses to correct the dropping of the fore part of the foot, and of the spring splints for the arm and hand to correct the pronation of the arm and the contracture of the fingers. Much can be done in prevention after a paralytic stroke, applying splints, etc., so that the fore part of the foot does not get into the habit of dropping and the fingers of contracting.

40. **Treatment of Varices.**—Secher extols the numerous advantages of throwing a thread around the varicose vein and tying it, repeating this at short intervals along the entire course of the vein. The dressings are changed the twelfth day, when the threads are removed. The technic is simple and easy; it can be applied in the office or home and the outcome is excellent. Kuzmik has had only three relapses in 155 applications of this technic and Secher has had no recurrence of the varices in the four cases in which he has applied it, on both sides in all but one case. Stout silk is used for the ligation, and it is tied over a roll of gauze. The intima and media are separated by the strain from the ligature, and it is their growing together again that leads to the obstruction of the vessel. There are pains and numbness in the leg the first few days, requiring a sedative, and it is a little hard to walk at first, but these disturbances soon pass off.

Correspondenz-Blatt für Schweizer Aerzte, Basel

June 12, XLV, No. 24, pp. 737-768

43 *National Insurance of the Military in Switzerland. (Wirkung der Mobilisation auf der Militärversicherung und die daraus für die Aerzte erwachsenden Aufgaben.) R. Stähelin.
44 By-Effects of Vaccination Against Smallpox. (Pockenimpfschädigungen einst und jetzt.) O. Nägeli. Commenced in No. 23.

43. **State Insurance for the Military.**—In Switzerland every able-bodied man has to serve for a certain period in the army and each year must have a practice course of drill with the militia. During the latter they do not serve long enough to get accustomed to roughing it, while the drill and exposure are liable to induce acute articular rheumatism or rouse a latent tuberculous process. The financial burden of sickness insurance for the military is thus a heavy one, and Stähelin urges that it is the task of physicians now to make a special study of the subject. The present mobilization affords unprecedented opportunities for this. In the first place, the physical examination to determine the fitness for military service must be conscientious. The testimony of civilian physicians is extremely important here. The interests of the combatants, of the man himself and of the finances of the state insurance frequently clash. For instance, if men who have recently had pleurisy are acccpted the ranks will be filled, but many of the men will become consumptives, and the insurance office will suffer financially. On one point all agree, namely, that all who are sick should be given the very best treatment. He relates that in the German cities in the west, the school buildings, factories, etc., that are being used for hospitals are as fully equipped as and have the general aspect of a good hospital, nothing makeshift about them. He was told that at Freiburg arrangements for equipping the hospitals were started several years ago, at a time when the political horizon looked threatening. Bed linen was accumulated in readiness for extensive hospital use. When the war broke out, the surgical and the medical departments were separated early, and each was placed in charge of experts, with ample means at their disposal. One school building used as a hospital has had a light addition built on, the entire height of the building, to provide water closets on each floor, as there had been none except in the basement before. Each floor of all the hos-

pitals also has its bath room. If no special room can be spared for the purpose, a space is partitioned off for it in some large room. All the plumbing, and gas cooking stoves, etc., were installed in a few days.

Münchener medizinische Wochenschrift, Munich

May 25, LXII, No. 21, pp. 705-736

45 *Prophylaxis of Cholera. E. Gildemeister and K. Baerthlein.
46 Sodium Citrate as Aid in Blood Transfusion. R. Lewisohn.
47 Digestibility of "War Bread." (Verdaulichkeit der Kriegsbrote.) J. Decker.
48 Hernia on the Median Line Incapacitates for Field Service. S. Plaschkes.
49 Arrhenal Ineffectual in Relapsing Fever. (Misserfolge der Arrhenalbehandlung bei Rückfallfieber.) P. Mühlens, Hegeler and Canaan.
50 *Gunshot Wounds of the Hip. (Hüftgelenksschüsse.) R. Göbell.
51 Treatment of Infected Wounds of Joints. (Infizierte Gelenke im Kriege.) H. Burckhardt and F. Landois.
52 *Bullet in the Heart Causing Slight Disturbance. F. Glaser and K. Kaestle.
53 *Bladder Disturbances in Soldiers. (Enuresis und ähnliche Blasenstörungen im Felde.) F. Böhme.
54 Six Months' Surgical Work Among French Prisoners of War. H. v. Bomhard.
55 Antifly and Antilouse Measures. H. Hecker and others.
56 *Metal Clamp as Substitute for Tourniquet. (Neue Methode der künstlichen Blutleere.) E. Sehrt.
57 Splints for Extension or for Mobilization of Stiff Joints. H. Backhammer, F. Schede and L. Horn.

June 1, No. 22, pp. 737-768

58 *Problems in Regard to Pathology and Treatment of Dermatomycoses. Bloch. Concluded in No. 23.
59 *Rupture of Uterus Under Hypophysis Extract. (Uterusruptur bei Gebrauch von Pituitrin.) Züllig.
60 *Abdominal Wounds. (Bauchschüsse.) P. Kraske.
61 *Technic for Treatment of Fractures in War. (Wichtige Forderung für die Behandlung der Schussfrakturen.) G. Perthes.
62 Improved Plaster Casts. (Die Rabitzbrücke bei gefensterten Gipsverbänden.) F. Kuhn.
63 Sling and Extension without Bandage. (Stützungs- und Extensionsapparat als Ersatz aller kontentiven Verbände bei sämtlichen Verletzungen der oberen Extremitäten, Klavikula und Schultergegend.) J. Szilagyi.
64 *Wounds of the Eyes. (Augenerkrankungen im Felde.) M. Zade.
65 Prophylaxis of Gas Embolism in Injecting Oxygen. (Gasembolie bei Sauerstoffinjektionen.) G. Gaertner.
66 Weiss' Chromogen Test for Serodiagnosis of Typhoid. M. Rhein.
67 *Epidemic Stomatitis from Antilouse Measures. E. Grünbaum.

45. **Cholera.**—Gildemeister reviews much data on the subject of cholera and reports the results of bacteriologic examination of stools from seventy cholera patients. The cholera germs were not found for more than one, three or five days in a third of the stools, but in sixteen they were living for three weeks and in one stool each for from thirty-one to thirty-seven days and in one case for fifty-one days. The germs survived equally long in stools from healthy carriers. Mixed infection with dysentery and cholera has been frequently encountered in the eastern arena of war.

50. **Wounds of the Hip Joint.**—Göbell has been comparing his own experience with gunshot injuries of the hip joint and the published reports of similar injuries in the Balkan wars. When the wound is not infected, the prognosis is quite good, but the infected wounds terminated fatally in 60 per cent. of the Balkan cases. Analysis of these fatal cases leaves the impression that some might have been saved by an early operation. An early diagnosis and operative measures at the right time will certainly improve the outlook. If there is fever, search must be made for acute coxitis, and the joint must be examined with the Roentgen rays if possible. Early intervention will prevent abscesses; they leave conditions bad for resection later. In the twelve cases of wounds of the hip joint among the soldiers in his charge recently, three of the men died and four were barely saved by a tardy resection.

52. **Bullet in the Heart.**—The bullet came from a distance of over 600 feet and the man was knocked unconscious for thirty-six hours. He recuperated slowly but finally regained health and strength except that his left arm is impotent and he cannot breathe normally when he lies on either side. He also complains of stabbing pains in the left side, radiating from the costal arch to the shoulder and arm. These pains are sharper after eating, keeping up for about an hour. Otherwise he seems in perfect health but the Roentgen rays show a pointed bullet in the right ventricle, moving with the walls of the ventricle. Nine roentgenograms show the bullet from various angles.

53. **Enuresis in Soldiers.**—Böhme thinks that suggestions as to the nature and treatment of enuresis can be deduced from study of the cases of enuresis developing suddenly in soldiers on the firing line. He found that the men thus affected had practically all suffered from enuresis in childhood, and that it had developed now after prolonged exposure to cold and wet. This exposure, the chilling, had aroused a tendency to enuresis which had lain latent since childhood. Warmth, rest, avoidance of much fluid, none after 6 p. m., generally conquer the tendency. Böhme warns in particular against local measures at first.

56. **Clamp to Shut Off Blood Supply.**—An illustrated description is given of the instrument which grasps the limb in its semicircular jaws and permits graduated compression to shut off the blood supply more easily, rapidly and effectually than a tourniquet.

58. **Specific Hypersusceptibility in Dermatomycoses.**—Bloch's experiments have confirmed the assumption that certain infectious diseases of the skin confer allergy on the patient, so that he reacts in a specific manner to an extract made, like tuberculin, from the trichophyton fungus, the favus fungus, etc. The trichophytin, favin or sporotrichin induces a specific allergic reaction like the Pirquet reaction in tuberculosis. He regards the local focus as merely the anatomic expression of the localization of the allergy at the point of infection. According to these views every infectious disease of the skin is at the same time a general process, affecting to a greater or less extent the organism as a whole. These views justify treatment with the extract of the fungus in question, and he here reports favorable experiences with subcutaneous or intradermal injections of trichophytin or the killed fungi themselves. The article is to be continued.

59. **Rupture of the Uterus Under Hypophysis Extract.**—Züllig reports what he thinks is the sixth case that has been published of rupture of the uterus after hypophysis extract had been administered at term. In his case the fetus was unusually large in proportion to the rather contracted pelvis, and the woman had already borne twelve children. In all the cases on record the pelvis was contracted and there was a history of previous difficult deliveries in all but one.

60. **Abdominal Wounds.**—Kraske advocates early operative treatment of abdominal wounds in war. All with wounds in the viscera should be sent at once to an operating headquarters specially equipped for abdominal work. He has never encountered a case of actual gunshot injury of the intestines with recovery under conservative measures. All the men died in a few days from peritonitis. At first Kraske believed that the danger from operating under field conditions turned the scale against any attempt to operate for abdominal wounds, but he was finally able to fit up operating quarters which answered the requirements and permitted successful operations when all the men with severe abdominal wounds were brought to him there. The main thing is to provide a suitable place to operate in; then there will be no question as to the proper management of abdominal wounds.

61. **Gunshot Fractures.**—Perthes declares that too many fail to realize that the wound must be dressed without disturbing the immobilization. Any jar or displacement while the wound is being dressed does more or less harm. The plaster cast must be applied in such a way as to prevent this entirely while allowing free access to the wound. He gives some illustrations of casts which permit this and also protect against soiling the edges of the window in the cast. When the wound has healed, then extension and other measures can be applied as for a simple fracture.

64. **Wounds of the Eyes.**—Zade addresses his remarks to physicians who have seldom or never had occasion to treat injuries of the eyes but are now encountering them with appalling frequency. He warns that cocain banishes pain

only for a few minutes. It is useful to permit the eye to be cleaned out after a shell injury, and he urges all to familiarize themselves beforehand with everting the lid. Usually when the eye has been cleaned of foreign bodies, boric acid salve applied, and the eye bandaged, there is no further pain; if it keeps up, aspirin or morphin should be given. Unilateral conjunctivitis testifies to a traumatic origin; generally there is some erosion of the cornea. This can be discovered by watching the picture of the window in the eye as the patient stands from 6 to 9 feet from the window and keeps his gaze fixed on your hand held about 18 inches in front of his eyes. As you turn your hand and move it around, the eyeball follows it and it is possible thus to bring the reflection of the window on every point of the visible eye. Any erosion is at once recognized by a blurring in the picture of the window. The erosion requires at once disinfection with the boric acid salve and a protecting bandage. Left untreated it entails, almost inevitably, ulceration and iritis which can usually be warded off by early discovery and treatment of the erosion. With severe injury of the eye, the field surgeon's task is restricted to hurrying the man to a specialist after cleaning out and bandaging the eye.

67. **Epidemic Stomatitis from Mercurial Antilouse Measures.**—Grünbaum relates that a few days after the arrival of 800 Russian captives from one Siberian regiment, 200 of the men developed stomatitis and a number had sore throat. The clinical and bacteriologic findings were those of the Plaut-Vincent type of angina. The men with the angina were taken into the hospital where it was found that they were all wearing a strip of black cloth nearly two yards long and an inch wide, wound around their bodies on the bare skin. This band was impregnated with mercury; the droplets could still be seen glistening. The bands had been received about two weeks before as gifts from home, intended to drive lice away. Under treatment for mercurial poisoning the stomatitis and the angina were soon cured.

Therapie der Gegenwart, Berlin

June, LVI, No. 6, pp. 201-240

68 *Wounds of Peripheral Nerves. H. Oppenheim.
69 *Prognosis and Treatment of Severe Acute Middle Ear Disease. (Mittelohreiterungen.) F. Kobrak.

68. **Wounds of Peripheral Nerves.**—Oppenheim relates that one of the surprises of this war is the way in which all kinds of phenomena of paralysis from nonorganic cerebral and spinal processes are superposed and blended with the symptoms of direct injury of peripheral nerves, confusing and masking the true symptoms. The only clue through the maze of symptoms is the response to electric stimuli. The paralysis of nonorganic origin does not affect this response, so that normal findings differentiate such areas. He adds, however, that the individual variations in the location and course of the nerves are being found much greater than generally supposed.

69. **Otitis Media.**—Kobrak pleads for investigation of the blood with severe otitis media. When the blood is found sterile, operative treatment is seldom required. In one of his cases the temperature kept moderately high with pyemic remissions but no signs of involvement of bone. The only local symptom was slight pain on pressure on the lower wall of the auditory canal. The tenth day bacteria were found in the blood and at the operation the mastoid process and sinus were found normal but a pus pocket was discovered close to the bulb of the jugular vein. Prompt recovery followed its evacuation. The blood was sterile again the day afterward. When the bacteria get into the blood they may acquire new virulence and set up new foci in the spleen or marrow or elsewhere, independent of the primary focus. Otitis media that has recurred at times is liable to flare up anew during an acute infectious disease, and when this is the case and an operation is required for the bilateral otitis media, the ear that has had previous trouble should be perferably attacked. When the fever is constant and high from the first, there seems to be less liability to a complication requiring operative measures than when there is a shorter or longer drop in the temperature after a few days of high fever at the onset of the otitis media, and then the temperature runs up high again after this pause. In one adult the fever kept up for three months notwithstanding a mastoid operation; the sinus was sound but profuse secretion and pain kept returning. At one time during the protracted fever there was pain in one hip joint but it soon subsided spontaneously. Streptococci were found repeatedly in the blood. When the blood is sterile, conservative measures are justified, even with high fever for several days, if there are no local or general signs of complications. The sigmoid sinus seems to be the intermediate link with general infection, and hence the exploratory operation should be directed here.

Instead of a stormy onset and high fever from the first, the otitis media may start insidiously and after a mild course apparently subside but soon a serious complication becomes evident. He has found the *Streptococcus mucosus* responsible for this type, and warns that mucosus otitis should be kept under supervision for some time after it has apparently healed. Slight subfebrile temperature will warn that the process may be insidiously progressing. If there is only slight local reaction, Kobrak advises to wait until the local infectious process has become circumscribed to some extent. In one case the secretion contained no leukocytes but swarms of staphylococci; the temperature kept very high, sometimes 104 F., and the mastoid process was tender. The torpid reaction and the lack of urgent otoscopic indication justified waiting until the end of the second week. The operation then revealed that the spongiosa was soft and crumbly but no pus focus was found although the operation was carried into sound tissue. The fever dropped at once. The lack of suppuration shows that the tissues have little reacting power and hence that any operation is liable to throw open the portals to general infection. He gives two typical fever charts the characteristics of which throw light on the underlying processes.

Zeitschrift für Tuberkulose, Leipzig

May, XXIV, No. 1, pp. 1-80

70 Measures to Combat Tuberculosis in the Army During the War. (Massnahmen der Heeresverwaltung auf dem Gebiete der Tuberkulosebekämpfung während des Krieges.) Helm.
71 Tuberculosis in the English Army and Navy and in the English and French Colonies. E. Meissen.
72 *Evidences of Tuberculosis Found at Necropsy of Combatants. J. G. Mönckeberg.

72. **Necropsy Findings Suggesting Tuberculosis in Soldiers.**—Mönckeberg relates that he found signs of tuberculosis in over 31 per cent. of 85 cadavers of soldiers. The positive findings were in twenty-two Germans, one Belgian and four French soldiers, and five had succumbed to the disease. The others had been killed while fighting. The clinical course compared with the findings emphasizes that the less perfectly healed and the more extensive the latent tuberculous affection, the greater the danger of its being roused to activity by the vicissitudes of the campaign.

Zentralblatt für Chirurgie, Leipzig

June 5, XLII, No. 23, pp. 409-424

73 *Flap from Sternum to Close Gap in Skull; Two Cases. (Deckung von Schädeldefekten aus dem Sternum.) P. Müller.
74 *Flap from Fascia Lata to Reenforce Suture of Patella. R. Seubert.
75 Advantage of Compression in Treatment of Abdominal Wounds. (Zur Behandlung der Bauchschüsse mittels komprimierenden Verbandes.) O. Langemak.

73. **Sternum Flap to Close Gap in Skull.**—Müller comments on the drawbacks of taking a flap from the skull itself, the harm done the brain by hammering and chiseling on the skull, the unevennesses liable to be found when a flap is twisted around, and the difficulty of cutting a flap just the right size. These disadvantages are obviated by taking the flap elsewhere, and the sternum is especially well adapted for the purpose. It is easy of access and the spongiosa structure permits a flap to be readily scaled off. He has applied the method in two cases and was surprised at its advantages. In one case he used a sheet of fat to substitute the dura; over this he fitted the sheet taken from the sternum, setting it in the gap which it smoothly filled; it soon bent to conform

to the curve of the skull. The defect measured 2.2 by 6 c.c. The work was all done under local anesthesia.

74. **Suture of the Patella.**—A man of 52 fractured the patella and Seubert sutured it with catgut. Then a flap of fascia lata was implanted to cover the patella and sutured all around with fine button sutures. The drain was removed the fourth day and the eighth the small clips reenforcing the skin suture were removed. Massage of the thigh was begun the third day and the joint was cautiously moved the tenth day. By the fourteenth day the man was up and about and now, the fifth week, he can climb stairs without trouble.

Zentralblatt für Gynäkologie, Leipzig

June 5, XXXIX, No. 23, pp. 393-408

76 Acidosis in Pregnancy Intoxication. (Ueber die puerperale Osteomalakie.) J. Novak and O. Porges.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 6, XXXVI, No. 45, pp. 705-720

77 *Defective Development of Muscles in Connection with Lordosis and Albuminuria. (Distrofia muscolare ed albuminuria lordotica nei bambini.) A. Muggia.

78 Hair Pin in Bladder for Three Years. (Grosso calcolo vescicale da corpo estraneo.) De Franchis.

77. **Defective Development of Certain Muscles with Lordosis.**—Muggia comments on the inevitably progressive character of chronic disturbance in the innervation of a muscle, and the difficulty of distinguishing this neuropathic atrophy of a muscle or group of muscles from a primary atrophy. He gives illustrations of four children with typical atrophy of different groups of muscles, and hypertrophy in some. In one child of 9 the pectoralis showed pronounced atrophy after an attack of tonsillitis followed by considerable debility. It was difficult for the child to move her shoulder and there was consequent scoliosis. There were no signs of neuritis and improvement was realized under tonics and massage. In another case an infant developed normally for three weeks after birth, and then it seemed to have difficulty in moving its limbs and the wall of the chest seemed to sink in from the rapidly progressive atrophy of the muscles of the chest, and finally of all the muscles. It was impossible to elicit the knee jerk or brachial reflex. Electric tests showed reduced excitability in the legs but there was no trace of the reaction of degeneration. It lived only two months; the necropsy findings in the nervous system were apparently normal. None of the cases described showed the typical congenital atrophy of the muscles with which there is defective or arrested development of the peripheral motor neuron. A congenital muscular defect becomes apparent in the first few months of life and remains stationary, while this is not the case with dystrophy. One of the four patients described had lumbar lordosis and albuminuria, all of which improved as the general condition changed for the better, and became aggravated when there were signs of more pronounced kidney trouble. Under rest and dieting the albuminuria subsided and the dystrophy of the muscles also seemed to be arrested for the time being.

Policlinico, Rome

June 13, XXII, No. 24, pp. 785-820

79 Heart Block. (Caso di sindrome di Adams-Stokes.) D. Fabricci.

80 *Prophylaxis and Treatment of Venereal Disease in Active Army. P. Sabella.

81 Gallstones and Life Insurance. (La calcolosi biliare e l'assicurazione-vita.) I. Romanelli.

June, Medical Section, No. 6, pp. 241-292

82 *Organic Basis for Chorea. (La corea di Sydenham malattia organica.) F. Bonola.

83 Paralysis and Atrophy of Half of Tongue with Necropsy. (Della paralisi periferica dell'ipoglosso.) F. Alzona.

84 *Cervical Ribs. (Costa cervicale pseudosopranumeraria bilaterale. Ipoplasia unilaterale, a tipo radicolare, di alcuni gruppi muscolari del cinto scapolare destro.) L. Muratori.

80. **Venereal Disease in the Active Army.**—Sabella cites the various writers on this subject in the last few months, their number and prominence attesting the importance of the subject from the standpoint of military efficiency. In the recent Italian campaign in Lybia no prostitutes from Europe were allowed to enter the country, and the native prostitutes were kept under medical supervision twice a week. Those found diseased were sent to a special department of the civil hospital where they were interned and treated until danger of contagion was past. With this system of "hygienic brothels" and enlightenment of all the troops, Sabella was able to keep the incidence of venereal disease at a remarkably low figure both in the camps and the barracks, and this notwithstanding that syphilis is widespread among the native population and that its manifestations are grave and highly contagious in hot countries. Preventive measures have amply proved their usefulness in the navy, he adds. On return from shore leave each man is interrogated and, when there has been a chance for contagion, preventive measures are applied at once, washing with a 0.5 per thousand solution of mercuric chlorid, injecting into the urethra a few c.c. of a 2 or 3 per cent. solution of some silver salt, and smearing with a 30 per cent. calomel salve. Similar or even stricter measures should be enforced for the land troops, he declares. He is positive that a preventive packet for the men would prove its usefulness as much as the first-aid packet for dressing wounds now supplied regularly to every man in the service.

82. **Chorea.**—Bonola reviews the evidence as to Sydenham's chorea being of organic nature, supplementing the testimony of others by his own study of 22 cases. In 9 in this group there had been general febrile phenomena before the onset of the chorea; in 5 the children had had acute articular rheumatism and 2 had been subjected to a severe fright after which the chorea had developed suddenly. There was concomitant heart disease in 13 cases and in 6 the chorea had recurred. The reflexes were exaggerated in 14 of the 22 cases and 7 presented Gordon's tonic reflex, that is, the rapid elevation of the leg when the patella tendon is struck, the subject reclining on his back. The leg returns very slowly to its former position. It is equivalent therefore to an exaggerated reflex. The most significant testimony to the organic nature of chorea are signs indicating irritation or degeneration in the pyramidal tracts or cerebellar apparatus. He found evidences of such in many of his 22 cases, as he describes in detail, comparing his percentages with those in the literature. His final conclusion is that the evidence all tends to prove that some special affection of the nervous system is the organic basis for chorea.

84. **Cervical Ribs.**—Muratori has compiled from the records 200 cases of cervical ribs, bilateral in 86. They are more common on the left side. The deformity and functional disturbance, impeded circulation and nervous trouble may cause the most varied symptoms. In a case described some of the neighboring muscles were defectively developed. There was only the normal number of ribs, the cervical ribs having developed at the expense of the seventh cervical vertebra and being evidently responsible for the atrophy of the muscles on account of hypoplasia of the corresponding motor fibers in the nerve roots. As a rule, the disturbances from cervical ribs do not become manifest until between 15 and 30. Conservative measures to favor collateral circulation and combat the edema of the arm may be tried in mild cases. Electricity may improve the nervous disturbances, with salicylates, etc., to relieve pain. In rebellious cases the rib may have to be resected.

Riforma Medica, Naples

June 12, XXXI, No. 24, pp. 645-672

85 *War Typhoid and Typhoid After Vaccination. (Tifo di guerra e tifo dei vaccinati.) M. Ascoli.

86 Experimental Research on Agglutination After Treatment with Polyvalent Vaccine. (Tetravaccino Castellani, tifo paratifo A + paratifo B + colera.) F. P. Titone.

87 *Action of Ether on Ductless Gland System. (L'etere come anestetico e come eccitante in rapporto alla funzione del tessuto cromaffine.) G. Marchetti.

88 *No Appreciable By-Effects After Resection of Two-Thirds of Large Intestine. (Invaginamento ileocecale irriducibile; resezione dell'ultimo tratto dell'ileo cieco e del colon ascendente e del trasverso; guarigione.) R. Minervini.

85. **Agglutination After Vaccination Against Typhoid.**—Ascoli says that the serum gives a positive agglutination

reaction in every one who has been vaccinated against typhoid. The diazo and chromogen reactions, the leukopeny and aneosinophilia are also the same in the typhoid patient and in those merely vaccinated against typhoid. There is a difference, however, in that agglutination occurs at a greater dilution in true typhoid so that a quantitative serodiagnosis is still possible. The agglutination response varies also differently with true typhoid when the test is repeated. Cultivation of typhoid bacilli from the blood and bile (after ingestion of oil) and the hemolysis test are the main reliance now to differentiate typhoid patients and detect carriers. If the bile is added to bouillon containing serum known to agglutinate typhoid bacilli, if typhoid bacilli are present in the bile they will be agglutinated in clumps in six hours. Still another test he cites is to draw 1 or 2 c.c. of the blood into sterile water. After hemolysis has occurred, 2 or 3 c.c. of the clear red fluid is added to the bouillon containing serum known to agglutinate typhoid bacilli. Any typhoid bacilli present will thus become agglutinated in seven hours. The vital importance of early differentiation of typhoid emphasizes anew, Ascoli remarks, the wisdom of the army authorities in having provided each army corps with a well-equipped laboratory. He appeals to the medical men with the army to lay aside all skepticism and prejudices and cooperate zealously with the laboratories to get the full benefit from them.

87. **Ether Stimulates Suprarenal Capsules.**—Marchetti experimented on cats, injecting ether or giving it by inhalation in amounts proportionate to what are used in the clinic. He first established that the average epinephrin content in the cat suprarenal is 0.000,19 gm. Under the influence of the ether the epinephrin content increased. In 3 cats killed at once after the ether general inhalation anesthesia the content averaged 0.000,27; in 4, killed one or two hours afterward, it averaged 0.000,297, but it had returned to the normal average by the twenty-fourth hour. There was also an increase, but less pronounced, after injection of ether.

88. **Resection for Invagination.**—In the case reported, a woman of 45, mother of ten children, had sudden abdominal pain while working in the field. The invagination found at the laparotomy required resection of the lower part of the ileum, the cecum and ascending and transverse colon—a total of two-thirds of the large intestine. The case is notable from the rapid recovery and total absence of by-effects. The stools are of normal consistency and the health is perfect The invagination probably had occurred suddenly but had gradually involved more and more of the intestine in the course of the three months before the operation.

Grèce Médicale, Athens

April, XVII, Nos. 7 and 8, pp. 13-16

89 Operative Treatment of Inguinal Hernia; Nine Cases. G. Dre Kolias. Commenced in No. 5.

Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

XIII, No. 3, pp. 411-506. German Edition. Last Indexed April 3, p. 1202

90 Speed of Nerve Conduction in Frogs. (Ueber das Einschleichen des Reizes beim Kaltfroschnerven.) T. Inouye.
91 Bacteriologic Research on Silk Worms. (Ueber die Pathogenität der sog. Sotto-Bacillen Ishiwata bei Seidenraupen.) K. Aoki and Y. Chigasaki.
92 *Leptothrix in Pulmonary Lesions. Y. Kato.
93 Synthetic Epinephrins. (Ueber die pharmakologischen Eigenschaften einiger dem Adrenalin nahestehender Substanzen, o-Dioxyphenylaethanolamin, Phenylaethanolamin, Ephedrin, Mydriatin.) M. Hirose.

92. **Leptothrix in Pulmonary Lesions.**—Kato found nothing but a leptothrix in pure cultures in the sputum of a young woman who died three months after the onset of symptoms suggesting pneumonia with pleurisy and considerable effusion in the pleura. The sputum was constantly serous and mucous, glassy and thready, never separating into strata and never malodorous. No blood or pus was ever found in it, no elastic fibers or scraps of lung tissue. From the first there were sharp pains in the left side on deep breathing and on coughing, but no chills nor fever for a week. Then the temperature began to rise and ran a remittent or intermittent course for the rest of the three months till death occurred from heart weakness. By the end of the second week the pulse was 140 and the cough and expectoration continued a progressive course. No bacilli or cocci could be cultivated from the sputum and no actinomyces, but filaments, coccus and rod forms of a leptothrix were found constantly at the bottom of the spitcup and could be cultivated in pure cultures, showing always these various forms. The leptothrix induced fatal chronic septicemia in mice, but seemed to be harmless for rabbits, monkeys, frogs and the fish tested. In a second similar case the symptoms and course were identical except that the fatal termination did not come until the sixth month. No tubercle bacilli were ever found but various other micro-organisms could be cultivated from the sputum. The necropsy findings are given in this case, but Kato does not venture to say whether the pulmonary processes were the work of the leptothrix or not. Charts and colored plates accompany the article.

Brazil-Medico, Rio de Janeiro

May 15, XXIX, No. 19, pp. 145-152

94 Brazilian Flagellate. (Spirorhynchus verrucosus n.g.n. sp.) A. da Cunha.

May 22, No. 20, pp. 153-160

95 Polyvalent Vaccines. (Sobre a questão das vaccinas polyvalentes.) A. Fontes.
96 *Renal Tuberculosis at Rio. (Nota sobre a tuberculose do rim no Rio de Janeiro.) A. Pereira. Commenced in No. 18.

96. **Tuberculosis of the Kidney at Rio de Janeiro.**—Pereira declares that in fully 20 per cent. of all cases of disease of the urinary apparatus at Rio, the trouble is of a tuberculous nature. The clinical manifestations of it are much milder than is the case in Europe, and consequently it is frequently overlooked or the symptoms ascribed to other causes. This may be due to the exceptionally vigorous defense of the organism against the infection, but he thinks the fact is due more probably to the exceptionally ineffectual resistance offered by the organism to the infection. It yields to the invading infection so soon and so completely that the processes in the lungs or elsewhere prove fatal before the kidney process has had time to manifest its presence. In his seventy-two cases of renal tuberculosis there were concomitant lesions in the apices in forty-three. The mortality from pulmonary tuberculosis is always high at Rio. In his experience, as the pulmonary lesions progressed the renal frequently came to a standstill. He discusses the question of nephrectomy in treatment, citing various views for and against it, his own opinion being that it should not be advocated unless severe disturbances, pain, etc., compel intervention. The patient is left still tuberculous, as a rule, after removal of the tuberculous kidney. The ordinary measures for treating tuberculosis should be systematically applied and if in six months there is no improvement or if the patient is running down nephrectomy should be considered.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

May 29, I, No. 22, pp. 1847-1926

97 Proportion of Women to Men in the Netherlands. (De geslachtsbreuk in de bevolkings-statistiek.) H. H. van Eijk.
98 Improved Technic for Blood Platelet Count. (Een eenvoudige telmethode voor bloedplaatjes.) M. A. van Herwerden.
99 Familial Occurrence of Eyes of Different Colors. (Een familiaire oogafwijking.) F. A. van der Breggen.
100 Quantitative Test for Phosphoric Acid in the Urine. (Eenvoudige methode om in urine het gehalte aan phosphorzuur te bepalen, en iets over de aciditeit van de urine.) L. de Jager.

Hospitalstidende, Copenhagen

May 29, LVIII, No. 21, pp. 509-532

101 *Spontaneous Rupture of Rectus Muscle with Extravasation of Blood. (Om Haematoma m. recti abdominis, opstaaet ved Spontanruptur af Musklen.) J. Lambrethsen.
102 Vaccine Therapy of Whooping Cough. (Kighostebacillen: Bordet-Gengous bacil.) A. H. Meyer.

June 2, No. 22, pp. 533-556

103 *Cure of Prolapse of the Rectum by Fascia Graft. I. Svindt.
104 *Chronic Lead Poisoning in Potters. (Kronisk Blyforgiftning hos Pottemagere.) C. Gram.

June 9, No. 23, pp. 557-580

105 *Cancer of the Uterine Cervix in Syphilitic Ulceration. (2 sjældent forekommende Lidelser paa Collum uteri.) I. Kaarsberg.

106 *The Meiostagmin Reaction at Room Temperature. O. Wissing.

101. **Spontaneous Rupture of the Rectus Muscle.**—Lambrethsen's patient was a woman of 66 who had borne three children and whose gallbladder had been removed ten years before. A fistula had been left for four years but finally healed. During an attack of coughing sharp pain developed in the left lower abdomen and a small tumor could be felt. Torsion of an ovarian cyst was the presumptive diagnosis, but the trouble proved to be a hematoma from rupture of the rectus muscle. All disturbances ceased after the blood had been cleaned out and the region drained. The few similar cases on record are compared with this; there was a history of considerable violence as the cause of the rupture in the cases in the literature. The extravasated blood has to be removed or complications may follow.

103. **Strip of Fascia to Correct Prolapse of the Rectum.**—Svindt lauds the fine results of Thiersch's method of treating prolapse of the rectum and anus by running a strip around above the anus and drawing it up to close the opening to the normal size. Thiersch uses wire but Svindt thinks that a strip of fascia has all the advantages of this with none of its drawbacks. He relates the details of a case in which the benefit was peculiarly striking. The child had had prolapse of the rectum since the age of 4 months; when it was 15 months old, this method was applied after the prolapse had been reduced. Four radial incisions were made through the skin and subcutaneous tissue around the anus, about 1 cm. from the mucosa. While the slight bleeding was being staunched, a strip of fascia was cut from the outside of the right thigh, about 8 cm. long and 0.75 cm. wide. This was carried around the anus with a stout curved needle, introducing it at the back incision and bringing it out in the front incision (the side ones proved superfluous). The ends of the fascia strip were then brought up and drawn up tight enough so that only the little finger could be insinuated into the anus. The ends were then sutured together with silk and buried. The side of the fascia that had been next the muscle was turned inward. Healing proceeded smoothly and there is no longer any tendency to prolapse. With adults it is better to give something to bind the bowels for a while.

104. **Lead Poisoning in a Potter.**—The man entered the hospital for chronic nephritis with hypertrophy of the heart, high blood pressure and albuminuric retinitis—all of which were probably the result of chronic lead poisoning at his trade. Drugs will have to be given very cautiously in this case on account of the defective elimination.

105. **Syphilitic Origin of Certain Uterine Cancers.**—In Kaarsberg's first case there was merely typical branching leukoplakia on the uterine cervix. In the second case a cancer had developed in a syphilitic ulceration, and in the third there was an incipient cancer in the cervix of a syphilitic. Franceschini has reported a case in which a tertiary lesion developed into cancer under his eyes. He has also found a positive Wassermann in many patients with uterine cancer, and declares that uterine cancer should be included in the parasyphilitic affections. Others have reported simple syphilitic lesions and hemorrhages in the uterus, cured by mercurial treatment, in both acquired and inherited syphilis. Whitehouse found a positive Wassermann in 7 of 18 and McIlroy in 10 of 24 cases of metritis (1913). Pacola and Cioja are said to have found circumscribed and diffuse infiltration and connective tissue changes in the uterine cervix impeding delivery in certain cases, which proved to be of a syphilitic nature. Hoffmann has published a case of gummatous endometritis. Kaarsberg thinks that these facts, along with others he mentions, demonstrate the necessity for suspecting syphilis in every case of erosion of atypical aspect.

106. **Meiostagmin Reaction.**—Wissing applied to 115 serums Ascoli's technic for this reaction but found that the results were much clearer when the serum had not been warmed. He obtained a positive reaction in all the febrile cases, in nearly all the pregnant women in the latter half of the pregnancy, in failing compensation with heart disease, in cirrhosis of the liver and severe jaundice, in severe but afebrile pulmonary tuberculosis, and in a few cases of severe diabetes, chronic nephritis with uremia, and chronic rheumatism. There is little danger of any in this list being mistaken for cancer, unless possibly icterus gravis. On the other hand, none of the affections which are liable to simulate cancer gave a positive response, neither gastric ulcer, chronic gastro-intestinal irritation, afebrile surgical tuberculosis, chronic gynecologic affections nor syphilis. The reaction was positive in 82 per cent. of the forty cancer cases, and his conclusion is that this reaction may prove a valuable aid in the differential diagnosis of cancer although it is by no means specific.

Norsk Magazin for Lægevidenskaben, Christiana

June, LXXVI, No. 6, pp. 697-856

107 *Rapid Growth of Children Predisposes to Morbidity. (Vekst og sygdom. "Les maladies de croissance.") C. Schiøtz.

108 Scleroderma in Man of 39. N. B. Koppang.

109 *Possibility of Spontaneous Cure of Detachment of the Retina. (Om nethindeavløsningens spontane helbredelighet og værdien av dens behandling.) S. Holth.

110 *Diagnosis of Tumor in Cerebellopontine Angle. (Et tilfælde av cerebellopontin tumor—behandlet med subtentoriel dekompression—samt generelle betragtninger over cerebellardiagnostikken.) G. H. M.-Krohn.

107. **Growth and Morbidity.**—Schiøtz during 1913 and 1914 made physical examinations of eighty-six schools, with a total of 8,727 pupils, and discusses the data thus obtained. The boys were the tallest up to the age of 11, but then the girls grew taller than the boys up to 14. At 8 and at 11 they averaged the same height. The district inspected is known as a goiter region, and from 3 to 12.8 per cent. of the boys at various ages and from 4.3 to 23.9 per cent. of the girls showed enlargement of the thyroid. The disposition to morbidity was most pronounced when the environment was unhygienic, and this was particularly evident in respect to goiter. About 9 per cent. of the 4,459 boys had goiter and 14.3 per cent. of the 4,268 girls. The morbidity, especially the tendency to goiter, was most pronounced in the periods of most rapid growth, that is, just preceding puberty. The largest proportion of children with goiter were among the taller children—in short, all the data presented confirm the old idea that children growing too fast are particularly liable to morbidity of almost any kind. Schiøtz goes beyond this, declaring that even the periods of normal growth predispose to morbidity. The monotony of life in the country districts is reflected in the lesser height of country children; the nerve stimulation of city life causes city children to be more alert, the thyroid functions with greater intensity and the skeleton develops better. The country children as a rule were not so healthy as the city children. They have fresh air and fresh milk in abundance but they do not take advantage of them, and unhygienic sleeping rooms are the rule. The conditions among the children in regard to orthostatic albuminuria, tuberculosis, school anemia, heart disease, diabetes, headache, syphilis and chorea are analyzed in turn. The proportion of cases of chorea was twice as large among girls as among the boys, and occurred at a later age period.

Schiøtz' figures show further that, in the northland at least, there is a seasonal difference in the growth. It is least from August to December and greatest in April and till the end of July. The children grow much taller during these latter months, and the weakening influence of this predisposes to morbidity of all kinds, and yet these are the months of the "final examinations" and cramming for them. Schiøtz pleads to have the school vacations begin earlier, and have the examinations changed to some other season, not go counter to Nature as at present. He comments on the greater tendency to morbidity of girls after the age of 11. The years preceding puberty, the years of most intense growth, are trying times physically for girls, the future mothers of the race, while they work and study more conscientiously than boys. The child grows taller too fast for the rest of the body to

keep pace with this development. This or that organ has not developed yet enough to take care of the extra amount of work thrust on it by the increased metabolism of the taller frame.

109. **Chances for Spontaneous Cure of Detachment of the Retina.**—Holth reviews his own experience and that of a number of leading ophthalmologists. Spontaneous cures are discovered mostly by retrospective diagnosis. He now makes a practice, he says, of telling every patient with a laceration in the detached retina that he has never seen a case of cure under these conditions. If it is the only good eye, an attempt at treatment may possibly be justified. Pre-equatorial sclerectomy has more cures to its credit than any other technic, and it has the advantage of acting quickly, which is naturally of the greatest importance for the reestablishment of the functioning of the retina.

110. **Cerebellopontine Tumor.**—Krohn's patient was a woman of 25 who applied for relief from headache and weakness of the left arm and leg, that had been noted for the last two months. The results of examination are related, illustrated and discussed in detail, the case proving an unusually typical instance of a cerebellopontine tumor. Decompressive trephining relieved the symptoms materially but the hard growth, the size of a walnut, plainly seen in the cerebellopontine angle, was too closely adherent to the bone to be removed. Reexamination nearly a year later showed gait and speech quite normal and the woman felt well although there was still a slight tendency to paresis. At the time of the operation she had headache, occasional choked disk, vomiting, nystagmus and the cerebellar speech and gait. On the same side as the tumor she presented paresis of the fifth to the eighth cranial nerves, and occasionally of the tenth and twelfth, hypotony, asynergy, adiadokokinesia, catalepsy, deviation and dysmetria. (By this latter term he means the inability of the patient to draw a series of parallel lines between two vertical lines. The right hand ends of the lines never reach to or else they extend beyond the right vertical line.) On the opposite side the patient showed hemiparesis and positive Babinski, with hemianesthesia.

Svenska Läkaresällskapets Handlingar, Stockholm

XLI, No. 1, pp. 1-318

111 *The Ductless Glands and Disturbances in the Skeleton and in Development in General. (Om endokrina skelett- och utvecklingsrubbningar.) A. Josefson.

111. **Influence on Growth of Disturbance in Ductless Gland System.**—The 320 pages of this bulky volume are devoted to illustrated descriptions of fifty cases in which anomalies in growth and development seemed to be traceable to some upset in the internal secretions. Josefson defines with special details the condition which he calls hyporchism. There is hypoplasia or atrophy of the testicle although the external secretion may be within low normal range. The physical development shows a deficiency in the internal secretion, the feminine growth of the hair on head and body, the general feminine aspect of the body, like that of an elderly woman; roentgenoscopy shows various development defects in the skeleton, and the legs are abnormally long, averaging about 58 per cent. of the height, often with a tendency to genu valgum. The genital organs are infantile. In women the aspect resembles the masculine type. In both sexes, the developmental changes vary with the age at the time of the disturbance. In one typical case of hyporchism the man of 29 complains of lassitude and weakness with occasional headache, occipital or frontal, and some impairment of vision and hearing of late; he sweats readily and is often chilly and the hands and feet are clammy. The man seems morose and silent, sluggish in his movements, his voice high and weak. He was given a three months' course of testicle tablets but no effect was apparent. Then thyroid treatment was begun and in a short time there was a masculine growth of hair on the upper lip and chest. In a case with signs of ovarian insufficiency, "hypovarism," the girl of 15 never menstruated until after a course of thyroid treatment. In neither of these cases was the thyroid the gland at fault, in all probability, but the thyroid treatment seemed to restore the balance in the internal secretions. In other cases benefit followed testicle or ovary treatment. Some of the other cases reported were examples of hyperovarism; one girl of 11 was as sexually mature as a woman of 20; the ovary was in cystic degeneration.

The majority of the cases discussed are examples of deficient or excessive thyroid functioning and improvement was easily realized under appropriate organ treatment, as for instance under thyroid plus hypophysis treatment for goiter and myxedema in a woman of 41. A man of 27 with an exceptionally small sella turcica, hyporchism, and signs of incomplete development of the skeleton had been treated in America by implantation of hypophysis and pineal gland tissue as he had shown signs of extreme nervousness and tendency to mental derangement. After the operation he had required asylum treatment and again a year later after an interval of improvement. It is in cases such as these, Josefson adds, that early implantation of testicle tissue offers a prospect of success. The other glands with an internal secretion have been functioning defectively for years and vicarious functioning may have been developed. But the testicles have not had such a long period of functioning and hence there is greater prospect of remedying deficit disturbances in this line. In this case last mentioned they were analogous to those following castration; if testicle tissue had been implanted in time the insanity, etc., might possibly have been warded off.

Inhibition of genital functioning seems to be associated with abnormal growth in height, while excessive genital functioning during the years of physical development tends to bring the growth to a prematurely early conclusion. The influence of the ovaries and testicles on the development of fat seems to be exactly opposite; boys grow fat if the testicle function is deficient, while girls grow abnormally fat if their sexual glands are functioning to excess. Josefson takes up each of the ductless glands in turn and discusses the special manifestations of their deficient, defective, excessive or perverted functioning. Rational organ therapy under critical supervision is liable to produce brilliant results, as testify many of the cases he reports. Everything suggesting a disturbance in development, especially anywhere in the skeleton, should be studied with particular care from the standpoint of the ductless glands, Josefson affirms. School inspectors and family physicians have here a new field for research and results of paramount importance for the rising generation will follow when practical and theoretical medicine work hand in hand.

Ugeskrift for Læger, Copenhagen

May 27, LXXVII, No. 21, pp. 825-874

112 Gunshot Wound; Accident or Suicide? (Skudsaar; Ulykkestilfælde eller Selvmord.) E. A. Tscherning.

113 Advantages of Electrocoagulation in Treatment of Papillomas in the Bladder. (Om endovesikal Behandling af Blærepapillomer.) S. Prior.

June 3, No. 22, pp. 875-922

114 *Albumin Milk in Infant Feeding. (2½ aars Erfaringer med Aeggehvidemaelk.) V. Poulsen.

115 Poisoning from Young Veal. (Kalvekødforgiftning.) H. Hansen.

114. **Albumin Milk in Infant Feeding.**—Poulsen found in eighty-five infants less than a year old that albumin milk had no advantages over other methods of feeding when the children had acute gastro-enteritis. Equally good results can be obtained by other means. It did not prove beneficial in the cases of atrophy. But in chronic dyspepsia the effect far surpassed that of any other measures, and he extols the albumin milk as a great advance in these cases. It is necessary to begin with small doses and rapidly increase them; a four-weeks' course is generally sufficient. The change to other food should be made very gradually. In another group of thirty-eight children, from 1 to 5 years old, the albumin milk was given to supplement other food and the results were strikingly good in all the twenty-nine chronic cases. Poulsen rejects all of the explanations advanced as yet to explain the benefit from the change to albumin milk. It is most effectual in chronic diarrhea in infants over a year old.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 5 CHICAGO, ILLINOIS JULY 31, 1915

RECENT ASPECTS OF NERVOUS AND MENTAL PATHOLOGY *

FRANCIS X. DERCUM, M.D.

PHILADELPHIA

The pathology of the nervous system has heretofore and in a large measure occupied a place by itself, that is, a place apart from pathology in general. Recent developments, however, have shown that only in a limited sense is this justified. Many of the organic diseases of the nervous system—some of its neoplasms and system diseases—must of necessity occupy a separate and distinct position, but is this true of the functional diseases and especially of those which are classified as mental? Are not the phenomena of the latter to be included in the general pathologic processes going on in the body as a whole? Let us see what the facts indicate.

First, the various functions of the human organism, digestion, nutrition, the maintenance of the bodily temperature, the production of nervous and muscular energy are all the expression of chemical processes; secondly, these chemical processes, manifold and complicated, are intimately correlated. It is the derangement of these processes that constitutes disease. Such derangement may arise spontaneously through some fault in the makeup of the individual, or it may be secondary to some disturbing cause introduced from without, such as a poison or infection.

Disturbances of the metabolism of the body, no matter how arising, necessarily entail states of intoxication and in these states of intoxication must be sought the explanation of nervous and mental disorders. Even many of the affections which we classify as organic, for instance, the system diseases, owe their inception to the presence of toxic substances, and the subsequent death of systems and tracts is to be looked on merely as a terminal state. It is, however, especially in the so-called functional nervous affections (and among these the mental affections are to be included), that the recognition of the factor of intoxication is important.

Time will not permit us to recall the various theories of toxicity that have from time to time appeared in the history of medicine. Such theories appear in Hippocrates, were advocated by Pinel, Esquirol and Morel and in more recent times by Mendel and by Bouchard and his school. Although numerous and interesting facts were discovered, the existing knowledge of physiologic and chemical processes was not sufficiently advanced to enable medical men to interpret them correctly or to assign them a proper value, and because the studies proved disappointing the field was for a time neglected. That poisons do play a rôle, however, in the production of nervous and mental disease became evident from the subsequent and rapidly accumulated knowledge as to the rôle played by poisons introduced from without, notably alcohol and the infections. In regard to alcohol it became known not only that it may bring about diseased states in various of the viscera, but also that it may bring about inflammation of the nerves, and, in addition, disturbed mental states consisting of delirium, confusion and stupor. As regards the infections, Regis and later Kraepelin pointed out that they also were responsible for both nervous and mental symptoms. Kraepelin was one of the first to insist that in infections mental symptoms are the result of the action of bacterial toxins. These toxins, it would appear, may act directly on the brain, or the infection may bring about disturbances in the function of other organs, disturbances leading to changes in the general metabolism of the body, to the formation of endogenous toxins and a consequent general autointoxication. Infections variously involve the liver, the kidneys, the thyroid, the adrenals and other glands and tissues. The fact of such involvement is based on indisputable clinical and pathologic evidence. That under such circumstances an intoxication may be very complicated and very persistent can be readily understood. The prolonged confusions that now and then occur during the convalescent periods of typhoid fever and other acute infections, the prolonged confusional insanity every now and then encountered in alcoholism, are clearly due not to the original infection, not to the poison originally ingested, but to the secondary toxemia of a deranged metabolism. The confusional insanity of alcoholism, for instance, lasts, as we all know, for many months after alcohol has ceased to be ingested, and there is no escape from the conclusion that in such cases the symptoms are due to secondary intoxications.

These ideas must necessarily influence our conceptions as to the nature and origin of primary autointoxication, that is, of endogenous poisoning. A moment's reflection reveals that primary autointoxication is of two kinds; first, one that is gastrointestinal in origin, and, second, one that arises in the tissues of the body itself. In the normal or healthy individual, intestinal poisons are destroyed by the liver, the thyroid and by other glands and by the tissues generally, or they are eliminated by the various excretory organs. Poisoning of the nervous system is thus effectively guarded against. In diseased and defective organisms, however, invasion may occur, and the nervous system may suffer both from this primary

* Chairman's address, read before the Section on Nervous and Mental Diseases, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

intoxication and from secondary disturbances of metabolism due to derangements of the function of the liver, the thyroid gland or other structures. On the other hand, intoxications having their origin within the body proper may be followed by a secondary intestinal intoxication; as in melancholia, in which in consequence of the diminished innervation and changed secretions, toxic materials may form in the intestinal tract.

From whatever aspect the subject is approached the problem presented is that of an intoxication in which disturbances of metabolism play the essential rôle. It is the nature of the intoxication which first claims our attention. The long duration of mental diseases points clearly to the fact that these poisons cannot be of a character such as to permit of elimination, at least not of ready elimination. Bouchard taught that the organism is a laboratory of poisons and this as much in the normal as in the pathologic condition. In the normal condition these poisons are in one way or another made harmless, but in diseased states, when the protective measures of the organism are weakened, these poisons were supposed to circulate in the blood and to be excreted by the urine. Bouchard, it will be remembered, worked out a method of determining the degree, that is, the coefficient of the toxicity of the urine, a method which later found application also in the study of the toxicity of the serum. Our knowledge of physiologic and chemical processes, however, was not sufficiently advanced in his day to permit of a correct interpretation of the results. The profound interest which these studies aroused was equaled only by the disappointment which in due course and necessarily followed. We all remember the extensive rôle that was at one time assigned to the uric acid group, a rôle that still demands consideration. It was at first believed that the presence of leukomains—as they were termed—in the urine was sufficient to account for the symptoms of a given case. All that it seemed necessary to do was to further the elimination of these poisons, or to prevent their formation, or in some way to render them harmless; but, as we have seen, these expectations were doomed to disappointment. This was also true of the more elaborate studies made of the urine. The amount of nitrogen, sulphur and phosphorus excreted, the mineral waste and the output of water were all facts of interest; but they dealt largely with the end-results of metabolism and were obviously secondary to various recondite changes within the body.

An increasing knowledge of insanity has gradually indicated another view as to the nature of the toxicity in insanity. The clinical histories of many mental diseases—for example, of melancholia—consist of a period of gradual invasion, another period of maximum onset of symptoms and a third period of gradual subsidence. These facts suggest that we have to do with biochemical processes akin to those of infection and immunity, processes fermentative or enzymotic in their nature. In the prolonged intoxications encountered in mental disease the organism doubtless has recourse to the formation of immune bodies; that is, the organism reacts to intoxications just as it does to infections, namely, by a defensive fermentation. The rôle that the fluids of the organism play in its protection we have been taught by Buechner, Bordet, Bouchard, Behring, Roux, Kitasato, Ehrlich and others. The agencies at work have been shown to be substances which bring about immunity by a biochemical action, an action that is probably reducible to physicochemical terms. In combating the poisons which give rise to nervous and mental disorders, the phagocytes have, it would seem, no opportunity for the exercise of their special function, but it is not improbable that they join the serum of the blood in furnishing protective substances. The truths revealed in the discovery by Behring and Roux in regard to the curative and preventive action of the serum of animals immunized to diphtheria, in the discovery by Kitasato and Behring of the kindred facts in regard to tetanus and by Simon Flexner in regard to cerebrospinal meningitis, constitute stories of brilliant human achievement. Ehrlich's results in regard to ricin and abrin and Calmette's in regard to cobra poison are likewise familiar to us all. Nor need we call attention to the specific serums developed against definite microorganisms, the bacteriolytic serums or to the serums developed as defensive agents to erythrocytes, the hemolytic serums, or to the numerous other cytolytic and cytotoxic serums that have been experimentally produced. The doctrine of antigens and antibodies is destined, it would appear, to have an ever-widening application. An antigen is, as we all know, a substance which when introduced into the organism brings about the formation of a specific antibody. Among such substances are micro-organisms, their toxins, cells of various kinds or extracts of their substances, poisonous and nonpoisonous proteins and lipoid substances. Obviously, other facts, such as those of precipitation, agglutination, opsonin reaction and complement binding, must, like those of antigens and antibodies, be expressive of fermentation. Probably there is a common biochemical or physicochemical action basic to all of these phenomena. Certainly all of the processes of nutrition, all of the changes exhibited by proteins and carbohydrates, are the expression of such action and occur under the influence of catalytic and enzymotic processes. Again, the fact that ferments consist of two basic substances, first, a zymogen and, secondly, an activator, goes far to prove the identity of fermentation and immunizing processes. Again, just as antigens lead to the formation of antibodies, so do ferments lead to the formation of antiferments, and, finally, ferments likewise manifest the property of specificity, that is, each ferment is active on a specific substrate.

The aspect of the subject of fermentation developed by Abderhalden depends on the fact that a foreign protein substance introduced into the blood excites the production of a ferment the action of which is to protect the organism against the foreign substance. Such a foreign substance may gain access to the blood from without or from organs and tissues within the body. An instance is the digestion of placental elements by ferments in the blood of the pregnant woman, the blood of nonpregnant women and of men containing no such ferments. Abderhalden and his pupils have already done a very large amount of work on this subject but we must content ourselves with the statement that Fauser and others have tested the digestive or reducing action of the serums of different forms of insanity in relation to the thyroid gland, the sex glands, the brain, the kidneys and other organs. Many remarkable observations have been made.

Three general statements in regard to the processes of fermentation appear to be justified: First, proteins

and lipoids alone can evoke the formation of antibodies; in this process lipoids appear to play the rôle of activators, and their injection seems to bring about an increased formation of immune bodies. Second, the specificity of immunity and fermentation processes does not appear to be entirely absolute. It appears that the curative action of a given serum depends on its containing a larger amount of substances already normally present in the body. Third, in the struggle with intoxication and autointoxication, a most important rôle must be assigned to the glands of internal secretion. The various other tissues and organs of the body, in addition to their special functions, possess also the function of internal secretion inasmuch as they elaborate, as a result of their functional activity, and pass into the blood and other liquids of the body, certain substances which in one way or another act on other organs and thus add to the number of the hormones as we now term them. The life of the organism is that of a well-coordinated chemical whole. It is the disturbance of this coordinated chemical whole either by the introduction of foreign substances from without, or by the breeding of foreign substances within the body through the breaking down of the coordination, that causes intoxication, and it becomes clear that disturbances of metabolism, using this term in its widest sense, are the basic factors in mental diseases. How such disturbances of metabolism arise we have already indicated in the instance of the infections and poisons introduced from without. If the organism be essentially defective, deviate and aberrant insanity may of course arise without the influence of any external agency. The peculiarities presented by the defective organism are innate and often hereditary. Further they do not commonly manifest themselves in a marked degree until the period of life is reached in which metabolism assumes a special activity, namely, puberty or later. At this time, the sexual glands and with them all other glands of internal secretion and hormone producing structures and tissues take on a new rôle, enter on a new chemistry, and if the organism be badly constructed this chemistry becomes aberrant and toxic; for instance, in dementia praecox the sex glands appear to furnish materials directly toxic to the organism—that is, materials which act as foreign bodies and assume the rôle of antigens—while the defensive ferments, the antibodies, produced are in turn destructive in their action on the nervous system. In the manic-depressive group we have to do apparently with a somewhat simpler interplay of antigens and antibodies, but time forbids a further consideration of this interesting subject. Suffice it to say that in this group in which the picture is one of the predominance of antigens in the early stage—in an attack of melancholia or mania as the case may be—and of the predominance of antibodies in the later stage, it is by no means impossible that serums will be devised which will enable us to cut short such attacks and perhaps to practice preventive immunization for recurrences. It is with regard to the heboid-paranoid group, the great group of dementia praecox and paranoia, that the outlook is the most discouraging. Even here, however, it is not impossible that a fuller understanding of the problem will finally enable us to master the field; but if this is ever to be accomplished, it is only, I am firmly convinced, by further discoveries in the field which I have here so imperfectly outlined.

1719 Walnut Street.

THE PROGNOSIS OF CONGENITAL CLUBFOOT

AND ITS RELATION TO NONOPERATIVE TREATMENT *

EBEN W. FISKE, A.M., M.D.

Assistant in Surgery, Orthopedic Department, Massachusetts General Hospital; Assistant Orthopedic Surgeon, Boston Dispensary; Assistant Surgeon to the New England Peabody Home for Crippled Children

BOSTON

It has been truthfully said that a bad clubfoot is a stigma on the medical community in which its possessor has been reared. While there are today fewer opportunities for such condemnation than in the past, yet badly deformed and even untreated cases may be seen, and partially cured and relapsed feet are all too common. Such being the case, pertinent questions naturally arise in the consideration of every clubfoot. What is the outlook for form and function? If a good result is to be expected, how long will it take? What form of treatment should be employed, and how practicable will it be? For the physician not especially trained, such questions will be difficult to answer; even the man of experience will be guarded in his replies, for there are many factors entering into the result. What, then, is the prognosis of congenital clubfoot, and on what does it depend?

I. THE FACTORS IN PROGNOSIS

In the first place, it may be said that the general prognosis is steadily improving. This is largely due to the earlier recognition of the deformity by the parents, and to the fact that physicians are learning, surely if but slowly, that early treatment is essential for success. The value of the earliest possible treatment of these cases is almost axiomatic, and little need be said further than to emphasize it. While the rigidity of the foot is not always in direct proportion to the age, this is usually the case. In the early weeks of life the bones are soft, cartilaginous and plastic, the soft parts are easily stretched, and the earlier overcorrection is obtained, the sooner will reshapement and readjustment take place.[1] During the first year the growth of the foot is most rapid, and of this advantage should be taken.[2] As time goes on, all the tissues become firmer and more permanently adapted to their positions, whether right or wrong. Bones once calcified in a deformed position are difficult to reshape,[3] ligaments once shortened are always hard to stretch, and muscles which have become adapted to incorrect length and position are not easily activated.[4] If, moreover, correction is obtained in the first year, subsequent walking will become a further corrective rather than a deforming agent.[5]

The prognosis of congenital clubfoot might, then, be held to depend directly on the age at which treatment is instituted, and, other things being equal, this may be so. But the determining factors are usually neither the age nor the rigidity of the foot. These conditions on admission cannot be charged to the surgeon (unless, indeed, he has delayed treatment), and

* From the Orthopedic Department of The Children's Hospital, Boston.

1. Brackett: Tr. Am. Orthop. Assn., 1892, v. Silver: Interstate Med. Jour., 1911, xviii.
2. Brackett (Footnote 1). Judson: Am. Jour. Orthop. Surg., August, 1904.
3. Ryerson: Am. Jour. Surg., 1907, xxi, No. 3.
4. Wilson: Tr. Am. Orthop. Assn., 1892, v.
5. Judson: Tr. Am. Orthop. Assn., 1892, v.

future neglect of the parents in carrying out treatment may not be foreseen; but, aside from these two factors, the condition of the foot after treatment has once begun is the surgeon's direct responsibility, and thus the largest element in the prognosis falls directly on his shoulders. The proper selection of treatment and the persistency with which this treatment is carried out are the all-important factors in this one controllable element in the situation.

II. THE CHARACTERISTICS OF THE DEFORMITY

Before considering the question of selection of treatment and the relative advantages of the different forms, it may be well to review briefly the problem which confronts the surgeon. The two most common forms of congenital clubfoot are talipes equinovarus and talipes calcaneovalgus, the former constituting about 80 per cent. of all forms.[6] In both, there is a deformity of the foot in three planes, the foot in the former being held in plantar flexion, adduction and inversion, in the latter in the opposite deformity of dorsiflexion, abduction and eversion, the distortion being the most marked in this type in the one plane of dorsiflexion. In both, the deformity is entered into to a certain degree by all the structures of the foot, all the soft parts on the side toward which the foot is drawn being short and tight, while all the structures on the outer or convex side of the deformity are lengthened and relaxed.[7] While calcaneovalgus is largely a distortion characterized by changes in the muscles and ligaments, yet in all clubfeet of any marked degree the interrelations of the bones of the tarsus are considerably changed,[8] and in equinovarus especially, all the bones become altered in shape after calcification has begun.[9]

Not only are the anatomic difficulties great, particularly in the older and more rigid feet, and in those whose deformities have been complicated by previous treatment, but there is also another factor, less tangible but equally potent, which complicates the problem. This is the inherent tendency of clubfoot to relapse, an internal condition of tissue contraction which continues, and even seems to increase, after birth.[10] It is this active contractility and resiliency of the deformed foot which, more than any other one thing, makes the condition so hard to correct, or rather, to maintain corrected. It is evident that the treatment must be directed no less to the subjugation of this deforming tension than to the actual reshaping of the distorted anatomic structures.

In the study of cases of clubfoot as seen at the Children's Hospital, Boston, it has impressed the writer that, while all types and degrees of deformity are seen, most of the cases can be separated into two quite distinct groups. This distinction appears fairly early in the treatment, or at about 6 months of age in the untreated cases, and increases in degree rapidly as the case progresses. Into the first of these groups fall the flexible and early feet which have immediate and continued treatment, and into the second fall the older, more rigid feet, which have usually been neglected, or on which improper treatment has been instituted; therefore these groups represent, respectively, the feet which become overcorrected early and stay so, and those which are never well corrected, and are always relapsing and demanding further treatment. From this standpoint, then, the prognosis of a clubfoot may be considered to be directly dependent on the respective group into which it falls.

The treatment of congenital clubfoot has resolved itself during recent years into two somewhat different methods, both of which have their strong adherents. These are the operative or radical, and the manipulative, nonoperative or conservative types of treatment. Without discussing the merits of the two at this point, it suffices to say that it has also been the author's observation that most of the cases treated by operative, that is, cutting methods, have found themselves in Group 2, as defined above, and that the manipulated cases have largely claimed Group 1, with its obvious advantages.

III. REPORT OF CASES

It was with some curiosity as to how well this impression was founded, and as to the reasons for the existence of these relations, that the following examination of the records of about 200 cases of congenital clubfoot was undertaken. This group includes all cases admitted to the Children's Hospital between September, 1907, and January, 1913 (a little over five years), no case therefore having begun treatment less than two years ago. As no cases were reported which had received less than one year's treatment or observation in the clinic, the original number was reduced to 105 cases of equinovarus and ten of calcaneovalgus.

The general course of treatment carried out during this period was as follows: In the cases in which operation was performed, certain of the resistant structures were cut, and, their resistance having been removed, the foot was put in the corrected position with a certain amount of ease. In eighty operations on children with equinovarus, twenty-two of which were secondary to previous operations on the same foot, there were 109 tenotomies of the Achilles tendon, 14 of the tibialis posticus, 7 of the tibialis anticus, 2 of the extensor proprius hallucis, and 1 each of the flexor longus hallucis, flexor brevis hallucis and flexor longus digitorum. The plantar fascia was cut 80 times, the calcaneoscaphoid ligament 27, and the calcaneocuboid in 6 instances. There were 11 osteotomies with the removal of a bone wedge from the outer side of the dorsum, usually from the os calcis or astragalus. The most common operation was a tenotomy of the Achilles tendon with a plantar fasciotomy, to which was often added a division of the calcaneoscaphoid ligament, all these structures being cut subcutaneously. When suitable correction had been obtained, dressings were applied and the foot put up in plaster in the corrected position.

The nonoperative treatment consisted in manual manipulation of the foot, working slowly on all the contracted and distorted structures, and putting the foot up in plaster after each manipulation, these plasters being changed about every three weeks. In only three cases was ether given so that more forcible manipulation could be employed. Braces were used for the retention of these feet after overcorrection by plaster had been obtained, especially in the children old enough to walk. Similar braces were used in the cases with operation also, following the plasters applied at the time of operation.

6. Ehrenfried, Albert: The Occurrence and Etiology of Club-Foot, THE JOURNAL A. M. A., Nov. 30, 1912, p. 1940.
7. McKenzie: Tr. Am. Orthop. Surg., 1892, v; Am. Jour. Orthop. Surg., January, 1905.
8. Bankart: Clin. Jour., xli, No. 42.
9. McKenzie: Am. Jour. Orthop. Surg., January, 1905.
10. Schapps: Med. Rec., New York, Oct. 3, 1914.

In judging the results of these cases, it has been necessary for purposes of comparison to make four arbitrary classifications, into which practically all cases could be fitted. These have been designated A, B, C and D, and are as follows:

Class A (good results). Feet which are held straight, are flexible and overcorrectible, are apparently normal in form and function, and require no apparatus.

Class B (fair results). Feet which are manually correctible but not overcorrectible, that is, with no marked deformity, but possibly a little stiff, both form and function being good. Some of these feet still use a lift or brace.

Class C (poor results). Feet held in deformity, with some rigidity, but possible to correct manually with force. This group includes the common result of good function with adduction of the forefoot and inversion of the os calcis. It also includes a few cases in which operation was performed recently, in which the results are apparently satisfactory but not enough time has elapsed to judge the end-result.

Class D (bad results). Feet held in definite and marked deformity, rigid and not correctible, and requiring further corrective treatment. This class includes a few cases in which operation was recently performed with questionable results.

Of the 105 cases of equinovarus, 60 were double, giving a total of 165 deformed feet, each foot being considered a separate case hereafter. For the total number the results were: Class A, 37; B, 79; C, 42; D, 7, about 70 per cent., therefore, being satisfactory (Classes A and B). A comparison of the cases in which operation was performed and the cases in which operation was not performed for different lengths of treatment, with the percentage of satisfactory and unsatisfactory results in each group, is shown in Table 1.

TABLE 1.—RESULTS IN CASES WITH AND WITHOUT OPERATION FOR DIFFERENT LENGTHS OF TREATMENT

	Groups					
	A	B	Per	C	D	Per
Equinovarus:	No.	No.	cent.	No.	No.	cent.
Result of all cases seen one year or more after admission.						
With operation	12	43	55	38	7	45
Without operation	25	24	94	3	0	6
Results two or more years after admission.						
With operation	10	36	55	31	7	45
Without operation	24	16	95	2	0	5
Results three or more years after admission.						
With operation	9	30	55	27	5	45
Without operation	24	12	95	2	0	5
Calcaneovalgus:						
Results, all cases	3	2	31	9	2	69
Results, with operation	0	1	17	3	2	83
Results, without operation	3	1	40	6	0	60

From this it would appear that in equinovarus there is considerable difference between the results of the cases in which operation is performed and the cases in which operation is not performed, the former being almost evenly divided between satisfactory and unsatisfactory, while the latter are practically all satisfactory. The results are apparently not influenced by variations in the interval from the time treatment was begun to the date of the observation of the foot. The ten cases of calcaneovalgus, though a small number from which to draw conclusions, still further bear out this contention, for although few of these results are so good as in equinovarus, yet the cases in which operation is not performed here also seem to have a far better outlook.

A comparison of results in relation to the age at which treatment was begun, with the operative and nonoperative results for each division, may be seen in Table 2, taken from the group which was investigated at a period two or more years after admission (126 feet).

TABLE 2.—RESULT IN RELATION TO AGE

	Groups					
	A	B	Per	C	D	Per
Equinovarus, two year group:	No.	No.	cent.	No.	No.	cent.
Admitted under two months	7	17	63	10	4	37
With operation	0	12	48	9	4	52
Without operation	7	5	92	1	0	8
Two to six months old	15	12	77	7	1	23
With operation	4	8	62	6	1	38
Without operation	11	4	93	1	0	7
Six months to one year	8	4	67	6	0	33
With operation	4	3	55	6	0	45
Without operation	4	1	100	0	0	0
Over one year	4	19	66	10	2	34
With operation	2	13	56	10	2	44
Without operation	2	6	100	0	0	0

It is apparent that the general results do not differ appreciably with the age when treatment was begun, but that the proportion of satisfactory results in the cases in which operative treatment is not employed greatly exceeds that of the group with operative treatment in every instance. The treatment, then, and not the age, has evidently been the determining factor. Moreover, there were fifty-four relapses recorded in the series, only three of which were found to be in patients receiving no operation, and in these the relapses were traced to neglect of the parents in carrying out the prescribed treatment.

The criticism may be made that the majority of the cases given operative treatment were at all times worse than those treated without operation, or, in other words, that the prognosis of the former was never so good as for the latter. To meet such criticism, all the cases from the operative group, which at admission corresponded in age and type of foot to any admissions in the nonoperative group, were selected and compared with the latter cases. The individual cases of both groups with their results are tabulated in Table 3.

TABLE 3.—COMPARISON OF SIMILAR CASES

		From two year group, equinovarus			
Age	Type	Number Cases With Operation	Results Cases With Operation	Number Cases Without Operation	Results Cases Without Operation
1 week	3	2	B-C	2	B-B
4 weeks	2	2	B-B	3	A-A-C
4 weeks	3	3	C-C-D	2	B-B
6 weeks	2	2	B-C	6	A-A-A-B-B-B
6 weeks	3	8	A-A-B-B-C-C-C-C	1	A
8 weeks	3	3	B-B-C	1	B
3 months	3	7	A-B-B-B-C-C-C	4	A-A-A-C
12 months	3	1	B	1	A
13 months	3	2	B-B	1	B
15 months	3	4	B-B-B-C	1	B

Total above	A No.	B No.	Per cent.	C No.	D No.	Per cent.
With operation	3	17	60	13	1	40
Without operation	10	10	90	2	0	10

As these constitute all the cases of the same age and in the same condition at admission, of which part were treated with operation and part were not, these figures, corresponding closely to those previously given, show even more conclusively the preponderance of good results in the cases in which operation was not performed. It hardly seems possible that these figures could be due to chance, or to the fact that all these particular cases with operation developed unfavorable conditions, which were not referable to the treatment

itself. There were, moreover, among these operative cases, twelve in which operation was performed immediately on admission, and were, consequently, purely operative throughout. The results of these, compared to the eight nonoperative cases of the same age and type at admission, are given in Table 4.

TABLE 4.—COMPARISON OF OPERATIVE AND NONOPERATIVE CASES

	A No.	B No.	Per cent.	C No.	D No.	Per cent.
Cases with operation at first visit..	0	10	83	2	0	17
Cases without operation of same age and type	4	3	88	1	0	12

While the proportion of satisfactory nonoperative results is not so great as in the previous tables, it will be noticed that there were no results of Grade A in any of the operative cases, whereas half of the nonoperative cases had a perfect result. Judging from these figures, it would appear that if two patients of exactly the same age and condition were treated, one by operative and one by nonoperative procedures, the prognosis of the two would greatly differ, and would be decidedly in favor of the cases without operation. While undoubtedly satisfactory results have been obtained in some of the cases operated upon, yet the preponderance of cases not operated upon with almost perfect restoration to normal is unmistakable.

IV. CONSIDERATION OF THE OPERATIVE METHOD

Assuming, then, that these figures are of significance, to what can we attribute the poorer results in the cases with operation. Is there an explanation for these facts which will leave little room for doubt that the foregoing statistics represent the relative values of the two methods of treatment? Can we not discover some primary defect in the operative method that will account for this difference?

The essentials in any method of treatment of clubfoot are, first, full correction, or better, overcorrection of the deformity, and second, perfect retention in the overcorrected position until the structures have become so adapted to their new relations that they will hold themselves corrected. Now it will be noticed, in addition to the comparatively worse results shown above, that in over one third of the cases having operation a second operation had to be performed, and also that in over half of these cases there were relapses, while in only three of the cases without operation were there relapses, for none of which latter was treatment responsible. The elements of relapse are, broadly speaking, two, namely, failure to obtain sufficient correction, and failure to maintain the correction obtained.[11] If operation is depended on for correction, and full correction is not obtained, a relapsed condition practically exists from the beginning.[12] If, on the other hand, good correction is obtained, only a small part of the treatment has then been accomplished, for there are many factors operating to reproduce the deformity, such as short contracted ligaments, deformed and elastic bone,[13] and unequal muscular pull.[2] Home neglect, imperfect apparatus,[14] failure to maintain the overcorrection day and night for a sufficient period,[15] and failure to stimulate and regulate muscle balance by massage and exercises[16] are potent factors in the relapse of a well-corrected foot. All of these may have entered into the cases in which relapses have been reported, yet there is at first sight no more reason to expect a failure of retentive measures in the cases with operation than in those without operation, the indications for after-care being the same in each group. It would, then, be natural to infer that in the former group there is also in operation the first of the two elements of relapse, that is, there is failure by operative methods to obtain perfect correction. It is true that, by cutting whatever structures resist correction, an apparently perfect foot would seem to be obtained at one sitting. But is it not possible that here appearances are deceptive, and that the foot is really far from complete correction? Let us consider some of the reasons why this might be so.

In the first place, there are certain well-known conditions existent in many orthopedic clinics, which, though avoidable, are too constant to be disregarded. If operation is relied on as the means of correction of a clubfoot, however perfect this correction may be, the operation itself can be only an incident in the treatment,[17] as has been previously noted. Men who operate on these feet are too prone to be overconfident of results and to neglect the equally important after-care, a circumstance which rarely arises in the manipulative treatment, as in this no one corrective procedure is preeminent. As a matter of fact, the case having operation should be the more carefully watched, because it is much more difficult to hold the foot recently operated on in plaster in proper correction on account of the dressings which must be applied over the incisions. Frequently patients whose deformity has been apparently well corrected at operation return to the outpatient clinic with an already relapsing foot, because of the loss of fixation in a too-roomy cast. Another equally potent factor which operates against this treatment is the unfortunate condition which necessitates that the management of the case be shifted from one man to another, no one of whom takes the whole responsibility or is fully conversant with the case and its requirements, and few of whom have the same principles and technic of treatment.

These conditions attending the operative treatment of clubfoot, however, undesirable as they may be, are largely preventable with care and skill, and do not conclusively disprove its value. There is yet another reason for these unsatisfactory results, easily understood on examining the distorted foot. The deformity of equinovarus is not localized at any one joint, but is entered into by all the structures of the foot.[18] Not only are all the soft structures on the inner side short and on the outer side long, but also all the bones are changed in shape, and each bone of the tarsus is dislocated inward on the bone or bones immediately behind it.[18] No one tissue or part being at fault,[19] treatment must be directed to the whole foot,[18] not localized as it must necessarily be by operation,[20] which thus gives an apparent rather than a real correction.

Moreover, there are many definite objections to operation. Aside from the usual risks of anesthesia, sepsis and possible mortality in bone operations,[21] oper-

11. Eikenbary: Northwest. Med., 1913, v, No. 4.
12. Townsend: Tr. Am. Orthop. Assn., 1892, v. McKenzie: Brit. Med. Jour., Nov. 10, 1906. Jones: ibid., Oct. 9, 1909. Bartow: Am. Jour. Orthop. Surg., May, 1910.
13. Savariaud: Presse méd., Sept. 7, 1912.
14. Bradford: Tr. Am. Orthop. Assn., 1899, i.
15. Wilson (Footnote 4). McKenzie: Tr. Am. Orthop. Assn., 1892, v.
16. Wilson (Footnote 4). Myers: Tr. Am. Orthop. Assn., 1893, vi.
17. Taylor: Tr. Am. Orthop. Assn., 1892, v.
18. McKenzie: Am. Jour. Orthop. Surg., January, 1905.
19. McKenzie: Tr. Am. Orthop. Assn., 1892, v.
20. Bankart C. (Footnote 8). Schapps: Northwest. Med., November, 1908, vi, No. 11.
21. Sayre: Tr. Am. Orthop. Assn., 1892, v. Wilson: Tr. Am. Orthop. Assn., 1893, vi.

ation is productive of scar tissue and ankylosis,[22] it impairs muscle power and equilibrium, interferes with growth[22] and development, and often increases rather than alleviates deformity. The contractility of scar tissue is well known, and is often a potent factor in relapse,[23] especially after the more destructive operations on the soft parts. Scar mats up the tissues and binds down the tendons, so preventing the long muscles of the leg, which during walking take their fixed point from the foot, from acting normally in locomotion.[24] Following tenotomy, muscle power does not wholly return,[25] for the retraction of the muscle belly impairs future contractility,[26] and in the case of the gastrocnemius, especially if cut on one leg only, often resulting in such deformity of the calf as to be a source of great embarrassment in the future.[27] Every removal of bone shortens an already short foot or leg,[28] and increases the future rigidity and inelasticity of the foot,[8] as well as weakening it.[7] Incision of nerves and vessels retards development,[7] and for every tendon that is cut, so much of the normal balance of the foot is lost for the future.[29] Furthermore, division of the contracted tissues removes a valuable leverage for the further correction and retention of the deformity, and a fulcrum for the reshapement of the bones and articular facets.[30]

V. CONSIDERATION OF THE NONOPERATIVE METHOD

Evidently surgery does not offer the ideal solution of the problem, and it is equally evident that the solution must lie in that procedure which will, as nearly as possible, restore the parts to their normal condition.[31] The foot is a delicate and complicated mechanism, and its artificial reconstruction must be cautious.[5] By the slower manipulative method, the gradual reshaping of the soft parts and bones alike may be produced without danger to the patient, without damage to any of the structures, without interference with the circulation,[32] innervation or growth, without loss of muscular power or balance,[30] and with an ultimate restoration of practically normal form and function. Correction is begun as soon as the patient is seen, without waiting for "the ideal operative age," [33] advantage being taken of the soft tissues, natural growth, and the recumbency of the infant, which avoids the deforming influence of walking on the partially corrected foot.[5] By holding the foot for a moderate time in the corrected or overcorrected position, it reshapes itself by growth,[34] and as this reshaping force is spread out over the whole foot, all the structures approximate normal, and the natural elasticity and vigor of the foot is preserved.[35] A long time is necessary to reshape the foot[36] by any method, and if the operative treatment is employed, a longer retentive stage must be expected, for the normal anatomy has not been restored as after more gradual correction. Moreover, the liability to relapse is less after the manipulative treatment,[37] since, after all the soft structures have become adapted to their new positions and the bones to their new static conditions, the intrinsic structure of the former and internal architecture of the latter will become permanently altered to meet their new requirements (by Wolff's law),[38] an alteration which is impossible to produce except after the long-continued molding process of correction which the usual operative treatment does not afford.

It is not the purpose of this paper to discuss the details of treatment, but a few words should be said further to elucidate the theory of manipulative treatment. By the employment of plaster of Paris after each manipulation, holding the foot in the position gained, pressure is made over the whole foot in a manner impossible with any form of apparatus.[39] The slight atrophy following this method soon disappears if proper correction and function have been obtained,[40] and decubitus may not be feared if proper care is exercised. For the routine application of this plaster, the technic of Ehrenfried[41] has been used, the present writer's modification of using a longer foot cuff which will raise the prolapsed cuboid, being recommended. Between the time full correction has been obtained, and the period of walking, a great deal of attention must be given the case, as this is the commonest period of relapse, and retentive apparatus, such as Bartow's elastic band,[42] or the leather cuff recently described by Schapps,[10] should be employed. At the walking age, the foot should be corrected and be actively overcorrectible, or walking should not be commenced. It must then be held in a light brace, preferably an inside upright attached to a tight-fitting shoe with outside lift on the sole, which allows muscular activity and the use of the body weight as a corrective agent.[43] A night plaster or brace should be worn for some time.[7] Massage and exercises are also indicated, though not so important as after operative treatment.

While most of the foregoing statements are based on a study of equinovarus, the same theory of treatment applies equally well to congenital calcaneovalgus, the principles of early treatment by manipulation, and plaster if necessary, followed by thorough retention, applying. The chief difference is that correction is easier and quicker to obtain, but that retention must be continued as long, if not longer, for a good result, a fact not usually recognized.

Retention of the overcorrected foot is a matter of detail and perseverance, correction of the foot is the element of variation, so that the prognosis to a large extent rests on its efficacy, other things being equal. That the prognosis may from this standpoint be considered good is indicated by the statistics in Table 5 of those cases of clubfoot admitted to the outpatient clinic of the Children's Hospital during the year from Dec. 1, 1913, to Dec. 1, 1914, which were treated by the writer with the nonoperative method exclusively. During this period, thirty-one children with equinovarus and seventeen with calcaneovalgus were admitted, but excluding all who did not return for further care, and those who had operation, there remain to report twenty-two with equinovarus, fifteen

22. Schultze: Arch. für Orthopadie, Band 3.
23. McKenzie (Footnote 18). Myers (Footnote 16). Soule: Am. Jour. Orthop. Surg., May, 1911.
24. Schnapps (Footnote 20).
25. Guaccero: Arch. di Orthop., 1909.
26. Steele: Tr. Am. Orthop. Assn., 1899, i.
27. Ryerson: Am. Jour. Orthop. Surg., April, 1906. Myers (Footnote 16). Guaccero (Footnote 25).
28. McKenzie (Footnote 12). Bartow (Footnote 12).
29. Heimannsberg: Arch. f. Orthop., vii.
30. Scule (Footnote 23).
31. Brackett (Footnote 1). Barnett: Am. Jour. Surg., June, 1909.
32. Stern: Am. Jour. Orthop. Surg., August, 1910.
33. Bradford (Footnote 14). Becker: Arch. f. Orthop., iv.
34. Judson (Footnote 2).
35. Willard: Tr. Am. Orthop. Assn., 1899, i.
36 Eikenbary (Footnote 11). Towndsend (Footnote 12).
37. Brackett (Footnote 1). Bradford (Footnote 14). Vance: Tr. Am. Orthop. Assn., 1892, v.
38. Bloom: New Orleans Med. and Surg. Jour., lxii, 714. Levy: Tr. Am. Orthop. Assn., 1892, v.
39. Milliken: Tr. Am. Orthop. Assn., 1890, iii.
40. Herz: Arch. f. Orthop., vii.
41. Ehrenfried: Boston Med. and Surg. Jour., 1909, clxi, 741.
42. Bartow: Tr. Am. Orthop. Assn., 1894, vii.
43. Judson (Footnote 5). Towndsend (Footnote 12).

being double (thirty-seven feet) and thirteen with calcaneovalgus, nine double (twenty-two feet). As the results of these cases, as shown in Table 5, were noted at the conclusion of the year stated above, it is evident that many of them had been under treatment but a short time when their condition was reported.

TABLE 5.—REPORT OF ONE YEAR'S TREATMENT

	Equinovarus 37 feet	Calcancovalgus 22 feet
Average age of admission.....	3 mons. (7 days to one year)	11½ mons. (2 wks. to 2¼ years)
Average number of manipulative treatments	2¼	1⅓
Average number of manipulative and plaster treatments.....	2⅔	1
Average number of days until foot overcorrectible	34.7	33.
Average number of days until foot held straight.....	51.	
Average number of days until held overcorrected	53.	50.
Average number of days until braces advised	119.	6.
Result		
Group A: actively overcorrected.	27	5
Group B: actively straight or passively overcorrected	10	5
Group C: not yet straight or passively overcorrected	0	12*

* Five of these patients did not continue treatment.

From this it appears that cases with equinovarus are easy of correction when treatment is begun in the first year, active overcorrection being obtained in an average time of less than two months and with about three plasters, demonstrating what nonoperative methods can accomplish. Calcaneovalgus, on the other hand, does not seem to have so good a prognosis, for while the time required for correction is much the same, and with fewer treatments, evidently it is harder to hold the correction obtained, judging from the results at the end of the year. In explanation of this, we should first note the greater age at admission, as most cases are not recognized until the walking age. For this reason, many were at once put into braces (explaining the short average interval to "braces advised"), and did not receive manipulation and plaster. That this is a mistake, and that more attention should be given these cases early, these figures apparently prove.

While the tables demonstrate the results of manipulative methods in infants only, it is the writer's belief that this treatment can be almost equally well adapted to older, more rigid feet, and to relapsing cases. During all of childhood the bones are plastic, much advantage may be taken of growth, and walking may be made an active force for correction. Other structural bony deformities, as scoliosis, are known to yield to persistent plaster redressment, even in much older cases. Indeed, many very satisfactory results have been reported from time to time, following the nonoperative treatment of older cases of clubfoot.[44] With the promise of a better ultimate result from noninterference with the anatomic structures and physiologic equilibrium of the foot, it would certainly seem justifiable to give it a fair trial.

SUMMARY

1. There are three factors in the prognosis of congenital clubfoot: the age and rigidity of the foot, neglect, and the method of treatment employed. Of these, the last is the one controllable and predicable factor.

2. Other things being equal, favorable prognosis is proportionate to the flexibility of the foot, which is usually in indirect proportion to the age of the child.

3. Absolute overcorrection of the foot, and unremitting attention to the maintenance of this position until the structures have become permanently readjusted, are essential.

4. The deformity being shared by all the structures of the foot, that treatment only which is not localized in its application is productive of uniformly satisfactory results.

5. The destruction of any tissues prevents the restoration of natural shape, strength and balance of the foot, and is prejudicial to the return of normal function.

6. The nonoperative or so-called manipulative treatment of clubfoot avoids these errors in treatment, and takes advantage of the plasticity and growths of the foot.

7. By the manipulative method, overcorrection of the foot is rapidly and thoroughly effected, and relapse is seldom seen.

8. By the manipulative method, almost twice as many cases show ultimate satisfactory results as do those with operation.

9. The manipulated cases are easy and practical of management, and overconfidence and carelessness are often prevented by the nature of the treatment.

10. Although the cases are rarely so severe, the prognosis for perfect result in calcaneovalgus is not so good as in equinovarus, largely because of delay in diagnosis, and failure to maintain overcorrection.

44. McKenzie (Footnote 12). Bartow (Footnote 12). Schultze: Arch. f. Orthop., vi. Smith: Detroit Med. Jour., 1909, ix. Hutchins: Am. Phys. Ed. Rev., 1914, xix, 8.

THE SUPRARENAL GLAND IN SHOCK*

J. F. CORBETT, M.D.

Fellow of the American College of Surgeons; Associate Professor of Experimental Surgery, University of Minnesota Medical School

MINNEAPOLIS

The term "shock" usually brings to our minds a certain clinical syndrome consisting of mental apathy, reduced sensibility, vasomotor disturbance, weakness, pallor, subnormal temperature, rapid and thready pulse, and irregular respiration. Such a picture may be present in the severely burned individual, in the victim of a perforating ulcer, in the mangled railroad man, or in sepsis. Aside from these specific instances, we rarely see every symptom of the syndrome so exaggerated. In a broader sense we may still have shock, although some, or all, of the symptoms are mitigated or almost abated. For instance, during laparotomy the intestines in early shock lose their normal tone before blood pressure begins to fall. Persistent trauma may bring out the picture. It may be going too far to say that we may have shock without any symptoms, but it is very difficult often to tell when we get our first symptoms. To illustrate: We start to produce shock by the handling of the viscera of an animal; the first fifteen minutes of trauma produce no symptoms of shock; neither do the second fifteen minutes produce recognizable shock; but if this process is continued for several hours we finally produce the syndrome. Yet in doing this, the operator realizes that he is in some way dealing with a progressive affair.

The factors contributing to this syndrome are not easily recognized. Many authors attempt to explain

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* The cost of this research work was defrayed by a grant from the Graduate School, University of Minnesota.

shock on some one hypothesis. From the fact that none of the explanations clear all the phenomena, one is justified in believing shock to be composite depending on a number of variable factors. One of the factors that enters prominently into the composite of many forms of shock is concentration of the blood. Cobbett and Roy,[1] and to a lesser degree Sherrington,[2] have attempted to explain shock on the hypothesis of oligemia. This factor, important in itself, must be supplemented by other factors to make a universal application possible. The work of Henderson,[3] showing a loss of venous tone, attributed by him to deficient carbon dioxid, a damming up of the venous blood and an extravasation of the blood into the tissues is but stating the converse of Cobbett's explanation. Even when we combine the explanation of Meltzer[4] with these teachings we cannot get a full explanation of shock. I have often been impressed with the sudden collapse of an animal not well advanced in shock on the pinching afferent vagus areas in the peritoneum. This on our blood tracing revealed a sudden fall of blood pressure with cardiac slowing, exactly as obtains with vagus inhibition. Moreover, the effect can be annulled by cutting the vagi, or by atropin. Therefore, vagus inhibition seems an accessory shock factor.

Crile[5] and Dolly[6] explain shock through changes in the central nervous system with associated remote phenomena. In other words, the brain is a great storage battery in the kinetic system driving the suprarenals, the muscles, and through its action on the suprarenals the other important viscera. According to Crile, the suprarenals influence the direction of the blood supply, control the output of glycogen from the liver, inhibit intestinal function, and avert the blood from the viscera to the more insistent organs. As evidence of the central origin of shock, Crile shows work and exhaustion phenomena in ganglion cells. These are manifested by altered Nissl substance. This offers an ingenious explanation of many of the symptoms of shock, but does not seem to lend itself readily to laboratory demonstrations. Crile teaches that the liver overcomes acidosis.

That shock is in any way cardiac, or due to cardiac failure, as advanced by Boise,[7] does not seem even reasonable. In advanced shock the heart is still capable of pumping against an enormous resistance, as can be demonstrated by the injection of epinephrin.

Acidosis[8] is considered a shock factor. By the term "acidosis" I understand is meant retention of excessive amounts of some of the beta-oxybutyric acid derivatives by the tissues.[9] Such an accumulation, when no longer neutralized by ammonium or sodium compounds of the body fluids, may lead to clinical acidosis. In traumatic shock I have never been able to demonstrate any increase of ammonia in the urine such as should occur in beginning acidosis. Dr. McClendon by accurate hydrogen ion determinations could show no increase of hydrogen ion concentration in the blood in our cases of experimental traumatic shock. In obstructive jaundice, one of my students (Olga Hansen) has produced acidosis, and this has been confirmed by McClendon's blood examination. Crile produced marked acidosis by extirpation of the liver or of both suprarenals. Clinically, acidosis is important, and may be intensified by operative procedure. However, the relation to shock is not clear.

Last of all, I wish to introduce primary suprarenal exhaustion as a shock factor. Before discussing suprarenal depletion, I will review the action of epinephrin, the product of the medullary suprarenal.

The amount of epinephrin in the blood of a normal individual is very slight, somewhere between one part in two hundred millions, as determined by Hoskins,[10] and one part in ten millions, as determined by Waterman and Smit.[11] Further than this, the epinephrin output per minute per kilogram of dog cannot be above 0.2 c.c. of a 1 : 1,000,000 solution of epinephrin. The smallest amount of epinephrin that will have any effect on the blood pressure of a normal dog is 0.42 c.c. of the same solution. This amount produces not a rise but a fall of blood pressure, and the amount necessary to produce a rise is several times as much. These facts indicate that in the normal individual, just enough epinephrin is in circulation to maintain the tone of the "myoneural junction," as the pegs of a violin maintain the tension of the strings. Therefore, we have no right to say that the normal blood pressure is maintained by epinephrin in the blood, but rather that epinephrin sensitizes unstriped muscles of the vasomotor system to the sympathetics.[12] In addition, epinephrin has other functions than that of blood pressure control. Small doses relax the muscles of the alimentary canal, and at the same time close the sphincters; cause the bronchioles to dilate, and increase secretion of glands. According to Boinet,[13] Cannon and Nice,[14] epinephrin relieves fatigued muscles. Cannon[15] emphasizes the mobilizing power of epinephrin on sugar, the rôle of this sugar as an emergency food, and in addition the effect of the epinephrin on the coagulation of blood. Emergencies may call large amounts of epinephrin from the suprarenals to the circulation. Such forced output[15] of epinephrin produces a general rise of blood pressure, shifting the blood from the less insistent abdominal viscera to organs immediately essential to life, such as the lungs, heart and central nervous system, and under special conditions to the skeletal muscles.[16]

Intact splanchnic nerves are necessary to the function of the suprarenal medulla, according to Cannon,[17] Dreyer[18] and Elliott.[19] The last-named investigator shows that when the efferent nerves to the suprarenal gland are cut, there is no discharge of epinephrin on any sort of reflex stimulation. Further than this, the reflex center for the control of the epinephrin output is in the medulla somewhere in the bulb between the first thoracic nerve and corpora quadrigemina. Emotional fright (Cannon, Elliott), simple anesthesia, cerebral injury, excitation of nerves, and poisoning with toxins are effective in reducing the epinephrin content of the suprarenal medulla, and act reflexly through the

1. Cobbett and Roy: Quoted by Short.
2. Sherrington and Copeman: Jour. Physiol., 1893, xiv, 52.
3. Henderson: Am. Jour. Physiol., xxi, 126; ibid., 1909, xxiii, 345; 1909, xxiv, 66; xxv, 385; xxvi, 260.
4. Meltzer, S. J.: The Nature of Shock, Arch. Int. Med., July, 1908, p. 571.
5. Crile: Lancet, London, July 5, 1913.
6. Dolly: Jour. Med. Research, 1909, xxi, 95; ibid, 1910, xxii, 331.
7. Boise: Am. Jour. Obst., 1907, lv, 1.
8. Crile: Ann. Surg., January, 1915, p. 6; Canad. Med. Assn. Jour., January, 1915.
9. Levy, Magnus: Bull. Johns Hopkins Hosp., 1911, xxii, 239.
10. Hoskins, R. G., and McClure, C. W.: The Adrenal Glands and Blood Pressure, Arch. Int. Med., October, 1912, p. 343.
11. Waterman and Smit: Arch. f. d. ges. Physiol., 1908, cxxiv, 198.
12. Elliott, T. R.: Brit. Med. Jour., June 27, 1914, p. 1393.
13. Boinet: Compt. rend. Soc. de biol., 1895, xlvii, 273.
14. Cannon and Nice: Am. Jour. Physiol., 1913, xxxiii, 44.
15. Cannon: Am. Jour. Physiol., 1913, xxxiii, No. 4, p. 366.
16. Oliver and Schafer: Jour. Physiol., 1895, xviii, 240.
17. Cannon and de la Paz: Am. Jour. Physiol., 1911, xxviii, 64.
18. Dreyer: Am. Jour. Physiol., 1898, ii, 203.
19. Elliott: Jour. Physiol., 1912, xliv, 409.

splanchnic nerves. So suprarenal glands are played on with splanchnic nerves in emotion and vasomotor reflex with almost as frequent call as the blood vessels themselves. For instance, stimulation of sensory nerves and psychic emotions, according to Cannon and de la Paz, produce measurable quantities of epinephrin in the blood.[17] In our own experiments we often found that traumatization of the visceral peritoneum produced epinephrinlike rises of blood pressure. From these experiments we can assume that stimulation of the afferent nerves of the viscera is analogous to pain stimulation elsewhere. Suprarenalectomized animals do not furnish identical rises of blood pressure on peritoneal trauma. The work of Elliott[20] has shown that sciatic stimulation produces not only an output of epinephrin, but actually reduces the epinephrin content of the glands. Seelig and Lyon[21] have demonstrated vasoconstriction to be present in traumatic peritoneal shock. This could be maintained only through the forced output of epinephrin. The output of epinephrin in peritoneal trauma is protective in function. Symptoms of shock fully develop only after the supply of epinephrin is greatly depleted. Moreover, animals deprived of suprarenals present a condition of mental apathy, reduced sensibility, vasomotor disturbance, weakness, pallor, subnormal temperature, rapid and thready pulse, and irregular respiration, exactly as they do in shock.

Aside from Wiesel's finding in status thymolymphaticus, literature is not very rich in reference to epinephrin exhaustion in shock. Parkinson[22] could not demonstrate chromaffin substance in the suprarenals in a case of postoperative shock. This has been corroborated by the work of Hornowski[23] and Bainbridge.[24]

In traumatic shock, the forced output of epinephrin seemed to me so marked that I undertook a study to determine the condition of the suprarenals in such cases. My findings lead me to consider epinephrin as a shock factor. I do not state that epinephrin loss is shock, but rather that epinephrin is necessary to overcome shock, and anything that depletes epinephrin favors the development of that condition.

In the light of the work of Elliott and Cannon, Seelig and Lyon, my own observations have led to the foregoing statements for the following reasons: In a long series of animals reduced to traumatic shock by usual methods, I found a great degree of epinephrin exhaustion to exist. In this series the final appearance of the animal was that of complete shock — mental apathy, evidenced by unconsciousness with no ether, muscular relaxation, pale mucous membrane and low blood pressure. The average blood pressure was 12, and the average epinephrin content 8 per cent. In a few instances the blood pressure remained at from 30 to 45 mm., suddenly fell to 0, and the epinephrin content in these cases was 11 per cent. The average time to produce complete traumatic shock was six hours. Bulldogs[25] protected by morphin, not reduced to shock after four hours' trauma (average blood pressure 45 mm.), had epinephrin content of 0.35 per cent. In animals in which the suprarenals had been removed, only 1.3 hours of traumatization were necessary to produce shock. These animals showed no spontaneous recovery of blood pressure such as we get in a normal animal. Further than this, animals whose epinephrin content had been reduced by sciatic stimulation, but in which shock had not become manifest, very rapidly went into shock after a few minutes of peritoneal trauma. Boinet[13] states that suprarenalectomized rats are more quickly exhausted on exertion than normal animals. All of these traumatic shock cases, when determinations were made, showed a concentration of blood and a loss of blood in organs examined. In one instance, the blood pressure fell to 15 mm. and epinephrin content remained 45 per cent. In this case, concentration of blood was the predominant factor. Shock supervenes more rapidly in traumatized parietal peritoneum than on bowel trauma. Symptoms of shock become extreme with great suprarenal depletion. Epinephrinlike rises of blood pressure were usually absent in advanced shock. These are the cardinal reasons for considering epinephrin exhaustion as a shock factor, and using the same to express degree of shock.

Crile has demonstrated changes in the Purkinje cells of the cerebellum in shock. Without attempting to discuss the altered Nissl substance of those cells in shock, it seems to me that the truth of the following statement is apparent: If the epinephrin deficiency in the condition which we call shock is due to failure of the reflex mechanism in the brain by which epinephrin outflow is governed, then we should have a residual epinephrin in terminal shock in the suprarenal and not an almost complete exhaustion. Very little is known of the secretion[26] of epinephrin, but from the fact that the suprarenal ordinarily contains enormous loads to tide the individual through emergencies, it would seem that the storage-discharge factor were paramount over the secretory rôles. Further than this, the amounts of epinephrin needed to maintain vasoconstriction that exists in shock are evidence of the necessity for continued output of that secretion as long as an available supply exists.

The lipoid content of the suprarenal cortex is apparently unaffected in experimental traumatic shock.

The exhaustion of the suprarenal medulla through ether and other anesthetics explains the contributory part played by these agencies in shock, as is typified in the accompanying table.

The average epinephrin content of the normal suprarenal gland is taken as 100 per cent. The table gives

AVERAGE EPINEPHRIN CONTENT

Procedure	Per. Cent.
Immediate chloroform poisoning	76
Chloroform anesthesia for 1 hour	35
Chloroform anesthesia for 4 hours	28
Ether deaths, primary anesthesia (not poisoning) frightened animals	6
Ether anesthesia, 1 hour	33
Ether anesthesia, 4 hours	24
Ether and morphin anesthesia, ¼ hour	60
Ether and morphin anesthesia, 4 hours	40
Ether anesthesia and operative trauma, 4 hours	21
Ether and morphin and operative trauma, 4 hours	34
Ether and morphin, quinin and urea block, operative trauma, 4 hours	35
Nitrous oxid-morphin-atropin anesthesia, 4 hours	65
Nitrous oxid, 4 hours	40
Local anesthesia, without preliminary morphin	27
Local anesthesia with preliminary morphin	70
Typhoid	3
Infection	3
Intestinal obstruction	7
Severe peritoneal trauma, ether anesthesia, 6 hours	9
Severe peritoneal trauma, ether and morphin, 4 hours	25
Severe peritoneal trauma, ether death, vagus inhibition	25

20. Elliott, T. R.: Jour. Physiol., 1912, xliv, 374.
21. Seelig and Lyon: Surg., Gynec. and Obst., 1910, xi, 146.
22. Parkinson: Tr. Path. Soc. London, 1907, p. 194.
23. Hornowski: Virchow's Arch. f. path. Anat., 1909, cxcviii, 33.
24. Bainbridge and Parkinson: Lancet, London, 1907, i, 1296.
25. Animals in this series were powerful male bulldogs, and figures are probably out of focus with the rest.
26. Biedl: Arch. f. d. ges. Physiol., 1897, lxvii, 456.

the average epinephrin content expressed as percentages resulting from the respective procedures.

CONCLUSIONS

Shock is a composite, in which epinephrin exhaustion and oligemia are predominant factors. Anesthesia, pain, fright and trauma are immediate agents in producing epinephrin exhaustion as well as shock.

ABSTRACT OF DISCUSSION

DR. J. E. MOORE, Minneapolis: About forty years ago we saw a great deal of what we called shock. I realize that many of these cases were acute anemia. Our methods of hemostasis were not so good as they are now. Now we can with impunity secure bleeding points and take all sorts of tissue along with them, with catgut ligatures. In those days we had a great deal of sepsis. Why do we see little shock today? We rarely see shock in the operating room. I realize that before eliminating these cases of hemorrhage we still had a much larger percentage of shock than today. The question arises, why? Dr. Corbett claims it is because of exhaustion of epinephrin in these cases. He says epinephrin is exhausted by sepsis. There is very little sepsis today and therefore we have removed one cause of shock. We have learned to use anesthetics more carefully and less of them, and therefore we have removed another cause of reduction of epinephrin. We are careful in the handling of our patients and the general public is not afraid of an operation today, and therefore the element of fear is taken away. And so on down the line we make the practical application of Dr. Corbett's paper. Infection, fright, too much anesthetics, etc., that lower the production of epinephrin should be eliminated. I am glad he states that epinephrin is not the whole thing. I am glad he looks on shock as a symptom complex. We all agree with him in that. The question I want to ask is, that if these symptoms of shock are due to the loss of epinephrin, why can't we relieve these symptoms by the administration of epinephrin?

DR. J. F. CORBETT, Minneapolis: The purpose of this paper was to show that shock developed rapidly in the absence of residual epinephrin, and by what means the epinephrin content of the suprarenal gland became exhausted. The reason for doing this was to point out methods for conserving this epinephrin content. I do not think that epinephrin administered artificially is the antidote for shock, because the amounts of epinephrin normally in the blood are exceedingly small, and if we try to maintain blood pressure by forcing epinephrin we have to use continued larger doses to maintain our results. The continuous administration of increasing doses of epinephrin has a deleterious effect on the blood vessels and might increase the concentration of the blood, adding this factor to shock.

Practice of Medicine in Colombia.—U. S. Consul Isaac A. Manning at Barranquilla, Colombia, gives in *Daily Consular Reports* the requirements for foreigners practicing medicine in Colombia, according to the law of 1914. An individual having a diploma issued by a foreign faculty must present to the government of the department in which he wishes to practice his diploma properly certified by a Colombian diplomatic or consular officer resident in the country of issue, must prove his identity by a photograph attached to the diploma, stamped with the seal of the legation or consulate where legalized, and must pass an examination of an hour in clinics in a hospital and before a council of four examiners named by the board of hygiene, or by the medical faculties, where such exist. There are some other provisions of the law for those who have practiced in the country previous to the passage of the law referred to. Natives graduating at approved medical schools abroad on proper certification of their diplomas may practice without examination under the same conditions as the graduates of Colombian medical schools.

PHENOLTETRACHLORPHTHALEIN TEST OF LIVER FUNCTION

IN A SERIES OF UNSELECTED CASES*

JAMES S. McLESTER, M.D.
AND
BLANCHE FRAZIER
BIRMINGHAM, ALA.

In an endeavor to devise a reliable and convenient test of liver function, Rowntree, Hurwitz and Bloomfield[1] have suggested the use of the dye phenoltetrachlorphthalein, and have perfected a method for its administration and subsequent estimation in the feces. They report studies of this test in sixty-seven patients, thirty-seven of whom, including those with myocardial insufficiency, were classified as having pathologic livers. They state that the number of cases thus far observed is too small to warrant far-reaching deductions, but conclude that their studies "indicate that the excretion of tetrachlorphthalein will be useful in the estimation of the functional capacity of the liver."

Chesney, Marshall and Rowntree[2] studied this and other tests in forty-five cases. They express the opinion that the determination of phenoltetrachlorphthalein excretion is of decided value in revealing the presence of, and to a less degree the extent of, functional liver involvement.

Sisson[3] studied phenoltetrachlorphthalein excretion in forty-one cases and reached no definite conclusion regarding its value as an index of liver function.

Whipple[4] and his co-workers have made thorough and elaborate observations on the excretion of this dye under experimental conditions. Dogs were subjected to this test after liver injuries of various nature and extent. These authors show that in normal dogs the excretion is quite constant, and with definite liver injury is proportionately diminished. They state that simple circulatory changes will occasion diminished output and call attention to the fact that lowered functional capacity of the liver without demonstrable histologic change may cause decreased phthalein output.

In undertaking these studies of phenoltetrachlorphthalein excretion, it was our expectation for purposes of comparison, to carry out one or more other tests of similar intent, but in reviewing the voluminous literature of other functional liver tests, we were forced to the conclusion that none of these were suitable for this purpose.

The carbohydrate tests in their present form give untrustworthy results, and the fibrinogen, lipase and nitrogen partition estimations from a clinical standpoint seem to be of doubtful value.

Urobilin estimation as a means of determining liver efficiency would seem most rational. It certainly has much in its favor, yet there are serious difficulties in the way of its practical use. Wilbur and Addis[5] point to the wide daily variations in the output of this sub-

---

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Rowntree, Hurwitz, and Bloomfield: Bull. Johns Hopkins Hosp., 1913, 327.

2. Chesney, A. M.; Marshall, E. K., and Rowntree, L. G.: Studies in Liver Function, THE JOURNAL A. M. A., Oct. 31, 1914, p. 1533.

3. Sisson, Warren R., A Clinical Study of Two Hepatic Functional Tests, Arch. Int. Med., December, 1914, p. 804.

4. Whipple, Mason and Peightal: Bull. Johns Hopkins Hosp., 1913, xxiv, 207; Whipple, Peightal and Clark: Bull. Johns Hopkins Hosp., 1913, xxiv, 207; Whipple and Speed: Jour. Exper. Med., 1915, xxi, 193; Whipple: Jour. Exper. Med., 1914, xx, 297.

5. Wilbur, R. L., and Addis, Thomas: Urobilin: Its Clinical Significance, Arch. Int. Med., February, 1914, p. 235.

stance and state that to get an accurate measurement, estimations in each individual case should cover a period of two weeks — a circumstance which greatly reduces the clinical availability of urobilin estimations.

Since there is at hand no accurate yardstick, so to speak, by which we can measure the phenoltetrachlorphthalein test, it seemed to us less confusing to carry out this test alone and to compare its results with our clinical data and when possible with necropsy findings.

The method followed was that originally suggested by its authors.[1] The minor changes in dosage and technic recently suggested by Whipple,[4] do not alter the principle of the test nor its clinical value, and we thought it best to adhere to the original directions.

Briefly, the test is as follows: An accurately measured quantity of a freshly prepared solution of phenoltetrachlorphthalein, greatly diluted, is given intravenously; 30 to 45 per cent. of this dye is normally excreted by the liver and can be recovered in the feces. For this purpose the feces are collected for forty-eight hours. After the proper diluting, shaking and clarifying of the collected feces the phthalein of the resulting solution is estimated in a colorimeter and the output thus computed. The authors of this test believe that an output of less than 30 per cent. indicates liver disease, organic or functional.

Because of the well-known difficulties in obtaining forty-eight hour feces of a large number of patients, great pains were taken to insure the accuracy of our collections. The nature of the work was explained to the interns, nurses and orderlies, and as a reminder, a large red placard was hung on the bed of each patient whose feces were being collected.

To each patient it was explained that we were endeavoring to estimate the ability of his liver to do its work — an explanation which invariably appeals to the patient and gains his cooperation. In certain cases of exceptional interest a special nurse was provided whose sole duty it was to care for the patient and collect the feces.

TABLE 1.—GROUP I, DISEASE CONDITIONS OF LIVER

Case No.	Name	Age	Diagnosis	Phenoltetrachlorphthalein Percentage in		Remarks
				Feces	Urine	
1	J. P.	47	Cirrhosis....	40	0	
2	B. F. N.	41	Cirrhosis....	45	0	
				34	Lost	Six days later
				18	.....	Twenty days later
				27	11	Twenty-five days later
3	W. H. ...	40	Cirrhosis....	25		
				42	.....	Twenty-one days before death
4	C. E. E.	60	Cirrhosis....	25-30	0	Wassermann positive
5	W. B. ...	34	Cirrhosis....	30-35	0	Wassermann positive
6	R. Y.	30	Abscess.....	26	1	Three days after operation
7	C. H. T.	28	Abscess.....	35-40	1	Wassermann positive
8	J. L.	26	Sarcoma.....	35	0	Extensive involvement
9	G. T.	6	Syphilitic(?) hepatitis	40	0	
10	M. P.	43	Partial biliary obstruction, adhesions	52	0	Jaundice for 33 years
				38		
11	J. C. M.	45	Biliary obstruction, tumor	0	15	Cancer of liver

We believe we have detected the few mistakes which, despite these precautions, did occur, and we have excluded these cases.

A water-driven machine was used for shaking the feces which were worked up always by the same individual (F). Colorimetric readings in most instances were made by both of us.

We wish to report our studies of 100 cases. Eleven of these represent primary liver disease and form Group I. Seventeen cases of myocardial insufficiency with consequent circulatory changes in the liver make Group II. In Group III we have placed the miscellaneous cases representing various disease processes. Each case here reported has been carefully studied for clinical evidence of liver disease. All of Group III, including the six alcoholics, were negative in this regard.

TABLE 2.—GROUP II, MYOCARDIAL INSUFFICIENCY

Number	Name	Age	Extent of Decompensation	Liver Enlargement	Edema	Per Cent. in Feces	Remarks
12	A. McN.	44	Extreme	++	+	29	Marked arteriosclerosis
13	Mrs. H.	35	Slight	0	0	39	Wassermann positive
14	Mrs. H.	50	Slight	0	0	45	Wassermann positive
15	L. D. J.	31	Extreme	+++	++	23	Slight jaundice
16	J. K. H.	75	Slight	+	+	20	Wassermann positive
17	M. P.	30	Moderate	0	+	48	
18	J. L.	59	Moderate	0	+	42	Wassermann positive, chronic alcoholism
19	W. J.	24	Extreme	+	++	20	Died 3/8. Liver congested, weight 1,680 gm.
20	T. L.	24	Moderate	+	+	42	
21	A. J.	34	Extreme	++	++	65	Died 3/18
22	W. T.	56	Extreme	+++	+	10	
			One week later	+	0	10	Improvement
23	W. J.	54	Moderate	0	+	10	
			Eight days later	.....	....	25	
24	D. L.	24	Extreme	+	+	29	Died 4/11. Marked anemia
25	G. A.	45	Moderate	+	+	40	Albumin and casts in urine
26	B. C.	31	Extreme	+	++	64	
27	L. M.	31	Slight	0	+	23	
28	R. P.	34	Moderate	++	+	48	Syphilis, malaria

We wish to escape the criticism so often offered, of giving insufficient clinical data; yet it is manifestly impossible to publish protocols of the entire series, and we content ourselves with appending notes containing all pertinent data regarding the liver cases in Group I.

REPORT OF CASES

CASE 1.—J. P., aged 47, a colored laborer and chronic alcoholic, with diagnosis of cirrhosis of the liver, had typhoid fever twelve years ago and malaria one year ago. The patient is obstinately constipated. For several months there has been a gradual enlargement of the abdomen. One week before his admission his abdomen was tapped, four liters of fluid being removed. When admitted he had considerable fluid in the abdomen; the abdominal organs could not be palpated. The liver on percussion seemed smaller than normal; the heart was negative; there was no edema and no jaundice. Leukocytes, 10,000. The urine and Wassermann were negative. When the abdomen was tapped, three liters of straw colored fluid were withdrawn. The phenoltetrachlorphthalein output in the feces was 40 per cent.; in the urine, none.

CASE 2.—B. F. N., aged 41, a white carpenter, with diagnosis of cirrhosis of the liver, had tertian malaria in 1905, and smallpox in 1906; for twenty years he had been a steady and excessive user of alcohol and tobacco. For several months, a loss of weight and constant enlargement of abdomen had been noted. He became too weak to work, and very much emaciated. A moderate edema of lower extremities and scrotum existed. The abdomen was greatly distended, the superficial abdominal veins being dilated and tortuous. The peripheral arteries were soft, the heart and lungs negative. Systolic pressure was 115, diastolic 90. The temperature was normal. There was no jaundice and the Wassermann was negative. The urine showed a small quantity of albumin and a few hyaline casts. The abdomen, tapped March 7, yielded 8 liters; April 3, 7½ liters; April 12, 16 liters; April

17, 6 liters; April 27, 15 liters; May 5, 12 liters; May 14, 12 liters; May 21, 13 liters.

The edema of the feet and scrotum disappeared after the first tapping. The phenoltetrachlorphthalein output in the feces February 26 was 45 per cent.; March 2, 34 per cent.; March 22, 18 per cent.; April 17, 27 per cent.; with the urine 11 per cent.

CASE 3.—W. H., aged 40, a colored coal miner, with diagnosis of cirrhosis of liver, had had his abdomen tapped several times within the past two years. He was accustomed to the constant, though not excessive, use of alcohol. When admitted his abdomen was greatly distended with fluid. The edge of the liver could not be felt. The heart and lungs were negative. A week later the sclera were slightly tinged. This subsequently disappeared. The Wassermann was negative. The urine showed albumin and casts. The abdomen, tapped March 6, yielded 12 liters; March 18, 15 liters; March 25, 5 liters; April 2, 16 liters. The phenoltetrachlorphthalein output in the feces March 9, was 25 per cent.; in the urine none; March 24, 42 per cent.; in the urine, none. The patient died April 13.

TABLE 3.—GROUP III, MISCELLANEOUS CASES

No.	Name	Age	Diagnosis	Per Cent. of Output
29	E. B. H.	52	Acute and chronic alcoholism	34
30	D. D. L.	50	Acute and chronic alcoholism	40
31	M. B.	54	Acute and chronic alcoholism	51
32	F. C.	33	Acute and chronic alcoholism, syphilis	25
33	M. C.	45	Alcoholic dementia	30
34	M. Z.	28	Alcoholic gastritis	52
35	K. McC.	52	Chronic morphinism	0, 10
36	M. W.	56	Chronic morphinism	20, 20-30
37	M. R.	40	Tuberculosis of the hip	23
38	E. W.	38	Tumor of mediastinum (syphilis)?	45
39	N. H.	19	Venereal ulcer	28
40	G. L.	33	Secondary syphilis	23
41	W. E. D.	42	Syphilis, arteriosclerosis, hemiplegia	14, 20
42	S. O.	27	Endarteritis obliterans, hemiplegia, syphilis	30
43	E. G. W.	62	Arteriosclerosis, cardiac hypertrophy	14
44	D. G.	42	Aortic aneurysm	30
45	S. W. F.	24	Chronic parenchymatous nephritis	39, 40-50
46	M. B.	25	Pulmonary tuberculosis, syphilis	41
47	M. C.	30	Pulmonary tuberculosis (early)	18
48	G. C.	14	Pulmonary tuberculosis (early)	40
48	E. T. W.	62	Pulmonary tuberculosis	14
50	W. M.	56	Arteriosclerosis	40
51	W. B.	68	Pulmonary tuberculosis, arteriosclerosis, senility	10, 21
52	R. D.	48	Pulmonary tuberculosis, dilated aorta	45
53	L. P.	36	Gonorrheal arthritis	37
54	F. M.	35	Gonorrheal arthritis	35
55	T. B.	25	Gonorrheal arthritis	32
56	J. L. I.	24	Gonorrheal arthritis	15-20
57	C. H. T.	29	Rheumatic fever	30
58	H. A.	48	Rheumatic fever	10
59	I. L. R.	28	Rheumatic fever	35
60	R. B.	23	Rheumatic fever, acute endocarditis	32
61	M. H.	47	Multiple arthritis, pyorrhea alveolaris	40
62	J. K.	40	Influenza	15
63	M. J.	33	Influenza	32
64	J. Y.	23	Bronchitis	40
65	I. McC.	50	Bronchitis	30
65	M. H.	45	Tonsillitis	14
67	E. B.	47	Pernicious anemia	35-40, 50-55
68	M. C.	50	Pernicious anemia (?)	35
69	G. W.	41	Tuberculosis, peritonitis	22
70	H. S.	36	Tuberculosis of hip	45
71	L. W.	58	Catarrhal pneumonia	20
72	J. M.	51	Catarrhal pneumonia, syphilis	50
73	J. E.	23	Convalescent pneumonia	45
74	S. B. W.	51	Convalescent pneumonia	23
75	F. A. M.	35	Convalescent pneumonia	37
76	D. M. C.	18	Convalescent pneumonia	35
77	A. H.	47	Convalescent pneumonia	21, 45
78	P. T.	23	Lobar pneumonia	35
79	C. R.	36	Convalescent pneumonia	42
80	M. D.	37	Acute otitis media	34
81	S. L.	46	Traumatic epilepsy	35
82	C. N.	17	Traumatic epilepsy	40
83	R. E. S.	54	Hypertrophy of prostate	40
84	M. W.	42	Diabetes mellitus	40
85	R. P. B.	30	Gastric ulcer	53
86	E. N.	33	Cholecystitis, perigastritis	45-50
87	M. F. F.	59	Urethral fistula	60-65
88	J. P.	50	Sarcoma of jaw	13
89	L. P.	57	Ovarian cyst	10
90	L. N.	50	Fibroid tumor of uterus	46
91	A. S.	25	Uterine fibroid tumor	12-15
92	M. McB.	25	Atonic constipation	37
93	T. W.	25	Varicose ulcer of leg	45
94	F. D. B.	47	Burns on legs	37
95	J. F. L.	56	Epithelioma of face	32
96	S. M.	19	Sacro-iliac strain	34
97	D. McD.	17	Fracture of femur	20
98	A. L.	25	Asthma, unknown cause	35
99	J. S.	40	Neurasthenia (?)	29
100	M. E. P.	30	Neurasthenia (?)	30

At necropsy the lungs showed a marked anthracosis and numerous pleural adhesions. The heart walls and valves were normal. There was no sclerosis of the aorta. The heart weighed 260 gm. The abdomen contained about 4 liters of fluid. There were numerous recent adhesions between the omentum, stomach, and colon. A thick peritoneal exudate was noted, but no tubercles. The liver was small, covered with fibrous adhesions, cut hard, and the cut surface was pale and granular. It measured 14 by 17 by 8 c.c. and weighed 865 gm. The spleen was enlarged, cut hard, and weighed 275 gm. The kidneys weighed 135 and 138 gm., respectively and showed a moderate degree of sclerosis.

Sections show advanced sclerotic changes, the portal canals are thickened and prominent and the normal lobular markings are greatly disturbed. Connective tissue trabeculae extend into the lobules and break them up into larger and smaller islands which usually show little trace of the normal architecture. The connective tissue of the portal canals and of the capsule is infiltrated by numerous lymphocytes and plasma cells. There is an occasional suggestion of hyaline masses within the liver cells such as are described by Mallory in alcoholic cirrhosis, but the poor preservation of the tissue will not allow of a positive statement in this particular. In other respects, however, the picture is typical of an alcoholic lesion. Diagnosis: (Late) alcoholic cirrhosis.

CASE 4.—C. E., aged 60, white, a lawyer, had a diagnosis of cirrhosis of the liver, arteriosclerosis, chronic interstitial nephritis and syphilis. His mother died of chronic nephritis. He had pneumonia at 17 years of age and syphilis fifteen years ago. He had had salvarsan treatment with mercury, the last treatment six months ago. Twelve years ago albumin was found in the urine and a beginning interstitial nephritis was suspected. The heart was normal at that time. For the past few months he has suffered from bulimia, loss of weight, pains and discomfort in epigastrium, and diarrhea. Three months ago abdominal distention was noted; edema of the feet appeared one month ago. The urine has been scanty for some time. Physical examination showed great emaciation. The lungs were negative; the heart apex was in the sixth interspace 1 inch outside the nipple line; its impulse transmitted shock to the entire left chest; a rough systolic murmur was heard everywhere, best at base. The abdomen was greatly distended, the superficial abdominal veins being very prominent. Neither spleen nor liver was palpable. The deep and superficial reflexes were normal. Systolic pressure was 160, diastolic 135. The peripheral arteries were hard and tortuous. The urine showed a large amount of albumin and many casts. The Wassermann was strongly positive. On May 7, 6½ liters of straw colored fluid was removed from the abdomen. May 15, 5 liters were removed. The phenoltetrachlorphthalein output in the feces was 25 to 30 per cent.; in the urine, none.

CASE 5.—W. B., aged 34, a colored laborer, with a diagnosis of cirrhosis of liver and syphilis, had malaria at the age of 12. For the past eight or nine years he has suffered indefinite pains in the abdomen and right lumbar region. For the past year he has had abdominal discomfort after eating and is obstinately constipated. He has lost 15 or 20 pounds. One month ago abdominal enlargement was noted. Two weeks ago hemorrhoids appeared. The temperature was normal. He was emaciated. The heart and lungs were negative. Systolic pressure was 125, diastolic 85. The abdomen was moderately distended with fluid. The edge of the liver was not felt and on percussion this organ appeared smaller than normal. The spleen was easily palpated. There was no edema. The urine showed little albumin and no casts. The Wassermann was strongly positive. The phenoltetrachlorphthalein output in the feces was 30 to 35 per cent.; in the urine, none.

CASE 6.—R. Y., aged 30, a colored laborer, with diagnosis of abscess of the liver, gave an indefinite history of dysentery several years ago. He was a well-nourished man. A smooth mass sensitive to pressure extended 4 fingers' breadth below the right costal margin. The right lower chest posteriorly

was very sensitive to percussion, and was more prominent than the left. The temperature was 100 to 101. Leukocytes 24,000. The urine was negative. At operation a large quantity of pus (said to be about 8 ounces) drained from the right lobe of the liver. The patient had a slow and uneventful recovery. The amount of phenoltetrachlorphthalein in feces after operation was 26 per cent.; in urine, 1 per cent.

CASE 7.—C. H. T., aged 28, a white convict guard, had a diagnosis of abscess of the liver and incipient pulmonary tuberculosis. His mother died of tuberculosis. He had pneumonia at the age of 10. Three years ago a small abscess was found in the lower right lobe of the liver and was drained. No amebas were found. One year later, the patient had an illness characterized by epigastric pain and fever. The symptoms subsided after three or four weeks in bed. He now complains of pain in the epigastrium. The temperature was irregular. Leukocytes, 17,000. The urine was negative. A smooth rounded mass, the size of a small orange, apparently part of left lobe of liver, could be felt just below the ensiform cartilage. Pressure produces intense pain at this point, but is negative elsewhere. There is no extension upward of the liver dulness. Fluoroscopic examination disclosed: "Excursion of diaphragm good. No area of rarefication or excessive density. Liver enlarged." The physical examination disclosed a few râles at the apex of one lung. The phenoltetrachlorphthalein recovered in the feces was 35 to 40 per cent.; in the urine, none. The liver was subsequently incised and 1 ounce of pus evacuated.

CASE 8.—J. L., aged 26, a colored house servant, with a diagnosis of multiple melanotic sarcomas involving the liver, was admitted because of a growing pigmented mole on her forehead. The mole increased rapidly in size and numerous growths of similar nature appeared in various parts of the body. The liver became enlarged. The temperature was irregular. The Wassermann was positive. She was given intravenously, numerous doses of mercury succinimid without benefit. Two weeks before death a nodular abdominal mass, apparently of the liver, was noted, extending 2 inches below the umbilicus in the midline. The phenoltetrachlorphthalein output in the feces was 35 per cent.; in the urine, none (ten days before death). The patient died February 5.

Necropsy: A large pigmented tumor involved the entire right frontal and parietal regions of the scalp. The lymph nodes were extensively enlarged. Numerous pigmented moles slightly elevated and rough, were scattered over the skin of the entire body. The abdomen contained a large quantity of dark fluid, and an enormously enlarged liver reaching about half way to the symphisis pubis. The entire surface of the liver was covered with pigmented nodules measuring from 2 mm. to 4 c.c. These dark brown nodules almost entirely replaced the liver parenchyma—only occasionally on the cut surface could be seen apparently normal parenchyma running as trabeculae between the pigmented tumors. The liver weighed 4,800 gm.

The following microscopic report was made by Dr. G. S. Graham:

The liver is studded with larger and smaller nodular tumor masses made up of rounded to elongated cells heavily laden with granules of brown pigment. The nucleus is often completely obscured. The larger nodules sometimes show necrotic changes which in places have been followed by partial fibrosis. At the periphery of the nodules the tumor cells invade the sinusoids, cell cords and the connective tissue of the portal canals, completely replacing the normal structures. There are many microscopic collections of pigmented cells within the lobules and in the tissue of the portal canals. In the latter location the blood vessels are sometimes crowded with tumor cells. The sinusoids everywhere contain pigmented cells that occur singly or in small groups. Some of these are undoubtedly endothelial cells. The liver cells in the zone about the tumor nodules are often congested and atrophic. Only rare mitosis can be found in the tumor cells. Diagnosis: Melanotic sarcoma. Apparently a slow-growing metastatic tumor laid down in the liver as numberless microscopic and mascroscopic nodules.

CASE 9.—G. T., aged 6, colored, had a diagnosis of syphilitic (?) hepatitis and pertussis. The family history was negative except that the mother had one miscarriage at six months. The patient was a normal baby, having had no former illnesses except mumps. Ten months before admission a gradual swelling of the abdomen and loss of weight, with night sweats and cough were noted. When admitted the patient showed moderate emaciation, general slight enlargement of lymph nodes, mild general bronchitis, and distended abdomen, the liver extending to within 1½ inches of the umbilicus. There was a bony enlargement on the humerus. The patient also had whooping cough of recent acquisition, with temperature range from 97 to 100. The Wassermann in the blood and spinal fluid was negative; the von Pirquet positive. The blood and urine negative. Mercury and potassium iodid were administered with marked improvement in general condition and reduction in size of liver, and the patient was discharged greatly improved. Three days previously phenoltetrachlorphthalein was given (one quarter the adult dose). The output in the feces was 40 per cent. of that given; in the urine, none.

CASE 10.—H. P., aged 43, white, an inmate of the Alabama Hospital for the Insane, was given the diagnosis of biliary obstruction. There was nothing suggestive in his family history. Until ten years of age he was apparently well. At that time he had an acute febrile attack with marked abdominal tenderness, became jaundiced and has remained so (thirty-three years).

At operation numerous adhesions in the region of the gallbladder were found, but no stones. The gallbladder was drained and ten days later it was reported that the patient's skin had cleared up markedly. Two tests, one week apart and both prior to operation, were done. The phenoltetrachlorphthalein output in the feces was 52 and 38 per cent., respectively; in the urine, none. Drainage of the wound prevented a repetition of the test. (Kindness of Dr. L. W. Grove.)

CASE 11.—J. C. McI., aged 45, a colored laborer, with the diagnosis of carcinoma of the liver and gallbladder and biliary obstruction, had had loss of weight and "weak feeling" for the past six months. Three weeks previous to admission he first experienced pain in the epigastrium appearing immediately after eating and lasting two or three hours. The pain persisted. When admitted the patient was a fairly well-nourished man, deeply jaundiced. The lungs and heart were negative; the abdomen was rigid and difficult to palpate. The liver was nodular, slightly enlarged, with a mass indistinctly felt in the right hypochondrium. The stomach contents showed achlorhydria. The Wassermann was negative. Leukocytes 9,500. At operation a tumor, evidently cancer, was found involving the liver and gallbladder.

The patient died a few days after the operation. A necropsy was refused, but the abdominal incision was opened and the common bile duct was found to be completely occluded by this tumor. A specimen of tissue removed proved to be carcinoma. Phenoltetrachlorphthalein was given a few days prior to the operation. The output in the feces was none; in the urine, 15 per cent.

SUMMARY

In Group I are five cases of cirrhosis — four advanced and typical; one (Case 5) is less advanced and is perhaps open to question. Each of the five gave a normal phenoltetrachlorphthalein output at some time during the patient's stay in the hospital. One of them (Case 3) showed a slightly diminished output at first; but again twenty-one days before the patient's death, with a liver weighing one half the normal, the phenoltetrachlorphthalein output was well within normal limits.

Another patient (Case 2), on entering the hospital three months ago, in grave distress, gave an output which reached the upper limits of normal. His second test showed a low output, but a third gave an almost normal percentage — this, when the man appears to have at best only a few weeks of life ahead.

The average output of the five cirrhosis cases was normal.

A case of multiple sarcoma of the liver gave a normal output. At necropsy almost no true liver parenchyma could be found.

The absence of phenoltetrachlorphthalein in the feces in Case 11 was evidently due to complete occlusion of the common bile duct.

Group II presents some rather bizarre results. Certain of the cases showing marked liver engorgement and low phenoltetrachlorphthalein output would encourage one to believe that here we have a means of measuring liver injury. On the other hand, some of the most extreme cases in this group gave a normal amount of phenoltetrachlorphthalein in the feces. Taking this group as a whole, we cannot read in it any close relationship between liver engorgement and phenoltetrachlorphthalein output.

In Group III are seen wide variations in phthalein output for which we can offer no explanation.

CONCLUSION

In the consideration of our cases and in view of the inconclusive results reached by the authors quoted, one naturally asks: Does the output of phenoltetrachlorphthalein necessarily depend on the functional capacity of the organ which excretes it?

Since such a large part of the phenoltetrachlorphthalein introduced is oxidized or otherwise destroyed in the body, is it not possible that this unknown destructive process is itself the variable factor and that on it depends the amount of phenoltetrachlorphthalein which reaches the liver for excretion?

We conclude that the phenoltetrachlorphthalein test of liver function taken alone in its present form is of no clinical value.

ABSTRACT OF DISCUSSION

DR. GEORGE H. WHIPPLE, San Francisco: I know but little about the clinical application of this test. However, I would like to speak to you of its application to animals with disease experimentally produced, in which the studies can be better controlled than in clinical cases. If the functional activity of the liver is altered by changes in the blood supply, this test shows it. If the liver is injured, as by the introduction of poisons, this test shows it. If the liver is stimulated by small doses of poison, this test gives evidence of hypersecretion. If the functional activity of the liver is impaired by exsecting certain ductless glands, this test shows that the action of the liver has been affected. So from the physiologic standpoint, it has been shown that this test is of very great value in that it gives an index as to the functional activity of the liver cells.

Functional activity and anatomic findings do not always harmonize. We are not justified in expecting that this test will diagnose scars in the liver. But to determine whether or not the liver cells are functionating properly can be done only by a functional test. We may not have at the present time sufficient knowledge to interpret this test. Workers in Baltimore, who were carrying on clinical work at the time we were carrying on the physiologic experimental work with this test, found that it is of some value. Animal experimentation has shown that it is apparently of value. In clinical work, it would seem better to make a careful comparison of several of these tests, and we would then probably find that the readings would be instructive, particularly when compared with the necropsy findings. If phthalein escapes with the urine, it means that there is an obstruction to the escape of the phthalein or injury of the liver cells. That is at least something indicated by the test. The fact that the speaker found that it appeared in the urine in association with liver abscess, is instructive. Then, too, there are other tests of value both experimentally and clinically. First we might mention the estimation of fibrinogen in the blood, which apparently is maintained at a normal level by the liver, and only when the liver is in bad straights does it fail to keep the fibrinogen at a proper level. When it falls, this indicates very poor liver function. The observation of a fibrolytic ferment is also of value. It would be well to try those two tests with the phenoltetrachlorphthalein test. I would protest against a hasty conclusion that this test is of no value. We should not too readily put aside the work on animals because of evidence collected from patients, where there may be many factors that we do not now understand and cannot control. Many factors must be carefully controlled, especially that of purgation. It would be safer to say that we must be careful in drawing conclusions regarding the meaning of the tetrachlorphthalein test.

DR. T. ADDIS, San Francisco: Dr. McLester stated in connection with the urobilinogen and urobilin test of liver efficiency that he understood from the work of Wilbur and Addis that daily estimations of the total excretion in the urine and stools over a period of two weeks were required before any decision could be made as to the presence or absence of hepatic insufficiency. This is not what these authors intended to convey. On the contrary, the demonstration of large amounts of urobilinogen and urobilin even in one specimen of urine is valuable evidence of defective liver action in those patients in whom there is no clinical evidence of increased rapidity of blood destruction. It is true that it is not conclusive evidence, because increased blood destruction may occur without obvious signs other than that obtained from a determination of the amount of urobilinogen and urobilin excretion in the stools. Daily observations for at least a week are required definitely to determine that point. In purely clinical work this is not always possible. Yet this does not make the test useless. After all, it is doubtful whether any of our clinical functional tests can be regarded as in themselves decisive. In this particular instance, we maintain that the estimation of urobilinogen and urobilin in the urine — an extremely simple procedure which need not take more than ten minutes — may give very strong evidence of the presence of a generalized disorganization of liver function.

DR. JAMES S. MCLESTER, Birmingham, Ala.: Dr. Whipple's work with animals would lead one to rely on this test; yet clinical investigations thus far reported, together with our own work, point, to my mind at least, in the opposite direction. This can be explained by the fact that the results of animal experimentation cannot always be unreservedly applied to clinical medicine. Regarding our failure to compare this with other tests of liver function, we felt that to measure this test by others, themselves of doubtful value, would result merely in confusion.

Limiting Emporiums for Liquor Selling.—The province of Quebec has recently put into operation a plan for reducing the number of places in which liquor is sold. It provides, for instance, that the number of such places in the city of Quebec shall be limited to fifty after May 1, 1915, and accordingly on that date forty-seven licenses were abolished and the owners of the places run under them were each paid $3,000 in the way of indemnity. The amount of the indemnity paid is to be recouped by increasing the license fee of the other dealers, and inasmuch as their trade will presumably be increased to some extent, they can probably well afford to pay the additional fee. In Montreal, where there have been 470 such places, the number is to be reduced gradually, a certain number being abolished each year. The amount of indemnity is to be greatest the first year and will decrease in amount each year, and the license fee of the remaining places will be increased each year. It is probable that limiting the number of places and the ease with which liquor can be procured will have a material effect in decreasing consumption, and as a step toward practical prohibition has much to commend it.

THE MOTOR FUNCTIONS OF THE INTESTINE FROM A NEW POINT OF VIEW *

WALTER C. ALVAREZ, M.D.
SAN FRANCISCO

According to modern textbooks the small bowel is a tube whose structure and physiologic characteristics are much the same from one end to the other; and material is supposed to move aborally because of the myenteric reflex, or Bayliss and Starling's "law of the intestine." According to this law,[1] "Excitation at any point of the gut excites contraction above and inhibition below"; and it can easily be seen how this mechanism must favor the aboral progress of material through the intestine.

Cannon[2] has warned us, however, that this reflex and normal peristalsis are not the same, nor is it always in control of the mechanism of the bowel. A moment's thought will show that this must be true; otherwise food once introduced into the duodenum would never stop in its rush to the anus. My own graphic records of peristaltic rushes, secured with six or seven enterographs, rarely show any relaxation before the oncoming wave. On the contrary, powerful contractions appear below, which serve to stop the rush from going too far.

Unfortunately, the stimuli ordinarily used to elicit the reflex have been traumas — pinches, sudden distention by balloons, etc., and little effort has been made to see what happens above and below the normal loopful of digesting food.[3] Much might be said about the difficulties met with by those who have studied this reflex; about the narrow limits (2 to 3 cm. on either side of the stimulus) within which it ordinarily is operable, but it would be beside the point. The existence of the reflex has been well established; but we do not know how far it enters into normal peristalsis, and we must admit that this explanation for the downward progress of food through the intestine is not sufficient in itself. Perhaps for this reason the "law of the intestine" has been of little help to the gastro-enterologist in the solution of his problems. "It does not govern the rhythmic contractions of the small intestine, the rhythmic peristalsis and antiperistalsis of the colon, and probably not the rhythmic waves of the stomach. . . . For these activities *the tonic contraction of the wall of the canal is all-important.*" [4]

FUNCTIONAL DIFFERENCES IN THE VARIOUS PARTS OF THE INTESTINE

A number of writers[5] in the past have noticed differences in muscular strength and tone — differences in rhythm and irritability — in the various parts of the bowel; but they did not seem to realize the importance of their findings, and their writings certainly have had no effect on our conception of the motor functions of the intestine. My own study of these functional differences in the various parts of the intestine of animals soon suggested to me that they might play a large part in the passage of material through the tract. The contents of a muscular tube so constructed would probably move from the more active, irritable and powerful regions above to quieter, less sensitive segments below, where the muscular coats are thinner and less tonically contracted. Reverse peristalsis would hardly occur unless the lower parts of the bowel could be stimulated to an activity greater than that ordinarily found in the upper stretches.

We think of the heart today, not as pump with purely mechanical valves, but as an elaboration of the primitive tube in which the rhythmic power of each segment varies inversely as does the distance from the sinus.[6] So important is this difference that the current is reversed in the simpler types of heart if the aortic end be made to beat faster.[7]

Similar experiments have been performed with segments of the digestive tract. The direction of peristalsis in the crop of *aplysia,* a large marine snail, can be changed at will by increasing the tension at one end or the other.[8] Cannon[9] has shown that waves will course over the excised stomach of a frog or cat in either direction, depending on the location of a pulsating tonus ring. Still more pertinent is the experiment in which he dipped the aboral end of a short loop of small intestine into a weak solution of barium chlorid, and by thus raising its tone, reversed the direction of peristalsis.[10] Stimuli which raised the tone in the middle of such a loop sent off waves in both directions.[11]

The few references I have been able to find to the motor functions of the digestive tract in the lower forms of life show how much the progress of food through their simple tubes depends on local differences in tone and rhythmicity.[12] It is harder to recog-

* From the George Williams Hooper Foundation for Medical Research, University of California.

* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Bayliss and Starling: Jour. Physiol., 1899, xxiv, 110.
2. Canon: Am. Jour. Physiol., 1912, xxx, 125.
3. "What causes the myenteric reflex to appear or not, when material is present, is as yet undetermined," Cannon: Am. Jour. Physiol., 1912, xxx, 125.
4. Cannon: The Mechanical Factors of Digestion, London, 1911, p. 195.
5. For some of the literature, particularly in regard to differences in rhythm, see Alvarez: Am. Jour. Physiol., 1914, xxxv, 177; ibid., 1915, xxxvii, 266. Differences in muscular thickness in different parts of the small intestine have been noted by Monks: Ann. Surg., 1905, xlii, 549; Bérard: Cours de physiologie, Paris, 1849, ii, 285; Jonnesco: Poirier et Charpy's Traité d'anat. humaine, Paris, 1901, iv, 284; Flint: Textbook of Human Physiology, New York, 1895, p. 234, and others. Differences in sensitiveness to various stimuli have been observed by Schillbach: Arch. f. path. Anat., etc., Berl., 1887, cix, 281; Biedermann: Arch. f. d. ges. Physiol., 1889, xlv, 372 and 379; Floel: Ibid., 1885, xxxv, 161; Lüderitz: Arch. f. path. Anat., etc., Berl., 1889, cxviii, 24 and 32, and others. Differences in the driving power have been shown by Hess: Deutsch. Arch. f. klin. Med., 1886-7, xl, 105. A balloon in the dog's intestine was fastened to a thread which came out of a gastric fistula and ran over a pulley. At the end of the string was a little bag which could be filled with shot until its weight stopped the progress of the balloon. Eighteen cm. from the pylorus 228.5 gm. were needed; 38 cm. from the pylorus 90.4 gm. were needed; 50 cm. from the pylorus 75.5 gm. were needed.
6. Erlanger: Arch. Int. Med., 1913, xi, 334.
7. Gaskell: Schäfer's Textbook of Physiol., London, 1900, ii, 184.
8. Von Brücke: Arch. f. d. ges. Physiol., 1905, cviii, 209
9. Cannon: Am. Jour. Physiol., 1909, xxiii, xxvii.
10. Cannon: Am. Jour. Physiol., 1912, xxx, 119.
11. Cannon: Am. Jour. Physiol., 1909, xxiii, xxvii. "A ring at the cecum repeatedly sends off downward running waves; a new ring made now near the terminus of these waves starts reversed waves; and a tonic ring made midway in the proximal colon not infrequently will originate waves which pass away in both directions." Cannon: Arch. Int. Med., 1911, viii, 419.
12. See papers by Bottazzi on the *Aplysia,* a large marine slug: Jour. Physiol., 1897-98, xxii, 481, and v. Brücke: Arch. f. d. ges. Physiol., 1905, cviii, 202; Bottazzi on some fishes, Ztschr. f. Biol., 1902, xliii, 364, and Hardy and McDougall on lower crustaceans, Proc. Cambridge Philosoph. Soc., 1893, viii, 41. A valuable point brought out in these studies and, I believe, largely applicable to man, is that material does not press up to and pack against the sphincters. The real barrier is not the sphincter, but a ring of muscle with high tone and inherent rhythmicity, placed around or just above the valve. This not only blocks impulses coming down, but starts up reverse waves that protect the sphincter from being put under pressure. I have shown how the sacculus rotundus may protect the ileocecal sphincter of the rabbit. Alvarez: Am. Jour. Physiol., 1914, xxxv, 184. A similar thickening has been described in man by Keith: Jour. Anat. and Physiol., 1903, xxxviii, 7, and Elliott: Jour. Physiol., 1904, xxxi, 158. The greater tone of the lower end of the colon in man serves the same purpose, probably, as do the pulsating tonus rings that guard the anus in the above-mentioned fishes and crustaceans.

nize this simple mechanism in the much elongated and more specialized gut of a mammal, but there is considerable evidence that short nerve paths through Auerbach's plexus, and longer paths through the mesentery and ganglia keep the stomach and cecum as close together, functionally, as they are in a snail or a frog.[13]

CLOSE CONNECTION OF VARIOUS PARTS OF TRACT

The use of a number of enterographs at one time, particularly in the cat, has shown me how immediate is the response of one part of the tract to changes in tone and activity in another. In addition, what might be called ripples, invisible to any one watching the bowel, can plainly be seen on the records, running in a few seconds from the pylorus to the colon. Now and then these ripples show themselves as short, diastaltic rushes, much perhaps as a swell from the ocean striking a shallow shelf suddenly becomes a comber. Without the graphic record no one would think of associating a short rush 200 cm. from the pylorus with a particular gastric contraction or with a sudden cessation of colonic activity. Bayliss and Starling have well said that, "every point of the intestine is in a state of activity, which can be played upon and modified by impulses arriving at it from all portions of the gut above and below."[14] The promptness with which a mouthful of food introduced in the stomach causes material to pass through the ileocecal valve[15] or to rush through the colon,[16] shows that the human intestine also acts very much as a short unit.

THE THEORY

Returning, then, to the idea of a tube with greater tone and rhythmicity at the oral end, it is apparent that a rise of tone at the upper end, due to the introduction of food or to irritating lesions, would hurry the aboral progress of food; while a similar rise at the lower end should slow the current or even reverse it. A rise anywhere in the middle of the tube should cause material to flow both ways from that point.

A more rapid current might be brought about also by lowering the tone of the lower end.[17] If the gradient of forces should become a horizontal line, no progress could be made, no matter how great the activity throughout the tube.[18]

While much work yet remains to be done on animals before such a theory can be firmly established, it seems worth while, at this time, to go over the literature of the laboratory worker, the clinician, the surgeon, and particularly of the radiologist, to see how well this hypothesis accords with the facts already at hand. Physiologic methods (Roentgen ray, gastric analysis, etc.) in the hands of the clinician have been yielding results that are not to be despised even if Dame Pathology did arrange the experiment; and an ill-assorted collection of observations awaits only the systematizing touch of a basic theory.

That the rhythmic segmentation of food anywhere in the tract is associated with a rise of tone has been well proved.[19] That irritating lesions also raise the local tone is the daily experience of the radiologist. The spastic pylorus or hour-glass stomach with adjacent ulcer, and the hypertonic stomach and duodenum in duodenal lesions bear witness to this point.[20]

The word tone may have to be used rather loosely in this paper for the sake of brevity. We cannot tell yet what part other factors — such as differences in rhythm and irritability — play in altering the gradient of forces through the tract.[21] The words higher and lower, which will appear frequently in the following pages, refer to differences in tone and muscular force and have absolutely no relation to position in the abdomen, or to gravity. I trust no one will misunderstand or forget this point. There are enough surgeons already who tinker at the bowel as if it were a coil of rigid tubing always held in one position. The intestine is a muscular organ and "material does not move along the canal unless the pressure is greater on one side of it than on the other."[22]

THE EFFECTS OF FOOD INTRODUCED AT THE UPPER END OF THE TRACT

It may sound like a Hibernianism, but food does go down the tract more easily because it is put in at the upper end. The rise of tone there probably makes the gradient of forces steeper down the intestine.[23] A contrast meal will go down the bowel faster if followed by more food a few hours later.[24] This second meal probably keeps the gradient steeper than usual by maintaining the high level of the gastric tone.

There is some evidence that pleasurable psychic stimuli still further raise this tone. Several observers have noticed that contrast meals leave the stomach more rapidly if they are made palatable.[25] "Sham

13. Roith describes two cases in which rectal injections brought about movements in the upper colon although the bowel in between was completely severed. Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1913, xxv, 208. Marbaix produced inhibition of gastric emptying by filling the jejunum, even after complete section of the duodenum, La Cellule, 1898, xiv, 283. Surmont and Dubus obtained immediate responses from the colons of dogs and cats by stimulating the duodenum, even after removing sections of ileum, Arch. d. Mal. l'App. dig., 1912, vi, 181.

14. Bayliss and Starling: Jour. Physiol., 1899, xxiv, 116.

15. Hertz: Jour. Physiol., 1913, xlvii, 55. I have observed the promptness of this reflex many times. Cole's observation—see note 66—is also very striking.

16. Meyer-Betz has seen the colon empty into the ampulla almost immediately after the patient took some food. Immediate postprandial desire for stool, or even diarrhea in children and some adults, is well known. München. med. Wchnschr., 1912, lix, 2717.

17. Material seems to go through the small intestine faster than usual when there is a large fistula in the terminal ileum or cecum. There seems ordinarily to be a retarding influence from the highly tonic colon. See Demarquay: L'Union med., 1874, xviii, 906; and Macewen: Lancet, London, 1904, ii, 998.

18. Katsch concludes that there is no proportion between the intensity of peristalsis and the progress of material through the tract. At times the food will move with ease through long stretches of an almost passive bowel, and yet the violent contractions produced by drugs like pilocarpin may have little forwarding effect. Ztschr. f. exper. Path. u. Therap., 1913, xii, 287 and 233. Bayliss and Starling, Jour. Physiol., 1900, xxvi, 126, and Kelling, Ztschr. f. Biol., 1903, xliv, 240, have shown that the waves frequently put no pressure on the contents of the gut.

19. Cannon: Arch. Int. Med., 1911, viii, 421. Mall: Johns Hopkins Hosp. Rep., 1896, i, 45. "If the intestine is at rest it is anemic, small and long; when digesting it is hyperemic, large and short." I have placed two markers 3.5 cm. apart on an active and apparently stretched piece of bowel and have found them 8 cm. apart later when this region had emptied and quieted down.

20. "I have always believed that the severity of the spasm resulting from an ulcer was dependent on its irritability and not on its size." Barclay: Arch. Roentg. Ray, 1913, xviii, 235. Schmieden gives it as a rule that, in ulcer, the healthy parts of the stomach contract; in carcinoma, the diseased parts. Arch. f. klin. Chir., 1911, xcvi, 265.

21. "The tonic state is fundamental. I have repeatedly attempted to call forth rhythmic contractions, both in the atonic colon and in the atonic stomach, by distention, but without success. The tonic state is therefore quite as important as the internal pressure; indeed, it is the condition for the existence of that pressure." Cannon: Am. Jour. Physiol., 1911, xxix, 242. See also Arch. Int. Med., 1911, viii, 417.

22. Cannon: Mechanical Factors of Digestion, London, 1912, p. 76. According to Keith, there is enough muscular tissue in the colonic wall of man to form a mass as large as the biceps of a blacksmith's arm. Brit. Jour. Surg., 1915, ii, 584.

23. During active digestion, the gradient of rhythm is made steeper by a rise in the duodenal region and a fall in the ileum. Alvarez: Am. Jour. Physiol., 1915, xxxvii, 277.

24. Hertz: Arch. Roentg. Ray, 1912, xvii, 216.

25. Hertz: Arch. Roentg. Ray, 1912, xvii, 219. See also Haudek and Stigler, who speak of slow gastric emptying when the food is taken without appetite, Arch. f. d. ges. Physiol., 1910, cxxxiii, 159. Also Gilmer: Centralbl. f. Rocntgenstr., etc., 1911, ii, 235. Takahashi showed that cats' stomachs emptied half as fast when the animals were fed with a spoon as when they ate by themselves. Arch. f. d. ges. Physiol., 1914, clix, 389. Sailer believes that the bismuth meal leaves the stomach quicker if the patient drinks it than if it is put in by a tube, Univ. Penn. Med. Bull., 1906, xix, 136.

drinking," particularly in thirsty animals, will cause water to leave the stomach of a dog much faster than it otherwise would.[26] It will also prevent the backflow into the stomach which occurs when fat is put into the duodenum through a fistula.[27] The latter observation is explained if the pleasure of drinking has raised the tone of the stomach above that of the duodenum.

It is a common observation that patients who have vomited albumin water and other bland liquids for days may cease when given solid food. Good nurses are well acquainted with this trick and often stop postanesthetic vomiting with a little dry toast. Attacks of "cyclic" vomiting in children may also be stopped in this way.[28] I hope later to present evidence that vomiting is often a manifestation of reversed currents due to the presence of an abnormally high tone in the jejunum.[29] Water would probably not alter these conditions enough, as it passes rapidly into the intestine without having much effect on gastric tone. Solid food, however, can raise the tone of the stomach sufficiently to restore the normal gradient and to send the currents downward again.[30]

Cannon stated clearly in 1906 that "in whatever manner the pylorus may act under normal conditions, that action certainly can be overcome in abnormal states."[31] The other factors may simply modify the chemical control. For instance, increased pressure from above, brought about by a pleasant psychic influence,[32] or by distending the stomach,[33] will cause the pylorus to open before the chemical conditions are right. Cohnheim and Dreyfus[34] found in a dog, that when little food was present, 10 c.c. of stomach contents injected into the duodenum closed the pylorus for from ten to fifteen minutes; but when the stomach was full of fluid, the same stimulus stopped the flow for from only one to one and one-half minutes. The distention of the duodenum by a balloon,[35] the irritation of the bowel by strong saline solutions,[36] or the simple presence of neutral food in the upper half of the small intestine[37] will retard by hours the emptying of the stomach.

As Cannon reminds us, many of these observations can have little to do with physiology: food ordinarily shoots through the duodenum without distending or irritating it very much, but I believe they have much to do with pathology; and are of particular significance to those of us who, as clinicians, are dealing with abnormal states. It is unfortunate that all the efforts to explain the peculiarities of gastric emptying with gastric and duodenal ulcer and with carcinoma have been based on the chemical reflex alone. Von Bergmann and others have shown how impossible it is to trace any connection between the varying rates of emptying and the degrees of acidity in the individual cases.[38] We know also that the stomach gets along very well with complete achylia; and, although the emptying is a little more rapid, the intermittent spurts are very similar to those seen under normal conditions.

The slowing of gastric emptying by distending, irritating, or putting food into the bowel is explainable if we think of the intestinal tone as having been raised above that of the stomach. When the bowel empties and its tone falls, the stomach can empty again. The physiologic studies have not left it entirely clear as to whether the delay in gastric emptying is due to an inhibition of peristalsis or to pyloric spasm. A similar confusion is found in the clinical literature on six-hour stasis, where the terms pylorospasm, pyloric stenosis and gastric atony have been used almost interchangeably. Only a few men have observed closely enough to note that the stomach often fails to empty in the presence of active and powerful peristalsis, even when the pylorus is easily patent, as shown by palpation under the screen.[39] Such a condition is explainable if the tone of the intestine is equal to that of the stomach. Material may then churn back and forth; the pylorus may be open, and yet no progress can take place.[40]

This balancing of forces between the stomach and intestine is probably at the bottom of many well-known phenomena. The ill effects on some people of eating between meals may be due to the slowing of the gastric emptying caused by the presence of the previous meal in the small intestine. In order to show duodenal stasis, Jordan[41] gives a bismuth meal an hour or so after

26. Best and Cohnheim: Ztschr. f. physiol. Chem., 1910, lxix, 116. The dog has an œsophageal fistula in the neck so that water or food swallowed does not reach the stomach, hence the term "sham-feeding."

27. Best and Cohnheim: Ztschr. f. physiol. Chem., 1910, lxix, 125.

28. McClure: Am. Jour. Dis. Child., 1914, vii, 48. Hahn: Med. Klin., 1911, vii, 1452. Tobler: Deutsch. med. Wchnschr., 1914, xl, 1042. Bartlett: Am. Jour. Dis. Child., 1914, vii, 310.

29. I have graphic records from cats, and from a man with a fistula, showing that a marked rise in the tone of the jejunum preceded spontaneous vomiting. Strange to say, almost all writers on vomiting have apparently forgotten that there is such a thing as an intestine. Physicians think they can stop vomiting if only they can keep food out of the *stomach*. Cohnheim and Dreyfus produced nausea and vomiting in dogs repeatedly by distending the small intestine with a balloon. Ztschr. f. physiol. Chem., 1908, lviii, 56. Hirsch produced vomiting in dogs by giving solutions of organic acids. Acetic acid was most active in this regard, apparently because it had the least effect on the stomach and the most marked stimulating effect on the intestine. This produced back currents as shown by the flow of bile into the stomach. A weaker impulse, as from lactic acid, caused only a delay in gastric emptying. Centralbl. f. klin. Med., 1893, xiv, 380. That nausea is associated with a drop in gastric tone has been observed by Barclay: Brit. Med. Jour., 1910, ii, 539.

30. After the stomach has been quiet for some time with bismuth water, I have often seen it contract and start up active peristalsis immediately after the patient had eaten a small cracker.

31. Cannon: Am. Jour. Med. Sc., 1906, cxxxi, 569.

32. Cohnheim and Dreyfus: Ztschr. f. physiol. Chem., 1908, lviii, 57.

33. Marbaix found that 250 c.c. of water left his stomach twice as fast if he put in 250 c.c. of air on top of it. La Cellule, 1898, xiv, 280. Rieder comments on the more rapid emptying of the full stomach. München. med. Wchnschr., 1904, li, 1550. Turck marvels that a small test-breakfast will remain in an atonic stomach longer than will a large Leube meal, THE JOURNAL A. M. A., 1904, xlii, 815. Lüdin found that food taken after a contrast meal may hasten gastric emptying. Deutsch. med. Wchnschr., 1913, xxxix, 1239. See also Moritz: Ztschr. f. Biol., 1901, xlii, 585.

34. Cohnheim and Dreyfus: Ztschr. f. physiol. Chem., 1908, lviii, 58.

35. Tobler: Ztschr. f. physiol. Chem., 1905, xlv, 185.

36. Cohnheim and Dreyfus: Ztschr. f. physiol. Chem., 1908, lviii, 58. Four per cent. solutions of sodium chlorid and magnesium sulphate put into the upper bowel through a fistula caused diarrhea with marked slowing of gastric emptying, nausea and even vomiting.

37. An introduction to the literature on this subject may be had through the articles of Best and Cohnheim: München. med. Wchnschr., 1911, lviii, 2732. Marbaix: La Cellule, 1898, xiv, 268. V. Mering: Verhandl. d. Congr. f. inn. Med., 1893, p. 476. Hirsch: Centralbl. f. klin. Med., 1893, xiv, 377. Baumstark and Cohnheim: Ztschr. f. physiol. Chem., 1910, lxv, 484. Baumstark: Ztschr. f. physiol. Chem., 1913, lxxxiv, 437. Thomsen: Ibid., p. 425.

38. Von Bergmann, G.: Centralbl. f. Roentgenstr., etc., 1913, iv, 3. See also Faulhaber and v. Redwitz: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1914, xxviii, 192.

39. Holzknecht and Haudek: Fortschr. a. d. Geb. d. Roentgenstr., 1914, xxi, 634.

40. Cannon and Blake state clearly that after pyloroplasty the function of the pylorus is taken over by the active contractions of the duodenum, Ann. Surg., 1905, xli, 708. Dagaew removed the powerful pyloric end of the stomach, expecting that this would allow the food to run promptly into the bowel. Just the reverse happened; there was marked delay which seemed to be due to the lack of pressure from above to overcome the resistance of the active intestine. As we should expect, the usual regurgitation into the almost empty stomach was much exaggerated. Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1913, xxvi, 179. Marbaix speaks of the contest between the stomach and intestine, La Cellule, 1898, xiv, 283. The larva of *Ptychoptera contaminata* has no pyloric valve, so van Gehuchten says the small intestine, in all its length, takes up the rôle of sphincter. La Cellule, 1890, vi, 277.

41. Jordan: Arch. Roentg. Ray, 1913, xviii, 231. He has seen strong contractions forcing the contents back into the duodenum. He told Barclay that, under ordinary conditions, he does not see such stasis. "The Stomach and Esophagus," London, 1913, p. 57. Hess found, in one experiment, that a balloon put through a fistula into the duodenum of a dog did not go forward as usual. This apparently was accounted for by the presence of food in the ileum at the time. Deutsch. Arch. f. klin. Med., 1866-7, xl, 105.

the patient has eaten his dinner. By that time the tone of the intestine has been raised by the presence of food and the contrast meal is held back when it reaches the duodenum.

It has been observed repeatedly that, at the close of gastric digestion, when the tone of the intestine is still high and that of the stomach has probably fallen, duodenal contents flow back into the stomach. This is particularly the case when much fat has been eaten.[42] The explanation for this lies probably in the fact that while the tone and motility of the stomach are markedly impaired in the presence of oils,[43] the intestine may, at the same time, be even stimulated by the fatty acids split off in pancreatic digestion.[44]

It is a common observation that a stomach will empty quite rapidly to a certain point, after which there is little change for hours. At first, through its greater tone or better reaction to distention, the stomach is probably stronger than the intestine. Later, the actively digesting bowel becomes too strong for the half-empty stomach, and there is little change until the intestine empties, or more food is put into the stomach.

Anything that tends to keep up the tone of the intestine will exaggerate this type of gastric emptying. I have seen it frequently in those cases, particularly of appendicitis, in which the ileum empties very slowly. This so-called "late pylorospasm" is quite characteristic also of duodenal ulcer.[45] There, I believe, the increased tone of the stomach, plus the stimulus of food, overcomes the hypertonic duodenum and brings about rapid emptying at the beginning. After this, a small residue remains in the stomach for hours, or until the next meal, presumably because the ulcer keeps the duodenum from relaxing to its proper tone level, below that of the stomach.[46]

INTRODUCTION OF FOOD AT THE LOWER END OF THE TRACT

According to the theory, food introduced at the lower end of the tract should retard the progress of material coming down from above and might even reverse the current. There is ample proof in the literature that both these things happen. Clinically, it is well known that an enema given shortly after a meal is likely to cause colic, nausea, and, in sensitive people, even vomiting.[47] Radiologists know that enemas must not be given after a bismuth meal if they are to tell anything about the emptying time of the stomach or the rate of passage through the small intestine.

The few times I have ordered rectal feeding I have had to give it up on account of nausea and vomiting, which ceased only when the enemas were stopped. To illustrate: A woman with a blood pressure of 220 mm. of mercury and no clinical or radiologic signs of ulcer, before or since, had been passing tarry stools for several days. Rectal feeding and a Murphy drip were started, and only a little water was given by mouth. Fearful nausea began, and soon she was vomiting large amounts of blood-stained fluid. No blood reached the anus while she was being fed per rectum. The vomiting became so serious that we then left the rectum entirely alone and gave her solid food. Nausea and vomiting stopped with the first mouthful and did not return. Tarry stools appeared again. Apparently the blood, oozing somewhere in the middle of the digestive tract, could be sent in either direction by raising the tone of either end.

Rolleston and Jex-Blake[48] collected ninety-six cases of gastric ulcer fed per rectum alone and found that twenty-six patients vomited on one or more occasions. They noticed that the giving of cleansing enemas to these rectally fed patients frequently produced nausea and retching, and, in a few cases, it brought on vomiting. There are enough cases in the literature in which the enemas were actually vomited, or in which the patient objected to the constant taste of the peptonized foods.[49]

Several observers have noticed an increased tendency to colonic anastalsis after the giving of enemas.[50] The Roentgen ray has shown how frequently enemas will pass through the ileocecal valve and run up the small intestine even to the stomach. As would be expected from the theory, this is more likely to occur when some lesion in the colon has already raised the tone of the lower end of the tract.[51]

FOOD PUT INTO THE MIDDLE OF THE BOWEL TENDS TO MOVE BOTH WAYS

My experiences with jejunal feeding have not been entirely satisfactory on account of the nausea and vomiting which occurred from time to time.[52] Food put in at the fistula has even been returned by mouth; and in most of the cases the discomfort could be relieved only by simultaneous mouth feeding. Here again vomiting was stopped probably by raising the tone of the stomach to its normal position above that of the jejunum. Nausea, vomiting and pain were present in another case until a simultaneous Murphy drip of glucose and salt solution was stopped, and some food given by mouth. The patient had no further trouble until one day when he had a cleansing enema.

42. Boldireff states that in animals that have been fasting for some time, the intestinal juice will run out of a gastric fistula continuously. This back-flow can be accentuated by giving fatty acids and fats or by injecting some 0.1 per cent. HCl into an intestinal fistula. Centralbl. f. Physiol., 1904, xviii, 457. Rehfuss, Bergheim and Hawk found bile present in the fasting stomachs of most of the normal students studied. THE JOURNAL A. M. A., July 4, 1914, p. 11. Years ago Kussmaul said "Offenbar gelangt die Galle viel leichter in den leer als in den vollen Magen." Samml. klin. Vortr., Inn. Med., 1880, No. 62, p. 1651.

43. V. Tabora says the stomach may be quiet for hours when full of fat. Centralbl. f. Roentgenstr., 1911, ii, 247. Cannon says the waves were a little slower and shallower. Am. Jour. Physiol., 1907, xx, 315.

44. Bokai: Arch. f. exper. Path. u. Pharmakol., 1887, xxiv, 158. For further discussion of this subject and references to the literature see Cannon: Am. Jour. Physiol., 1907, xx, 315.

45. Carman: THE JOURNAL A. M. A., March 28, 1914, p. 980.

46. This may be the explanation for Cannon and Murphy's observation that food did not begin to leave the stomach for five or six hours after section and suture of the duodenum, some 10 inches below the pylorus. Am. Jour. Med. Sc., 1906, cxxxi, 569.

47. Trousseau and Sydenham have discussed this point. The latter warns us that clysters become emetics in cases of ileus and typhoid where there is already a tendency to a reversal of intestinal action. Clin. méd., Paris, 1865, iii, 28; Sydenham Soc. Edit., London, 1848, i, 67, 68 and 194.

48. Rolleston and Jex-Blake: Brit. Med. Jour., 1903, ii, 68. Bine and Schmoll have given up rectal feeding on account of such experiences, California State Jour. Med., 1914, xii, 364.

49: Parkes-Weber: Brain, 1904, xxvii, 170, and Langmann: Jacobi Festschr., New York, 1900, p. 375, give a good introduction to the literature on this subject.

50. Cannon: Mechanical Factors of Digestion, p. 150. In one cat an enema of warm water caused continuous anastalsis in the colon for one hour and twenty minutes. Ordinarily such waves appear from time to time only. See also Nothnagel: Beitr. z. physiol. u. path. d. Darmes, Berl., 1884, p. 20.

51. Case finds incompetency of the ileocecal valve associated most frequently with the increased antiperistalsis of hypertonic constipation, and with obstruction and disease of the colon. The incompetence of the valve is not a disease in itself; it is secondary, and due to a loss of tone in the muscle making up the valve. He quotes a number of authors who agree with him. Arch. Roentg. Ray, 1915, xix, 380 and 383.

52. Kelling speaks of the stagnation of food in the stomach, feeling of fulness and tendency to vomiting in jejunal feeding. Ztschr. f. Biol., 1903, xliv, 248. "In the majority of cases, direct nutrition through the duodenum is a delusion. The chyme, or the greater part of it, is regurgitated into the stomach, as can be demonstrated fluoroscopically"; Therapeutics of the Gastro-Intestinal Tract, Wegele, Gross and Held, New York, 1913, p. 272.

It is common knowledge that vomiting is often associated with diarrhea. A small boy who has eaten all the blackberries he can pick is likely to vomit three quarters of the amount some hours later; and shortly after, the remainder is voided in loose movements. Presumably, enough of the irritant mess gets into the jejunum at the start to prevent the stomach from emptying.[53] Finally the tone becomes high enough in the upper bowel so that it can clear itself both ways. Strong psychic stimuli may bring about diarrhea and vomiting in the same way, if they raise the tone of the upper jejunum at the point where it is so richly supplied with vagus branches.[54]

IRRITANT LESIONS

The motility of the tract is affected by irritating lesions, much as the theoretic considerations would lead us to expect. One of the best roentgenologic signs of duodenal ulcer is the presence of the head of the bismuth column in the descending colon after six hours. This is not pathognomonic of ulcer, but points to some irritation of the duodenum or the closely related gallbladder and pancreas.

It appears also with hypertonic stomachs, due in some cases apparently to vagus disturbances. Another factor in the causation of this hypermotility is the rapid outpouring of food from the stomach in duodenal ulcer, achylia gastrica and some cases of gastroenterostomy.[55] The greater distention alone may stimulate the upper bowel to greater activity, much as a large enema has more effect than a small one.

The problems of motility with lesions at the upper end of the tract are complicated by the fact that the whole region from cardia to jejunum seems to have its tone raised by a lesion in the duodenum, or in the embryologically related bile passages, liver and pancreas. This is shown by the hypertonic stomachs and the hour-glass contractures so frequently seen in these cases.[56]

The reaction of the stomach to ulcer is also complicated by so many factors that I will not try to discuss the subject at this time. The stomach is often atonic and quiet with pyloric ulcer;[57] possibly the waves are blocked by the tonus ring caused by the lesion. Actual reverse waves are often seen, particularly when the bismuth is taken at a time when a previous meal is in the intestine.[58] Under these conditions, as we have seen, there is a considerable tendency to back-flow at the upper end of the tract.

That gastric anastalsis is seldom seen with duodenal ulcer[59] is due probably to the almost complete break in continuity of the muscular coats at the pylorus.[60] This barrier deserves more study, as it may be of immense importance to us in blocking undesirable waves coming up from the intestine, and in protecting the bowel from undue influence from the powerful pyloric portion of the stomach.

Jonas has shown that just as intestinal hypermotility and even diarrhea may appear when the stomach empties too rapidly, hypomotility of the bowel and constipation are seen with lesions interfering with the opening of the pylorus. He speaks of the stomach as the *"Haupt-motor"* for the intestine.[61]

Lesions in the course of the bowel, such as tuberculous ulceration, render the affected area so irritable that the bismuth meal goes through very rapidly, and this region appears to be empty.[62] The bowel is often empty for some distance above an obstruction, showing that there is a powerful repelling effect.[63] For the same reason, in appendicitis, the last few coils of ileum may be empty; or the lower limit of the bismuth, instead of showing a bulging shoulder, tapers to a point. The obstruction is not mechanical, it is dynamic. It is becoming generally recognized that a kink in the bowel has little effect unless it becomes irritated in some way. The marked differences in severity, amount of vomiting, etc., between acute ileus and that arising slowly may depend partly on the degree to which the cause of obstruction irritates the bowel, raises the local tone and reverses the current.[64]

The commonest lesion near the ileocecal valve is appendicitis; and this, as is well known, can generally be diagnosed by the presence of marked ileac stasis. I believe chronic appendicitis disturbs digestion mainly through its effect in raising the tone of the terminal ileum; and operations give relief only as they remove all sources of irritation from this region.[65] A rise of tone here has a retarding effect that extends upward even to the stomach, which is frequently

53. Baumstark has shown that fermented food put through fistulas into various parts of the intestine will greatly slow the emptying of the stomach. Ztschr. f. physiol. Chem., 1913, xxxiv, 437.

54. Alvarez: Am. Jour. Physiol., 1915, xxxvii, 276.

55. Hertz: Ann. Surg., 1913, lviii, 466, and Moynihan: Abdominal Operations, Philadelphia, 1906, p. 221, have seen even fatal diarrhea after gastro-enterostomy when the stomach emptied too rapidly.

56. Hertz: Guy's Hosp. Rep., 1907, lxi, 403. Case: Jour. Michigan State Med. Soc., 1913, xii, 577. Carman: The Journal A. M. A., March 28, 1914, p. 980. Eisler: Centralbl. f. Roentgenstr., etc., 1912, iii, 320. Schlesinger: Berl. klin. Wchnschr., 1912, xlix, 1223. Holzknecht and Luger: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1913, xxvi, 669.

57. Barclay says when he cannot provoke any gastric peristalsis he always suspects a lesion at the pylorus, Brit. Med. Jour., 1910, ii, 539. Carman: The Journal A. M. A., March 28, 1914, p. 980. Kreuzfuchs believes that hypertonus of the pyloric end causes hypotonus of the body of the stomach, Wien. med. Wchnschr., 1912, lxii, 1073. The blocking of waves by a tonus ring is described by Cannon: Mechanical Factors in Digestion, p. 188.

58. Haudek: Wien. med. Wchnschr., 1912, lxii, 1061.

59. Once in ninety cases, Haudek: Wien. med. Wchnschr., 1912, lxii, 1061. Carman has never seen it. The Journal A. M. A., March 28, 1914, p. 980.

60. Cunningham: Tr. Roy. Soc. Edinburgh, 1905-7, xlv, 9. Brinton: Diseases of the Stomach, London, 1859, p. 268.

61. Jonas: Arch. f. Verdauungskr., 1912, xviii, 769. Agéron holds similar views, ibid., 1911, xvii, 584. Dagaew found that food reached the lower ileum in thirteen hours instead of six after removal of the strong pyloric muscle. Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1913, xxvi, 179. Cohn found in a case of complete removal of the stomach and vagus endings that food went very slowly through the bowel, reaching the cecum only after twenty-four hours. Berl. klin. Wchnschr., 1913, l, 1393. Cole has noticed that the cecum fails to empty for a long time if the patient does not eat after the contrast meal, Am. Jour. Med. Sc., 1914, cxlviii, 110.

62. Stierlin: Centralbl. f. Roentgenstr., 1911, ii, 254. Case describes the emptiness of the cecum in cecal tuberculosis. Arch. Roentg. Ray, 1915, xix, 381. Kienbock discusses the subject at more length in Fortschr. a. d. Geb. d. Roentgenstr., 1913, xx, 231. Nothnagel says food is rushed through sections of bowel that have been inflamed and made irritable by the injection of concentrated salt solutions. Beitr. f. Physiol. u. Path. d. Darmes, 1884, p. 39.

63. Kirstein: Deutsch. med. Wchnschr., 1889, xv, 1000. Kelling: Ztschr. f. Biol., 1903, xliv, 249. Reichel: Deutsch. Ztschr. f. Chir., 1892-93, xxxv, 551. Nothnagel: Beitr. z. Physiol. u. Path. d. Darmes, 1884, p. 29. Quirot: Thèse de Paris, 1909, p. 25. These men have all remarked on the contracted, empty state of the bowel above the obstruction, and the signs of anastalsis a long distance above. Shimodaira: Mitt. a d. Grenzgeb. d. Med. u. Chir., 1910, xxii, 229, and Maleyx, Thèse de Paris, 1912, have written monographs on the well-known distention and ulceration of the cecum with obstruction in the lower colon.

64. Kirstein: Deutsch. med. Wchnschr., 1889, xv, 1001, thinks acute ileus is not the result of closure of the bowel but of its maltreatment. When he cut the ileum across and sewed it up, the food went on down the intestine and packed against the obstruction. The dogs did not vomit, and finally died of starvation. When, however, he pinched the bowel with an elastic ligature, the food was turned back in the duodenum and the dogs were very sick. Treves says that in acute intussusception, violent symptoms of obstruction may run their course without there having been produced any actual occlusion of the bowel. He believes the symptoms are due to what he calls peritonism, Intestinal Obstruction, New York, 1902, p. 2. These mechanical factors should not be lost sight of, although the recent work on intestinal obstruction shows the problem to be quite complicated.

65. Barclay: Brit. Jour. Surg., 1915, ii, 645. According to the theory, we would expect to find hypermotility in the colon with appendicitis. Deaver says diarrhea is present in about 13 per cent. of cases. It is met with more often in children. Appendicitis, Philadelphia, 1905, p. 226 and 244. That it is not seen more frequently is due probably to the powerful repelling effect from the lower colon.

dilated and atonic. The duodenum is often dilated, and material stagnates either in the "cap" or just above the duodenojejunal junction.[66] That this is not due to kinks or adhesions is shown by the fact that the swallowing of a mouthful of solid food generally causes this bismuth to whisk over into the jejunum. This region has also been found normal at subsequent operation in several cases. I have seen active reverse peristalsis in the duodenum due to the ileac stasis alone.

Back pressure from the intestine must be looked for in all cases of gastric atony or deficient emptying when no lesion can be found near the pylorus. Several writers have emphasized the importance of gastric dilatation as an early sign of intestinal obstruction. It can be detected with the stomach tube and Roentgen ray some time before the reverse currents are strong enough to cause the typical vomiting.[67]

There is a so-called gastric type of carcinoma of the lower colon in which nausea, vomiting and gastric dilatation are the early symptoms of the ascending influences.[68] The descending ones show themselves later in tenesmus and protrusion of the rectal mucosa.

CONSTIPATION

In sensitive people and in children, constipation may cause vomiting which will yield promptly to a laxative. These patients may feel stuffed after a few mouthfuls, on account of the reverse influences.[69] Conditions seem to be somewhat as they are in baseball when the bases are full and the batter has made a hit: there is no use of his running if the runner on third refuses to come "home." The intestine may also be thought of as a railroad under control of a block system. Just as food in the stomach forces material through the ileocecal valve or into the rectum when the tract in between is empty, the stagnation of material in a lower block will hold up the food for several blocks above.

Future experiments must show how much actual reverse waves or ripples have to do with the process. The reverse influences seem to skip over regions in which the waves are catastaltic to cause anastalsis above. The direction of peristalsis may change also from time to time in the same stretch of bowel. All these observations are explainable in the light of the theory.

A large part of what is called "biliousness" and "autointoxication" may be due to this tendency to reverse peristalsis when the colon remains filled and active. "Biliousness" derives its name from the appearance of bile in regurgitated material, and this would be more liable to occur when the tone of the intestine is higher than that of the stomach. Much of the satisfaction that the "bilious" get from a dose of calomel may be due to the setting of a strong current down the tract again. The symptoms in the "autointoxicated" ordinarily clear up within a few minutes after emptying the rectum, and no toxin could be eliminated at that rate.

There seems little doubt that normally the tone of the rectum and sigmoid is higher than that of the cecum and ascending colon.[70] This tends to protect the anal sphincter and to keep feces out of the ampulla except during those times when the pressure from the upper part of the tract is very great. Material which is forced over into the rectum may even be returned to the transverse colon if defecation is postponed.[71] The commonest cause of constipation is probably an increase of this tone which makes the gradient steeper up to the rectum.[72] Case has found adhesions irritating the pelvic colon in a number of these cases.[73]

Hemorrhoids and painful fissures may cause constipation not only on acount of the fear of pain at defecation but by raising the tone of the rectum, and thereby keeping the sigmoid and ampulla empty. This holding back is often shown by a large accumulation of gas in the splenic flexure. This is so constant a finding that I have come to regard a large tympanitic Traube's space as almost diagnostic of hemorrhoids.

CONCLUSION

It was natural that when the Roentgen ray first threw light on conditions in the digestive tract, the striking defects, as seen in carcinoma and ulcer, and the marked ptoses, so different from what anatomists had taught us to expect, should have occupied the center of the stage. Soon the more thoughful radiologists began to realize that it was only occasionally that they could see the lesion, or, more correctly, a cast of the lesion. In the large proportion of cases they could only suspect the presence of some irritant from the altered motility in different parts of the tract. Finding marked ptoses and kinks every day in people with good digestions, they began to see that a stomach might empty just as satisfactorily when in the pelvis as when above the navel. As Case says, "with increasing experience, the morphological factors have shrunk in importance, while the problems relating to the functional behavior of the alimentary tract have assumed greater significance."[74]

Some good may be done by this article if it helps at this time to bring about a more physiologic point of view in gastro-enterology; if it induces more men to think of the tract as a unit, and to study it from one end to the other before they make diagnoses, or attempt repairs at any one point. Good men are still reporting statistics on gastric ulcer, six-hour stasis, etc., without making mention of conditions even as far away as the gallbladder. Surgeons are doing gastro-enterostomies on baggy stomachs when the offending appendix should come out instead. How much better it would be to explore the tract carefully before beginning work on

66. I have observed these things many times. See articles by Borgbjärg: Verzögerung der Magenentleerung bei Darmkrankheiten, Arch. Verdauungskr., 1911, xvii, 706 Bassler: THE JOURNAL A. M. A., Oct. 24, 1914, p. 1469. Eisen, Ibid., p. 1228. Barclay: Arch. Roentg. Ray, 1913, xviii, 234. Paterson and other surgeons have seen at operation marked dilatation of stomach and duodenum in many cases of appendicitis. Proc. Roy. Soc. Med. London, 1910, iii, Surg. Sect., p. 197. Of 482 cases with gastric stasis due to ascending influences, only twenty-one showed retention after the removal of appendices or the restoration of normal conditions in the bile tract. Smithies: Am. Jour. Med. Sc., 1915, cxlix, 187. Cole says, "I have observed time and time again that if, after the contents of the stomach and 'cap' have remained stationary for some time, the ileum be partly evacuated, a rehabilitation of duodenal peristalsis will be established forthwith and food may be seen . . . passing through the jejunum." Am. Jour. Med. Sc., 1914, cxlviii, 109. Barclay has made similar observations, Brit. Jour. Surg., 1915, ii, 643.

67. Ewald: Berl. klin. Wchnschr., 1907, xlix, 1416. Cataldi: Policlinico, Rome, 1914, xxi; abstr., THE JOURNAL A. M. A., Jan. 23, 1915, p. 378.

68. Quirot: Thèse de Paris, 1909. Hedblom and Cannon's experiments are in accord with these clinical observations. When they irritated the colons of cats with croton oil, the stomachs emptied very slowly in spite of active peristalsis; and there was great retardation in the small intestine also. Am. Jour. Med. Sc., 1909, cxxxviii, 520.

69. Hertz found patients could eat little at a time and complained of a sense of fulness when the stomach emptied too fast after a gastro-enterostomy. This disagreeable sensation was less after taking castor oil, apparently because the jejunum emptied faster, Ann. Surg., 1913, lviii, 466.

70. Rost: Verhandl. d. deutsch. Gesellsch. f. Chir., 1912, p. 169.

71. See a very interesting article by Campbell: Tr. Am. Gynec. Soc., 1878, p. 286. Also Schwarz: München. med. Wchnschr., 1912, lix, 2155.

72. Singer and Holzknecht: München. med. Wchnschr., 1911, lviii, 2536. Keith: Brit. Jour. Surg., 1915, ii, 581.

73. Case: Arch. Roentg. Ray, 1915, xix, 380.

74. Case: Arch. Roentg. Ray, 1915, xix, 375.

some part which, as Mayo says, may be the fire-alarm and not the fire.

In the last two years I have found it a very useful rule to remember that: *an irritating lesion slows the progress of food coming toward it from above and hastens the progress of food that has passed it.* This has helped in analyzing many unusual cases. For instance, a number of signs may point to a duodenal ulcer, yet the usual hypermotility is lacking. Further study may show that this has been neutralized by the back pressure from a chronic appendix.

In such a short paper little can be done except to present views that can be discussed in more detail later. Such papers that may follow can more easily be seen then in their relations to the whole problem. More proof can be adduced for many of the statements made here, and objections can then be taken up.

In closing I wish gratefully to acknowledge my indebtedness to Dr. Cannon of the Department of Physiology at Harvard, to Dr. Pope of the Surgical Research Laboratory at the University of California and to Dr. Whipple of the Hooper Research Foundation who, one after the other, in the last two years, have so generously afforded me the opportunities to work on this problem.

126 Stockton Street.

ABSTRACT OF DISCUSSION

DR. L. B. WILSON, Rochester, Minn.: I should like to ask Dr. Alvarez to tell us briefly what the factors are which he has been able to use experimentally in increasing the tonus, and those which he has been able to use experimentally in decreasing the tonus; and how he knew that he increased and decreased the tonus under those conditions.

DR. WALTER C. ALVAREZ, San Francisco: My reasons for believing that the tone of the bowel is raised by the giving of food or by irritating lesions are given in the paper. I have some evidence that irritation, or the presence of food, can alter the gradient of rhythm. In one rabbit with a very active and irritable cecum, the lower ileum contracted eighteen times per minute instead of the usual eight or ten. Considerable reverse peristalsis could be produced in this animal by injecting a little of the cecal contents into the terminal ileum, hence possibly the gradient of tone had also changed. The theory will be placed on a much firmer foundation when we know more about the way in which the tone is graded from one part of the tract to the other. In this paper I have had to assume that it follows somewhat the gradient of rhythm already established. Work is now being done on this and other phases of the problem. In the meantime it does seem permissible to call attention to the beautiful way in which a large number of observations fit into such a theory as is here presented.

Policemen Assist Health Department.—An experiment in cooperation between the police department through its patrolmen and the health department has been in progress since May 17, in Health District No. 1, in the lower East Side of Manhattan. The work has gone smoothly from the start. the policemen are interested in the work and the results obtained are better. Complaints and requests for assistance of various kinds submitted by physicians, field nurses and food and sanitary inspectors of the district are assigned with brief verbal explanations to the outgoing squad of patrolmen. The assignments are simple and call only for an "O.K." or "Not O.K." by the patrolman and clerical work is avoided. The policemen are also instructed as to sanitary nuisances and what action to take in regard to them. The time required of the patrolmen is not over ten minutes a day for such assignments and talks. Arrangements are under way to give instruction in sanitary matters of new policemen by the Bureau of Public Health Education of the Department of Health. The work of the patrolmen has been of great assistance to the department.

SPINAL CORD COMPRESSION FROM LEPTOMENINGEAL CYSTS

WITH A REPORT OF TWO CASES *

A. L. SKOOG, M.D.
KANSAS CITY, MO.

The two cases which are incorporated in this report, and about which revolves the discussion of the subject of nonparasitic cysts of the leptomeninges of the spinal cord, are found to be quite uncommon, even though a most thorough search of the literature is made. The bulk of the reported arachnoidean cysts have for their etiology either the cysticercus or echinococcus, which means that they are multiple and complicated. Moreover, it is highly important that the simple, nonparasitic cysts like those which I am placing on record be recognized early, so that immediate proper operative intervention may be instituted. Then a fair prognosis may be offered.

A plea for an early recognition of the nature of the trouble is a chief motive for placing before the profession a report of my two interesting and instructive cases.

The first patient was in an extreme paraplegic state when first observed. Operative treatment improved her condition but not in a satisfactory manner. The second patient came under my observation in an earlier stage, and with a prompt operation and good after-care made a much better recovery.

REPORT OF CASES

CASE 1.—The patient (V. J., single, aged 37, tailoress) was referred to me for diagnosis by Dr. Gray, who performed the operation at St. Margaret's Hospital, which she entered July 10, 1912. She complained of inability to walk on account of a paralysis in the lower extremities, pain about region of lower ribs, feeling of numbness in the legs, and loss of control for urination and defecation.

Family.—Father is living, aged 87. He is suffering from a recent progressing senile enfeeblement. Mother died of pneumonia at the age of 73. Patient has three living brothers, all well; two brothers died, one at 22 and the other at 44 of tuberculosis. There are two healthy living sisters. One sister died of "heart disease" at 49, and another of tuberculosis at 23.

Past Illness.—Patient has had measles and epidemic parotitis. The menses were established at the age of 15. There has been some dysmenorrhea but no leukorrhea. Since the age of 16 there have been attacks of "stiff neck" lasting two or three days. Seven years ago there was an eruption below the knees without itching. There was some backache and headache at the time, but no sore throat, alopecia nor subsequent pains. Recovery was prompt.

Present Trouble.—The onset dates from about July, 1909, when patient awoke one morning with a feeling of numbness in the right leg. There was much difficulty in walking and no work was done for one week. Then followed a period in which she was able to work but there was present always a numbness and trouble in walking. Sharp pains around the waist and in the lower chest appeared early. Three weeks before entering the hospital the condition grew rapidly worse and the patient became bedridden. The left leg had become severely involved also. A loss of rectal control and urinary retention with a subsequent overflow and dribbling had appeared. Uncontrollable jerkings of the legs had been present a few weeks. There had been no headaches or vomiting.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Examination.—The mental condition was normal and the physical condition good. The head, chest and upper extremities gave normal findings. The patient was unable to move her lower extremities voluntarily. The paraplegia was of the flaccid type. The abdominal muscles were weak. There were no trophic sores. Some muscular atrophy was present. All deep reflexes in the lower extremities were absent. No Babinski or allied phenomena were found. The abdominal reflexes were not present. All forms of sensation on the right side from the tenth dorsal segmental area downward were reduced, epicritic and protopathic greatly, and deep sensation to a lesser extent. The ninth dorsal segment showed some mild sensory changes, and the eighth dorsal very slight. On the left side there was a mild diminution for epicritic and protopathic sensibility from the first lumbar segment downward, deep pain sensibility being well preserved. The diagnosis of a cord compression with a corresponding progressing transverse myelitis and tract degenerations was made. A neoplasm or a cyst was indicated. It was located as extramedullary and probably within the dura. The sensory chart localized the lesion at the eighth dorsal segment with possibly some compression on the seventh. An operation was advised at the fifth, sixth and seventh dorsal vertebrae.

Operation.—A laminectomy at the region indicated was performed on July 12, 1912, by Dr. Gray with Dr. Nesselrode assisting. The dura in this region seemed quite tense and had a bluish color. Opening it revealed an arachnoidean pocket of fluid. Its diaphanous wall was torn through, and following the evacuation there was hardly any of the pathologic structure visible. The contained fluid was clear, having to the naked eye the same appearance as normal cerebrospinal fluid. There followed an escape of much cerebrospinal fluid. The cord had the evidence of much local compression. It was visibly diminished in size at the eighth and ninth dorsal segments. The dura and external wound were closed. There was an uneventful recovery from the operative procedure. During the first few weeks the condition remained much the same except for a diminution of the painful symptoms. The patient left the hospital after three weeks and was lost sight of. From Dr. Nesselrode and by the report of a lay friend in May, 1915, I have gathered that there has been a slow improvement of all the damaged functions. There are no pains. The patient complains of a weak back. She now has control of the urine and stools. The patient can move the lower extremities, but in a feeble manner. She can walk with crutches, or a cane and some additional support. Her general health is good.

CASE 2.—This patient (J. H.) was referred conjointly to the surgeon, Dr. Outland, and myself by Dr. O. P. Mills of Grant City, Mo. The diagnostic observations and treatment were conducted at the Swedish Hospital, Kansas City, Mo., where the patient entered on April 22, 1913. She was 42 years old, the mother of three healthy living children, the youngest being 6 years old. One child died of diphtheria at the age of 3. Her husband is healthy. They live on a prosperous farm.

Past History.—There has never been any serious illness or trauma. Some hemorrhoids have been present since the birth of the first child nineteen years ago. Patient has been subject to occasional "sick headaches." History regarding the menses and pelvic organs was negative. The menstrual flow has failed twice.

Present Illness.—The onset dates from about March 1, 1913, when a numb sensation was noticed in the left ankle. The numbness increased and had extended upward to the hip in three weeks. It was difficult for the patient to describe this state, which was somewhat vague, with creeping cold and hot flashes in the leg. There was no pain of consequence except when walking. The pain had diminished at the time of this examination. The right leg was involved two weeks later. There was a pressure sensation about the legs and waist much like a tight band. A weakness in the lower extremities soon appeared, which was evidenced by some difficulty in walking. There was some trouble or delay in micturition. There were frequently sudden desires to defecate, and much haste was necessary to reach the stool. About one year ago there were a few pains in the shoulders, and six months ago a slight attack of numbness of short duration in the legs. These may or may not have been the very earliest manifestations of the present disease.

First Examination.—The psychic state, general health, chest and upper extremities were perfectly normal. There were no traces of hysterical stigmata. The urine and blood analyses were normal. All tests of the cranial nerves gave normal findings.

Motor: The gait showed much defect but patient was able to get about without support. It had neither the true flaccid nor the spastic characteristic. The lower abdominal muscles showed a little weakness. Muscles governing all movements at hip, knee, ankle and toe joints evidenced considerable weakness, the smaller muscles in the distal parts having a greater amount of loss of power. The flexor groups seemed to be weaker than the extensors. The left side was slightly weaker than the right.

Reflexes: Abdominal reflexes could not be elicited. The gluteals were brisk. The patellars were exaggerated to a moderate degree, left more than right. Decided prepatellars were presented. The Achilles were likewise exaggerated, right equaling left. There were no clonuses. The toe sign was positive to the Babinski and Oppenheim tests, but in a rather moderate degree.

A marked diminution of epicritic, protopathic and deep sensation was present, beginning at an encircling line about 3 cm. below the umbilical level. From this up to the umbilical line there were undoubtedly some mild sensory changes to touch and pin-prick tests, but responses were often doubtful in this narrow zone. Above the umbilicus all forms of sensation were normal. The sensory changes began at the same level on the right and left. The thermal sense showed a definite loss from the umbilicus downward. There was noticed in particular a retardation of the responses, especially for the hot tubes. The diminution of the deep muscle sense was mild in the lower extremities. Sense of position was much changed in the legs, being more noticeable at the proximal joints in contrast with the distal. More than 50 per cent. of the tests at the toe and ankle joints yielded incorrect replies. The tuning-fork vibrations (256) were not perceptible at prominences of the pelvic bones or lower extremities. No vibrations were felt at the fifth lumbar spinous process. They were diminished at the fourth and normal at the third lumbar.

Second Examination (May 2, 1913).—The subjective symptoms had remained the same or possibly became more prominent. There had been some mild complaints of stomach and shoulder pains. The objective findings compared with the first examination, were entirely pronounced in every particular.

Rachiocentesis was performed on May 4, 1913, at the third intervertebral lumbar space. The pressure registered 350 mm., water gage, and with the patient in a sitting posture. After 30 c.c. were withdrawn the pressure was reduced to 260 mm. The fluid was clear, containing no flocculi. The total albumin content was slightly increased. Likewise there was shown a very feeble positive globulin content by the Nonne-Apelt and butyric acid tests. The Wassermann was negative. The lymphocyte (small and large) count was 12 per cubic mm. There was some débris, and amorphous and crystalline bodies. A number of organic bodies taking a rather heavy stain and appearing to be degenerated epithelial cells, were found. No parasitic organism of any kind, nor tumor cells could be demonstrated.

The diagnosis eliminated syphilis, in particular that of the meninges, also tuberculosis and other rarer chronic meningeal infections. A motor and sensory paraplegia makes it quite evident that there is organic disease or a compression at the lower dorsal spinal cord. A chronologic survey of the development and progress of the symptoms and examination findings invites the diagnosis of an extramedullary new growth or cyst with its upper pole surely at the eleventh dorsal cord segment and probably very mildly involving the tenth dorsal. The lower pole could not be located definitely.

The lesion has an intradural location. I stated that we were dealing with a cyst of the inner meninges or a very soft benign neoplasm. There were no hopes for checking the disease otherwise than by a surgical intervention. Accordingly I demanded an immediate laminectomy at the seventh and eighth dorsal vertebrae.

Operation.—The laminectomy was performed on May 7, 1913, by Dr. Outland, assisted by Dr. Clendening. After removal of the seventh and eighth dorsal laminae, there was seen, at the depth of the entire cavity produced, a decided bulging of the dura which was quite tense to palpation. There was diminished transmitted pulsation of the dura from the cord, and it had a passively congested appearance. The sixth dorsal lamina was then removed. The dura was cautiously opened, and a considerable amount of cerebrospinal fluid free in the subarachnoidean space escaped. Then there was seen distinctly a cyst covering the posterior surface of the cord, extending to each lateral side and longitudinally for a distance of about 2.5 cm. The cyst covered the entire eleventh and a portion of the tenth dorsal segments. It was undoubtedly an arachnoidean cyst with probably complete but exceedingly diaphanous walls. The cyst wall was torn through during a little traction. It was opened freely and all the fluid allowed to escape. Unfortunately none of the fluid, which was perfectly clear and had the same appearance as normal cerebrospinal fluid, was collected for chemical and microscopic examinations. The cyst does not belong to the echinococcus or cysticercus class. The cord with its closely adapted pia was now free to sight and palpation, and seemed normal. The dura was closed without drainage. This was followed by a closure of muscles, fascia and skin. A great deal of pain and peculiar vise-like cramps in the legs and lower abdomen were experienced for some days following the operation. With a gradual recession these disappeared in about two weeks. There was retention of urine for eleven days, or about until the patient commenced to sit up, when normal micturition appeared rather quickly.

Third Examinatioin (May 22, 1913).—The patient walked unsupported but somewhat unsteady, showing a gait with an incoordination and mild motor weakness. Left leg was weaker than the right. She states that "the left leg gives way at the hip." Individual tests showed a fair amount of power and movements at hips, knees and ankles, right side being slightly stronger than the left. All deep reflexes were present, right patellar being slightly more pronounced than the left. The Achilles were equal and normal. There were no Babinski or Oppenheim phenomena. For a few days both had been present, the latter disappearing some days earlier. It was interesting to observe from day to day the slow evolution and disappearance of the Babinski phenomenon. The sense of position was fair at the hips and right knee, and impaired at the left knee. A greater amount of impairment was present at the ankles and toes, and rather poorer on the left side where there were 30 per cent. incorrect replies. Deep pressure sense was obtunded slightly in the lower extremities. The tuning fork vibration sense was normal at the right malleoli, feeble at the left malleoli and knees. It was absent at the pelvic prominences and sacrum. Tactile sense showed the same superior line dividing the normal from abnormal, but much more difficult to determine. It was about normal for the right leg and for the left showed a slight obtunding. Pin-pricks corresponded to the tactile sense. She volunteered "it hurts in the right leg," where as before the operation it did not. The trophic state was improving. The buttocks, which formerly "felt like sitting on ice," were much better. The lower extremities did not feel so cold. The skin, which formerly was harsh and dry, was now capable of sweating and felt moist.

Fourth Examination.—After being home one month, the patient returned for a brief examination on June 27, 1913. She stated that there had been a continuous improvement in every way. No pain or compression symptoms were being experienced. The urinary functions were normal. She walked rapidly without any support. The gait was not yet quite normal. She readily stood raised on the toes of both feet but not on those of one foot alone. The Achilles reflexes were equal and normal. The patellars were almost normal, the left being slightly brisker than the right. There were no Babinski or Oppenheim phenomena. There remained a little disturbance of sense of position for the ankle and toes, giving about 15 per cent. erroneous replies. All forms of sensation had returned almost to the normal state. Deep sensibility was normal everywhere. There was a mild diminution for epicritic and protopathic sensibility in the left leg, being normal over the abdomen and in the right leg.

No subsequent examinations were made, but reports by letters indicate that the patient was getting along nicely, the last report coming a few weeks ago. She was employed in her household duties. Some subjective symptoms were recited which might be attributed to the climacterium, which is being experienced now.

LITERATURE

While we are delving into past writings bearing on this subject there should be borne in mind the numerous possible errors, as reported cysts which are really nothing more than an excess of cerebrospinal fluid in the subarachnoidean space, cysts extending from within the cord or from without caused by some other disease, or the cystic degenerations of tumors of the leptomeninges. All of the earliest cases coming to our attention under captions of "Arachnoid Cysts," "Cysts from the Cavity of the Arachnoid," etc., are complications in which there is greatly increased cerebrospinal fluid in the subarachnoidean cavity secondary to cerebrospinal syphilis, paresis, tuberculosis and numerous other pathologic states. I name a few of those which I have analyzed as follows: Quain,[1] 1855; Ware,[2] 1858; Calmeil,[3] 1858; Wilks,[4] 1865; Sutherland,[5] 1871; Browne,[6] 1875.

Bellencontre[7] has furnished us with an early worthy contribution bearing on the subject under consideration. Most of his cases were cysticercus or echinococcus cysts. One, however, might have been a true single primary cyst belonging to our group. This one is a cyst of Professor Charcot, also reported in his work.[8] It was described as a "hydatid cyst" between the layers of the visceral arachnoid and pia in the cervical region, producing compression symptoms.

A few cases of cystic degeneration of genuine neoplasms of the inner meninges are on record. The Leyden case reported by Lenz[9] was examined pathologically by Recklinghausen and a diagnosis of "cystic sarcoma of the arachnoid with internal hemorrhage" was made. There were two cystic cavities in the tumor resting between the arachnoid layers and pia. It contained spindle cells and large ganglion-like cells. The case of Taube[10] is a lymphangioma with cystic degeneration. The origin was from the pial layers. The case of Potts[11] which was demonstrated at opera-

1. Quain: Large Cyst from the Cavity of the Arachnoid, Tr. Path. Soc., London, 1855, vi, 8.
2. Ware, C. E.: Cysts from the Cavity of the Arachnoid, Boston Med. and Surg. Jour., 1858-9, lix, 259.
3. Calmeil: Deux observations des kystes de la grande cavité de l'arachnoide, Gaz. d. hôp., 1859, xxxii, 514.
4. Wilks: Cyst in the Cavity of the Arachnoid, Tr. Path. Soc., London, 1865, xvi, 6.
5. Sutherland, H.: Arachnoid Cysts, West Riding Lunatic Asylum Rep., London, 1871, i, 218.
6. Browne: Arachnoid Cysts, Jour. Psych. Med., London, 1875, n. s., i, 167.
7. Bellencontre, P. E. D.: Contribution à l'étude des kystes hydatiques comprimant la moelle épinière, Paris, 1876.
8. Charcot: Lectures sur les maladies du système nerveux, Paris, 1873.
9. Lenz, G.: Beitrag zur Kenntnis der Tumoren der Pia und Arachnoidea spinalis und des Ruckenmarks, Bern, 1895.
10. Taube, J. L.: Lymphangiom der Pia Spinalis; Druckmyelitis, Neurol. Centralbl., 1887, vi, 247.
11. Potts, C. S.: Intradural Cysts of Spinal Meninges Removed by Operation, Jour. Nerv. and Mental Dis., 1910, xxxvii, 621.

tion had a pathologic diagnosis of a softening or hemorrhagic cyst of the inner meninges. It contained a soft gelatinous mass and lay posteriorly over the first lumbar, twelfth and eleventh dorsal segments. It does not belong to this group of simple cysts.

H. Schlesinger[12] has been quoted in a discussion of this subject. He has covered his material in an elegant and thorough manner. The two cases which he has been given the crédit of describing as simple cysts of the inner meninges, however, are not clearly cysts of this class. He discusses a number of parasitic cysts.

Oppenheim[13] writes of a local arachnitis above a tumor. The two cases which he has placed on record are questioned even by the author. He considers the possibility of some neighboring tuberculous disease.

Under "Chronic Spinal Meningitis," Horsley[14] has described a condition with allusions to twenty operative cases. Only one of these reported cases is to be considered as a possible simple arachnoidean cyst. Gowers referred this paraplegic for a laminectomy. A recovery followed.

F. Krause[15] in his surgical text uses the term "arachnitis adhaesiva circumscripta," and quotes to some length the historical details of two of Oppenheim's cases. There is a question about the simplicity of both cases, Krause believing the cord changes of at least one to be secondary to compression from the arachnoidean accumulation of fluid.

While Munro[16] reports having seen the pathologic process a number of times, it is necessary to reject his reported cases. They are not true arachnoidean cysts.

The French literature contains almost nothing relating to the subject. I have had recently some personal conversations on arachnoidean cysts with neurological men in Paris. They informed me that primary cysts of the arachnoid probably are encountered in other countries but not in France.

In reviewing the case of Claude and Rose,[17] it has occurred to my mind that possibly they were dealing with a cyst of the inner meninges, either a complete one or a well-defined pouch.

Of the few undoubted cases of arachnoidean cysts available in the literature, that of Spiller, Musser and Martin[18] holds an eminent position. It is the first concise, definite presentation of the subject. The distribution of the pain rather than motor or sensory changes led to a laminectomy exposing the third and fourth lumbar segments. A very thin-walled cyst of the arachnoid was opened. A gradual improvement covering months ensued. A report[19] six and a half years later indicates an almost perfect recovery, some slight buttock pains remaining.

Mendel and Adler[20] report one undoubted case with an operation. Eight months following the operation the patient was able to walk, though he had not been able to stand on his feet before the treatment. There remained only a slight weakness of the right leg. The arachnoidean cyst was located at the upper dorsal segments.

The case of Bliss,[21] diagnosed as a pia-arachnoid cyst and demonstrated by a laminectomy, seems definitely to have been an arachnoidean cyst with fluid like the cerebrospinal. It compressed the lower cervical segments. Seven weeks following the operation there was in progress a steady return from the paraplegic state to the normal.

Bruns[22] has placed on record a certain case. By the highest zone of sensory disturbance, reaching to the sixth dorsal segment on the right and seventh on the left, the lesion was located beneath the fourth dorsal spine. A typical arachnoidean cyst was exposed by a laminectomy at the third, fourth and fifth dorsal vertebrae. The paraplegic state grew worse for two months, which was followed by a period of improvement sufficient to permit walking in nine months.

To recapitulate then, we have but four previously reported cases that might be classed with absolute certainty as primary, simple, uncomplicated cases of leptomeningeal cysts. With my two added cases there is a total of six, and all have been located in the arachnoid.

PATHOLOGY

To appreciate fully the mode of formation of these cord arachnoidean cysts, the neomembranes, and their relationship to important structures, it is first necessary to have a clear idea of the normal gross anatomy and histology of the three coverings of the spinal cord with their relationship to the spaces and cord itself.

Beneath the heavy fibrous dura is the subdural space containing only a minute quantity of fluid. The inner surface of the dura has an endothelial lining. Going toward the cord there follows a thin, delicate arachnoid. This membrane has on the parietal and visceral surfaces an endothelial lining. These delicate cells have various forms, but chiefly ovoid, and all have the same kind of nuclei. Between the endothelial layers are the fine and some coarser connective tissue fibrils. The fibers never form bundles. Mattauschek[23] has demonstrated delicate "epithelial" cells on some of the fibers. Obersteiner[24] teaches that in the normal state the arachnoid is cloudy only in extremely old individuals. The subarachnoidean space is the container for the circulating cerebrospinal fluid. Some fibers are stretched across this space, attached from the inner arachnoid to the outer pia mater. There are no nerves or blood vessels in the arachnoid. The pia, adapting itself closely to the cord and its indentures, has an abundance of vessels and nerves.

Key and Retzius[25] have furnished us with some early information on the anatomy of the leptomeninges. Brunet[26] with C. Robin has commented on neomembranes forming in the arachnoid, giving hemorrhages as the cause. Knox[27] furnished a very early argumentative discourse, criticizing Magendie,

12. Schlesinger, H.: Rückenmarks- und Wirbeltumoren, Vienna, 1898.
13. Oppenheim, H.: Geschwülste in Bereich des Centralen Nervensystems, Berlin, 1907.
14. Horsley: Chronic Spinal Meningitis, Brit. Med. Jour., Feb. 27, 1909.
15. Krause, F.: Chirurgie d. Gehirns und Rückenmarks, Berlin, 1911, ii, 726 and 729.
16. Munro: Circumscribed Serous Meningitis of the Cord, Surg., Gynec. and Obst., March, 1910, p. 235.
17. Claude, H., and Rose, F.: Kompressionssymptome am Rückenmark bei einer Hysterischen, Neurol. Centralbl., 1908, xxvii, 889.
18. Spiller, Musser and Martin: Cysts of the Spinal Cord, Univ. Penn. Med. Bull., March and April, 1903, pp. 27 and 56.
19. Spiller: Am. Jour. Med. Sc., January, 1909, p. 95.
20. Mendel and Adler: Zur Kenntnis der Meningitis serosa spinalis, Berl. klin. Wchnschr., 1908, xlv, 1596.
21. Bliss, M. A.: Cysts of the Spinal Canal, THE JOURNAL A. M. A., March 13, 1909, p. 885.
22. Bruns, L.: Ein Fall von arachnoidaler Zystenbildung, Neurol. Centralbl., Leipzig, 1911, xxx, 1026.
23. Mattauschek, Emil: Ein Beitrag zur Kenntnis der Arachnoidea spinalis, Arb. a. d. Neurol. Inst. d. Wiener Univ., 1908, xvii, 150.
24. Obersteiner: Nervösen Centralorgane, Ed. 4, Vienna.
25. Key und Retzius: Studien in der Anatomie des Nervensystems, Stockholm, 1875, i.
26. Brunet, D.: Recherches sur les néomembranes et les kystes de l'arachnoide, Paris, 1859.
27. Knox, Robert: Some Remarks on the Structure and Arrangement of the Spinal Arachnoid, Lond. Med Gaz., 1843, ii, 463.

Sharpey and others. He mentions fine bands connecting arachnoid and pia. He also demonstrated a space completely encircling the cord.

The nature of the disease has prevented satisfactory studies of the pathologic anatomy in the few cases reported. The exceedingly delicate walls do not readily permit the operative excision of even a portion for microscopic preparations. No partitions of the cavity have been observed in the six cases. The contained fluid seemed to have been the same in all and not very different from cerebrospinal fluid in the free subarachnoidean space.

In the etiologic survey it is interesting to note that the six cases were all in women, and that the ages ranged from 17 to 50. A number of theories have been advanced regarding the cause. The parasites can be excluded. Horsley suggests the gonococcus as a cause, which is a possibility. The influenza bacillus might be considered. In fact, any one of a large number of infectious organisms may be the cause. Trauma is another possible factor. Likewise developmental malformations in the arachnoid should be considered seriously. I believe that there may be several provocative agents in the different cases and that from one of the irritating factors there are formed adhesions with the endothelial cells and fibers of the arachnoid. This is followed by an exudate or secretion from the delicate endothelial cells lining the fibrils or covering the interior of the cyst. Thus there is a very slow accumulation of fluid followed by the gradual development of the cord compression symptoms.

DIAGNOSIS

Time does not permit an exhaustive review of all the possible symptoms or the differential diagnosis in cysts of the leptomeninges of the cord. My two cases combined illustrate about all the symptoms observed. The diagnosis of a compression of the cord should usually be made without much difficulty by an experienced diagnostician in neurologic diseases. It is essential that we have an intimate knowledge of the minute anatomy and physiology of the spinal cord and roots. The almost exact metamerism of the spinal cord and its utilization should be of signal service in determining the location of the level of the lesion. To determine whether the lesion is intramedullary, intradural or extradural is not so easy a task. Much importance is attached to the painful symptoms. An intramedullary growth or cyst gives no pain unless indirectly pressing on roots. A carefully prepared sensory chart is absolutely essential, and is the chief guide to the segmental localization. The reflexes are of some importance for locating the lesion. A chronologic review of the development of the motor weakness and the various painful neural phenomena is of much importance in determining whether the pressing object is a hard, soft or cystic one. Variability in the degree of some of the symptoms, especially pain, sensory disturbances and motor weakness, is characteristic of an extramedullary cystic compression.

Rachiocentesis is advised in all these cases. It aids in establishing the nature of the trouble. Gendron[28] suggests a puncture above and below (*au-dessus et au-dessous*) the compression for separate chemical and microscopic examinations, as has been done by Sicard and Foix in a series of cord compressions from Pott's disease.

28. Gendron, André: étude clinique des tumeurs de la moelle et des méninges spinales, Paris, 1913, No. 229.

TREATMENT

More than a quarter of a century has elapsed since the first successful removal of a meningeal tumor compressing the cord was accomplished by the late Sir William Gowers[29] and Horsley. To-day the spinal canal is so frequently opened that it is unnecessary to say anything regarding the comparative safety with which these major operations may be performed.

Laminectomy is the only treatment for cysts of the cord arachnoid and pia. It is usually necessary to remove at least three laminae. The leptomeningeal cysts have been found chiefly in the dorsal vertebral canal. No postoperative drainage is necessary. No physical or chemical therapeutics are considered for the eradication of the disease. If there has been much motor impairment, however, it might be of considerable benefit to give massage and electrical treatments to the paraplegic regions during a certain period following the operation. The prognosis is excellent if proper treatment is given early. There should be in the neighborhood of a 100 per cent. recovery rate if an early operation is performed. Comparing my two cases illustrates this fact. The compression may continue to a degree at which the pyramidal tracts have degenerated beyond repair, and a restoration of the paraplegic state becomes impossible. My second patient had visited a famous surgical clinic a week or two before coming under my observation, was observed ten days and with grave doubts about the diagnosis sent home with the advice to return in three months for further observation after the disease had advanced further. A skilled neurologist should have recognized the condition at a stage fully as early as the patient presented herself.

CONCLUSIONS

1. Admitting, from results of a thorough search of the literature, that there have been recognized only a very few cases of simple, uncomplicated cysts of the spinal arachnoid and pia, we should keep, nevertheless, a lookout for others. The recognition of some of these cysts may have been neglected in the past.

2. The diagnosis of a lesion at or near a certain segmental level should not be difficult. The perception of the exact nature of the compressing material is accomplished less readily.

3. A prompt evacuation of the cystic contents by means of a laminectomy should permit a good prognosis to be fulfilled.

Note.—Since the preparation of this article there has appeared the careful report of another case of arachnoidean cyst by Bouché (Compression medullaire par arachnoidite cloisonnée, Revue Neurologique, July 30, 1914, No. 14), the publication being delayed almost one year owing to the bellicose times. The several severely damaged functions had returned almost to the normal twelve months after evacuating the cyst by a laminectomy. The author comments on the dark etiology and the importance of early operative intervention.

Rialto Building.

29. Gowers: Diseases of the Nervous System, Ed. 3, i, p. 627; Med. Chir. Tr., 1888, lxxi.

Heavy Athletics.—The college strong man often dies in middle life. The long-distance runner, the great-chested rower, the prize fighter, usually dies young, frequently from tuberculosis or some other disease associated with lowered resistance. Heavy athletics are pernicious. They have no place in hygienic exercise. The after effects of severe exertion are harmful. An enlarged heart is not a safe organ; a greatly increased lung capacity is not only useless but dangerous in later life.—*Public Health Reports,* May 7, 1915.

THE INTELLIGENCE EXAMINATION AND EVALUATION

AND A NEW INTELLIGENCE EXAMINATION SHEET

J. VICTOR HABERMAN, A.B., M.D., D.M. (BERLIN)
Instructor in Clinical Psychology and Psychotherapy, College of Physicians and Surgeons, Columbia University; Attending Physician, Psychotherapy Room, Vanderbilt Clinic

NEW YORK

The examination and evaluation of a child's intelligence is a most difficult procedure. No method of absolute computation of the *normal* general mental ability exists, not even a relative computation, and, at best, our conclusions are based on single facts which we ascertain. In other words, we estimate the whole by gaging a separate part[1] or, better still, several separate parts.[2] How accurately, it must be asked, can this be done? About as accurately as anything, perhaps, that is in largest measure subjective. Using precisely the same methods, my results and yours may evidence remarkable divergencies. Much will depend on one's knowledge[3] of the *normal* and *abnormal* child, and more still on wide experience in examining and treating such.

But there is not even an absolute *normal*. The pendulum of intelligence may swing a minor length to right or left and still be within accepted bounds. A relative evaluation of the intellectual make-up, therefore, may be sufficient for our purposes. Our purposes? Just what may they be? Briefly this: The individual we term mentally and intellectually normal is one who acts and *progresses* in a manner that will permit him to take his place among his fellows without conflict, or any hindrance or molestation to them. Or again, to state it differently, normal is one whose reaction to given stimuli is no more nor less in degree and manner than a certain quantum that we have become accustomed to—allowing the foregoing latitude for the pendulum swing, and remembering the possibilities of topographic, racial and temperamental variations. Hence, as clinical psychologists, confining ourselves for the time being to the problem of the child, we have children brought to us because they "do not keep up with the others in the class," because they "fall behind," or "do not progress," etc.; or the complaint is that they "cannot get along with other children," or are odd or just "queer" or "peculiar" or "not right"; or they are children "who cannot be managed or trained," who "are combative, destructive, morbidly tempered"; who "run away," or "come in conflict with the law," etc. Some may be ignorant; some not at all. Their variance from the *action* and *progress* that we have become inured to causes these children to be singled out by their own families in the home, or by the teacher in the school, or by the police (or probation) officer in the community at large; and they are then (or ought to be!) brought to us for a diagnosis and prognosis preliminary to a therapy. This, our first purpose and duty, then, is to discover in what and why such a child differs from the mentally normal child.

The *why* here referred to, that is, the etiology, I do not mean to touch on in this paper. As to the abnormalities involved, they are those of mental and actual behavior which we rubric under the general term of psychopathies (and these, too, I shall leave aside for the present[4]) and those involving the intelligence as such. The latter necessitate our acquaintance with the component parts of intelligence and their normal interfunctioning in the mental process. They also necessitate our acquaintance with the methods of testing these faculties. It is this examination which, as I have intimated, is so difficult, and for which no simple or sufficient method of procedure has yet been offered. How shall we probe the psychical make-up of the child so that its general mental endowment may be understood, may be (for purposes of record and accuracy) graphically expressed—evaluated, as we are wont to say? How further shall we analyze the whole so as to discern the parts, the separate so-called faculties, and thus gain insight into this facultative interfunctioning and finally appreciate the nature of its thinking, feeling, judging, acts of will?[5] For the mind, the psyche, the general intelligence of the child, call it what you will, is not a matter of what it knows or has retained—not a matter of knowledge—but of something essentially dynamic behind and veritably *in* this knowledge, in short, a facultative interfunctioning (of perception, comprehension, combination, etc.), harmonious and correlated in the normal,[6] discordanced and disrelated in the psychopathic, incapable, inadequate, impotent when there is intellectual defect.

From this it may be seen that the work in clinical psychology is far different, and a decidedly more serious business than that of "testing whether one is an idiot, imbecile or moron," a stereotyped jargon heard on all sides at present, for the entire matter has fallen on evil days and into the hands of a new class of dilettanti who have been permitted to invade the clinics and colleges, and who believe they know aught of the child because they have learned to make a Binet test. It is the latter fact, and the proneness of our institutions likewise to lean to passing fashions, that makes it most imperative for us to indicate just what the Binet tests do *not* do, and their general

1. Thus, some have graded intelligence by tests of color sense alone, or through tests of sensory acuity (with esthesiometer) or through a completion (Ebbinghaus) test, etc.

2. Nor do we deceive ourselves in thinking that the intelligence we are testing is just the sum of such "parts." Intelligence depends on their correlation and interfunctioning.

3. By which I mean pediatrics and neurology, and a considerable knowledge of some of the specialties and much beside. A clinical psychologist must be first and foremost a physician; everything else is secondary. That the physician today knows nothing of the subject is pathetic enough, but does not change the matter. The psychologist and psychology must, in clinical psychology, be subservient to the physician. Knowledge of physiology and its patbology is the fundamental, and deep and abstrusely in this physiologic are hid the roots of mental functioning, both normal and abnormal. Out of the anamnesis and the examination we ascertain more important facts for the understanding and evaluation of the child mentally than out of the psychologic tests, however indispensable the latter may be. They must never be held as substitutes for medical facts, but merely as concomitant data to such ascertained through medical and psychopathologic examination. It is more important to learn that a child's mental "peculiarity" or abnormality is due to disturbance of internal secretion (mental infantilism, for instance) or nasal occlusion or ethmoid disease (as Aprosexia nasalis) or latent congenital lues (mental defatigation, etc.), much more important, for the understanding of the case, than to learn from tests that its attention, concentration, etc., are defective.

4. It must not be forgotten, however, that the intellectual functioning may be much influenced or disturbed by the psychopathy of an individual. At our clinic a psychopatby questionnaire is, therefore, always filled out before the intelligence examination is begun.

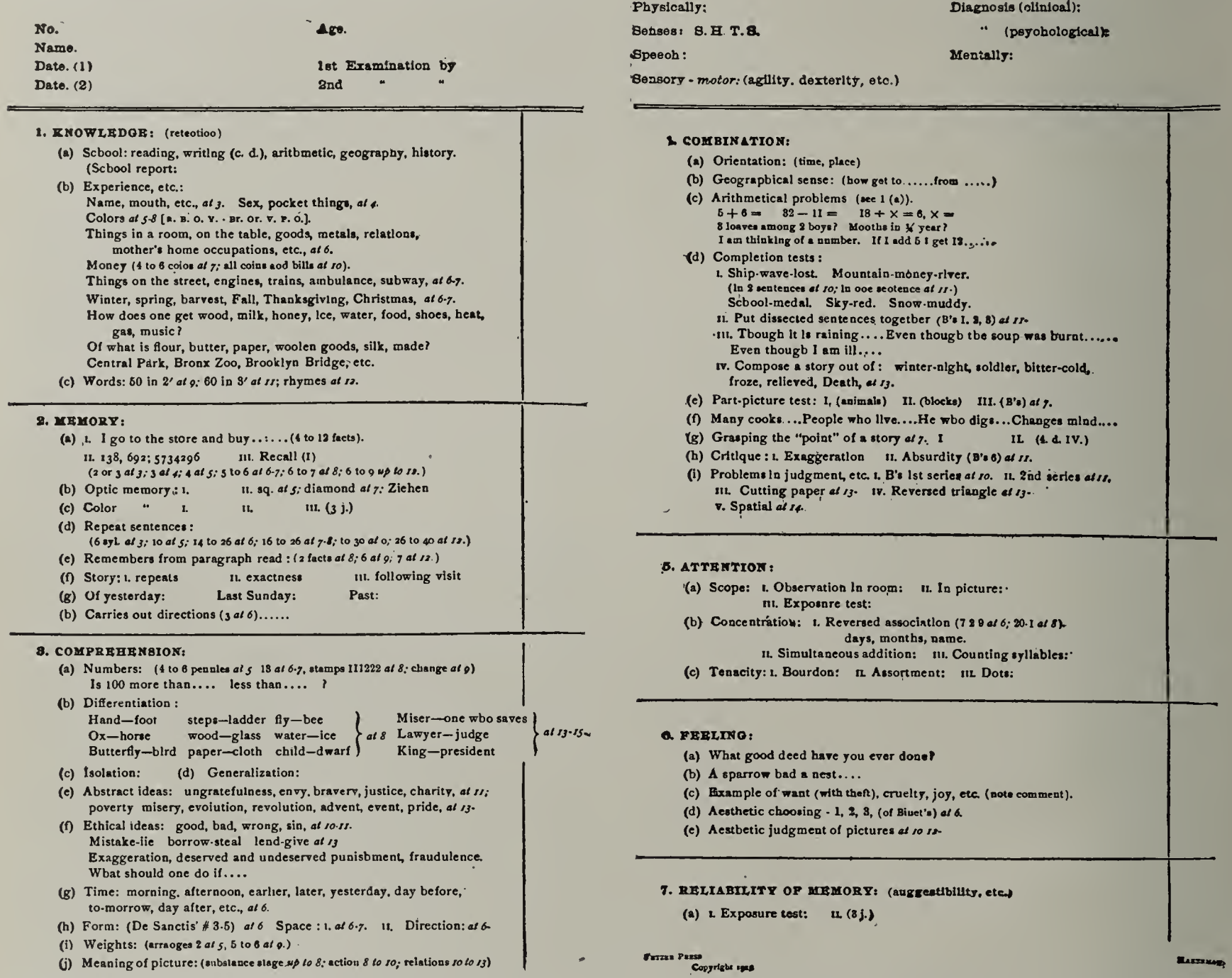
5. Another very important factor is diligence or assiduousness. It plays the greatest part in the mental building of the child and later on through life. There is, however, probably no way known of examining or estimating it.

6. There is, however, an abnormal type in which the mental functioning may be harmonious and correlated yet of an abnormal nature, inasmuch as the scope of such functioning is miniature, or infantile. It is an important class, even if a small one, to keep in mind; it is no doubt most often overlooked. Of course, some of these cases of psychic infantilism may also be below the normal in intelligence, or even defective. See Anton, G.: Ueber Geistigen Infantilismus, in Vier Vorträge über Entwicklungsstörungen beim Kinde, Berlin, 1908; especially pp. 35-36; also De Sanctis: Gli Infantilismi, Policlinico (sezione pratica), Rome, 1910, p. 20.

limitations, and warn, as Stern,[7] Bobertag, H. Myers and Binet himself warned, against dilettanteism in this work, and the use of any test series in an automatic way.

There are two methods of examining the intelligence now available, the one being the testing of the "faculties" on which intelligence is assumed to rest, the other a reconnaissance of a set of facts stated to be known by a large percentage (75 per cent.) of children at each given age (namely, the Binet tests).

The former tests are those longest in use, and developed out of the studies and examinations in



No. Age.
Name.
Date. (1) 1st Examination by
Date. (2) 2nd " "

Physically: Diagnosis (clinical):
Senses: S. H. T. S. " (psychological):
Speech: Mentally:
Sensory-*motor:* (agility, dexterity, etc.)

1. KNOWLEDGE: (reteotioo)
(a) School: reading, writing (c. d.), aritbmetic, geography, history. (School report:
(b) Experience, etc.:
Name, mouth, etc., *at 3*. Sex, pocket things, *at 4*.
Colors *at 5-8* [B. B. O. Y. - Br. Or. V. P. O.].
Things in a room, on the table, goods, metals, relations, mother's home occupations, etc., *at 6*.
Money (4 to 6 coins *at 7;* all coins and bills *at 10*).
Things on the street, engines, trains, ambulance, subway, *at 6-7*.
Winter, spring, barvest, Fall, Thanksgiving, Christmas, *at 6-7*.
How does one get wood, milk, honey, Ice, water, food, shoes, heat, gas, music?
Of what is flour, butter, paper, woolen goods, silk, made?
Central Park, Bronx Zoo, Brooklyn Bridge, etc.
(c) Words: 50 in 2′ *at 9;* 60 in 3′ *at 11;* rhymes *at 12*.

2. MEMORY:
(a) I. I go to the store and buy . . : . . . (4 to 12 facts).
II. 138, 692; 5734296 III. Recall (I)
(2 or 3 *at 3;* 3 *at 4;* 4 *at 5;* 5 to 6 *at 6-7;* 6 to 7 *at 8;* 6 to 9 *up to 12.*)
(b) Optic memory: I. II. sq. *at 5;* diamond *at 7;* Ziehen
(c) Color " I. II. III. (3 j.)
(d) Repeat sentences:
(6 syl. *at 3;* 10 *at 5;* 14 to 26 *at 6;* 16 to 26 *at 7-8;* to 30 *at 9;* 26 to 40 *at 12.*)
(e) Remembers from paragraph read: (2 facts *at 8;* 6 *at 9;* 7 *at 12.*)
(f) Story: I. repeats II. exactness III. following visit
(g) Of yesterday: Last Sunday: Past:
(b) Carries out directions (3 *at 6*).....

3. COMPREHENSION:
(a) Numbers: (4 to 6 pennies *at 5* 18 *at 6-7*, stamps III222 *at 8;* change *at 9*)
Is 100 more than.... less than.... ?
(b) Differentiation:
Hand—foot steps—ladder fly—bee } *at 8* Miser—one who saves } *at 13-15*
Ox—horse wood—glass water—ice Lawyer—judge
Butterfly—bird paper—cloth child—dwarf King—president
(c) Isolation: (d) Generalization:
(e) Abstract ideas: ungratefulness, envy, bravery, justice, charity, *at 11;* poverty misery, evolution, revolution, advent, event, pride, *at 13*.
(f) Ethical ideas: good, bad, wrong, sin, *at 10-11*.
Mistake-lie borrow-steal lend-give *at 13*
Exaggeration, deserved and undeserved punisbment, fraudulence.
Wbat should one do if....
(g) Time: morning, afternoon, earlier, later, yesterday, day before, to-morrow, day after, etc., *at 6*.
(h) Form: (De Sanctis' # 3-5) *at 6* Space: I. *at 6-7*. II. Direction: *at 6-*
(i) Weights: (arranges 2 *at 5*, 5 to 6 *at 9*.)
(j) Meaning of picture: (substance stage *up to 8;* action *8 to 10;* relations *10 to 13*)

4. COMBINATION:
(a) Orientation: (time, place)
(b) Geographical sense: (how get to.....from .....)
(c) Arithmetical problems (see 1 (a)).
5 + 6 = 32 − 11 = 18 + × = 6, × =
8 loaves among 2 boys? Mooths in ¼ year?
I am thinking of a number. If I add 5 I get 12. . . .
(d) Completion tests:
I. Ship-wave-lost. Mountain-money-river.
(In 2 sentences *at 10;* in one sentence *at 11*.)
School-medal. Sky-red. Snow-muddy.
II. Put dissected sentences together (B's I. 2, 3) *at 11*.
III. Though it is raining....Even though the soup was burnt.....
Even though I am ill.....
IV. Compose a story out of: winter-night, soldier, bitter-cold, froze, relieved, Death, *at 13*.
(e) Part-picture test: I, (animals) II. (blocks) III. (B's) *at 7*.
(f) Many cooks....People who live....He who digs...Changes mind....
(g) Grasping the "point" of a story *at 7*. I II. (4. d. IV.)
(h) Critique: I. Exaggeration II. Absurdity (B's 6) *at 11*.
(i) Problems in judgment, etc. I. B's 1st series *at 10*. II. 2nd series *at 11*.
III. Cutting paper *at 13*. IV. Reversed triangle *at 13*.
V. Spatial *at 14*.

5. ATTENTION:
(a) Scope: I. Observation in room: II. In picture:
III. Exposure test:
(b) Concentration: I. Reversed association (7 2 9 *at 6;* 20-1 *at 8*).
days, months, name.
II. Simultaneous addition: III. Counting syllables:
(c) Tenacity: I. Bourdon: II. Assortment: III. Dots:

6. FEELING:
(a) What good deed have you ever done?
(b) A sparrow had a nest....
(c) Example of want (with theft), cruelty, joy, etc. (note comment).
(d) Aesthetic choosing - 1, 2, 3, (of Binet's) *at 6*.
(e) Aesthetic judgment of pictures *at 10 12*.

7. RELIABILITY OF MEMORY: (suggestibility, etc.)
(a) I. Exposure test: II. (3 j.)

Fetzer Press Copyright 1915 Haberman

Outlines of tests used in determining the relative intelligence of children. Copies of this sheet may be obtained from the Fetzer Press, 106 Duane Street, New York.

psychiatry and the domain of the mentally abnormal. Large series of psychologic tests were made on normals and abnormals and the differences noted. Both tests of single psychologic factors were devised and then entire series of tests (Rieger, Kraepelin, Anton, Sommer and especially Ziehen), and so psychology came to the aid of mental pathology (psychopathology), and both were commissioned by pedagogics and its deviate, remedial pedagogy (Heilpaedagogik). Hence the many sources of these tests, and also their wide field of application.

As to the faculties to be tested in this sifting of the mental, they are primarily such as are involved in what one deems *intelligence*—primarily but not exclusively so. Ziehen[8] characterizes this intelligence as essentially composed of memory, comprehension and judgment or combinational ability. Stern[9] holds it to be "the general ability or capacity of an individual consciously to focus his thinking on new requirements; it is general mental adaptability to new problems and conditions of life." But this depends wholly on the factors designated by Ziehen. Still another definition is attempted by Treves and Saffiotti.[10] "Intelligence," they write, "consists in the greater or lesser ability of an individual to utilize the theoretical and practical worth of his ideas and acts in orienting and adapting himself to his environment, by discerning (or finding out) that which is most advantageous for him." This, however, does not tell us with what psychologic functions it is accomplished, and we must again fall back on the elements noted in the first definition.

7. Deutscher Kongress für Jugendbildung und Jugendkunde at Dresden, 1911. Report in Arbeiten des Bundes für Schulreform, etc., Leipzig, Teubner, 1912.

8. Ziehen, T.: Die Erkennung des Schwachsinns im Kindesalter, Berlin, Karger, 1909, p. 1.

9. Stern, W.: Intelligenzprüfung, Leipzig, 1912, p. 3.

10. Treves and Saffiotti: La scala metrica dell'Intelligenza di Binet e Simon, Milan, 1910, 1911. A still somewhat different interpretation is given by H. Kahane (Grundzüge der Psychologie, etc., Wiesbaden, Bergmann, 1914, p. 186): Insoferne die Psyche wahrnimmt und Wahrnehmungen einordnet um aus ihnen ein ebens festes als elastisches system zu schaffen, das allen Beanspruchungen genügen soll, spricht man vom Walten des Intellekts und mutet jedem Individuum und jeder Entwickelungsstufe einen gewissen Grad von Intelligenz zu.

Thus, for examination, we single out memory and retention (which includes reproduction or recalling), comprehension, combinational ability, and such influencing components as attention, feeling and reliability of memory. (Ziehen,[11] to quote him accurately, tests retention, development of comprehension [Vorstellungsentwicklung] and differentiation of ideas [Vorstellungsdifferenzierung], which includes isolation, complexion and generalization; reproduction, combination, feeling and attention. At our clinic we at first followed in these footsteps, but later altered the arrangement, and adopted a somewhat different routine. Sommer, on the other hand, tests memory, school knowledge, arithmetic, association and its relation to "understanding," attention, comprehension [Auffassungsfähigkeit] of complex ideas, mechanical or practical and constructive understanding or ability, logical relations, intellectual interest, and comprehension of the environment.[12]) We ascertain whether the child is normal, backward or defective in these, that is, in all, or again possibly only in one. Even in the normal these faculties are not on the same even level—a point of no little importance to remember. We shall be able likewise to understand an abnormally limited store of knowledge if we find memory defective — the poor memory making *retention* impossible; or the memory itself may not be at fault, but the weakness lie with the attention. If a child's attention is nil, or nearly so, then its perceptive process does not focus long enough to produce the cortical alteration giving memory. Thus we get our clue to the interfunctioning and interdependence of the various faculties.

Bearing these facts in mind, let us turn to the second method of examination, namely the Binet-Simon evaluation according to age norms, and inquire whether by their very nature these tests are able to fulfil the foregoing requirements, and give us the necessary data, and in fact, what is assumed to be their specific merit, the norm of such data at a given age.

If one looks over the fifty-six queries allotted in groups averaging from four to six for each year in the most recent scale, one is struck first of all by the paucity of questions, and is prompted to doubt the possibility of gaging the mentality of an individual, or rather his intellectual age with four or five bare questions! One also notices that these questions are in large measure questions of language efficiency[13] and of school-trained facts.

Now, the child with whose quota of intelligence the clinical psychologist is in largest measure concerned is the so-called *psychopathic constitution,*[14] and the study of just these cases by Ziehen at the Berlin Charité, and later by his assistant Stelzner[15] proved that these children, in spite of normal intelligence, were defective in school-trained ability. The same was pointed out by F. Kramer in connection with the examination of psychopathic and criminal children.[16] These may cut school so often, or raise trouble so constantly in the class room, and be so untameable through punishment or discipline that they are "left back" again and again; and so they may be low in school knowledge, and yet of good intelligence.

Looking again at these groups of questions, and checking them off individually, one finds that the functions tested in each year are by no means the same, nor are they systematically arranged, so that in testing the next higher year one may be testing quite a different set of functions, and one, therefore, could not at all say that one child passes a year in advance of another, for one has not examined the same faculties. This fact Meumann[17] points out to be one of the greatest drawbacks of the Binet tests.

But even if all the faculties were tested in each year-group, could one then average up the whole, and assay a mean valuation as an age-norm? To this Seashore[18] made objection, pointing out that retardation does not follow a common flat level any more than growth does, and that a child could be at the mental age of 6 in one capacity and 12 in another.

Another set of serious shortcomings in these tests become evident if one glances over the questions used by those testing out the Binet series (Goddard, Terman and Childs, Bobertag, Meumann, and others.) One finds some questions pronounced too difficult, some too easy. They are then placed in a lower or higher year-group according to the inclination of the tester; but in a set of four or five questions such a single question plays no small part in the final evaluation, and the results would read quite differently according to which "scale" or whose "modification" was being employed. Must we not wait with the application of these tests, then, until we determine in just what year-group the doubtful questions belong? But a still more remarkable fact has been brought to light: applying the Paris scale to the children of Rome,[19] of Brussels[20] and of Moscow,[21] one found that the children of the first two cities tested at least two years higher than the Paris schoolchildren, while those at Moscow tested at least two years lower! Does this mean that the Parisians are mentally retarded compared with the Romans, or that the Moscowitz are defective according to the Roman or Brussels scale? If nothing else, it indicates[22] that the Binet tests are milieu or community tests, and that there is no such thing as a general normal age-average of intelligence. But how allow for these variations in testing children of our own mixed population? Shall we apply a different scale of reckoning when testing the Italian child or the Russian? Are there general differences in the races, or is the difference environmental, or pedagogic?

Nor do the Binet tests, nor can they, take into account obtaining *abnormalities*. Hence, as I pointed

11. Ziehen: Die Prinzipien und Methoden der Intelligenzprüfung, Karger, Berlin, 1908 (after the address at Intern. Kongress, Amsterdam, 1907).

12. Sommer: Klinik f. psych. und nervöse Krankheiten, 1911, vi, 222. See also his Lehrbuch der Psychopathologischen Untersuchungsmethoden.

13. See, for instance, in this connection the criticism of L. P. Ayres (Psych. Clin., 1911, v), and of Mehnert (Dresden) at the Dresden Congress, October, 1911. The latter criticism will be discussed farther on.

14. Ziehen: Die Erkennung der psychopathischen Konstitutionen, etc., Berlin, Karger, 1912. Haberman, J. V.: The Psychopathic Constitution, Med. Rev. of Rev., March, 1912, and literature there cited.

15. Stelzner, H.: Die Psychopathischen Konstitutionen, Berlin, Karger, 1911, pp. 72 et seq., and especially p. 91.

16. Kramer, F.: Intelligenzprüfungen bei psychopathischen und kriminellen Kindern," Deutsche Kongress für Jugendbildung und Jugendkunde, Dresden, 1911. Congress Report by Teubner, Leipzig, 1912, p. 23.

17. Meumann: Vorlesungen zur Einführung in die Experimentelle Pädagogik, ii, pp. 278-279. He also states that the questions are not tests *of intelligence,* but of quite various things, some being purely psychologic [of psychologic functions] some of knowledge, the latter again partly such as the child learns from those around him [picked up at home or on the street or at school], partly gains through his own observation. All the latter do not test his ability as such, but only the influence of "milieu" on his ability, etc. Then there are tests of functions and knowledge mixed [as the language tests], etc.

18. Seashore, C. E.: The Binet-Simon Tests, Jour. Ed. Psychol., 1912, iii. Aikens, Thorndike and Hubbel: Correlation Among Perception and Association Processes, Psychol. Rev., 1902, ix. Wissler, C.: Psychol. Rev., Monog. Supplement III, 1901.

19. Jeronutti, A.: Applicatione della Scala metrica dell'intelligenza di Binet e Simon etc., Rivista Pedagogica, 1909. Cited by Meumann, ii, 249.

20. Decroly and Degand: La measure de l'intelligence chez des enfants normaux, Arch. d. Psychol., 1910, ix.

21. Schubert, Anna: Vortrag auf dem ersten Russ. Kongress f. exper. Pädagog., 1910. Cited by Meumann, ii, 251.

22. Meumann: Vorlesungen, etc., ii, 281-282.

out some years ago,[23] they have little or no value in the evaluation of abnormal children if taken alone, not disclosing the *patho*psychologic aberrance characterizing such mental make-up. And to the psychopathologist or clinical psychologist the fact of importance is not whether the child is at his age norm of intelligence, but rather, if deficient, the nature of such deficiency, and the why and wherefore of it. Abnormalities of attention may alone in the psychopathic throw an entire series of tests and computations out of gear. But one must also remember that vascillating or dispersive attention, or utter inability to attend or concentrate, or, again, hyperfantasy or day-dreaming tendencies or pathologic moods and perverse humors may all make great incursions on such children's perseverance, and so increase the difficulty to pursue systematized work, whether in school or out. Concerted with this is the additional fact that their erethism and shifting fancies, and often enough a dromomanic bent — their wanderlust — impels them to truancy half the time, or carries their interests forever "wool-gathering" and far from their work.

Some of these children show, especially, ethical defect and are peculiarly unmanageable in school. They pass as "bad children," are constantly up to mischief, and cannot be reached through punishment of any kind. Of course, they won't "study" or do "homework," and are in consequence repeatedly left back. But their intelligence is not defective, not even retarded; they are sometimes even remarkably intelligent. Some of these children in later life may show great talents along certain lines, and become personalities of no little renown. Very great indeed is the difficulty of diagnosis when there is just a mild intelligence defect, combined with such psychic abnormality. These children only too often are the class from which our chronic criminals spring.

Still another type of abnormality ought to be borne in mind because it is important and so frequent, and yet never mentioned in connection with clinical psychology, and I fear rarely thought of by neurologists or pediatricians in treating their young charges. It is a kind of emotionalism or affectivity in certain children, children often finely attuned and "soulful"—but present likewise in the ordinary psychopaths of the "affective type"—which breaks forth on slight provocation and then clings in a singular way. Like a mist, depression and oppression, despondency or sadness permeates their minds and clouds their thinking and hangs on their actions like a weight of lead. This mood *irradiates*[24] to current thoughts and happenings and unrelated things, and sometimes even follows on into the years.[25] This mood may be morbidly indulged as in the Byronic way—"the stinging of a heart the world has stung"—or may recur in spite of every counter effort. It is at its worst when fear comes in its train. One finds it as the occasional occurrenece in some normal children, or as a disposition or proneness to disposition in certain abnormal ones. It is found especially frequent in the children of neurasthenics or in children themselves neurasthenic. Its effect on intelligence may be but to color it—or again, and this is the important thing, it may occasion inhibition, at times so intense as to be decidedly baneful.[26] That these facts (of feeling, emotion, will, etc.) have all been neglected in intelligence computations, and are especially neglected in the Binet tests, Meumann[27] justly points out.

Are these abnormals or psychopathic constitutions (Ziehen) unusual cases, so that the objection may be made that regarding the work in clinical psychology we are unduly emphasizing a minor factor? Indeed no; for these are the preponderant cases among those we see, these psychopathic constitutions, and *not* the "idiots, imbeciles and morons"! And Binet testing brings out none of their abnormalities, and may put the falsest evaluation on their mental ability. Herein lies the most important shortcoming, to my mind, of the Binet tests.

Finally, the danger of pronouncing an opinion on one examination has been pointed out (Graupner[28]) remembering the extensive fluctuations in mental accomplishment under normal conditions, varying fatigue, alimentary hazards, dysphorea, disinterest, disinclination, disconcertedness, etc. Even at different seasons of the year, teachers will tell you that the ability of children varies considerably. Underfeeding, anemia, tuberculosis and other bodily conditions may also strongly inhibit the mental functions for the time being, and so lead to incorrect conclusions.[29]

The objections to the Binet-Simon tests thus far enumerated will suffice to indicate, I believe, that whatsoever the practical value and promise of these tests for rapid orientation of large numbers of children, mass evaluations, so to speak, they cannot in their present form be automatically applied, and can scarcely be regarded as anywhere nearly safe or certain tests of intelligence in the *individual normal* child. And in the case of the *abnormal* child, the psychopathic constitution, these tests become for the most part utterly impossible and valueless. Even when made in such cases in connection with other examinations (our "psychopathy sheet" and neurologic examination) it is only of interest, scarcely of importance. That an appraisal of quality, apart from quantity, in such tests depends mostly on the opinion (subjectivity) of the examiner, is evident. And that little of the separate intellectual components or characteristics is brought out is likewise evident.

These tests, however, do not claim such a purpose, it may justly be answered; they assume to be specifically tests of the *general* ability. Very true; but are they really so? Can they give an accurate *equation?*

23. Haberman, J. V.: Intelligence Tests, Med. Rev. of Rev., August, 1912.

24. Ziehen: Leitfaden der physiologische Psychologie, Ed. 7, pp. 161 and 258.

25. For a remarkable example see De Quincey's autobiography, The Affliction of Childhood, and the Dream-Echoes Fifty Years Later. It may be of interest to state that types of these "affective" natures are found often enough in literary and musical biography (our Poe for instance, or Baudelaire, Lennau, Beethoven, Chatterton, or Ernest Dowson) and autobiography (the best example probably being De Quincey). Such children are also often enough those written of in story, Pater's most exquisite Child in the House, for instance (which probably is autobiographical), and some of his Imaginary Portraits. They are the "Werthers" in an entire period of German "storm and stress" romanticism, as also the children in many of the English Victorian novels (especially Dickens and Bulwer). But how many just such among the "mute inglorious" real sensitive children we see but rarely stop to understand! Does one ever stay to think of what goes on in the mental life of those many children who commit suicide early, and the many more who later travel the downward path to moroseness, to crime, to despair and insanity! Here is the real work for the future clinical psychologist, to find out these children, and "feel out" their "soul's pathology," and help them over their affectivity into healthy modes of thought.

26. Meumann: Vorlesungen, etc., ii, 459 et seq.; i, 641. See also Th. Heller's über affektiv bedingte Psychoneurosen des Kindesalters, Zeit. f. kinderheil., No. 2, 1913, ix.

27. Meumann: Vorlesungen, etc., ii, 464.

28. Graupner: Leipzig Congress Report, p. 40.

29. Here I might also mention the interesting point brought up by W. Hofmann at the Dresden Congress, that there may be a latent intelligence, necessitating some special stimulus to startle it into action. In this way the fact may be explained that it often comes down to us historically that men of great intelligence were not only poor at school in their youths, but also were considered on all sides as but meagerly intelligent.

We have seen that in the psychopathic they cannot. It has also been indicated[30] that a good memory may cover up a multitude of sins, and an individual pass as normal who may be defective, even feebleminded. But more important still is the question, Does such data give us adequate information? Are we, after all, any wiser? When a man sways on closing his eyes, the physician calls it a Romberg; but the good physician differentiates between a real and a pseudo-Romberg, and even goes further and sifts the cause, distinguishing the entirely psychogenic as in hysteria from the organic, as, for instance, in an alcoholic polyneuritis. Only when the data are thus separated and unraveled can a diagnosis be made. Is the matter at all different in clinical psychology? Does knowledge of the average mental performance of a child, after all, give you any insight into its intelligence or mentality?[31] Especially, if the performance is below normal, do we know aught if we do not know in what functions, and why, whether in one (and which) or in all, whether due to psychologic causes, or physiologic, or pedagogic or environmental? In short, we can form a rational conception only if we ascertain the data concerning single component functions, and construct our estimate from these.

And now, sum up, mentally, the strictures I have pronounced in criticism of the Binet tests, and then think for a moment of the amazing popularization of these tests in this country, so that at most of our mental and educational clinics they are the *only* tests or *the* tests, made in diagnosing mentally abnormal children (and made usually by examiners of such wide experience in psychopathology as young college graduates or nongraduates, without medical training whatsoever, or in fact, knowledge of psychopathology save what they probably derived in a half years' course at college "with a visit to the island"!) Like the freudian delusion, this Binet testing dilettanteism has taken us by storm, and shows splendidly our native gullibility and likewise an interesting phase of the hysterical lay-medical activity of the times.[32] It is to be deeply regretted that the universities do not rise above this undiscerning level, and institute departments for the genuine study of the abnormal child — departments composed of a medical and pedagogic contingent in connection with a psychoclinical clinic and laboratory, as well as affiliations in the departments of experimental pedagogy, pediatrics and neurology. At least that would be the ideal situation. How far we are still from this may be understood when we remember that not a medical student graduates with an iota of knowledge anent the abnormal mental in connection with the child, or an idea as to how to examine it, or spot the forerunners of impending trouble. Nor have we scientific clinics with adequately trained or skilled workers—for we would scarcely call adequately trained an oculist, for instance, who was not a physician at all, but "read up" a bit on the subject at home, and "picked up" what he could at some clinic. Yet such are the "clinical psychologists" who pass on our children — *for we have no departments where clinical psychology is scientifically taught—theory and practice, lecture and clinic.*

I have not made criticism here or elsewhere in a spirit of animadversion, but in the interest of child psychopathology[33] and remedial, pedagogics, and with the hope that the universities may wake up to the vast importance of the subject, and make an attempt to place the work on a dignified footing, and give it a propitious chance to grow.

And now to return again to our intelligence tests — the first considered facultative tests. Is it not possible, it may be asked, to arrange these so as to obviate the many objections brought up in connection with the Binet series? Yes, this appears possible; and for quite a time we have been working with such a series of tests at our clinic—a procedure at first based solely on the method of Ziehen (whose methods and teachings we have closely followed at our clinic), but little by little modified and altered. Finally, we devised a *test sheet,* rubricked for knowledge or retention, memory, comprehension, combinational ability, attention, feeling and reliability of memory. Sufficient tests were given (not just one,) and the various subfunctions examined (as, for instance, under comprehension, the comprehension of numbers, of words, of abstract ideas, ethical ideas, etc.). Thus each child at every age would be tested in these various faculties and adequately tested.

But one embarrassing question frequently came up. If a child passed various memory tests, for instance, it would be asked, does it answer questions difficult enough for its age? Or if a question was not answered, wasn't the question possibly too difficult? In other words, here was the age-norm query of Binet confronting us again.[34]

The older psychologists got around this by either calling a normal child of like age, and putting the same question or trusting to their experience as to what a child of that age ought to know. This, of course is neither safe nor scientifically accurate. Could not, then, the Binet plan be applied in some way, or to some extent, to our own sheet?

This I have attempted in the accompanying form which I offer here in the way of a preliminary report. The test series employed by Ziehen — but modified and increased in the progress of this work at our own clinic — formed the fundamental of this sheet. In it were finally incorporated some of the important questions of Binet, rubricked according to the functions involved, as well as those of Meumann and others. Binet's age norms were placed in italics, to the right of the various questions, and additional facts, assumed

30. Saenger of Hamburg (Congress report); also Trüper of Jena at same meeting.

31. This criticism has been especially made by W. H. Pyle: Suggestion for the Improvement and Extension of Mental Tests, Jour. Educat. Psychol., February, 1912. It may also be remembered that in mental pathology, disease processes involve *electively* (not generally), and in a most remarkable way. So optic memory and optic phantasy may alone be lost, or an almost isolated word deafness may occur, in which the inner word memory is alone lost). In Korsakoff's syndrome orientation and recent memory are severely involved, while early memory and the results of early thinking are relatively well preserved. The tonal feeling or ethical feeling may become dissociated from the ideas with which they were connected. Cyclic conditions, drugs and poisons are likewise elective in their mental invalidation. The degenerates often show remarkable mixtures of talent and defect, etc. (Antoh: Ueber krankhafte moralische Arbartung im kindesalter, etc. Jurist et Psych. Grenzfragen., Halle, 1910).

32. To wit, the psychopathology on the stage (Damaged Goods, Maternity, etc.), the teaching of psychopathology at nonmedical colleges, the exploitation of the psychopathologic in newspapers and magazines, and the intimate discussion of these things among laymen. What delightful advertisements, for instance, were bill-posted for Twin-Beds, and what interesting comment as to utility, etc., they evoked! In a play called Fads and Fancies, an automobile is given "twilight sleep." And at Chicago the thing in reality was to be advertised through moving pictures (The Limit in "Twilight Sleep" Sensationalism, Current Comment, THE JOURNAL A. M. A., April 10, 1915, p. 1251). Also, Haberman, J. V.: Psychic Therapy, Clinical Psychology and the Layman Invasion, Med. Rec., New York, April, 24, 1915.

33. I do not refer to psychoses, which are most uncommon in childhood, or to idiots and imbeciles—which are for the most part segregated in institutions, where only a very little can be hoped for them — but to those abnormals and psychopaths mentioned throughout these pages.

34. This, however, does not mean that the intelligence age is of importance or necessary to know in every case. We very often get along without exact knowledge of this.

to be known or answerable at a given age, were added (from the writings of Ziehen, Meumann, Gaupp Bobertag and others[35]).

The age norms must still be considered but approximate, for reasons already given, the varying normal fluctuations in intelligence, wide differences in opinions still maintained as to the difficulty or overeasiness of certain questions, the unsettled problem of possible racial or environmental variations, the differences found in children tested in higher and lower social classes, etc. There is even a possibility that the intelligence variations in individuals of the same age are greater than we assume — at least the contrary has not been proved — so that we possibly have no normal age norm of intelligence or of the faculties comprising intelligence. This, too, must be borne in mind.

So much for the present in the way of criticism of methods, etc. Elsewhere the facts making up this test sheet will be fully described and discussed, and the importance of the faculties themselves in their interfunctioning studied in relation to mental evaluations.

THE EFFECT OF POTASSIUM IODID ON THE LUETIN REACTION

PRELIMINARY REPORT *

JOHN W. SHERRICK, B.S., M.D.
Intern in Neurology, Hospital of the University of Michigan
ANN ARBOR, MICH.

During the past year I have had the opportunity of studying the luetin reaction somewhat in detail on patients admitted to the neurology service of the Hospital of the University of Michigan. As a result of this study, it was attempted to determine the value of the luetin reaction in the diagnosis of syphilis, the proper technic and the influence of various factors such as medication, etc.

Observations were made sometimes repeatedly in a series of 235 cases from the neurologic clinic of the University of Michigan, service of Dr. C. D. Camp. This reaction was also tested in a series of sixteen cases admitted to the clinic for dermatology and syphilology, University of Michigan, service of Dr. Udo Wile.

The technic followed is that described by Dr. Noguchi, namely, the intradermal injection of a 1:1 dilution of luetin material with saline.

The cases were taken indiscriminately and were both luetic and nonluetic. In fact, a large percentage were nonsyphilitic from every standpoint, including cases of pernicious anemia, brain tumor, hysteria, traumatic neurosis, muscular dystrophy, sciatica, chronic nephritis, neuritis, epilepsy, exophthalmic goiter, multiple sclerosis, arteriosclerosis, disturbances of the internal secretions, etc. The reaction was observed on an average of from eight to ten days, and in many for a period of several weeks.

A detailed report of the various factors mentioned above will be deferred to a later communication. In this report I wish to call attention to the influence which potassium iodid has on the luetin reaction.

The fact that the administration of potassium iodid will cause a positive luetin reaction which otherwise would have been negative in nonsyphilitic individuals seems not to have been observed. Furthermore, the fact that this reaction is indistinguishable from the reaction indicative of syphilitic infection is a matter of considerable importance to those using the luetin reaction as a means of diagnosis. If the patient suspected of being syphilitic has received potassium iodid either before, during or shortly after the use of the test, the result is entirely unreliable. The fact that the iodids are capable of causing this reaction to the intradermal injection of luetin may throw some light on the pharmacologic action of the iodids.

Where potassium iodid is administered to patients who have undergone a luetin test, it is found that in practically every case a pustular or nodular reaction results; in this series only one has failed to respond. As a rule, relatively large doses are required to bring about this condition, on an average of from 20 to 30 grains three times daily; but a great deal apparently depends on the individual's susceptibility, a positive reaction being obtained in several cases with small doses, 10 grains three times daily. This reaction is characterized by a marked areola, with redness, edema and swelling appearing in a very few hours after the injection and gradually increasing in its manifestations. There is a firm, central nodule of a bright red color raised above the surface of the skin and extending deeply; this nodule develops an area of central necrosis which, in turn, is in most cases replaced by a hemorrhagic pustule. The intensity of the reaction varies in different individuals, but always goes on to the pustular stage if the drug is continued. This pustule, on discharging, soon heals, and marks the end of the reaction. If only small doses of potassium iodid be given, or if large doses be given for a short time, and the drug is stopped short of the pustular stage, there is a similar reaction to the iodid but no discharge, and the lesion involutes, to reappear again on subsequent readministration of the iodid. This has been demonstrated in several cases, and with proper manipulation I think can be obtained in practically every case.

It is interesting to note that the period elapsing between the injection of the luetin material and the ingestion of the potassium iodid may vary widely with still positive results. In one case with a negative luetin test, potassium iodid was given in small doses about two months later, and the old seat of the test immediately developed an areola with a firm, red, central nodule. The potassium iodid was then discontinued, and the reaction stopped short of the pustular stage and underwent complete involution. Subsequent administration of potassium iodid several weeks later resulted in a similar response. If potassium iodid is administered at the time of the injection of the luetin, an intense reaction develops in from three to eight days. A similar result ensues if the patient has been receiving potassium iodid previously, but even more quickly. If, however, the patient has received potassium iodid over a considerable period, but none previous to the luetin test, a positive luetin will still result, if too long a time has not elapsed from the time of the administration of the iodid. In one case a marked reaction was obtained three weeks after the potassium iodid was discontinued.

A reaction similar to the luetin can be obtained by the injection intradermally of other substances, such as agar, starch, etc., and the administration of potas-

35. It was astonishing enough how little an immense amount of reading brought to light and how little could be got from Binet himself in the faculties of combination, attention, feeling, etc.

* From the Neurologic Clinic, Hospital of the University of Michigan.

sium iodid. The response which agar shows to potassium iodid is more marked even than the luetin material, an intense reaction involving practically the entire surface of the arm resulting. A very thin emulsion of agar, less than 1 per cent., is injected in 0.07-c.c. doses. There is a response without potassium iodid; but this, in the course of a few days, involutes if not influenced by potassium iodid. A positive agar reaction with potassium iodid has been obtained by administering the iodid about four weeks after injecting the agar.

A thin starch emulsion, injected in the same manner, will, under the effect of potassium iodid, give a similar pustular reaction; but as yet the length of time has not been determined after which such reaction could be obtained. Insoluble substances, of the nature of bismuth, will not give this reaction, nor will vaccine such as the gonococcus vaccine.

Another point of note is that the administration of other drugs which contain iodin, such as thyroid extract, will develop a reaction similar to the potassium iodid. Painting the lesion with iodin, however, does not give the reaction.

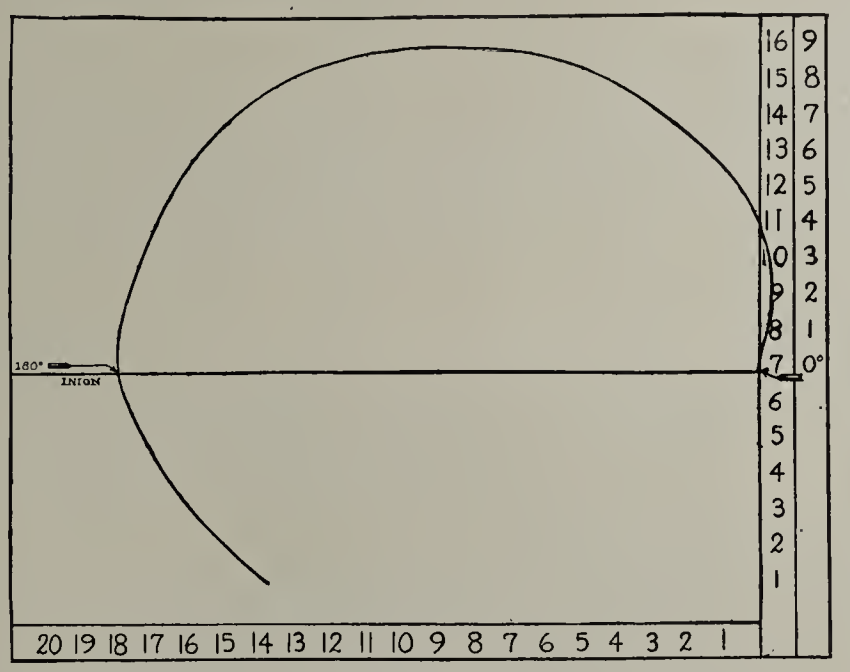


Fig. 1.—Method of adjusting points "glabella" and "inion" on the horizontal line at 0 and 180 degrees.

The effect of the iodids on the luetin reaction has been tested in forty-eight cases, both syphilitic and nonsyphilitic, and the results obtained seem to justify the following conclusions:

CONCLUSIONS

1. A positive pustular or nodular luetin reaction can be obtained in 99 per cent. of all cases irrespective of the presence of syphilis, by the administration of potassium iodid, either simultaneously, or shortly before or after the intradermal test.

2. Other substances, such as agar and starch, when injected intradermally, will give a similar reaction when potassium iodid is administered, but with these substances the potassium iodid must be administered within a shorter time than is the case with the luetin.

3. Other drugs containing iodin have a similar influence on the luetin reaction.

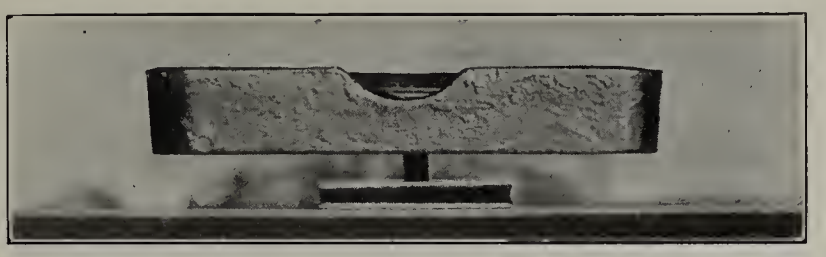


Fig. 2.—Spirit level with clip to attach to the arm of the calipers.

Smallpox.—In 1736 I lost one of my sons, a fine boy of 4 years old, by the smallpox, taken in the common way. I long regretted bitterly, and still regret that I had not given it to him by inoculation. This I mention for the sake of parents who omit that operation, on the supposition that they should never forgive themselves if a child died under it; my example showing that the regret may be the same either way, and that, therefore, the safer should be chosen.—Autobiography of Benjamin Franklin.

CRANIOMETRY IN DISEASES OF CHILDREN*

G. HARDY CLARK, M.D.
WATERLOO, IOWA

There is a close conformation of the brain to the size and shape of the skull, and for this reason measurements of the craniums of living subjects must become of increasing importance. Studies directed to the changing brain mass by means of craniometry appeal especially to students of diseases of children because developments of physiologic and pathologic significance that may be detected by this method are very generally completed before the adult stage is reached. Of the normal factors that modify the shape of the skull, aside from variants, heredity, mental training and character development are the most important, while the abnormal factors are typically illustrated in children afflicted with rickets, syphilis and acromegaly.

It is readily admitted that the many conditions that control skull shapes render it difficult, with our present knowledge, to make positive statements relative to the value of craniometry as a diagnostic agent. It would seem, however, that any advance to be made in this matter will be based on the general acceptance and use of a simple system of cranial measurements, which it is my object to propose.

Owing to the fact that craniometry has been developed largely by workers in comparative anatomy, methods of measurement of the cerebral cranium that are of the first importance to physicians have received little attention. Such lines as have been established for cranial measurements on the living subject have generally been based on craniometric points on the dried skull, and they are therefore difficult to adjust and use. Indeed the usual lines employed in craniometry having fixed points on facial bones as, for example, that from the auricular point to the acanthion, or the more recently developed line from the auricular to the orbital points, have no constant relations with the plane of the lower surface of the cerebrum, which must, after all, be the base-line from which physicians can calculate the height and angles of the cerebral skull. For these reasons it seems to me to be desirable to establish, irrespective of less urgent considerations, a base-line extending from the glabella to the inion, as this closely

* Read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

follows the lower surface of the cerebrum and readily serves as a foundation for measurements for which physicians have the greatest need. The base-line here proposed meets the requirement of craniometry in that it may be set at a definite angle, which is, in this instance, 180 degrees. This is done by means of a chart (Fig. 1), and equally well by placing one point of a pair of calipers on the glabella and the other on the inion and tilting the head forward until a spirit level (Fig. 2) affixed to the arm of the calipers shows the desired point is reached.

The head may be fixed in this position by requiring the subject to grasp firmly with the teeth a soft wooden plate adjusted to the proper height on a buret stand (Fig. 3). If, now, it should prove to be desirable to establish the facial angle on a plane parallel with the cerebral base line, this can be done by first adjusting the head in the manner described and then, with the aid of a level, running such a line from the upper angle of the tragus to a desired distance in the vicinity of the external angle of the orbit.

In order to make a record of the profile of the skull a strip of lead about 1 cm. wide, 75 cm. long and 3 mm. thick should be carefully molded over the median line of the cranium from the glabella to the lower part of the occiput. This should be removed from the skull and placed on a chart in such a manner that the foremost end of the strip will be at the junction of the base-line and point 0 degrees, while the point inion on the lead strip, previously marked on its outer surface with chalk, will rest on the base-line also. With a well-sharpened pencil a satisfactory tracing may be made (Fig. 1).

It is evident that if the two fixed points, glabella and inion, on the lead strip, are properly located on the base-line of the chart, the angle of inclination of the frontal and other bones shown in the tracing can be readily obtained for any measured distance. This is done in the case of the frontal bone, for, say 6 cm. above the glabella at point 0, by the use of the protractor on the tracing. In addition to this the position of the frontal bone relative to the perpendicular line ascending from point 0 of the chart may be marked plus or minus as it may appear, at a stated height, in front of or behind the line. For example (Fig. 1), at the height of 3 cm. above 0 the frontal bone is + 3 mm.

It will be observed (Fig. 1), that the tracing on a chart having squares 1 cm. in diameter will show the height of the cranium above the base-line at any desired point, and that changes in height resulting at a later time from any cause may be readily described on comparison with previous tracings.

The establishment of a base-line in the manner I propose makes it practicable to compare the greatest vertical height of the cranium with the length of the base-line and to express the differences in terms of percentage in the manner employed in obtaining the cephalic index of a skull. For example, if the base-line were 18 cm. and the greatest vertical height of the tracing 9 cm. the index would be 50. This index should be of service in describing a difference between two skulls such as that of the Kaffir and the negro where, though both are dolichocephalic, the former is markedly more high or long vertically.

It is desirable to give in terms of radius of curvature a description of the contour of the different parts of the surface of the cranium. For example, the median line of the frontal bone for a certain distance above the glabella may in a given subject be a plane surface, while the corresponding surface in another individual may have a radius of curvature of less than 75 mm. As this and all other cranial surfaces undergo considerable modification during early life, the determination of the amount of change in shape in different stages of development should result in information of value in diagnosis of diseases, and in determining the effects of mental training and character development in healthy subjects. The latter consideration appears to me to be of considerable importance, as the development of mentality and character in the race is coincident with symmetrical cranial lines and as, generally speaking, among present-day peoples the occurrence of abnormally sharp curves and flat surfaces appears to predominate in individuals who are least efficient as factors in social progress.

I have had F. A. Hardy & Co. of Chicago make a simple instrument for me (Fig. 4), which quite accurately measures the radius of curvature of the surface of the skull at any selected space of 6 cm.



Fig. 3.—Method of establishing and maintaining the cerebral base-line in a longitudinal position.

ABSTRACT OF DISCUSSION

DR. J. P. SEDGWICK, Minneapolis: I have appreciated this paper because during the last year Dr. Taylor of the Minnesota clinic has been doing work along these lines and has found the literature on this subject very poor. Craniometry has many applications in various conditions in children which involve abnormal skull development. We had a child born in the University Hospital in which we noticed, within three or four days after birth, that the vertex was very high. It looked somewhat like a case of oxycephaly. There seemed to be also some intracranial pressure. The child was subjected to a careful examination and watched very carefully, and a cardiac murmur developed. The condition of the child gradually became worse and it died when 2 months old. At necropsy an aortic stenosis and a patent ductus arteriosus were found. The stenosis was at a point distal to the passing off of the blood vessels that supplied the head and the question arose whether the increase in the vertical measurement of the skull could be taken as evidence of heightened intracranial pressure.

DR. C. G. GRULEE, Chicago: One meets many irregularities of skull development and many problems come up in connection with them. Dr. Sedgwick just spoke of a case simulating oxycephaly. I had such a case; that is, it resembled his on the point of oxycephaly, but it was without the heart

condition. Another peculiar skull deformity was a case of akrocephaly-syndactylism. We thought the case ought to be reported and endeavored to read up on it but found that the literature on the subject of craniometry was very scant and that there was very little to be found from the standpoint of skull development. In the study of skull deformities and skull development this paper marks a distinct advance.

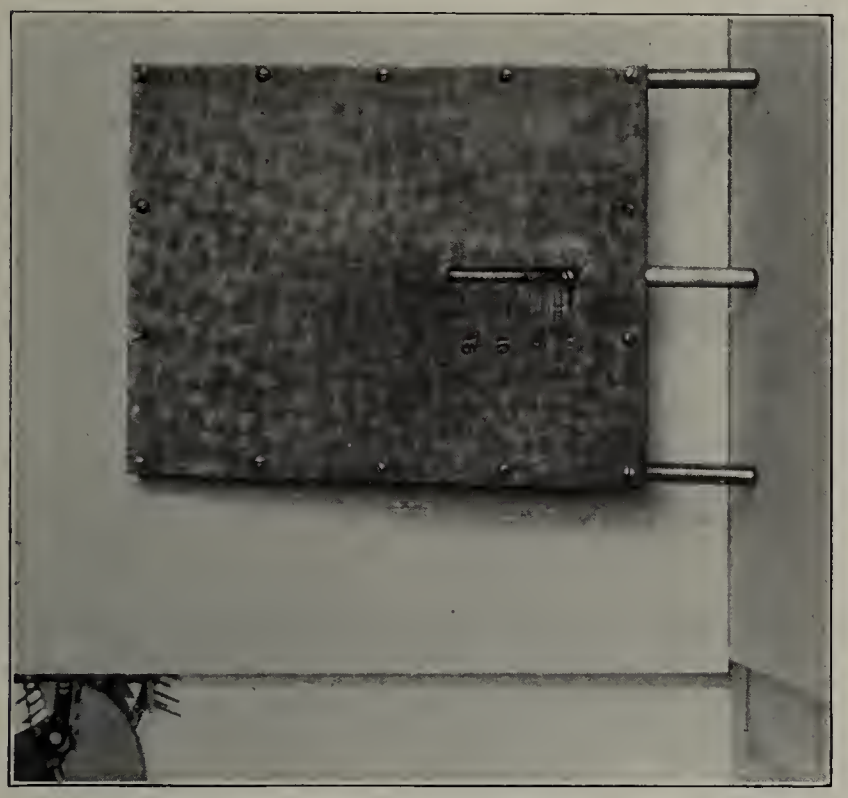


Fig. 4.—Instrument for measuring the radius of curvature of the surface of the skull.

DR. H. D. CHAPIN, New York: Some years ago we thought that data with reference to the head measurements of children might be of value and had an anthropologist measure the heads and also other parts of the body of children in the New York Juvenile Asylum. We made a comparative study of our data but found that we could not make any correlation between skull development and mental condition. Some of the children with the most unsymmetrical heads were brightest mentally. I feel that it is uncertain how much bearing the measurements of the skull have on the brain inside. The brain is very tolerant and can adapt itself to almost any condition, if that condition is slow in developing. I have seen many cases in which the brain did not seem to suffer from skull deformity. We measured about one hundred skulls and compared the results and we obtained a cephalic index, but that was about all we could get. The lead we used was not as heavy as that used by Dr. Clark, and in taking the measurements it would sometimes spring a little and we felt that this was an element of uncertainty in our work. I think Dr. Clark's study is of great value and shall be glad to follow it up.

DR. J. A. COLLIVER, Los Angeles: I would like to ask the essayist on what ground he based his conclusion that smoking had some effect on skull development. I have had ten years' experience in the Juvenile Court of Los Angeles, including the examination and record of over 600 cigaret fiends, and while I did not make an accurate observation as permitted with Dr. Clark's methods, I have never seen any such stigmata that were particularly characteristic of smokers. The size of the skull did not seem to be related in any way to the tobacco habit. In fact, the skull was practically fully developed in all my cases before smoking began.

DR. G. HARDY CLARK, Waterloo, Ia.: While the cephalic index has been of great use in anthropometric work, it has proved of no value, taken by itself, as a measure of mental acuteness or character development. The average index of high grade children and mental defectives in this country is about seventy-nine. It now seems possible that a character or morals score card constructed along the lines of that which I devised some years ago will be of service when used in connection with the Binet-Simon system, in securing the true mentality of an individual. Even in the present stages of the development of the work, considerable satisfaction may be found in comparing cranial measurements with the mental development of children. The lead tape I recommend is, of course, unusually heavy, but it gives quite satisfactory results. A jeweler can readily cut the strip from a piece of ordinary lead pipe. The mental and moral effects resulting from smoking tobacco are still *sub judice*, though the newer evidence undoubtedly supports the contentions of Lombroso that tobacco is a highly deleterious drug. My own inquiries and investigations strongly point to marked perversions and stunted mental development when this toxic agent is used by children. I think we may confidently look for changes in the developing cranium which will correspond with these mental effects.

SYMPTOMATOLOGY AND TREATMENT OF SOME COMMON PALMAR ERUPTIONS *

RICHARD L. SUTTON, M.D.
KANSAS CITY, MO.

The cutaneous disorders which commonly involve the palms and soles are relatively few in number. Aside from eczema, the dry syphilodermas, particularly the tubercular and papulosquamous varieties, are probably the most frequent offenders. In both eczema and syphilis the palmar involvement may be dependent on the generalized distribution of the eruption, but in the later stages of both diseases the cutaneous manifestations are frequently confined to the flexor surface of the hands.

Of the palmar eruptions which are directly or indirectly due to the action of pyogenic organisms, infectious eczematoid dermatitis is the commonest, although dermatitis repens, including the acrodermatitis perstans of Hallopeau, is not unusual, and during



Fig. 1 (Case 1).—Recurrent papulovesicular eczema of the palms, with slight scaling and exfoliation.

the past year I have encountered three cases of granuloma pyogenicum in this region.

Of the various forms of dermatitis which may affect the palms as a result of the action of external irritants, that due to liquor formaldehydi is in my experience the most frequent. It is especially common in laboratory workers and in embalmers, although surgeons and their assistants are often attacked. In

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

chronic radiodermatitis, the lesions are usually confined to the dorsal surface of the hands and fingers, but occasionally, as in two cases that have recently been under my care, the palms also may be affected.

There appears to be a generally accepted belief that psoriasis often involves the palms alone, and that



Fig. 2 (Case 2).—Squamous eczema of the palms and flexor surface of the fingers.

when the lesions develop in this region they always display the peculiar and striking appearance that is so characteristic of psoriatic eruptions on other parts of the body. In reality, the disease seldom if ever occurs solely on the flexor surfaces of the hands, and in suspected cases which present no evidence of the malady elsewhere, the probability of a diagnosis of psoriasis may safely be ignored.

In generalized cases of icthyosis, the palms and soles are seldom markedly affected. In symmetrical keratodermia of the extremities (keratosis palmaris et plantaris hereditaria), a disorder which is sometimes referred to as "icthyosis palmaris et plantaris," the epidermal thickening is limited strictly to the flexor surfaces of the hands and feet, and is probably trophic in origin. Heredity is an important factor in many instances.



Fig. 3 (Case 8).—Seborrheic dermatitis of the palm.

Seborrheic dermatitis of the palms is usually secondary to the disease on the scalp and in the sternal and interscapular regions, a fact which Unna pointed out in his original description of the malady, and which has more recently been emphasized by Stelwagon and others. Aside from the superficial character of the eruption, the manifestations often bear a striking resemblance to those of lues, and inasmuch as the lesions are often mixed in character, in borderline cases it is sometimes necessary to resort to laboratory tests before a definite conclusion can be reached. Of the various aids at our disposal, Wassermann's serum reaction is probably the most popular, with histopathologic examinations of biopsied tissue second, and Noguchi's luetin test third. The latter is a convenient and inexpensive method, and in my hands has proved reliable and trustworthy, particularly in the old and neglected cases of syphilis which commonly give rise to dry, scaly eruptions of the palms.

In the Southern States, pompholyx is a comparatively common disorder, and, as a rule, involves the flexor surface of the hands, and the sides of the fingers.

Of the somewhat rarer maladies, one example each of pityriasis rubra pilaris and keratosis follicularis have been included for purposes of comparison.

The general characteristics of the various types can best be illustrated by means of the accompanying photographs and case histories.



Fig. 4 (Case 9).—Psoriasis of the palm of five and one-half years' duration.

Case 1.—Recurrent, papulovesicular eczema of the palms and fingers in a girl, aged 15. The disease had been present at intervals for more than three years. The lesions began as reddish, intensely itchy macules, and papules and vesicles quickly followed. New lesions usually developed as rapidly as the old ones disappeared, and an attack generally lasted two or three months. There was very little thickening or fissuring, but always more or less moisture. Severe itching and burning were frequently present, particularly if the hands were allowed to come in contact with soap and water.

Case 2.—This represents a rather uncommon variety of squamous eczema of the hands. The patient was a stenographer, aged 34, an exceedingly "high-strung" woman who for many years had been subject to outbreaks of eczema of the so-called "flexural type." The palmar integument was only slightly thickened, but was dry, inelastic, scaly and fissured. The eruption was fairly symmetrical, and had been present fourteen months. The pruritus at times was intense, and there was some accompanying burning pain.

Cases 3, 4, 5 and 6.—These are illustrative of a fairly common type of chronic eczema of the palms. All of the patients were adults, between the fifth and seventh decades of life, and in every instance the disease had been present for more than one year. The affected skin was thick, horny, inelastic and fissured. There was very little itching, but

the fissures, which were arranged longitudinally on the palms and transversely on the flexor surface of the fingers, were at times exceedingly painful and troublesome. The frequent use of soap and water invariably renders the condition worse. Exposure to other external irritants appears to play but little part in the causation of this type of eczema. Case 3 occurred in a minister of the gospel, Case 4 in a physician, Case 5 in a semiretired housewife, and Case 6 in a wholesale liquor dealer.

Histologically, one finds the papillary hypertrophy with capillary dilatation and perivascular cellular infiltration, acanthosis and parakeratosis which are characteristic of chronic eczema no matter where it may be located.

CASE 7.—This may be considered as a borderline case, presenting features of both chronic eczema and seborrheic dermatitis. The patient was a physician, aged 51 years, and the malady had first appeared three years prior to the date of consultation. Both palms were affected. The skin was thickened, but was fairly flexible, and there was no fissuring. Below the thenar eminence on the left hand was a large, deep-seated vesicle which had been ruptured and from which some sticky fluid exuded. Aside from the itchiness in the vicinity of this lesion, there were no subjective symptoms. The skin on the anterior half of the palm and on the flexor



Fig. 5 (Case 10).—Condition of palm in a case of keratosis palmaris et plantaris hereditaria.

surface of the fingers was slightly thicker than normal, and was smooth and glossy. The Wassermann reaction was negative.

CASE 8.—This represents a chronic inflammatory disorder which, for lack of a more appropriate diagnosis, I have placed with the seborrheides. During the past year I have seen two cases of this type, one in a woman of 30, the wife of a physician, the other in a traveling salesman, aged 36. In both instances only the palms were affected, and the disease had been present for several years. The skin was of a yellowish, resinlike color, glossy and fairly smooth. The thickening was uniform throughout, and scaling practically absent. The entire flexor surface of both hands was involved, and the inflammatory process was sharply limited to these areas, except at the wrist, where the eruption extended slightly beyond the palmar margin. The affected skin was dry, and had never been moist or vesicular. The woman was the mother of two healthy young children. The man claimed to be free from syphilis, and there was no reaction to luetin. Unfortunately, neither patient was willing to submit to a biopsy, and no tissue was secured.

CASE 9.—This is a fairly representative one of psoriasis of the palms. There were accompanying lesions on the elbows and knees. The patient was a boy, aged 16, and the disease had been present five and one-half years. The integument was uniformly thickened, and dark red in color. There was very little fissuring, although movement was considerably impaired. The scaling was comparatively slight. As in all psoriatic eruptions, the lesions were dry, and subjective symptoms were practically absent.

CASE 10.—Keratosis palmaris et plantaris hereditaria. The patient was a young man, aged 20. The disease had existed for four generations on his mother's side of the family. Both the palms and the soles were affected. No other part of the body was involved. The skin was dry, horny and



Fig. 6 (Case 11).—Keratoses on the palm due to the long continued action of the Roentgen rays.

keratotic, and its natural lines greatly exaggerated. Owing to the lack of flexibility and elasticity, fissuring was not infrequent, the resulting lesions being very tender and painful.

CASE 11.—A pioneer roentgenologist failed to appreciate the danger associated with his specialty until he had incurred lasting injuries of both hands. The dorsal surface was the seat of numerous keratoses, several of which have recently become malignant. The palms were less seriously affected, although they too presented characteristic evidence of long-continued actinic irritation. The skin was dry, thickened and inelastic. In addition to the score or more of keratoses present, there was a small, prickle-cell carcinoma in the center of the left palm. Histologically, the smaller lesions were precancerous in character, and the malignant growth exhibited the vascular changes and hyperkeratinization which are typical of growths of this type.

CASE 12.—This is a representative one of infectious eczematoid dermatitis affecting the palm. The disease began with a paronychia which involved the nail of the left forefinger



Fig. 7 (Case 12).—Infectious eczematoid dermatitis of the palm.

and had been present five weeks. The skin surrounding the individual pustules was reddened and inflamed. The outer corneous layers were undermined with pus. Pure cultures of the *Staphylococcus albus* were secured from several fresh, unruptured lesions. Histologically, the papillae were swollen, edematous and infiltrated, and the interpapillary vessels dilated. There was a considerable degree of acanthosis present, but no pus collections in the rete. The destructive process was limited to the structures overlying the stratum

lucidum, the superficial corneous layers being elevated, frayed and broken.

CASE 13.—The flexor surface of the hands is a favored site for the lesions of dermatitis repens, mainly because of the thick, tough, resistant character of the horny layer in

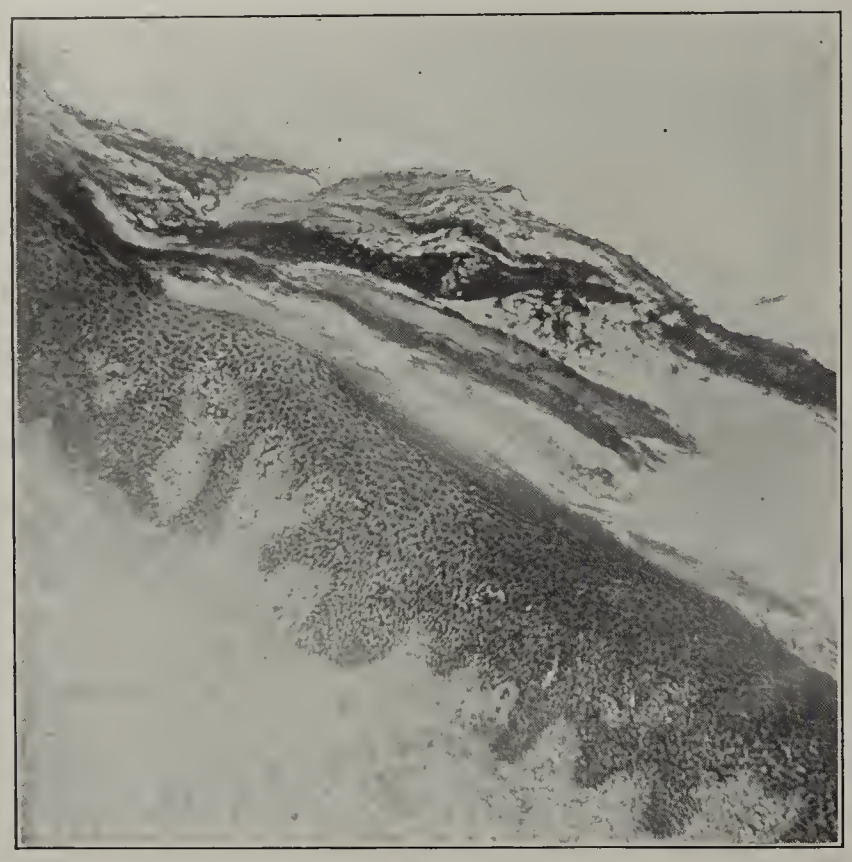


Fig. 8 (Case 13).—Infectious eczematoid dermatitis, showing papillary enlargement, with congestion, acanthosis, and corneous exfoliation (moderate magnification).

this locality. In this instance the attack followed a slight infected wound of the hand, and ultimately involved the entire cutaneous covering of the base of the thumb. Pathologically, the process is somewhat allied to that occurring in infectious eczematoid dermatitis, but in dermatitis repens it is much more deeply seated, and numerous abscesses are found throughout the prickle layer in the affected areas. In this disease also, the yellow or white staphylococcus is the offending organism.



Fig. 9 (Case 14).—Dermatitis repens involving the palm. A portion of the corneous collaret has been clipped away.

CASE 14.—Granuloma pyogenicum of the palm I formerly considered of rather unusual occurrence. Like many other supposedly rare conditions, however, its true nature is often unrecognized. In the present instance the little tumor, which was cherry-sized, bright red, and bled freely on the slightest provocation, developed following a puncture wound of the left thumb. It had been present three months, and had been subjected to many and diverse methods of treatment when the accompanying photograph was taken. Histologically, the growth consists of granulation tissue, and is more suggestive of an angioma than of anything else.

Of the various palmar syphilids, only a few types will be considered.

CASE 16.—This represents a macular eruption of the palms occurring as part of a generalized efflorescence at this stage of the disease. The lesions are dusky red, erythematous macules, distributed with a fair degree of symmetry, and give rise to no subjective symptoms.

CASE 17.—In this case, a syphilid of the maculopapular type, the lesions are more sharply defined, and when viewed at an obtuse angle they appear distinctly elevated. In reality,



Fig. 10 (Case 14).—Dermatitis repens, showing papillary enlargement, and infiltration, with acanthosis and the formation of numerous minute abscesses in prickle layer, and exfoliation of the entire horny layer (moderate magnification).

owing to the thickness and density of the overlying stratum corneum, the surface of the skin is perfectly smooth.

CASE 18.—This is of the large lenticular papular type, and the eruption on the palms consists of round-topped, ham-colored tubercles, from the summits of which the outermost layers of the epidermis have exfoliated.

CASES 19 and 20.—These represent early and late examples of secondary syphilis in which there is an intermixed seborrheic element. The surface of the skin is smooth and glossy, and the amount of scaling comparatively slight.

CASES 21 and 22.—These two examples also are suggestive of seborrheic dermatitis, but the segmental and circinate outlines of the lesions, the fact that they are deeply infiltrated, and that in each instance only one hand is involved, all are indicative of lues.

CASES 23 to 27.—These are illustrative of the later stages of syphilis. It is exceedingly probable that trauma is an important factor in the localization of many of these lesions. Of the five illustrative cases, all occurred in right-handed individuals, and in every instance this hand was the one affected. From eczematous eruptions the lesions are to be differentiated by their unilateral distribution and peculiar configuration, their reddish, beefy color, their history, and the absence of itching. Should any doubt exist regarding the true nature of the eruption, recourse should be had to a serum or a luetin test.

Pompholyx is so common and distinctive a disorder that little space need be allotted to it here. The acute onset of the disorder, the symmetrical distribution of the lesions, and their self-limited duration are usually sufficient for differentiation. Only two examples, both of which were somewhat unusual, will be discussed.

CASE 28.—In the first, the eruption on the hands was practically confined to a small area (measuring about 5 by 7 cm.), in the center of each palm.

CASE 29.—In this case the palmar lesions were not hemorrhagic, but on healing they left sharply defined patches of pigment which persisted for some weeks.

CASE 30.—In pityriasis rubra pilaris, palmar manifestations, if present, are usually but a part of the generalized eruption. Instead of the small, acuminate, spinous projections which are characteristic of the disease on other parts of the body, however, here the integument sometimes assumes a peculiar, pig-skin-like appearance which is very striking.



Fig. 11 (Case 15).—Granuloma pyogenicum of the palm of three months' duration.

CASE 31.—It is not unusual to find the palms and soles involved in extensive cases of keratosis follicularis. Instances in which the disorder is confined to one or more of these regions are comparatively rare, however; and for this reason the accompanying photograph and section are of interest. Only the flexor surfaces of the hands were involved. The disease had been present fifteen years (the patient was a man, aged 46). Superficially, the surface had the appearance of a target that had been peppered with birdshot. There was but little associated keratodermia. Subjective symptoms were absent.

The general plan of treatment for the various conditions that have been discussed may be briefly summarized as follows:

In actively inflamed lesions, soothing applications, such as carbolized calamine lotion and zinc-oil, should be employed at first, to be followed, if necessary, by the use of local stimulants (particularly those containing tar). Soap and water are to be avoided. In chronic eczema of the palms, recourse must often be had to the more powerful keratolytics and reducing agents. Of the various chemical keratolytics, salicylic acid (in strengths of from 5 to 20 per cent.) is one of the most efficient and reliable. It may be advantageously prescribed alone or combined with green soap, in the form of a plaster, or in an ointment. Of the commoner tar preparations, oleum rusci (oil of white birch) is superior to oleum cadini (oil of cade). It is best employed in ointment mixtures, and in strengths of from 8 to 20 per cent. Radiotherapy often proves valuable in combating this type of the disease, and if the affected areas are not too large, radium also may be employed with benefit. In a few

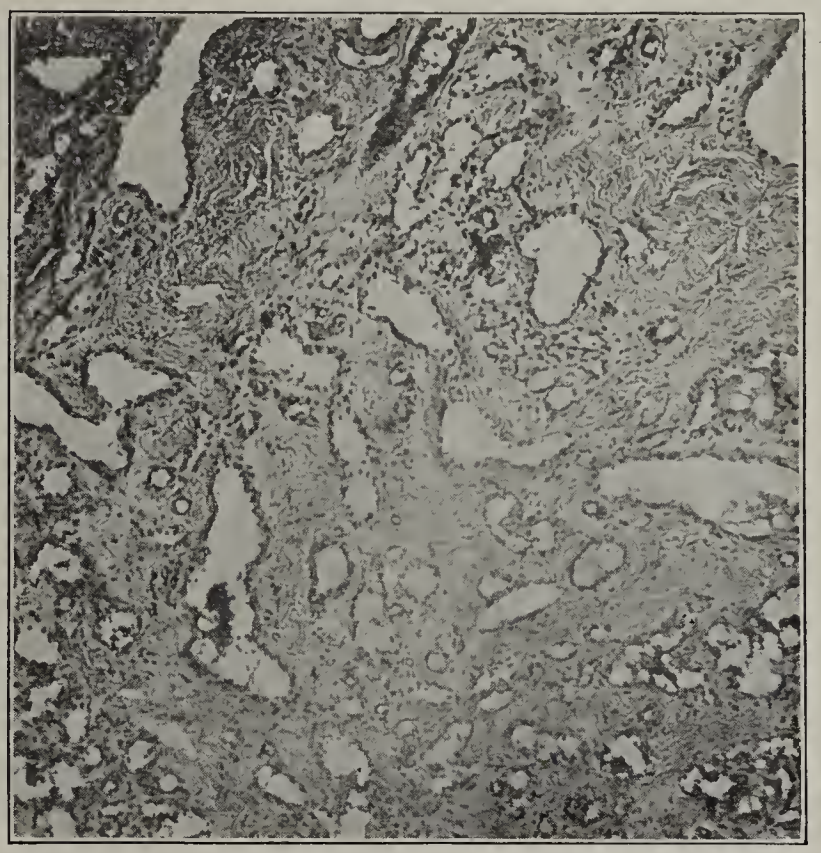


Fig. 12 (Case 15).—Illustration of characteristic histopathology of pyogenicum (moderate magnification).

instances in which the latter agent was used, I have noted improvement even on untreated surfaces. The cases were very intractable ones, the lesions having failed to respond to numerous other therapeutic measures, and it is difficult to account for their sudden disappearance unless it was due to the action of the mineral.

In infectious eczematoid dermatitis, the lesions usually respond promptly and favorably to a 5 per cent. ammoniated mercury ointment. Dermatitis repens is



Fig. 13 (Case 18).—Late papular syphilid of the palm, with exfoliation of superficial corneous layer.

much more rebellious, however, owing to the deep-seated character of the abscesses. The frayed and undermined corneous collar should be trimmed away, and Ruggles' mixture (salicylic acid 2 parts, tannic acid 10 parts, and alcohol 88 parts) applied freely several times daily. Occasionally a saturated aqueous solution of pyoktanin blue proves serviceable. In

many instances it will be found necessary to resort to the use of autogenous vaccines before the progress of the disease is checked.

After a thorough trial of all the various methods that have been suggested for the eradication of the growths in granuloma pyogenicum, I believe thorough congelation with Pusey's carbon dioxid snow to be the best. The top of the lesion is clipped off, and the base frozen for a period of at least one minute. Afterward the part is painted with tincture of iodin, and a thymol iodid dressing applied.



Fig. 14 (Case 21).—Segmental and circinate squamous syphilids of the palm (the so-called "psoriasiform syphilid").

Syphilitic eruptions of the palm generally require very little local treatment, although the liberal employment of a calomel (10 per cent.) or ammoniated mercury (10 per cent.) ointment will hasten their disappearance. Of the various constitutional remedies, I have found injections of mercury salicylate, in the following mixture, superior to all others:

		Gm. or c.c.	
℞	Mercury salicylate.....	2	gr. xxx
	Anesthesin	2	gr. xxx
	Lanolin	4	ʒ i
	Olive Oil.....q. s. ad	30	ʒ i

M. Sig.: Shake and inject 10 or more drops into the gluteal muscles, twice weekly. The dose should be gradually increased until the physiologic effect is secured. Occasionally it is advisable to administer sodium iodid at the same time, but in the majority of instances the mercurial preparation is all that is required.

ABSTRACT OF DISCUSSION

DR. A. RAVOGLI, Cincinnati: I congratulate Dr. Sutton on the beautiful demonstration he has given to us; and I can only say that some of his first cases in which he showed an eczematous condition of the hand, resembled some of my cases, which I found in my practice stubborn to treatment. I succeeded in finding the tricophyton, and by constant applications of Wilkinson's ointment I obtained results in about eight, ten or twelve days. From the frequency of these cases affecting mostly the palms, I concluded that inoculation could have occurred, the tricophyton being communicated by hanging on to the straps in a street car. Since then I consider dangerous taking hold of the straps in the street car, because of the possible presence of *Tricophyton tonsurans.*

DR. W. A. PUSEY, Chicago: Dr. Ravogli anticipated my thought on the subject of tricophyton of the palm. I have had it brought home to me that tricophyton palmus cannot be neglected by us; and in such a group of cases as this, I believe the occurrence of tricophyton or polycyclic patches on the hand, as determined by ringworm, must be thought of. I venture to call attention to the remedy I have been using in these cases: I have employed with great advantage 2 per cent. iodin in benzoin. It seemed to me to be a remedy of sufficient value to deserve attention. I got that from Dr. Politzer. I wondered why Dr. Sutton did not resort to cold in the treatment of this trouble with the hands, but I leave that to the discussion of our San Francisco colleague.

DR. HOWARD MORROW, San Francisco: I would like to call attention to the importance of the clinical diagnosis of palmar syphilis. Dr. Sutton spoke of the advantage of the Wassermann reaction, but frequently we find cases of syphilis of the palms with characteristic location and color in which there is a negative Wassermann reaction. These must be put on specific treatment, notwithstanding the complement fixation.

DR. ERNEST DWIGHT CHIPMAN, San Francisco: The set of photographs shown by Dr. Sutton, served to corroborate a pet theory of my own in establishing a differential diagnosis between an eczematous condition of the palm and late tubercular syphiloderms. It has been my observation that the latter nearly always begin in the very center of the palm and spread peripherally. Very frequently they are limited to the palm itself, and do not extend to the fingers, while eczematous lesions begin on any portion of the palm and are definitely inclined to spread to wrist or fingers.

DR. DOUGLASS W. MONTGOMERY, San Francisco: Lesions of the palm are among the most stubborn we have to deal with, and yet we dermatologists have to proceed against them particularly, because they refuse to yield to the measures adopted by the general practitioner. The treatment of chronic eczema of the palms has recently been considered by Dr. Culver. We have found the Roentgen ray an admirable aid in the treatment, and we think, as Dr. Sutton says, that it tends to prevent recurrences. This is interesting as indicating a possible connection between hyperhidrosis and the persistence of inflammatory lesions of the palms. We are inclined to the belief that hyperhidrosis of the palms is present often when it does not appear as such, as in many cases the sweat may diffuse itself in the rough thickened horny layer before reaching the surface. The Roentgen ray we know controls sweating, and it may in this way influence the dependent lesion both as regards its cure and also in regard to the permanence of its cure.

DR. HOWARD FOX, New York: I agree with Dr. Sutton in regard to psoriasis of the palms. I do not see how it is possible to make a diagnosis of psoriasis of the palms when there are no accompanying lesions on the rest of the body. I also do not see how psoriasis and eczema of the palms can be distinguished. Dr. Sutton spoke of the late syphilids on the right palm. They are not all on the right palm as the photographs exhibited will show. It is quite possible, of course, that some of these persons in whom the lesions occurred on the left palms, were left handed. The old rule that a squamous eruption on one palm is syphilitic, on both palms eczematous, holds good in about nine out of ten cases. One of the diseases of the palms in which serious mistakes in



Fig. 15 (Case 29).—Pompholyx, showing pigmentation of the affected areas.

diagnosis are sometimes made, is a form of erythema multiforme. In this disease the eruption occasionally consists of discrete macular and maculopapular lesions on the palms which closely resemble a secondary syphilid. When such an eruption is also accompanied by lesions in the mouth of bullous erythema multiforme the similarity to syphilis is even more marked.

DR. EVERETT S. LAIN, Oklahoma City: I have met with some puzzling cases of sweating and disease of the palms.



Fig. 16 (Case 31).—Keratosis follicularis, showing arrangement of corneous layer at the orifice of a coil gland duct (moderate magnification).

Dr. Sutton has only touched on this subject, and yet he has given a rather elaborate review on this point. There are so many of these eruptions, and many different varieties, and we treat them differently. Some yield nicely to treatment and some do not. There are cases in which you feel that the diagnosis is the same and yet the same treatment does not apply. The same is true of all other forms of eczema. My experience in this class of cases with Roentgen ray coincides with the experience of Dr. Montgomery, namely, that in such eruptions as those in which we have hyperhidrosis, eczema will follow. In fact I have made a rule to predict an eczema of the palms when I have seen patients who have a continuously cold, sweaty hand. In this type the Roentgen ray has given very satisfactory results; also in the weeping or moist hands or palms. In the dry, squamous type, however, I have not found the Roentgen ray so successful. It perhaps serves as an aid, but I have learned to use it almost entirely now with the moist types of these eruptions. In the dry scaly types we depend more on the stimulating ointments such as Dr. Sutton mentions.

DR. A. J. MARKLEY, Denver: During the past few years I have been struck by the frequency with which the late lesions of syphilis occur on the palms alone. Within the past few months several cases have come under my notice in which there was no history of previous eruptions, and yet definite evidence of lues in the palms. This location furnishes frequent evidence of latent syphilis, and we should carefully examine the palms more often than we do.

DR. J. C. PICKETT, San Francisco: I wish to mention two cases of ringworm of the hand which I have seen in the last few months. One was on the hand of a woman. The lesions extended from the fingers to the palm and originated from scratching between the toes where the original lesion was found. In the second case the lesion began on the index finger and extended to the palm. In this case the infection was also transferred by scratching, the original lesion being around the anus.

DR. GEORGE D. CULVER, San Francisco: I should like to ask Dr. Sutton to elaborate on his preference for salicylate of mercury over salvarsan for palmar syphilids. I have been led to believe that the use of salvarsan in the cases of doubtful palmar lesions is of the greatest diagnostic value. In my experience many of the doubtful cases have cleared up after one dose of salvarsan even when there was a negative Wassermann. None of the palmar syphilids have failed to yield to this remedy.

DR. RICHARD L. SUTTON, Kansas City, Mo.: With regard to palmar tricophytosis, the condition must be a somewhat rare one. Up to the present I have never encountered a case in America or elsewhere. Dr. Morrow is undoubtedly correct in regard to the fallibility of the serum test in some cases of palmar syphilis. In many instances both the histology and the laboratory findings are negative, and resort must be had to a so-called therapeutic test. In my experience salvarsan, even though administered intramuscularly (a method which is far superior to the intravenous), has proved inferior to the salicylate injections in eradicating tubercular syphilodermas of the palms. Dr. Montgomery's suggestion with respect to the occurrence of hyperhidrosis in the hyperkeratotic cases is illuminative and worthy of further study and investigation. I agree with Dr. Lain that the moist cases respond more satisfactorily to Roentgen therapy than do the dry types. I believe that the point made by Dr. Chipman is a valuable one, particularly with reference to the late, tubercular and gummatous varieties of syphilis. For further information on the histopathology of pompholyx, I would respectfully refer Dr. Pusey to a paper which was read before this section at the Minneapolis meeting in 1913.

THE ESTIMATION OF CARBON DIOXID TENSION IN ALVEOLAR AIR*

PAUL ROTH, M.D.
BATTLE CREEK, MICH.

Metabolic disorders are often accompanied by a disturbance of the equilibrium between acids and bases in the blood. Of frequent occurrence is an excess of acids over bases, a condition designated by the term "acidosis." A departure from the normal in the opposite direction is termed "alkalosis." Either of these conditions is an intoxication which in its intense form leads to symptoms of gravest import. Under normal conditions, this is very efficiently guarded against by physiologic mechanisms for the preservation of the neutrality in the body fluids, as shown by L. J. Henderson.[1]

Reported observations along this line by A. W. Sellards[2] and others show that there are evidently forms of acidosis different from the one so common in diabetes. On the whole, acidosis is of frequent occurrence. It has been recognized in children during the exanthems, in high continued fever, in even slight intestinal infections (F. Krauss), in typhoid fever (Kopfe), and in many other febrile conditions (Hallervorden), in starvation, infectious diseases, gastro-intestinal disturbances, eclampsia, phosphorus poisoning, narcosis, especially in the well-known postoperative acidosis.[3] It is easily induced in health or disease by any dietary restricting the intake of carbohydrates. I have found it often in the obese under a fat-reducing regimen. It can hardly be doubted that uremia is accompanied by a high degree of acidity in the blood.[4]

---

* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

*From the Clinical Laboratories of the Battle Creek Sanitarium.

1. Henderson, L. J.: The Theory of Neutrality Regulation in the Animal Organism, Am. Jour. Physiol., 1908, xxi, 427.
2. Sellards, A. W.: Bull. Johns Hopkins Hosp., 1914, xxv, 101.
3. Taylor: Digestion and Metabolism, Philadelphia, Lea and Febiger, p. 362.
4. Von Noorden: Metabolism and Practical Medicine, Chicago Medical Book Publishing Co., ii, 485.

Pronounced acidosis is a grave and distressing complication in disease, and although it is occasionally so well borne that it apparently produces no ill effects when of moderate intensity, it should be considered detrimental, even in its milder forms. I believe, also, that therapeutic measures adopted to prevent or to check it will always result in greater success in treating various affections. As proof of this assertion, I may call attention to the present revolution in our ideas in the management of fevers and the surprising results reported following the more liberal administration of food, particularly of carbohydrates, not only in fevers but also in surgical cases. This radical change in the diet of these patients, suggested by the results of such investigations as those of Coleman, and Dubois[5] was not for the specific purpose of holding acidosis in check; nevertheless to this I must, in part, at least, attribute the beneficial results obtained. In connection with his surgical work at the Battle Creek Sanitarium, Kellogg has for the past three years endeavored with success to prevent and to combat postoperative acidosis by a systematic administration, either per os or per rectum, of nutriment rich in carbohydrates, particularly during the period of preparation for operation, and also as soon as possible after operation. In surgical work, it is of the utmost importance to recognize a preexisting acidosis which would inevitably be increased by the usual dietetic restrictions before operation, and which may later develop into a dangerous, sometimes fatal, postoperative acidosis.[3] Practically all major surgical cases show a marked acid intoxication as confirmed by both the urinary findings and the carbon dioxid tension.



Fig. 1.—Complete outfit for collecting and analyzing samples of aleveolar air in the determination of carbon dioxid tension. *A*, carrier for collecting samples in room of ward; *B*, Haldane apparatus (small type) for air analysis; *C*, collecting tube with valve and mouthpiece; *D*, revolving buret stand.

Taylor[7] has explained how a long-continued acidosis of even mild intensity must inevitably lead to dangerous abstraction of cations from the tissues. In view of these facts, the importance of determining and combating acidosis in all its forms and intensity is apparent. Too much insistence cannot be placed on its early detection and on the necessity of the timely adoption of proper therapeutic measures. I believe that measures to combat acidosis are often delayed until it is too late to obtain any but temporary results.

A number of methods have been suggested for measuring the degree of acidosis. Palmer and Henderson[8] suggest that the condition of acidosis may be assumed to exist when an administration of a quantity of alkali equivalent to 1 liter of tenth normal solution fails to produce a diminution of the acidity of the urine.

"The mere estimation of urinary acidity is of little value in determining the intensity of acid formation," says Krauss, who adds, "More is afforded by the lateness of the appearance of alkalinity after the administration of salts of the alkali metals by the mouth."[9]

The estimation of urinary ammonia has for years been advocated as a fairly reliable measure of the intensity of acidosis of any type, and much dependence has been placed on this method by various authors. I have, however, had occasion to doubt its reliability when comparing day after day the urinary ammonia output with results obtained by the carbon dioxid tension.

Henderson and Walker's work on "Factors of Acid Excretion in Nephritis," published in the *Journal of Biological Chemistry*, for May, 1915, shows very conclusively that the usual interpretations of the urinary findings are at times erroneous and that even high acidosis can be accompanied by a constant diminution of urinary ammonia.

The detection of acetone alone in the urine is not an indication of acidosis. The appearance of diacetic acid and beta-oxybutyric acid marks the onset of acidosis, while acetone is its precursor when found without the acids.

Suffice it to say here, that the quantitative output of each one of these ketonic bodies is not proportional. Therefore, the estimation of acetone and of diacetic acid is not always a true indication of the probable amount of beta-oxybutyric acid present in the same specimen. Further, the total elimination of these same bodies may be considerably reduced as the result of retention and accumulation in the blood, resulting, of course, in a lowered urinary output with an increased acidosis.

While all the above methods have points of specific advantage, and can serve as indications of the presence of acidosis, none are suitable for an accurate measurement of its intensity. Moreover, their availability is limited, while some require too much time to be of any practical value for clinical purposes.

Compared with other methods, I find, as declared by Y. H. Henderson,[10] that the estimation of the carbon dioxid tension in alveolar air is as yet the most accurate available method for recognizing and measuring the intensity of acidosis. The process of elimination

5. The Influence of the High Calory Diet on the Respiratory Exchanges in Typhoid Fever: Arch. Int. Med., August, 1914, p. 168.
7. Taylor: Note 3, p. 405.
8. Palmer, W. W., and Henderson, L. J.: Clinical Studies on Acid Base Equilibrium and the Nature of Acidosis, Arch. Int. Med., August, 1913, p. 153.
9. Von Noorden: Metabolism and Practical Medicine, ii, 160.
10. Henderson, Y. H.: The Time that the Breath can be Held as an Index for Acidosis, The Journal A. M. A., July 25, 1914, p. 318.

in the kidneys, while being in some respects identical with that of the lungs, is much more complex and subject to variations not encountered in the comparatively simple and exceedingly rapid exchange of gases in the lungs. The quantitative relation between the carbon dioxid tension in the blood and in the alveolar air is much more constant than the quantitative relation between any given substance found both in the blood and in the urine.

That acidosis can be determined effectively through the estimation of the carbon dioxid tension in alveolar air, was shown several years ago by Porges, Leimdorfer and Markovci.[11]

Decreased alkalinity of the blood as in acidosis is accompanied by a corresponding decrease of carbon dioxid tension in the blood, while an increased alkalinity results in a corresponding increase of its carbon dioxid tension. The tension of carbon dioxid in the blood being represented by the carbon dioxid in the alveolar air,[12] observers have readily noted that with rare exceptions an increase of acidosis corresponds to a proportional decrease in the carbon dioxid tension in the alveolar air. This method of determination of acidosis has, as yet, been confined mostly to the experimental laboratory because the quantitative analysis of air, as that of any gas, is attended with difficulties of manipulation rarely encountered in the usual analysis of liquids. The introduction of simpler methods in the determination of the carbon dioxid contents of alveolar air will soon place the test among those that are considered indispensable in the practical management of many acute as well as chronic affections.



Fig. 2.—Manner of collecting the sample of alveolar air from subjects able to sit up. Note clip on nose of subject; right hand of operator is on crown of valve; left hand supports valve and tube, the index finger closing small opening underneath rubber tube close to valve.

METHODS AND TECHNIC

Space will not permit a full description of the methods recommended, but reference may be made to "A Comparison of Methods of Obtaining Alveolar Air," [13] "The Influence of Food, Posture and Other Factors on the Alveolar Carbon Dioxid Tension in Man." [14]

In modifying standard methods or in adopting new procedures, my aim has been to overcome difficulties encountered in our efforts to make free use of the test for clinical purposes. I have also endeavored to perfect a plan of procedure which would be simple, practical and easily mastered by any one having a limited laboratory training.

METHODS OF OBTAINING ALVEOLAR AIR

For general use and particularly when dealing with untrained subjects, with patients who are unable to lend any degree of cooperation or even with the unconscious, the best method would be:

1. The one requiring the least amount of intelligent cooperation on the part of the subject.

2. The one requiring the simplest form of apparatus, easily and quickly cleaned and sterilized. When dealing with patients whose condition enables them to lend a fair degree of cooperation I use the Haldane method with the only difference that I secure for each determination two samples, both of which, for the sake of simplicity, are taken alike from a rapid and complete expiration following a normal inspiration. Occasionally the two samples may vary more than 1½ or 2 mm., in which case the error would logically be in the lower result, which is then entirely discarded. Otherwise, when the results compare closely, as they most often do after the first or second test, the average of the two is reported. (For over a year, I have added to this a very simple qualitative test for acetone in the breath.[15] The patient is simply asked to breathe through a glass tube into a test tube containing a few cubic centimeters of an alkaline solution of mercuric cyanid and silver nitrate. Acetone will give an opalescent precipitate in such a solution, and it is reported simply in terms of "trace," "+," etc.)

AUTHOR'S METHOD

For collecting samples from patients who are unconscious or from those who for any reason whatsoever cannot cooperate, I suggest the following method, which has proved to be the most simple and satisfactory. The subject breathes normally back and forth for twenty-five seconds into the same collecting tube used in the Haldane method, with the valve turned so as to connect the patient from the start with the rubber tube. At the end of the twenty-five seconds as nearly as possible at the end of an expiration, the valve is turned to seal the sample obtained in the rubber tube, from which it is tranferred at once into the sample buret. From numerous observations, I find that the results are quite similar

11. Porges, Leimdorfer and Markovci: Ueber die Kohlensäurespannung des Blutes in pathologischen Zuständen, Ztschr. f. klin. Med., 1911, lxxiii, 389.
12. Haldane and Priestley: Jour. Physiol., 1905, xxxii, 25.
13. Boothby and Peabody: A Comparison of Methods of Obtaining Alveolar Air, Arch. Int. Med., March, 1914, p. 497.
14. Higgins, H. L.: Am. Jour. Physiol., April 1, 1914.
15. Scott and Wilson: A Method for Estimating Acetone in Ammoniacal Liquids, abst., Jour. Physiol., 1911, xliii, 456.

to those obtained by the Haldane method. The rapid diffusion of carbon dioxid gradually raises its tension toward and into the long tube. At the end of twenty-five seconds I find that this tension in various individuals is very much the same as that obtained with the same subjects at the end of a rapid and complete expiration. I further find that within certain limits, the *number of respirations* does not alter the tension materially, provided the total *time* during which the patient is made to breathe into and from the long tube is the same.

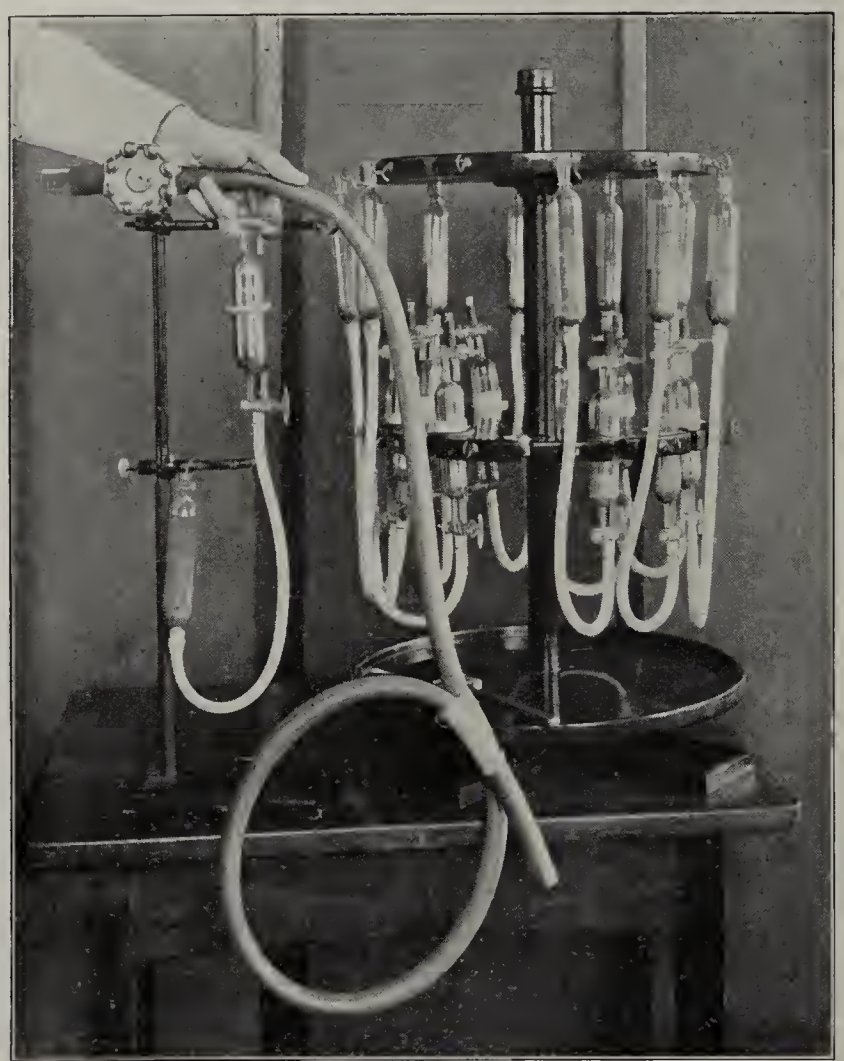


Fig. 3.—Manner of transferring collecting tube to stand and connecting sample air buret with tube through the small aperture. On opening the upper three-way cock the mercury filling upper buret passes into the other. When full the buret is connected with Haldane's apparatus (Fig. 4). The lower disk of the revolving stand is for catching the mercury that may escape when transferred back from lower to upper buret.

TABLE 1.—COMPARISON OF THE AUTHOR'S WITH HALDANE'S METHOD FOR COLLECTING THE SAMPLE *

Date	Method	L. A. Successive Samples mm.	mm.
April 13	H	(1) 42.6	(2) 43.3
	R	(3) 44.1	(4) 43.8
	H	(5) 43.1	(6) 43.0
	R	(7) 43.9	(8) 42.8
April 21	H	(1) 38.7	(2) 37.5
	R	(3) 39.1	(4) 41.3
	H	(5) 38.9	(6) 37.8
	R	(7) 42.7	(8) 42.9
	H	(9) 41.6	(10) 36.6
	R	(11) 35.0	(12) 34.9

* H = Haldane's method with full expiration following a normal inspiration. R = author's method following five respirations in about twenty-five seconds, except Nos. 10, 11 and 12, taken following five respirations in twenty seconds only.

A similar observation was made by Porges and confirmed by Boothby and Peabody,[13] when breathing into a closed bag as in the Plesch and Higgins methods. I do not hesitate to recommend my method of collection for general clinical use, although I personally like to compare results as often as practicable with Haldane's method.

Results are interpreted as follows: When the carbon dioxid tension in alveolar air is normal, there is no appreciable acidosis, even if acetone is present in more or less large quantities in the breath. Acetone in the breath in such cases, however, indicates the border line of acidosis. The results obtained vary more or less in the same individual according to the method employed, but with my method as also with Haldane's, the normal varies between 35 and 43 mm. in different individuals, though practically the same day after day in the same individual. A tension below the minimum normal indicates an acidosis proportional to the fall of tension. Tensions of 15 to 20 mm. indicate threatened coma. In coma the tension may fall as low as 5 or 6 mm. or less until death occurs, when inevitably it falls to zero.

For hospital work, the equipment represented in Figures 1 to 5 leaves little to be desired for rapid and convenient manipulation. The carrier on wheels serves to collect the air samples from patients in their rooms or ward. The analysis is made in the laboratory by means of Haldane's small type of air analysis apparatus. One apparatus is reserved exclusively for the estimation of carbon dioxid and has been stripped of all unnecessary parts to make it easily cared for. Certain modifications have also been introduced and are briefly: (*a*) The graduated scale (G, Fig. 4) on the side of the tube containing the measuring and compensating burets; this scale facilitates the rough preliminary estimation of the desired amount of air to be analyzed; (*b*) The placing of the vertical branches M and R (Fig. 5) in closer proximity than

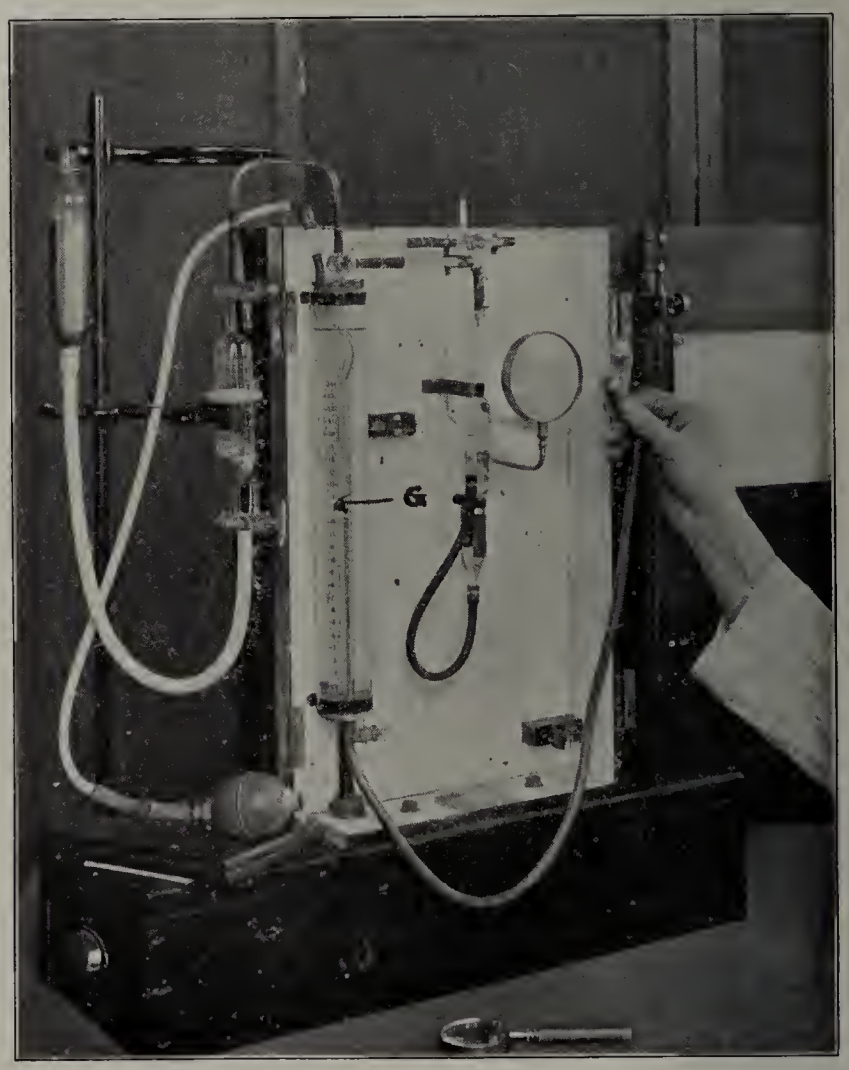


Fig. 4.—Buret containing sample to be analyzed connected with the graduated buret of Haldane's apparatus by means of an inverted capillary U-shaped tube. *G*, graduated scale (½ cm., divisions 0 to 25). The rubber bulb is connected with a glass tube reaching to bottom of large tube filled with water immersing burets; better shown in Figure 5.

as found in the instrument when bought. This greatly facilitates the adjustment of the levels in *M* and *R* as required before each reading. (*c*) The stationary magnifying lens gives greater accuracy and speed in leveling and leaves both hands free for other manipulations. (*d*) A fine horizontal line (*S*, Fig. 5) along the diameter of the stationary lens and another one at the same level directly on the background of the apparatus serves as a more accurate and convenient guide for bringing the meniscuses in *M* and *R* at a constant and definite level. A better control of the mercurial leveling cup is secured by resting the elbow on a block or any kind of support of a proper height to suit the operator. I omit mentioning other points of minor importance. Note, however, the stand on which the collecting tube is placed (Figs. 2 and 3) for the transfer of the sample into the buret. The mouth piece shown in Figure 1 is of metal (nickel-plated brass); the one shown in Figure 3 is of glass, which may not be used safely if the subject is liable to break it. The revolving rack with a capacity of twelve burets is a great convenience and economizes space.

The need of a simple apparatus for bedside use has been felt for some time. Fridericia has devised for this purpose an instrument remarkable for its simplicity and ease of operation.[16] This apparatus requires no collecting instruments as the subject delivers the air sample directly into the apparatus, which serves for the analysis as well. I have not had sufficient opportunity to give it a fair trial, but have no doubt that it can be recommended for clinical use.

I am not ready at this time to report on my own efforts to devise something which will meet the demand. I trust, however, to be able to report in the near future on an apparatus which promises to be satisfactory.

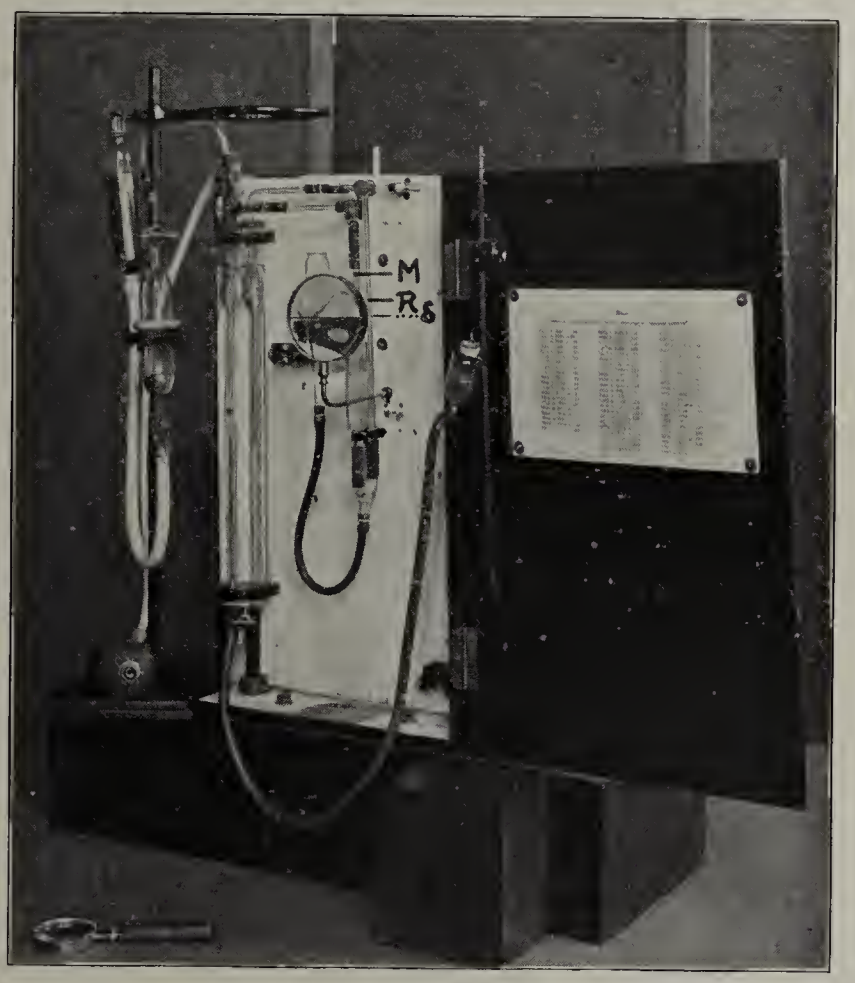


Fig. 5.—Position of stationary lens with fine transverse horizontal lines at level *S*. Note proximity of branches *M* and *R*, and block on which elbow rests when manipulating mercury leveling cup as shown in Figure 4.

16. Fridericia, L. S.: Eine klinische Methode zur Bestimmung der Kohlensaurespannung in der Lungenluft, Berl. klin. Wchnschr., 1914, No. 27.

CLINICAL OBSERVATIONS

Hasselbalch has shown that an increase in the irritability of the respiratory centers will induce a lowering of the carbon dioxid tension.[17] For practical clinical purposes, this should not detract from the reliability of the test, and all things considered, this factor would not lead one to error in following up the changes of carbon dioxid tension in individual cases. The results at any rate can be confirmed later by the urinary findings, which often require considerable time to obtain.

The Battle Creek Sanitarium has for over two years adopted the test as a routine measure in the management of diabetes, obesity and, more recently, in surgical cases. About two thousand determinations have been made, mostly in the above-mentioned groups of cases, but our experience has shown us the value of the test in many other affections, and points to the wide usefulness to which it seems to be destined.

The symptomatology of marked acidosis indicates plainly the serious character of its effects on the organism. It works insidiously but surely in its milder forms. In all conditions in which we have observed it, we find that the patient always improves remarkably when even a slight acidosis disappears. On the other hand, it aggravates concomitant affections and retards the progress of convalescence. As in diabetes, it interferes with nutrition and lowers vital resistance.

The power of endurance in health as in disease seems to run parallel with the individual power to retard or ward off acidosis. Observation along this line should throw considerable light on the causes of the greater endurance strikingly demonstrated in the vegetarian compared with that of the meat eater.[18]

Severe muscular exertion of even moderate duration will be followed by a decided fall of carbon dioxid

17. Hasselbalch: Neutralitats-regulation und Reizbarkeit des Atemzentrums in ihren Wirkungen auf die Kohlensäurespannung des Blutes, Biochem. Ztschr., November, 1912.

18. Fisher, Irving: The Influence of Flesh Eating on Endurance, Yale Med. Jour., March, 1907.

TABLE 2.—ALVEOLAR CARBON DIOXID TENSION BEFORE AND AFTER A MARATHON RACE OF FIFTEEN MILES

August, 1913 No.	Subject	Alveolar Carbon Dioxid Tension			Food Served to the Runners During the Race
		Before Breakfast 8 a. m.	Before the Run 3:30 p. m.	After the Run 8 p. m.	
1	B	40	42	39	Ice, lemon, maltose caramels
2	K	44	—	40	Ice and lemon only
3	R	39	39	36	Ice, lemon, maltose caramels
4	J	36	38	—	Ice and lemon only

tension. If a resting period follows, the tension will gradually rise again. This rise will be rapid in the well nourished, whereas after prolonged abstention from food, and in conditions with acidosis, the rise will be slower or may not take place at all until food is partaken of again.

I have observed the behavior of four young men who entered a marathon race of 15 miles. The tabulated results show the following interesting facts:

1. The runners who showed the highest alveolar carbon dioxid tension before the race finished first.

2. Of the two who had the lowest tension, one finished last, while the other did not finish at all. This runner, furthermore, had the low tension of 36 mm. before breakfast on the day of the run. His tension rose after eating, however, and was 38 mm. just before the start.

All four were served at frequent intervals from two accompanying automobiles, water and small pieces of ice, and pieces of lemon. In addition, Nos. 1 and 3 only were frequently given maltose caramels.

I give these results as an illustration of similar ones obtained with various individuals, including some diabetics, after exercise of various degrees or after muscular work induced by the application of the sinusoidal current. A fall in the carbon dioxid tension, accompanied sometimes with the appearance, even in normal subjects, of acetone in the expired air, has always been noted.

SUMMARY

1. Acidosis is of frequent occurrence in a relatively large number of diseases.

2. Acidosis is detrimental in all degrees of intensity; therefore should be looked for, its degree estimated, and efforts to control or combat it should begin early.

3. The estimation of the carbon dioxid tension in alveolar air is as yet the simplest, quickest and most reliable practical method to determine the degree of acidosis.

4. Simpler methods and apparatus are needed. My simple method of collecting samples of alveolar air during unconsciousness as well as in all other conditions is described.

5. Clinical observations.

Cooks as Typhoid Carriers.—The *American Journal of Public Health*, discussing typhoid carriers employed as cooks suggests that steps be taken "to provide for the establishment of some system of registration, bacteriological examinations and certification of persons engaged as cooks and kitchen help in public institutions, hotels, restaurants, etc."

EMPYEMA OF FRONTAL AND ETHMOIDAL SINUSES

G. W. STIMSON, A.B., M.D., PITTSBURGH
Fellow of the American College of Surgeons; Rhinolaryngologist and Aurist, Tuberculosis League Hospital; Instructor of Laryngology, University of Pittsburgh, School of Medicine

Suppurating (empyema) frontal (and ethmoidal) sinusitis with fistula; radical frontal sinus (Killian) operation. Identical though independent condition six months later on opposite side.



Fig. 1.—Roentgenogram taken Dec. 3, 1914, before the first operation, showing a small left frontal sinus filled with pus, and the dehiscence of bone (indicated by arrow) leading into orbit; left ethmoidal and maxillary sinuses also positive. On the right is shown a large frontal sinus partially divided by a septum, clearly free from pus; ethmoids and antrum negative. Six months later these were all full of pus, with a fistula leading into orbit; an exact counterpart of the condition on the left.



Fig. 2.—Photograph taken June 23, 1915, just three weeks after second operation. Only slight scar seen on left; on right side still some edema, which is gradually disappearing.

The patient, a youth aged 16 years, referred by Dr. T. J. Moran, first consulted me, Dec. 3, 1914. There was nothing pertinent in either his family or previous medical history with the exception of his reference to his present condition. He stated that three years ago his left eye became swollen shut by a great swelling of both lids, due to what he thought was a "boil," which seemed to point above and internal to the inner canthus. At this point it was lanced by his physician and had persisted uninterruptedly ever since as a discharging fistula.

A rather remarkable fact in this connection is that during the past three years he had anxiously sought relief from numerous physicians and hospital clinics without result.

Examination revealed the fistula located as already described. It was of extremely small caliber and would not admit the smallest probe. But on practicing the Valsalva method of inflation (puffing the cheeks with lips and nostrils tightly closed), pus was readily forced out of the fistula. Anterior rhinoscopy revealed a greatly hypertrophied middle turbinal, the anterior half of which was balloon-like and boggy; the middle meatus was full of inspissated pus and crusts.

A roentgenogram by Dr. George C. Johnston revealed a dehiscence of bone at the inner edge of the left orbit (apparently on a level with the point of the fistulous opening through the skin) leading into the frontal and ethmoidal cells, both of which showed dense shadows (pus). The left maxillary sinus also was full of pus (probably acting as a reservoir), that is, it, too, gave a dense shadow.

Dec. 7, 1914, under ether anesthesia, a typical radical frontal sinus (Killian) operation was performed. The incision reached from the temporal end of the unshaven eyebrow to the nasal end, and then curved downward through the fistulous opening, reaching almost to the left ala of the nose. After the orbital soft tissues (including the periosteum) had been well retracted, pus welled out of the wound, and 2 cm. behind the nasal end of the orbital ridge a fistulous opening the size of the end of a lead pencil was found leading into the ethmoidal cells, and a bent probe could be passed up into the frontal sinus. A bridge of bone 1 cm. in width, covered with periosteum, was left to support the brow, the anterior wall of the frontal sinus was removed above the bridge and the floor below, and a large opening made into the ethmoids. Through the nose the middle turbinal and some of the ethmoidal cells were removed *en masse*. An

opening the size of the end of a pencil was made through the external lateral wall of the nose (in the inferior meatus) into the maxillary antrum. A gauze drain was inserted, reaching from the frontal sinus above, down through the ethmoidal cells and the left side of the nose. The external wound was closed tightly without an external drainage (contrary to most textbook teaching). The gauze intranasal drain was removed at the end of forty-eight hours. The external stitches (metal clips) were removed on the fifth day. Union occurred by first intention. The bandage was removed entirely on the tenth day and the patient was discharged, free of his discharging fistula for the first time in over three years. As can be seen by inspection of the patient five months later, there is no depression and no deformity, and all that can be seen is a small linear scar reaching down the side of the nose from the nasal end of the eyebrow.

May 30, 1915, the patient presented himself again at my office with the opposite (right) eye swollen tightly shut by marked edema of both the upper and lower lids, and swelling especially marked internal to the inner canthus. The only symptoms were swelling of the eye and tenderness on pressure internal to the inner canthus.

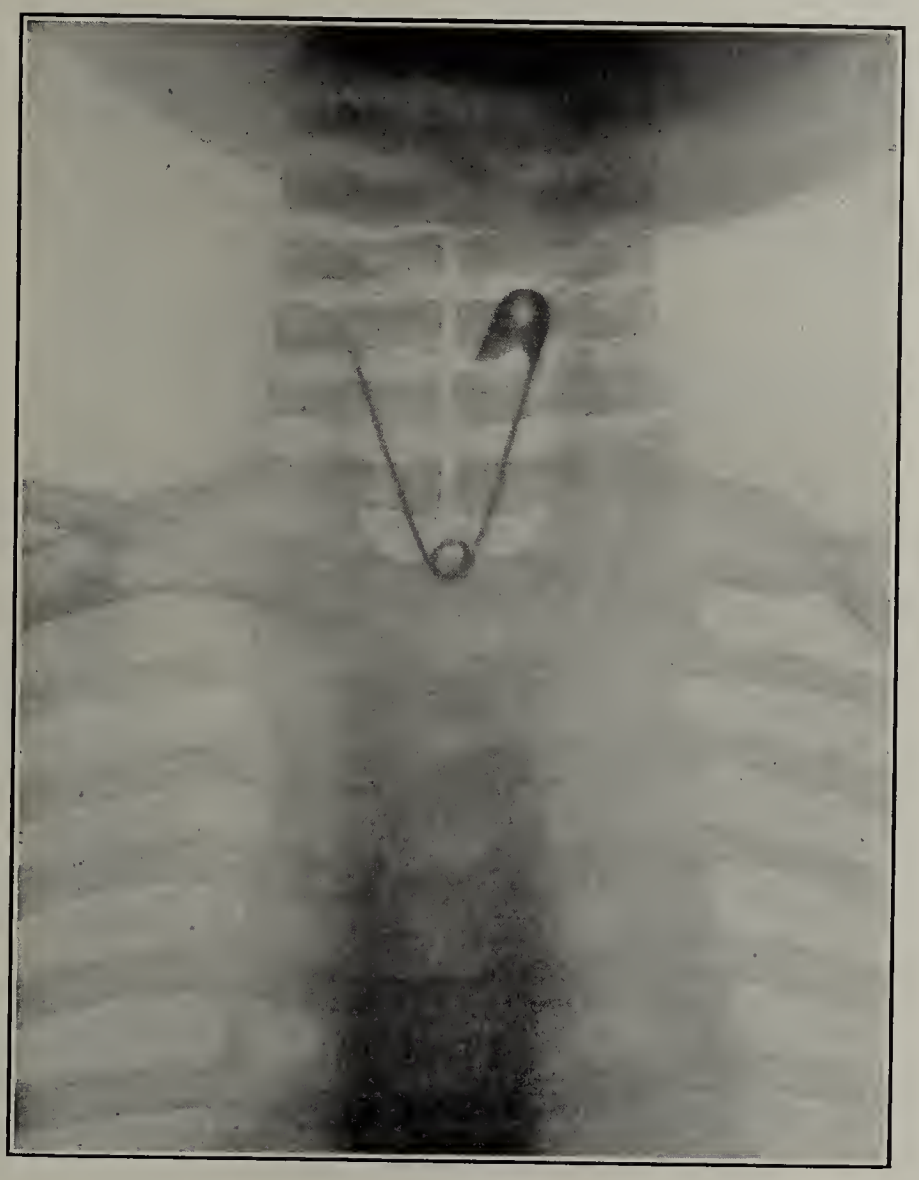
Intranasal examination revealed absolutely nothing. Except for a slight tendency to atrophy, the right naris was normal, and there was nothing to cause one to suspect the existence of any abnormal condition of the sinuses. The middle turbinal was normal in all respects. There were no pus or crusts present in the middle meatus or elsewhere.

June 1, 1915, the patient was sent to the hospital, and June 2 a radical external operation (Killian) was performed. At first I suspected that the suppuration might have been an extension from the left side, through the septum separating the two frontal sinuses, but this proved not to be the case. The side of the original operation was healthy, quiescent and uninvolved. However, when the contents of the orbit were retracted, a dehiscence of bone was found (from which pus exuded) similar in size, location and all other respects to that on the other side. The disease evidently originated as an entirely independent process (empyema of ethmoidal and frontal sinuses) on the right side with no connection whatever with the left. Exactly the same operative procedure was employed, with the same gratifying results as regards both cure and cosmesis.

SAFETY PIN IN ESOPHAGUS OF YOUNG CHILD

G. S. OTRICH, M.D., BELLEVILLE, ILL.

E. Z., male child, 7 months old, of Hungarian parentage, was brought to my office by the mother, who had been referred to me by Dr. E. P. Rabb, both suspecting that the child had swallowed a safety pin. She had found the child, which she had left lying on its back, on its abdomen, red and choking. These symptoms soon subsided. On examination no bruises, ulcers or hemorrhage could be found. The throat appeared perfectly normal. When given water, the child swallowed with apparent ease. Careful palpation along the larynx and pharynx could neither elicit pain nor outline any foreign body. The child vomited soon after nursing. The mother was sent home with the request to make a thorough search for the pin. She returned at 3 p. m. and reported that no pin had been found. The child had slept one and a half hours, but invariably vomited after nursing. A roentgenogram was taken by Dr. C. P. Renner, which showed the relative position of the pin and the conditions we had to deal with in its extraction.



Safety pin in esophagus.

As it was impossible to use the esophagoscope, the Roentgen-ray tube was arranged beneath an ordinary table so as to throw the light upward, and the child placed so that the light from the target would be in a direct line and the fluoroscope was adjusted directly over the child. I then introduced a small snare, and by using my finger as a director, passed this into the esophagus. Then by intermittent flashing of the light, we could see the relative position of the snare-closing device and the pin. I passed the snare slightly beyond the pin and then gently withdrew it till the pin seemed to be engaged, then closed the snare and was very fortunate in being able to get it by this method on the first attempt. There was no trauma or hemorrage following the operation. The child made an uneventful recovery.

State Quinin Supply in Venezuela.—An Italian exchange reports that the president of Venezuela signed a decree last December which aims to render quinin available to all for treatment of malaria. The national board of health is given power over the sale of the drug. All public and private hospitals and dispensaries, the army, and wholesale and retail dealers in drugs are to be supplied at cost. The interior department of state has charge of the inspection of the quality and the distribution of the quinin.

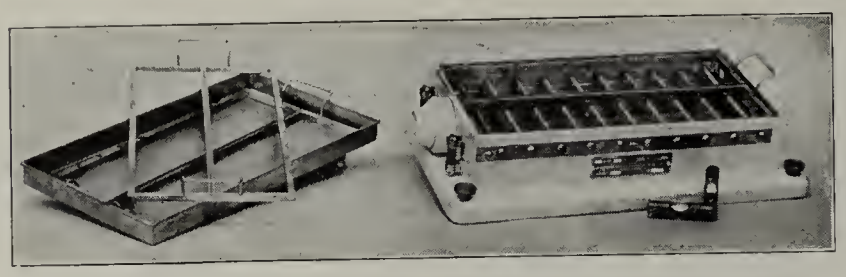
Vascular Surgery.—In vascular surgery the men of the Middle Ages and of the Renaissance, Henri de Mondeville, Guy de Chauliac, and even Ambroise Paré, were blind followers, who never even approached the position of their masters. Not much more than a century has passed since men of the John Hunter type took up vascular surgery where Rufus and Antyllus had left it, and only to this generation of experimental surgeons, such as Eck, Ballance, Matas, J. B. Murphy, Halsted, Carrel and Guthrie, could the best of the Greeks go to school. You may think perhaps, that I am scarcely just to the great medieval surgeons, particularly to such a master as Ambroise Paré, who reintroduced the ligature, but in vascular surgery, the touchstone of the position of the art, they never wholly regained what the profession had lost.—Osler, *Lancet*, May, 1915.

New Instruments and Suggestions

A CLINICAL ELECTRICAL FIXING AND HOT STAINING APPARATUS*

H. J. CORPER, M.D., CHICAGO

The need for a clean and neat apparatus for hot staining with carbolfuchsin has long been felt by laboratory workers in tuberculosis. With the advent of electricity and the use of nichrome wire for heating purposes, this want could be realized. Recently a good homemade "makeshift" electric



Clinical electrical fixing and hot staining apparatus.

hot staining apparatus was described by Carl L. A. Schmidt (THE JOURNAL, March 6, 1915, p. 823).

Since the opening of the Municipal Tuberculosis Sanitarium of the City of Chicago, there has been in use an electrical apparatus which is worthy of description, since it was found to possess manifold advantages over the older methods. By its use it was possible to fix the smears of sputum, etc., without danger of burning, stain them without danger of boiling the carbolfuchsin solution, and also avoid dropping carbolfuchsin all over the laboratory tables and floors. It was also possible to fix and stain as many as twenty or more without handling the individual slides within a short period of time.

The apparatus (a description of the twenty-slide type used by us is given), which can be made to accommodate any number of slides, multiples of two up to about twenty, consists of a large asbestos wood frame with base which will withstand a red heat without destruction. In the bottom of the boxlike frame is contained a sliding metal shelf to be filled with sand for catching any carbolfuchsin drippings and to aid in reflecting all the heat upward from the heating units, of which there are ten (one for every two slides). These units, which are easily replaceable, are simply made of "lavite" wound with nichrome wire (size 32), which will give the proper heat when connected with a 110-volt lighting circuit. (The nichrome wire used was tested for solubility in boiling carbolfuchsin solution and found to be insoluble.) In order to regulate this current more accurately, however, there is included in the circuit a small suitable rheostat. For the purpose of leveling the apparatus so that it may stand on any laboratory table, the two front legs of the base are made of adjustable leveling screws. The slide carriers are nickel plated brass frames made to fit in the asbestos frame at a suitable height above the electrical units, and with a handle at each end for moving it about, and suitable grooves so that the slides can be removed with forceps. When large numbers of slides are to be stained, three of these slide carriers are used, being placed in small trays made for the purpose. In this way it is possible to do continuous work as, for instance, fixing and staining one set while decolorizing, etc., the other sets. The trays can also be conveniently used in decolorizing and contrast staining by merely carrying to a nearby sink suitably arranged. A set of fuses is arranged on the apparatus so that there is no danger of accidental short circuit and burning of the operator. The apparatus is fireproof, being made entirely of metal and asbestos wood, as approved by the National Board of Fire Underwriters. This apparatus has been found to be a tremendous time saver by all who have used it in our laboratories.

The apparatus can be obtained complete (sizes two to twenty slides) from A. de Khotinsky, 6026 Drexel Avenue, Chicago.

* From the Laboratories of the Municipal Tuberculosis Sanitarium of the City of Chicago.

A UNIVERSAL SURGICAL MOTOR

H. M. WEGEFORTH, M.D., AND PAUL WEGEFORTH, M.D.,
SAN DIEGO, CALIF.

The widely increasing work among surgeons in the treatment of bone lesions by direct methods has created a demand for motor-driven instruments, several of which are now on the market. All of these, however, aside from being very expensive, lack several essential qualities which we have tried, in a measure, to develop in the instrument described below.

The instrument consists of a 1/15 horse power motor connected with a driving shaft, 4 inches long, at the end of which is screwed a chuck for securing the surgical bits. Around these parts there is a snug fitting, detachable metal case permitting free and easy access to the motor mechanism. At the posterior end of the case there is fitted a permanent hollow

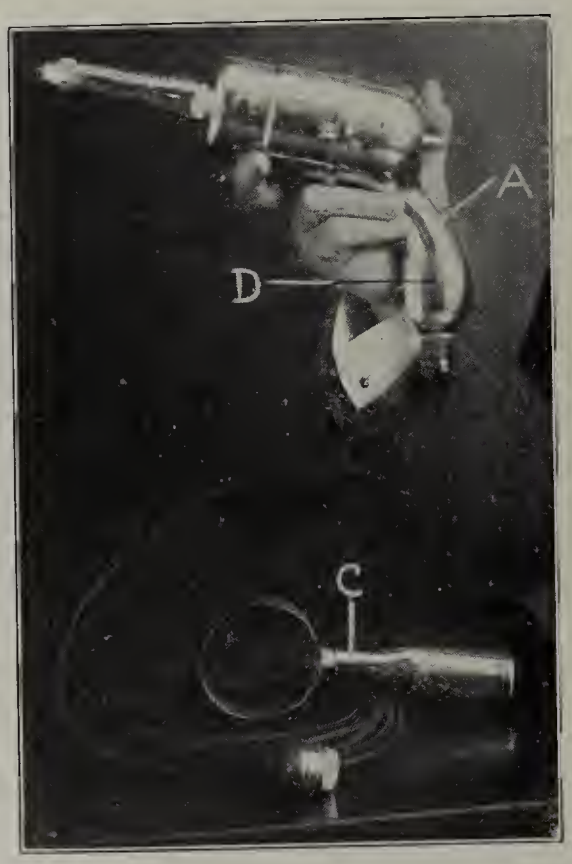


Fig. 1.—Universal surgical motor.



Fig. 2.—Universal surgical motor.

grip in which are stored the resistance coils and control mechanism. In addition to this grip, there is a detachable handle which can be fastened to the shell around the motor, and which can be adjusted instantly to conform with the position taken by the directing hand.

The instrument here described differs from those already on the market in the following details:

1. The entire motor, including bits and connecting cord, can be sterilized in the autoclave at a pressure of 15 pounds live steam for half an hour or more. There is nothing in the entire motor which can in the least degree be injured by heat.

Care should be taken, however, to dry the apparatus thoroughly after sterilization. This is easily accomplished in the autoclave, by the use of either a vacuum drying arrangement or the application of dry heat.

2. The chuck (*B*) at the end of the shaft fits any bit, having a diameter of its shaft up to ¼ inch. This does away with the necessity of obtaining specially designed drills for the instrument. As a matter of fact, most of the drills and burrs used by ourselves have been selected from a machinist's catalog, and were found to fit and be of service without alteration. As most of these tools are carried in stock by most hardware houses, the cost is quite small.

3. The outer shell, when removed, exposes the motor completely, allowing repairs to be easily made and permitting constant attention to be exercised over the working of the motor and connections.

4. The control (*A*), giving three speeds and a stop, is directly under the thumb of the operator and can be worked from any position. The speeds are 1,200, 1,800 and 4,500 revolutions per minute.

5. The pistol grip permanent handle (*D*) gives the operator a safe and sure grasp of the instrument in his major hand. As it is hollow, the room afforded on the inside gives a convenient place for the storage of the resistance coils.

6. A second grip (*C*) fits by means of a broad band over the larger part of the shell, and can be changed by a twist of the wrist to assume any position around the circumference, thus not only permitting of adjustment for various positions necessary during operations, but also allowing for use in both right and left handed individuals.

7. The weight of the entire instrument is 5¾ pounds and its length is 11¼ inches. It can be attached to any electric fixture supplied with either direct or alternating current.

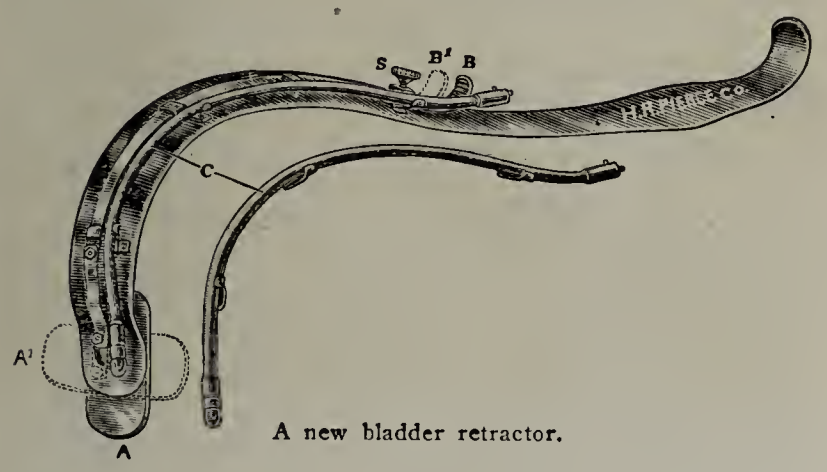
The instrument was made by the Southern Electrical Company of San Diego, Calif.

St. Joseph's Hospital.

A NEW BLADDER RETRACTOR

B. A. THOMAS, M.D., PHILADELPHIA

An ideal retractor in suprapubic cystotomy, particularly for exposure of the vesical trigon, does not exist. The chief difficulty has been to obtain a satisfactory exposure of the floor of the bladder and the ureteral orifices. Ordinarily two things occur to prevent this: First, when lateral retraction is made by simple vertical-bladed instruments, the floor and fundus of the viscus bulge up and down respectively, obscuring the ureteral orifices; second, the illumination of the operative field is either clumsy or insufficient.



A new bladder retractor.

The instrument here illustrated and described is essentially a Deaver retractor, or has the curve of this abdominal retractor, with certain important attachments which in my experience have made it most serviceable. The features of this new instrument are:

1. An adjustable cross-blade, *A*, which after introduction into the bladder by slight pressure at *B*, may be swung out as seen in *A'*. A set screw, *S*, fixes the blade in the horizontal position.

2. A removable light carrier, *C*, permitting the major part of the instrument to be sterilized by boiling; the lamp-carrier being conveniently sterilized in cold solution of liquor formaldehydi.

3. The lamp is particularly well constructed, sheds an excellent light and is very durable.

4. The instrument is thin, although very firm, therefore occupying very little space in the suprapubic opening and allowing unobstructed vision and opportunity for operative manipulations.

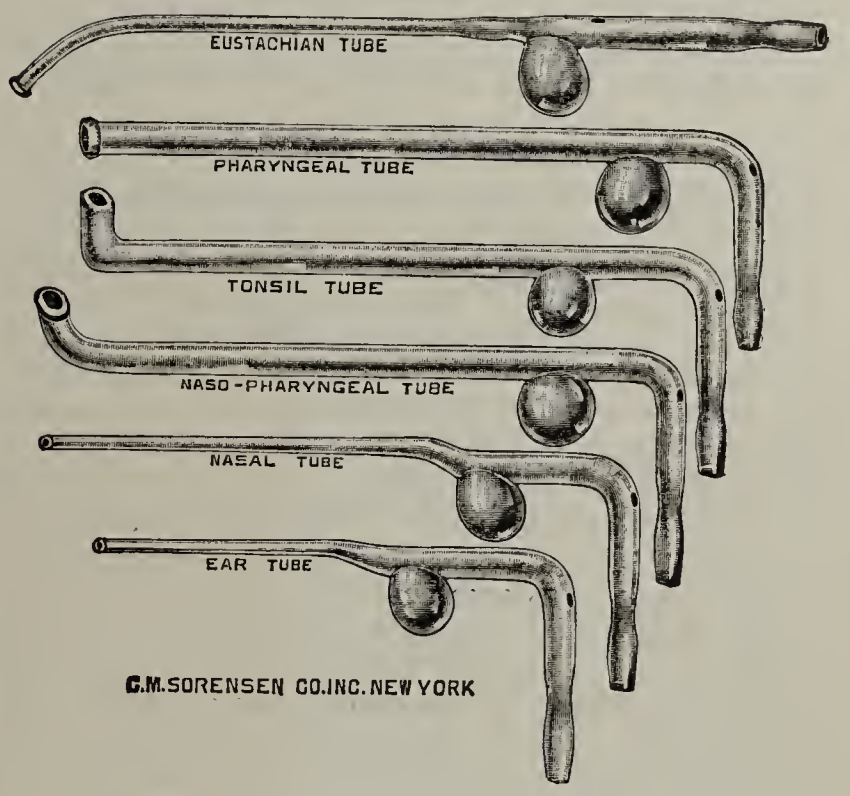
With two such retractors in lateral positions, one only necessarily equipped with the lighting device, and possibly a third simple Deaver retractor to hold up the upper angle of the wound and fundus, an operative field, par excellence, can readily be exposed.

116 South Nineteenth Street.

SUCTION TUBES FOR USE IN THE NOSE, THROAT OR EARS*

HAROLD HAYS, M.D., NEW YORK
Fellow of the American College of Surgeons

The tubes illustrated are designed for removing small amounts of secretions from the nose, throat or ears. They are made of glass and are fitted to a suction pump. Near the angle the glass is blown into a bulb into which the secretion will run. Just beyond the angle is a small hole so that even though the pump is turned on no suction is created until this hole is closed by the finger. In order to clean the tubes, water is run through them and then the excess of secretion is cleaned out by attaching the tube to the compressed air apparatus. If this does not succeed, one may start suction and thus draw water through them until they are perfectly clean. These tubes are readily boiled and are more durable than one would suppose.



Suction tubes for use in the nose, throat or ears.

11 West Eighty-First Street.

* Presented before the Otological Section of the New York Academy of Medicine, May 8, 1915.

Tuberculosis in Europe.—Tuberculosis statistics show that in Europe about 90 per cent. of all grown persons have been unable to defend themselves from tuberculous infection.—A. Calmette-Lille.

Special Article

PRACTICAL PHARMACOLOGY *

(Continued from page 333)

XXX

MISCELLANEOUS SOLUBLE SALTS

The systemic actions of a soluble salt are determined, as a rule, either by the anion alone or by the cation, but both ions are concerned in the actions of some salts.

Sodium and potassium are of physiologic importance but we know little of their actions that would indicate that one should be used therapeutically rather than the other in any given condition. It is often stated, however, that certain important differences are observed between the actions of sodium bromid and those of potassium bromid.

The rapid injection of large amounts of potassium salts directly into the circulation induces cardiac paralysis, but this action is not observed when the potassium salts are used therapeutically. It is sometimes maintained that the salts of ammonium or sodium should be used when cardiac depression from the action of potassium salts is to be feared.

Lithium is of neither therapeutic nor physiologic importance, but has become popular to a certain degree because of the erroneous belief that it is capable of dissolving uric acid calculi in the bladder. This misconception arises from the fact that salts of lithium do promote the solubility of uric acid and urates when tested under conditions that can never obtain in the bladder.

None of the salts of lithium are of sufficient importance to merit inclusion in the Council's list of "Useful Drugs."

The erroneous belief concerning the efficiency of lithium salts as solvents for uric acid has led to conditions that would be ludicrous were they not of a nature so little to our credit as physicians. Numerous proprietary preparations of lithium salts have been exploited widely as uric acid solvents and this action has been urged as the basis for their use in innumerable conditions in which it is claimed that uric acid plays an important rôle. The absurdity has reached its climax in the exploitation of so-called lithia waters. It has been shown that about two hundred thousand gallons of Buffalo Lithia Springs water contains an amount of lithium equal to only one therapeutic dose.

The rapid intravenous injection of large doses of ammonium salts causes strychnin-like convulsions, but these effects are never seen when those salts are administered by the mouth because they are decomposed in the body or eliminated almost as rapidly as they are absorbed. Hence after their oral administration their concentration in the blood never reaches the degree required to cause convulsions or hyperexcitability.

A fleeting stimulation of the central nervous system by ammonium is attained in the use of smelling salts in the treatment of fainting. Ammonium carbonate is frequently used to stimulate the respiratory center when this is depressed and when there is mechanical interference with respiration, as in asthma and especially in pneumonia. The use of ammonium acetate as a diaphoretic has been mentioned, the effect being attributed to its action on the central nervous system. The use of ammonium chlorid in the treatment of sore throat and cough has been mentioned in connection with other expectorants.

Calcium is an important element in the body, small amounts being found in the blood in which it is essential for the beat of the heart, and much larger amounts are found in the bones.

The normal diet probably contains more calcium than the body requires, but when calcium is withheld from the food of growing animals symptoms resembling those seen in rickets and osteomalacia are induced. This has led to the administration of calcium in the treatment of those conditions. It appears, however, that these conditions arise from an inability to utilize calcium, rather than from a deficiency of it in the food in most cases, hence calcium used therapeutically frequently fails to cause improvement. Emerich and Lowe believe that the daily food is often deficient in calcium and they recommend the routine use of as much as 1.5 gm. (22 grains) of calcium chlorid daily in health, and as much as 10 gm. (2½ drams) daily in disease. It is difficult to believe that such amounts are often indicated.

A diminution of calcium below normal in the circulation causes nervous irritability.

Such a depression of the central nervous system as is sometimes observed when magnesium salts are used subcutaneously in very large doses, as in the treatment of tetanus, can be relieved at once by the subcutaneous or intravenous injection of calcium chlorid.

Doses of from 0.30 to 0.40 gm. of calcium chlorid per kilogram of body-weight, corresponding to from 300 to 400 grains for a man, injected subcutaneously, gradually produce a fatal result in animals.

The intravenous injection of calcium salts into animals reduces their susceptibility to local irritants such as mustard, probably because of a lessened permeability of the smaller blood vessels. While normal dogs are resistant to the experimental induction of moist eczema their resistance is reduced by the injection of oxalates which precipitate the calcium in the circulation. It has thus been suggested that calcium salts should be used therapeutically in the treatment of moist eczema in man. It is also used on the same basis in the treatment of urticaria and to prevent serum rashes.

When administered by the mouth, a part of the salts of calcium are absorbed, but the larger portion is converted into insoluble phosphate or carbonate and excreted in the feces, the part that is absorbed being usually insufficient to exert any marked systemic effect.

The salts of calcium are administered to prevent or control hemorrhage during typhoid fever, and in hemophilia because of their supposed power to increase the coagulability of the blood.

Calcium chlorid will usually suffice for the administration of calcium, though there is no particular reason why one of the other salts should not be used if preferred for any reason. Calcium lactate has been recommended by many because of its being less irritant than the chlorid and therefore preferable for subcutaneous injection. Calcium hypophosphite is wholly superfluous and its use should be discouraged as it tends to perpetuate a mistaken idea of the value of the hypophosphites in general.

* This is the thirtieth of a series of articles on useful drugs — on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form. The book, entitled "Pharmacology of Useful Drugs" will be ready about September 1st.

The average dose of calcium chlorid is 0.5 gm. (7½ grains). If larger doses are required to abolish the paralytic action of magnesium salts when such action is induced accidentally, small doses should be given subcutaneously and repeated if necessary, or a dilute solution (1:200) may be slowly injected intravenously until improvement occurs or until the full therapeutic dose has been administered. Concentrated solutions must not be injected subcutaneously as they cause abscesses. Calcium lactate may be given in doses of from 0.5 to 2 gm. (7½ to 30 grains).

Lime water, a solution of calcium hydroxid, is an antacid and has been used as a solvent for the false membrane of diphtheria, but it is not used to produce the systemic action of calcium.

Attempts have been made at various times to popularize the salts of strontium but these have no advantage over the corresponding salts of the alkalies and none of the strontium salts has been admitted to "Useful Drugs." *

The Bromids

Animal experiments have failed to throw much light on the actions of the bromids on the central nervous system because of the comparatively slight action on the centers in animals unless doses are used that cause other toxic actions.

The bromids of the alkalies are irritant to the stomach and sometimes cause nausea and vomiting, especially when they are given in concentrated solutions or in the form of tablets. Tablets are convenient for dispensing but they should be dissolved in at least fifty times their weight of water before being taken.

The bromids cause mental depression with dulness and confusion of ideas, hence they are not so useful as hydrated chloral in simple wakefulness unattended with pain or nervous irritability, but they are useful in combination with hydrated chloral when these symptoms are present.

The bromids depress the centers in such a way that reflexes are diminished, while impulses passing from the brain to the periphery are said to be unaffected. They are therefore effective in controlling the reflex excitability of strychnin and may abolish the convulsions unless the dose of the strychnin has been excessive.

Large or frequently repeated doses of the bromids often give rise to a condition known as bromism, the readiness with which such symptoms develop in different individuals being subject to wide variation.

The symptoms of bromism include various skin eruptions, acne of the face being very common, and digestive disturbances which are sometimes attributed to the hydrobromic acid that is excreted into the stomach, but which are probably due largely to the local irritant action of the salt. The memory suffers severely and the other mental disturbances already mentioned are exaggerated. Muscular tremors also occur. The symptoms usually disappear if the drug is discontinued, but the patient is said to be more susceptible than normally to certain infectious diseases while suffering from bromism.

The bromids depress the respiratory center, and the sexual appetite is diminished or abolished.

The bromids are absorbed readily from the gastrointestinal tract and they may be detected in the urine within a few minutes after their administration. The larger part of the drug, however, is fixed in the tissues, apparently displacing as much as one fourth of the chlorids of the blood when saturation is said to have taken place, and the elimination thenceforth keeps pace with absorption. The bromid that displaces the chlorids in combination with protein is eliminated slowly, so that some weeks may elapse after the administration is discontinued before the last of the bromid is eliminated. Other tissues beside the blood also show the replacement of chlorids by bromids. Saturation with the bromids is reached more rapidly if chlorids are withheld while the bromids are being administered and, as saturation is desired when the bromids are used in the treatment of epilepsy, it is customary to limit the chlorid ingestion at such times. Saturation with bromids is indicated by the appearance of hydrobromic acid in the stomach, and probably by the elimination of a larger amount in the urine.

The mutual displacement of chlorids and bromids indicates the treatment of bromid poisoning by chlorids. It has been suggested that the toxic symptoms of the bromids may be due, at least in part, to the absence of the chlorids that are displaced, rather than to any direct action of the bromids themselves.

The bromids are found in nearly all of the body fluids and excretions, and bromism may be induced in a nursing infant whose mother is taking bromids.

THERAPEUTIC USES

The bromids are used as hypnotics when sleeplessness results from nervous irritability; they are frequently used with hydrated chloral, in which case their depression of the reflexes probably enhances the hypnotic action of the chloral.

They are especially useful in the treatment of epilepsy, in which they greatly diminish the number of seizures, or these may be abolished during the period that saturation with bromids is maintained. The attacks usually recur when the administration of the bromids is stopped.

The bromids are sometimes used for several days before operations on the throat and before examination with the mirror for adenoids.

They are also used to quiet nervous excitability in neurasthenia and in hysteria.

A more or less widespread belief exists that a mixture of bromids is preferable to any one of them, and the widely known epilepsy mixture of Brown-Séquard contained the bromids of sodium, potassium and ammonium together with some others. There is no evidence that such mixtures have any advantage over potassium alone.

Certain organic compounds of bromin have been introduced as hypnotics, but there is no satisfactory evidence that these are better than the inorganic.

DOSAGE

The average dose of sodium or potassium bromid is usually given as 1 gm. (15 grains), but 0.3 to 0.6 gm. (5 to 10 grains) is the dose commonly used as a hypnotic with hydrated chloral. In the treatment of epilepsy it is advisable to begin with doses of 1 gm. (15 grains) and increase until as much as 10 gm. (2½ drams) are taken daily, until saturation is attained or until symptoms of bromism indicate the limits of tolerance.*

* Owing to lack of space the materia medica of several groups is omitted from THE JOURNAL. It will be included when this series is published in book form.

IODIDS

Our knowledge of the pharmacologic actions of the iodids does not permit of a systematic discussion of them as a basis for their therapeutic uses.

The systemic effects frequently observed after the administration of the iodids are commonly described under the term iodism, and these are often seen after small doses as well as after larger ones. It is even asserted that when they appear after small doses they may disappear if the dose is increased. This may be true but it has not been demonstrated satisfactorily that the disappearance in such cases is due to the increase in dosage.

Catarrh of the respiratory passages is probably the commonest of the symptoms of iodism. There is often swelling of the larynx with edema that interferes with respiration, occasionally necessitating tracheotomy, and rarely causing death. Bronchitis is not infrequent, and the eyes are commonly suffused.

The respiratory symptoms are sometimes attributed to the liberation of free iodin by minute amounts of nitrites in the saliva and by carbon dioxid. It seems improbable that enough iodin could be liberated in this way to give rise to the symptoms, for the larger part of a dose of iodid leaves the circulation promptly and the amount that can be detected in any of the tissues except the blood is extremely small.

Skin eruptions of the most various character occur more frequently after the drug has been administered for some time; these include erythematous patches, papular eruptions that may become pustular, eczema, bullae, pemphigus, purpura and many others. It is said that frequent bathing with scrupulous regard for the cleanliness of the skin lessens the severity of the skin manifestations.

The iodids of sodium and potassium are absorbed promptly from the gastro-intestinal tract. The larger portion is excreted rapidly in the urine unchanged, a portion remaining fixed in the tissues for some time, much as in the case of the bromids.

The excretion of the iodids in the urine begins within a few minutes, reaches its maximum in about two hours, and within twelve hours the greater part of a small dose is eliminated, but several days may be required for the practically complete elimination of a large dose. The elimination may be hastened by the administration of chlorids but not by simple diuretics, such as caffein. Small amounts of the iodids appear in the saliva and other secretions.

THERAPEUTIC USES

The iodids are used in combination with mercury in the treatment of the second stage of syphilis, and alone, or in combination with mercury in the third stage. Various explanations have been offered to account for the improvement that they induce, but no adequate explanation has been given of the truly remarkable effects that often follow their use in the treatment of syphilitic manifestations affecting internal organs. Other obscure manifestations of syphilis, such as neuralgia and disturbances of the central nervous system, often yield readily to iodid treatment.

They are extensively used in the treatment of chronic rheumatism, but the benefits they cause are unexplained. The effects of iodids on the thyroid, and indirectly on conditions affected through the thyroid, will be mentioned when the thyroid is discussed.

The iodids are frequently used in arteriosclerosis partly perhaps because of their supposed capacity for lowering arterial tension, but there is no satisfactory evidence that they lower blood pressure appreciably. Their usefulness in this condition as in aneurysm is probably limited to their capacity for causing the absorption of syphilitic deposits in the walls of the vessels.

These salts have long been of special repute in the treatment of chronic poisoning by lead and mercury, and while some old experiments seem to show that they facilitate the elimination of lead, and possibly of mercury, the mechanism of the action is not known.

The iodids are sometimes used in the treatment of asthma. It has been suggested that they paralyze the vagus endings in the bronchi, thus relieving the spasm. While large doses of the iodids do depress the vagus endings, it is hardly conceivable that the small doses usually employed can have any such action. They are commonly used with belladonna or some other member of the atropin group, compared to which they can act only feebly on the vagus.

The iodids are contraindicated in tuberculosis, but they are used, nevertheless, in syphilis complicating tuberculosis. The increased susceptibility of the tuberculous to the iodids should be remembered when they are used in such conditions.

They have long been used in the treatment of actinomycosis and they are also of especial value in sporotrichosis and blastomycosis. In all of these they promote the absorption of granulomatous lesions.

Numerous organic compounds of iodin have been introduced for use in place of the alkaline iodids. Although these lack certain disadvantages of potassium iodid clinical experience shows that they are weaker than potassium iodid in the doses commonly used.

These compounds of iodin with proteins and with fats seem to irritate the stomach less than potassium iodid. It is asserted that they induce symptoms of iodism less readily, but these claims have not been substantiated in cases in which they are used in amounts sufficient to produce the full therapeutic effects.

Numerous compounds of iodin with protein and others with nonprotein substances are described in New and Nonofficial Remedies.

DOSAGE

Potassium iodid is used in nonsyphilitic conditions in doses of 0.3 to 2.0 gm. (5 to 30 grains) but much larger doses are employed to promote the absorption of the gummatous exudates in tertiary syphilis, in which 5 gm. (75 grains) and even larger amounts are used unless symptoms of iodism appear.

It may be prescribed in doses of 0.3 c.c. (5 minims) of a saturated solution administered three times a day after meals (at which time the stomach contents lessen the irritation) with a daily increase of 1 drop in each dose. While a saturated solution is convenient for measuring the dose it should be remembered that saturated, or even somewhat less concentrated solutions of salts are irritant to the stomach, hence these should be diluted with from half a glass to a glass of water before being taken. Bland fluids, such as milk, are better than water, and even with such dilution they should be taken only after food.

When symptoms of iodism occur the drug should be discontinued for a time and smaller doses used when the administration is resumed.

MATERIA MEDICA

The iodids in general use are:

Potassii Iodidum.—Potassium Iodid, U. S. P.

It occurs as colorless or opaque white cubic crystals or a granular powder having a pungent saline, afterward bitter taste. The salt is slightly deliquescent in moist air. It is very soluble (1:0.7) in water and soluble (1:12) in alcohol.

Sodii Iodidum.—Sodium Iodid, U. S. P.

It occurs as colorless crystals of a white crystalline powder having a saline taste, practically devoid of bitterness. In moist air it deliquesces and frequently undergoes decomposition. It is very soluble (1:0.5) in water and freely soluble (1:3) in alcohol.

The alkali iodids like the bromids are incompatible with mineral acids, spirit of nitrous ether and oxidizing substances generally. They are also incompatible with bismuth salts and ferric salts, and should not be prescribed in solution with salts of alkaloids or with preparations of drugs having alkaloidal constituents.

The iodids are preferably prescribed in concentrated solutions that may be measured out in drop doses and directed to be taken well diluted with water or with such liquids as milk, or solutions of egg albumin. The following is a typical formula for securing a concentrated solution of an alkali iodid:

	gm. or c.c.	
℞ Potassii iodidi	25	1 ounce av.
Aquae destillatae.....q. s. ad	25	1 fl. ℥

When larger doses of dilute solutions are used the disagreeable taste of the iodid may be masked by the addition of the compound syrup of sarsaparilla.

THYROID

The removal of the thyroid glands is rapidly fatal in dogs; in man it results in a train of symptoms closely resembling, if not identical with, those seen in myxedema. These include dulness of mentality and a characteristic collection of mucus-like substance in and about the connective tissue of the body.

The symptoms that result from the removal of the thyroid gland can be abolished by the oral administration of the dried gland or of a nonprotein compound containing iodin that may be obtained from the gland and which is probably secreted by it. This iodin compound as separated by Kendall contains 62 per cent. of iodin and is thought to be a di-iodo-dihydroxy-indole.

The oral administration of iodin or alkaline iodids may give rise to symptoms indicative of increased thyroid activity in those who show a tendency toward hyperthyroidism, or Graves' disease, and this would suggest that the activity of thyroid preparations might be increased by the addition of iodin or iodids to them, but this simple addition of iodin compounds to the thyroid preparations does not increase their activity. Such sophistication can be detected by chemical analysis, and biologic tests may be used to determine the activity of commercial preparations so that one can be satisfied that there has been no sophistication.

Four general methods have been followed in the investigation of the actions of thyroid preparations. These are: 1. The administration of thyroid substance to thyroidectomized animals. 2. The administration of the gland or preparations of it to patients suffering with myxedema. 3. Metabolism experiments during thyroid feeding. 4. Investigations of the effects of thyroid administration on the circulation.

The results of the oral administration of thyroid substance to thyroidectomized animals and man afford striking proof of the presence of some substance in the gland that is necessary to health, and the results obtained by the therapeutic use of the gland substance or idiothyrine in myxedema, in cretinism and in cases in which the gland has been removed have few parallels in the whole range of therapeutics. These brilliant results have led to the use of the gland substance in innumerable other conditions in which the failure is as complete as the success that attends its proper use.

Moderate doses of thyroid have comparatively little effect on normal persons, but with continued administration there is usually some loss of adipose tissue and some increased protein metabolism with loss of weight.

The action with reference to the increased metabolism of fat and protein is not the same in different individuals. In some there is a marked reduction of fat with relatively little loss of body protein, this being especially common in those persons who accumulate fat readily even when the diet is moderate and exercise is taken habitually.

When thyroid substance is taken for the reduction of fat an abundance of protein should be taken, but there is often a serious disturbance of the nervous system with marked destruction of body protein even when this precaution is observed.

The injurious effects of excessive thyroid feeding include palpitation with tachycardia and a sense of fulness in the head. There may be lassitude, trembling of the limbs, fever, sweating and sleeplessness. There is usually some looseness of the bowels or severe diarrhea; frequently there is some respiratory depression and there may be exophthalmos. These symptoms are seen in Graves' disease and are almost certainly due to hyperactivity of the gland.

Reid Hunt found that the administration of thyroid substance to mice increased their resistance to poisoning with isonitrile, the degree of the increase in resistance affording an index of the activity of the thyroid used. Unfortunately, we do not know the mechanism by which this tolerance is induced.

The injection of an extract of thyroid substance into the circulation causes slowing of the normal pulse rate, apparently through stimulation of the vagus center in the medulla, but with the appearance of toxic symptoms the vagus loses control of the heart rate and tachycardia results, as previously stated.

The thyroid glands of different species of animals, and even those of different members of the same species, vary widely in their iodin content and in their physiologic activity, but, as a rule, the iodin content of the gland lies between two and five parts in ten thousand of the gland.

The thyroid gland of the sheep is official in the U. S. Pharmacopeia VIII, but sheep are often goiterous, in which case the iodin content and the activity of the gland are low, and much of the older work done with thyroid substance is rendered valueless by the fact that the activity of the substance used is not known.

"New and Nonofficial Remedies" contains a description of a proprietary preparation known as iodo-

thyrine, or thyroiodin, which consists of a milk-sugar trituration of a substance, or mixture of substances, for which it is claimed that 1 gram of the preparation contains 0.3 mg. of iodin. This corresponds fairly well with the official dried thyroid gland.

THERAPEUTIC USES

The uses of thyroid gland have been suggested in part by the discussion that precedes this. First in importance in the use of thyroid stands its employment in those conditions in which there is a deficiency of normal thyroid activity, including myxedema, sporadic cretinism and patients having enlarged but feebly acting thyroid.

Of less importance, so far as real value is concerned, is its use in obesity though it is probable that it is used for this purpose more frequently than for any other, especially in the form of nostrums advertised directly to the public.

Curiously, its use in myxedema requires greater care than is necessary when it is administered to a normal person. It may then give rise to circulatory disturbances with weak and rapid heart, even when small doses are employed. The cause of these side actions is not known, but it has been suggested that during the course of myxedema and other conditions of deficient thyroid activity certain substances may accumulate in the organism and that these substances may be broken down, or otherwise rendered harmful, by the thyroid, in a manner analogous to the liberation of endotoxins when pathogenic bacteria are destroyed in large numbers in the body during the course of treatment of an infectious disease.

It is probable that the proper regulation of the diet and exercise can always accomplish better results than thyroid in the reduction of superfluous flesh.

The symptoms of thyroid poisoning should be borne in mind when one is called on to treat a patient who may be suspected of having resorted to the use of an obesity cure.

It would not be profitable to attempt to discuss the many different conditions in which thyroid has been used with asserted benefit.

DOSAGE

The average dose of desiccated thyroid gland is said to be 0.1 to 0.6 gm. (1½ to 10 grains), but it is evident that the dose must be adjusted carefully for each patient.

MATERIA MEDICA

The gland is official as:

Glandulae Thyroideae Siccae—Desiccated Thyroid Gland, U. S. P.

One part of the desiccated gland, in the form of a yellowish amorphous powder, represents approximately 5 parts of the fresh glands of the sheep. To insure greater uniformity it is proposed that the powder be required to yield from 0.17 to 0.23 per cent. of iodin in thyroid combination. The preparation is preferably administered in the form of capsules or cachets.

ANTITHYROID PREPARATIONS

These may be mentioned here briefly though their use is still in the experimental stage. A somewhat more extended discussion of these preparations will be found in "New and Nonofficial Remedies."

These preparations are obtained from the milk or blood of animals which have been deprived of their thyroid glands.

Their use is based on the theory that the thyroid secretes substances that are toxic but which neutralize, and are neutralized by, other toxic substances formed in the body. Removal of the thyroid is supposed to favor the accumulation of these toxic body substances (not those of the thyroid, of course) in the blood and milk, hence the blood and milk of such animals with the contained hypothetic accumulation are supposed to counteract the effects of hyperthyroidism (Graves' disease) or to interfere with the activity of the gland.

SUBSTANCES USED TO INFLUENCE THE APPETITE AND DIGESTION

BITTERS

Innumerable bitter drugs have been used with asserted benefit in the treatment of a great number of diseases though there is no satisfactory evidence that they are curative in any of these conditions, and it seems probable that the only benefit derived from their use is to be explained by the improvement in the appetite that they cause. The group of drugs known as simple bitters are now used by educated physicians only for improving the appetite.

That the appetite and digestion are closely related hardly required experimental demonstration, but Pawlow and his co-workers have shown that gastric juice is secreted when a dog is allowed to smell meat, but that food introduced into the stomach through a fistula might remain long undigested.

Bitter substances stimulate the taste buds in the tongue and cause the secretion of saliva, but Carlson and his associates have shown that they do not cause hunger contractions in the stomach, but on the contrary, that when they have any effect they tend to diminish these contractions. These experiments carried out on normal men and on one with a permanent gastric fistula of long standing, leave the question of the influence of the bitters on the appetite, as distinguished from hunger sensations, undecided.

Abundant clinical experience seems to show that the bitters taken shortly before meals improve the appetite in suitable cases. From this it follows that the subject is one for clinical, rather than purely pharmacologic discussion.

Bitters are classified conveniently as simple and aromatic. There are innumerable simple bitters, but the list of drugs in this class now recognized by the Pharmacopeia is much smaller than formerly and "Useful Drugs" contains only one—gentian—that may be classified as a simple bitter, since others, including nux vomica and cinchona, that may be used as such, have more important actions.

Chamomile, bitter orange peel and serpentaria are frequently added to alcoholic beverages or "bitters" in domestic practice, but none of these aromatic bitters has been included in "Useful Drugs."

Gentian is administered a few minutes before meals in such a way that the bitter taste is utilized, for, as previously stated, it has no therapeutic effect aside from this bitter taste.

DOSAGE

Gentian is rarely used in substance; the dose of the solid extract is 0.25 gm. (4 grains); that of the compound tincture is 4 c.c. (one teaspoonful).

AROMATIC CARMINATIVES

Under this classification are included various drugs that are related to other groups. Bastedo enumerates no less than eighteen therapeutic groups in which the carminatives may be classified. These include:

1. Anticolics, especially for infants (anise, ginger and peppermint).
2. Odors and flavors.
3. Correctives of irritant cathartics.
4. For tympanites—in typhoid fever, pneumonia, etc.
5. Anthelmintics (oil of chenopodium).
6. Stimulants of mucous membranes.
7. Antiseptics and anesthetics.
8. Counterirritants.
9. Stimulants in chronic skin diseases.
10. Stimulants to the growth of hair (oil of mace).
11. Antirheumatics (methyl salicylate).
12. Antihysterics (asafetida, camphor).
13. Antiasthmatics (cubebs in powder for cigarets).
14. Bronchial stimulants.
15. Diuretics.
16. Urinary antiseptics.
17. Emmenagogues.
18. Leprosy (oil of chaulmoogra).

Some of these have been discussed and a few remain to be considered.

The aromatic carminatives increase gastro-intestinal peristalsis and serve to hasten the passage of gas through the stomach and bowel. They induce hyperemia of the gastro-intestinal mucous membranes and probably increase the appetite and digestion.

Capsicum enjoys a special reputation in the treatment of atonic dyspepsia due to chronic alcoholism; cardamom is used as an aromatic carminative and the compound tincture is also used to give a handsome appearance to alcoholic mixtures. Oil of cloves is very commonly used for the relief of pain in carious teeth. Cinnamon is especially popular as a flavor. Mustard is most commonly used as a condiment; its use as a counterirritant has been mentioned. Ginger is probably the most popular member of the group for the relief of colic.

PEPSIN, PANCREATIN AND HYDROCHLORIC ACID

There are few chapters on therapeutics that reflect less credit on us than that dealing with the abuse of the digestive ferments. Many physicians have clung tenaciously to the idea that intestinal digestion can be promoted by the administration of pancreatin or mixtures of pepsin and pancreatin, despite the frequent reiteration of the fact that pepsin destroys pancreatin in the presence of a suitable acid.

Pepsin may be given to secure the digestion of protein food in the stomach when there is a deficiency of pepsin in the gastric secretion, but this seldom occurs, pepsin being secreted even where there is a deficiency of hydrochloric acid in the stomach.

Pepsin acts only in acid mediums and its action is inhibited when the concentration of hydrochloric acid exceeds 0.3 per cent. It is destroyed rapidly by pancreatin in alkaline mediums.

Pepsin is used in acute indigestion when there is no absence of hydrochloric acid in the gastric secretion but in chronic conditions it should be used only when it has been shown that pepsin and hydrochloric acid are both deficient in the gastric secretion.

Pancreatin is not often suited for oral administration for the reasons just mentioned, and it is useful mainly for preparing partially digested protein and starchy foods.

It may be administered with sodium bicarbonate in achylia gastrica, and it has been administered in the form of pills coated with salol or in gelatin capsules that have been hardened in formaldehyd, but this method of administration is not very promising.

Milk may be partially peptonized by adding a small amount of pancreatin and bicarbonate of sodium and allowing it to stand for a few minutes at body temperature. The process may be stopped by heating the milk rapidly to 65 C. (150 F.). If the process is carried too far the taste becomes excessively bitter.

As previously stated, there is a deficiency of hydrochloric acid in the gastric secretion more frequently than of pepsin. It is commonly given in doses of 1 c.c. (15 minims) of the diluted acid with water.

COD LIVER OIL

Cod-liver oil may be considered in this place, though it is not a drug, its value depending on its nutrient property.

The taste is so disagreeable to most persons that it is commonly dispensed in the form of a sweetened and flavored emulsion.

Cod-liver oil has long enjoyed a special reputation in the treatment of tuberculosis. Practically all proprietary emulsions of cod-liver oil contain the useless and extremely disagreeable tasting hypophosphites.

The following formulas may be used by those who prefer to prescribe the emulsion of cod-liver oil without useless salts:

	gm. or c.c.	
Cod liver oil.....	250	fl℥ viii
Acacia	60	℥ ii
Syrup	60	fl℥ ii
Methyl salicylate	2	♏ xxx
Water .....q. s. ad	500	fl℥ xvi

The flavoring may be varied to suit the individual taste; oil of sassafras, oil of peppermint, oil of cinnamon or oil of bitter almond may be used in varying quantities. In the event that oil of bitter almond is used that without hydrocyanic acid should be specified.

An emulsion made with yolk of egg has had considerable vogue at times and may be made as follows:

	gm. or c.c.	
Cod liver oil.....	250	fl℥ viii
Fresh yolk of eggs.....	45	℥ jss
Glycerin	60	℥ ii
Syrup	60	fl℥ ii
Methyl salicylate	2	♏ xxx
Water, a sufficient quantity to make.....	500	fl℥ xvi

In making this emulsion the yolk of eggs is triturated in a mortar with the glycerin added gradually. The oil is then added to this mixture, small portions at a time, followed by the syrup, the flavoring and finally a sufficient amount of water to make the required quantity.

(To be continued)

Exercise in Pregnancy.—The expectant mother should take exercise in her customary way, and to her usual extent, provided that no violent exercise such as jumping, jolting or straining is permissible. A daily walk in the open air does much toward keeping one in a cheerful frame of mind. Routine household duties are usually helpful except in an overworked person.—Dr. Bibb, Leaflets for Patients.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, JULY 31, 1915

VON PETTENKOFER AND HALF A CENTURY OF HYGIENE

Half a century has elapsed since the appointment of Max von Pettenkofer as the first professor of hygiene in any university, and the establishment of the first institute for the study of hygiene, at the University of Munich, in 1865. The subject of hygiene is now familiar, not only among physicians, in connection with the establishment of schools of hygiene attached to the medical departments of many of our universities and leading to special degrees or diplomas, but also in popular discussions of the public health. One may forget, therefore, that the beginnings of this modern scientific discipline, in the broader sense in which it is now understood, belong within the memory of many still living.

It would be unfair to contend that there was no interest in the questions here involved prior to von Pettenkofer's time.[1] In England the same science was being developed under the name of "public health"; and Great Britain's especial contribution to hygiene in the last century was in connection with the development of local organizations concerned with the control of all matters relating to the health of the communities involved. Ford remarks that the years 1847, when medical officers of health were first appointed; 1848, when they were required to be qualified medical practitioners (public health act); 1855, when every vestry and district board in London was required to appoint one or more medical officers of health, and 1872, when the new public health act forced every sanitary authority outside of London to appoint a medical officer of health, formed the especial landmarks in this chronological development. Turning to France, in 1848, the year that saw the first public health act of Great Britain, the Conseil d'état passed an ordinance for general health regulation. In these earlier days the attention to the subject of hygiene in America was sporadic and limited at best.

1. Many of the facts cited here are taken from a paper by W. W. Ford on The Present Status and the Future of Hygiene or Public Health in America, read at the May meeting of the Association of American Physicians, Science, 1915, xlii, 1.

Most physicians will agree with Ford that von Pettenkofer was really the founder of modern hygiene, at least so far as the German-speaking races were concerned. He occupies, indeed, the same position in regard to hygiene that Virchow does in pathology. The radical movement in hygiene fathered by him made a profound impression on Europe, especially on Germany and Austria. Professorships were established in the leading medical schools, first in Bavaria and then in other parts of the German empire; thoroughly trained men were put in charge of the administration of sanitary laws, and an attempt was made to limit the spread of the infectious diseases by scientific methods. The new knowledge acquired by von Pettenkofer and his pupils, and the laws promulgated at their suggestion soon began to have a definite influence on the mortality returns.

In its essence as applied to principles relating to the maintenance and promotion of health, the word "hygiene" dates back even before the days of Galen; it formed a contrast to the "iatric" pursuits which involved the healing art. About the middle of the nineteenth century, the idea of collecting all experiences dealing with the preservation of human health began to find expression. Von Pettenkofer inaugurated a new epoch by recognizing, in far larger measure than had previously been recognized, that health is impaired by factors which are to be sought not within ourselves, but in our environment. He realized the necessity of establishing the pursuit of the cause of disease on an independent scientific basis, with the aid which the physics, chemistry and physiology of his day could afford. The field of hygiene was made to include not only the study of epidemics, but also the problems of nutrition, clothing, ventilation and related themes.

There are some who still identify hygiene with the less comprehensive though eminently important science of bacteriology. This is a narrow view. Special emphasis may properly be laid on the mode of transmission of the infectious diseases; but the fundamental principles of hygiene should also apply to vital statistics, heating, lighting, ventilation, clothing, disinfection, sanitation, water and milk supplies, sewage disposal, nutrition and food values. It was von Pettenkofer who established hygiene on this broad and firm basis, and inaugurated what has rightly been termed "one of the most important movements in the science of medicine of the nineteenth century."

The retrospect which the semicentennial anniversary of the first hygienic institute in Europe awakens may appropriately be accompanied by anticipations of the future development in the dissemination of a knowledge of health problems. Where shall the advance be carried first? If possible, Ford writes,[1] let us first educate our medical students, then our officers of health, then the public. Should the order be changed,

however, no great harm will result. Should this country be so fortunate, he adds, as to see schools of hygiene attached to the medical departments of our universities properly endowed and aiming to satisfy all three needs, then, indeed, shall we be fortunate beyond the wildest dreams of the most enthusiastic student of the subject.

PSYCHOLOGY AND ART OF THE CAVE MAN

The assumptions with regard to the cave man's interests, and the belief that our primal ancestor was occupied exclusively with the struggle for existence have been so commonly accepted, that facts which completely contradict these theories are of interest. Professor MacCurdy[1] of Yale has written recently concerning some discoveries of works of art left by paleolithic man on the walls and floors of caverns in the Pyrenees. A report concerning these objects has recently been made to the French Institute. The caves in the Pyrenees have in recent years yielded a series of art objects which illustrate forcibly how high was the artistic ability of the cave dwellers. The remains of the art of these men are among the earliest documents available in human history. For a generation paleontologists have been familiar with portable Quaternary art objects, carved tools, weapons and the like, and also with engraved pebbles and carved fragments of stone, bone, ivory and horn. But it is only during the last few years that the fact has been recognized that stationary art, that is, wall and ceiling decoration of various kinds, is even more important than the examples of portable art, though these proved a veritable revelation of the artistic sense of their makers.

The most recent finds were made last year, during the weeks immediately preceding the beginning of the war. Count Begouen who, with his three sons, explored the Caverne des Trois Frères, named for the three brothers, reported to the French Institute that numerous prehistoric remains were encountered. The three younger explorers were called to the colors to fight for their country, and therefore could no longer continue their investigation of the art work of the earliest men of whom we have any records. Abortive as was this first investigation, the results of the preliminary visits were of such a nature as to foretell an abundant harvest when the work shall have been resumed.

The chief display of art was on the walls, where more than two hundred "admirably engraved" figures of animals are to be seen. The following species have already been identified: the mammoth, often seen in these cave-men pictures and evidently a contemporaneous inhabitant of the land with the artists; the rhinoceros, the first found in the caverns of the Pyrenees, and then the bear, lion, wolf, deer, reindeer, wild goat, horse, bison, chamois, eel and bird. There are also some anthropomorphic figures, including a curious female type drawn in black. It is thought that this might represent a human figure wearing a mask; the creature seems to be walking almost on all fours with the head surmounted by a reindeer horn.

The mural art of the Caverne des Trois Frères is executed with thorough artistic effectiveness. MacCurdy declares that it is admirably done. A small panel with reindeer at rest evidently enjoying themselves is, according to the French explorer, "like a page from an album." From the standpoint of the engravings, this cavern is "certainly the richest and the most beautiful thus far known." It confirms previous impressions that the oldest of European men, who lived thousands of years ago, had an artistic vision and a power of reproducing his vision that would have made him an artist of distinction at any time in the world's history.

The colors used by these Quaternary artists are insoluble in water and are mainly composed of the oxids of iron and manganese. These minerals were pulverized, mixed with grease or other medium and applied with a brush. It was a form, therefore, of oil painting, and the brushes were made of animal bristles and hair. Their crayons were whittled from chunks of ocher or manganese oxid. The artist's tools were primitive, yet effective. Flint scrapers and engravers were employed in preparing the surface and tracing the outlines. Portions of wall were often selected for the pictures which, because of their contour, gave the effect of colored bas-relief. Curiously enough, just after the discovery of colors, there was a period of paintings in the caverns characterized by an excessive use of color, thus weakening the effect of the modeling. Man had improved his materials so much that, as at many subsequent periods of human history, he came to depend on them for effect instead of his own efforts in an artistic way. Fortunately, there came a subsequent stage in the development of paleolithic painting when it reached its zenith, and some of the frescoes were remarkable for vigor, realism and the command of colors displayed, which were graduated into numerous shades and tints.

Some of the pictures made by these cave men seem marvelous in their artistic quality. A bison at bay and a charging boar are models of the most faithful reproduction of intense activity. In the bison at bay there is a tension about all the muscles which indicates the absolute readiness of the animal to charge, and that suppression of action which artists often find so hard to express with anything like satisfactory effectiveness. In the charging boar, every muscle in the creature is in action, and the effect produced is most vivid. Modern artists have not hesitated to say that

1. MacCurdy, G. G.: The Cavern of the Three Brothers (Ariège), Science, May 28, 1915, p. 782.

there are few artists in our time who could have expressed animal action so finely. Others have said that the creators of some of these portraits would be admitted at once into associations of artists in our time with a recognition of the fact that here was a brother artist spirit.

These paintings were probably made not less than 10,000 years ago; good authorities do not hesitate to declare that they must be at least 25,000 or 30,000 years old, and some have not stopped at the claim of an antiquity of 100,000 years. Apparently man's power to see with absolute clarity all the essential elements of a picture, involving even complex action, and the ability to reproduce it, have not changed in such a period.

THE PRESERVATION OF LIVING BLOOD CELLS

The red blood cells have of late acquired an unanticipated importance as a staple, so to speak, in the stock of supplies of the medical laboratory. They are an essential reagent in the technic of certain tests such as the Wassermann reaction; they form a highly desirable component of fluids used in blood transfusion. The blood corpuscles are currently regarded as fragile in nature and extremely prone to disintegration outside of the body. It is known, indeed, that even within the circulation the life of these formed elements is a limited one; at any rate it is assumed that they are undergoing disintegration steadily in the blood stream because they furnish hemoglobin, the mother substance of the bile pigments which are being excreted continually. An approximate calculation of the number of red corpuscles destroyed daily in the body has suggested a yield of one tenth of the total hemoglobin.[1] On this basis, the total duration of life of a red corpuscle in the circulation could not exceed ten days. Other estimates, however, place the length of life at several weeks.

It is not always easy to procure erythrocytes of a desired sort to meet sudden exigencies; therefore it would present a great advantage if they could be preserved both morphologically and functionally intact for some time outside of the body. Usually incipient hemolysis soon shows that the preservation of the blood cells in vitro is of brief duration even in their own serum. Weil[2] has recently reported that if blood is mixed in suitable proportions with sodium citrate so that it does not clot, it may be kept for many days in a refrigerator without losing its oxygenating function. After a week the red cells show little change under the microscope, and very slight reduction in their resistance to toxic physical or biologic agencies. Weil has demonstrated that animals may be practically exsanguinated and then restored rapidly by transfusion of such citrated blood even if it is several days old. No unpleasant reactions have been observed, and human patients have already been treated in the same way with citrated blood in amounts ranging from 10 to 350 cubic centimeters. Injections of blood from three to five days old are reported to be perfectly well borne and to produce no apparent disturbance of any kind except a transient rise of temperature and polyuria.

The advantages of suitable procedures for keeping red blood cells "on tap," so to speak, are obvious; it is quite natural, therefore, that much effort should be expended in the preservation in vitro of living erythrocytes. At the laboratories of the Rockefeller Institute for Medical Research, Rous and Turner have shown that in citrated plasma or defibrinated blood the erythrocytes of many species begin to break down within a week or ten days; and washed erythrocytes in normal salt solution or Ringer's fluid do not last even so long. This early hemolysis of washed erythrocytes is attributable in large part to injury during washing. It can be prevented by the presence of a very little gelatin in the wash fluid (0.125 per cent.). But even when protected during washing, the erythrocytes do not remain intact in vitro nearly so long as they are supposed to in the circulation.

Rous and Turner[3] have directed their attention to the discovery of agencies which will not only protect, but also preserve the corpuscles to a degree that does not happen when gelatin or citrated plasma or any of the familiar isotonic fluids are employed. They have found the sugars well suited to this purpose. In a dextrose-Ringer's mixture containing 2.5 per cent. of dextrose, the erythrocytes of the sheep have been kept intact for a period of two months, and those of man for a month in a somewhat similar solution. The limits of the method have not yet been reached. The sugars which have proved best are saccharose and glucose. Isotonic mixtures are better than hypertonic. For the blood of each species a different preservative solution is required. Thus, the blood of the dog keeps best in a sugar-Ringer's-dextrin mixture, whereas for other bloods, dextrin is useless if not harmful. It is interesting that though sugars and dextrin are preservative they are not protective; red cells handled in solutions of them undergo as much injury as in ordinary Ringer's solution.

The fact that cells can be kept intact in the way here described, that they can replace freshly drawn cells in the Wassermann test, that they can be washed repeatedly and will take up and give off oxygen in a typical manner, is not a sufficient proof of their viability. This could be determined only by transfusion trials. In the experience of Rous and Turner on ani-

1. Howell, W. H.: Textbook of Physiology, Ed. 5, Philadelphia, 1913, p. 430.
2. Weil, Richard: Sodium Citrate in the Transfusion of Blood, THE JOURNAL A. M. A., Jan. 30, 1915, p. 425.
3. Rous, Peyton, and Turner, J. R.: On the Preservation in Vitro of Living Erythrocytes, Proc. Soc. Exper. Biol. and Med., 1915, xii, 122.

mals, bile has never been found in the urine after the transfusions, nor hemoglobin with any certainty. There is no rise in temperature, and immediately after the operation the transfused animals are lively and seem quite normal. The outcome of these newest investigations[3] leaves the impression that washed erythrocytes left in a sugar-Ringer's mixture are really preserved alive, and preserved better than in plain Ringer's or in plasma-Ringer's-citrate. Such beginnings lead one to look forward to a time not far distant when the preservation of "surviving blood" like that of surviving tissues and organs may find a beneficent application in practice.

THE SUCCESSFUL DESTRUCTION OF FLY LARVAE IN HORSE MANURE

Ever since the slogan "Swat the fly" was liberated on the American public, the hygienic danger of the house fly has been thoroughly understood by persons in almost all walks of life. The injunction to destroy all evident specimens of this insect species has been heeded far and wide. In thousands of homes the fly is no longer tolerated. The logical solution of the fly problem resides, however, in the elimination of all breeding places or the destruction of the eggs and maggots before they can develop into an adult age.

Horse manure, which forms the principal breeding place of the house fly, has a large value as a fertilizer. It is not difficult to find a larvicide which will be effective; but to be suitable it must destroy the larvae of the fly without killing the bacteria of the manure. The latter are essential for the proper conversion of the manure into products which have value as plant food. Arsenical dip is an effective larvicide, but its poisonous nature precludes its use in any general way. Other products such as anilin, pyridin and nitrobenzene have been found to give satisfactory larvicide results, but the cost precludes their use.

Last year the U. S. Department of Agriculture demonstrated that borax is an effective larvicide, obtainable throughout the country, and available for the successful treatment of manure at the cost of 0.42 cent per bushel.[1] However, inasmuch as large quantities of manure are used in some forms of modern intensive truck farming, a warning was issued with reference to the possible injurious action of applications of borax-treated manure on plants. Meanwhile the government scientists have continued the pursuit of some volatile or other organic larvicide which would be effective, yet entirely devoid of possible toxic action on vegetation. As a result, powdered hellebore (from *Veratrum album* and *Veratrum viride*) has been found to be an excellent larvicide without exerting a deleterious action on the fertilizing value of the manure as determined by bacteriologic and chemical analyses, and no injurious action has been detected in the field tests.[2] The cost of the treatment, which calls for one-half pound of powdered hellebore to 10 gallons of water applied to 8 bushels of manure, is 0.69 cent per bushel. Without rejecting the usefulness of borax, unless it is applied in undue amounts through carelessness, the government experts now give preference to the hellebore. No injury can arise from the use of even excessive quantities, for the substance is entirely destroyed in the course of the fermentation of the manure. Sanitarians everywhere will welcome this useful discovery and contribution to the antifly campaign.

1. Cook, F. C.; Hutchison, R. H., and Scales, F. M.: Experiments on the Destruction of Fly Larvae in Horse Manure, Bull. 118, U. S. Dept. Agric., 1914 (Bureau of Entomology).

2. Cook, F. C.; Hutchison, R. H., and Scales, F. M.: Further Experiments in the Destruction of Fly Larvae in Horse Manure, Bull. 245, U. S. Dept. Agric., July 20, 1915.

RICE POWDERS AND FACE POWDERS

The toilet powder commonly known as "rice powder"—often labeled "Poudre de Riz" or "Fleur de Riz"—seldom is what its name declares, according to Charles H. La Wall,[3] chemist to the dairy and food commissioner of Pennsylvania. Out of sixteen samples of so-called rice powder examined by him, only two consisted entirely of rice (unfortunately La Wall does not name the brands), and only six contained any rice at all. Talc, corn starch, zinc oxid, chalk and bismuth subnitrate were the substances found replacing rice flour wholly or in part.

La Wall's attention was first directed toward substitutions and adulterations by a case in which a physician had difficulty in establishing a diagnosis. A face powder, alleged to consist of rice flour, fell under suspicion, and was found to contain zinc oxid, talc and corn starch, but no rice. The zinc oxid proved to be the disturbing factor. La Wall cites several cases observed by oculists—invariably in women—of blurred vision, inability to use the eyes long at a time, and severe itching of the lids.

Seven cases were originally reported in THE JOURNAL by Black.[4] On microscopic examination of the secretion removed from the eyes, the symptoms were found to be due to the presence of crystals in a "rice" face powder[5] used by a number of patients. These crystals were discovered in the face powder, but could not be found in true samples of "rice" powder. The powder, when applied with a puff, is driven upward and lodges on the moist eyeball. In the presence of tears it becomes mucilaginous in character, and, lodging in the culdesac, produces the symptoms complained of.

The substitution of other ingredients for rice in so-called rice powder constitutes a fraud, since sales-

3. La Wall, Charles H.: Am. Jour. Pharm., July, 1915.

4. Black, N. M.: Face-Powder Conjunctivitis, Correspondence, THE JOURNAL A. M. A., April 18, 1914, p. 1274.

5. Roger and Gallet.

people assert and customers believe that rice powder is — rice powder. This deception seems to be due, however, to trade custom rather than to deliberate fraudulent intent. Rice flour costs at wholesale only 6 cents a pound; talc costs the same; chalk is 5 cents a pound; corn starch is 3½ and zinc oxid is 2 cents a pound. Bismuth subnitrate is $2.75 a pound, but this may be disregarded, as it was present only to the amount of 1 per cent. in two samples. The difference in the cost of these ingredients is therefore insufficient as an inducement for adulteration, in the case of an article costing 6 cents wholesale and from 40 cents to $1 a pound retail. Since foodstuffs are sold under the provisions of the federal and state food and drugs acts, while toilet articles are not, La Wall suggests that consumers might well avoid adulterations and at the same time make a saving, by purchasing rice flour at a grocery.

THE CONTROL OF TRAFFIC SEWAGE

The art of sewage treatment is a recent one, and its development is as yet comparatively rudimentary. It seems reasonable to believe that, as time passes, the field of waste sanitation will become more and more comprehensive, and that many conditions now tolerated will eventually be regarded as obviously intolerable. One phase of waste sanitation which seems to be arousing attention is the treatment of sewage from such public conveyances as fresh water steamers and railway coaches. Some significant features of this problem were recently considered by L. C. Frank of the United States Public Health Service, in a paper on "The Control of Traffic Sewage."

The problem of traffic sewage control is at present being investigated by the Public Health Service and by the International Joint Commission. Naturally the public interests require the prompt and effective removal of any dangers arising from traffic sewage. Naturally, also, the traffic interests desire that it be reasonably demonstrated that the dangers adduced are real, and that the prescribed remedy be practicable, efficient, and not unreasonable in cost. Both of these demands are reasonable and just. It is probably safe to assume that, in the main, the traffic interests are viewing the question broadmindedly, and are willing to apply any corrective measure which may be shown to be reasonably necessary and economically possible.

The danger from the noncontrol of sewage from fresh-water vessels lies in the relation between such noncontrolled discharge, the drinking-water supplies of other vessels, and the drinking-water supplies of communities whose intakes lie within the bacterial zone of influence of the traffic lanes. Along crowded traffic lanes between busy ports, steamers often follow one another very closely, and it is hardly possible to doubt that the drinking-water intake of one steamer may thus often be exposed to pollution in local zones of discharge from another steamer. Again, these crowded traffic lanes pass close by a number of major city water intakes, thus creating an obviously dangerous situation.

The need for controlling sewage discharge from railway coaches arises from the possibility of pollution by the train sewage of drinking-water supplies within the zone of bacterial influence of the railway roadbeds. This zone of bacterial influence is determined by two factors: surface drainage and wind action. Surface drainage is an important factor because particular attention is paid in modern railway roadbed construction to rapid drainage. Typhoid feces, even though exposed to the sun and air for days, can hardly be considered as free from danger, and rain water which washes over them and then drains away very rapidly to the nearest watercourse must constitute a decided danger to the drinking-water supply. Again, wind action may be a factor in determining the zone of bacterial influence of the roadbed, because some drinking-water reservoirs, which may not be affected by surface drainage from the railway roadbed, may nevertheless be within the radius of the carrying capacity of the wind. Bits of dried fecal matter or particles of earth impregnated with fecal matter or urine may at any time be blown into such reservoirs. The existence of such dangers is recognized by such preventive measures as the locking of water-closet doors while steamers or trains are in danger zones.

Six methods of dealing with the situation are considered:

1. Purification of that part of the affected water supplies which is actually used for drinking water instead of any attempt to control the sewage.
2. Locking of all toilet doors while steamers and trains are within danger zones.
3. Storage of the sewage in tanks during passage over danger zones, and discharge after the danger zone is passed.
4. Treatment of the contents of storage tanks with chemical disinfectants before discharge.
5. Treatment of the contents of storage tanks with steam before discharge by manual operation.
6. Equipment of storage tanks with apparatus for the automatic disinfection and discharge of the sewage, when it has reached a certain predetermined level in the tank, by means of steam or other heating element.

Of all these methods the sixth is decidedly the best. The first would be apt to impose a very unjust burden on the users of the affected water supplies. The average number of travelers on the Great Lakes every day during the season of 1906 was 117,000, whereas the number of persons whose water supplies are affected by the 117,000 travelers can be shown to be many more than 4,000,000. Manifestly, it would be unfair for 117,000 persons to place the burden of water purification on 4,000,000 persons. The other methods are

open to the objection that their success depends on manual operation by a large number of employees. It is almost axiomatic that the greater the number of employees to whose care is entrusted the execution of a certain duty, the greater the likelihood that infractions will occur, unless such infractions automatically create their own remedy. The fourth method is also open to the objection that ordinary chemical disinfection loses much of its efficiency when it is called on to treat liquids containing such solids as fecal matter. It is extremely difficult—in fact, well nigh impossible—to secure thorough penetration into the interior of the particles.

A tank has been designed by the Public Health Service[1] to meet the requirements of the sixth method. This tank and the method which it embodies have a number of advantages. It depends for its disinfection efficiency on heat, which is generally acknowledged to be very thorough in its action, readily penetrating organic particles. The action of the tank is entirely automatic. If fresh sewage enters the device while it is being discharged, the discharge immediately ceases. Water closet doors may remain unlocked on boats over drinking-water areas, and on trains while waiting in stations, a convenience that would gladden every traveler.

This device is now being experimented with on a stationary basis in order to secure the maximum simplification of details and long-time data on steam consumption and bacterial efficiency. As soon as these experiments are completed the device will be tested in actual service to determine the effect of rocking and of variable outside temperatures.

Rough preliminary estimates indicate that, for a railway coach which uses 10 cubic feet of water per day for flushing closets, disinfection with the device described will cost two cents per day. For steamers the cost is greater, since the amount of water used for flushing closets is more generous in the present practice. An estimate is made of five or ten cents per closet per day. Steamers may reduce this by substituting railway closets for the present equipment.

1. Sewage Disinfection for Vessels and Railway Coaches, U. S. Pub. Health Rep., Jan. 1, 1915.

Deaths from Automobile Accidents.—During May thirty persons, fourteen of them children under 16, were killed by automobiles in the streets of New York City, as reported by the National Highway Protective Society. As set forth in the New York *Tribune*, not one of the thirty drivers concerned in the killings was indicted. The Weekly Bulletin of the Department of Health, in commenting on this, asks whether the legislature of the state is not guilty in this matter, and calls attention to the fact that the Health Department, though it might do much to prevent such accidents, is handicapped, as are all other authoritative bodies, by the action of the legislature not only in providing for the licensing of drivers of cars, but in expressly forbidding any local authority from enacting protecting regulations. Protective legislation is asked from the state, or in the absence of that, that the hands of local legislative bodies be untied so that protection may be afforded.

Current Comment

THE EASTLAND DISASTER

The *Eastland* disaster is one more illustration of the cheapness of human life. A thousand happy people about to start on a picnic—for most of them the event of the year—met sudden death. It was a preventable death, but the dead could not have prevented it; they were innocent of danger. True, their outing included a trip on Lake Michigan, and there is sometimes danger on the water in stormy weather. But that morning the lake was quiet; so there was no warning to the careful and the timid. Yet in a moment a thousand lives were sacrificed. Sacrificed to what? Man's inhumanity to man! Somewhere lies the blame. As we go to press, investigations by authoritative bodies are being made; until these are concluded and the findings announced, it is unwise to hazard a guess as to where or on whom the blame rests. Certain facts, however, seem to stand out as incontrovertible: A vessel of evil reputation — a "crank" — was purchased by one group of exploiters, perhaps because it could be had at bargain rates; was subleased to another corporation; was subleased to still another body for a single trip; and was then filled beyond capacity.

THE SHAPE OF HUMAN RED BLOOD CORPUSCLES

The familiar statement that the red blood corpuscles of man and other mammals are biconcave circular disks has been challenged in recent years by a number of capable morphologists, including Weidenreich, Lewis and others. They have taught that the classic definition of the erythrocytes should be altered to describe them as bell-shaped corpuscles without nuclei. The details of the controversies that have centered in these distinctions are perhaps too technical and subtle for general interest. It will not be denied that cup-shaped corpuscles can be observed in preparations of blood. The decision between the biconcave disk shape and the cup shape merely resolves itself into a solution of the question as to which is the normal, which the derived form of the mammalian corpuscle. Dr. H. E. Jordan,[1] of the Department of Anatomy at the University of Virginia, is the latest to join those who maintain that the uninjured, unmodified erythrocytes are clearly circular biconcave disks. By extremely careful preparation of microscopic specimens in solutions of presumably excellent preservative qualities, this normal form is invariably obtained. Jordan remarks that if a freely moving corpuscle is watched for some time, it may be seen to turn upward, now one side, now the opposite side, in either case showing a central depression. Viewed obliquely, such a biconcave disk gives the deceptive appearance of a shallow cup. This optical illusion may account for a certain amount of misinterpretation. The vast majority of the corpuscles remain unaltered at room temperature dur-

1. Jordan, H. E.: The Shape of the Human Red Blood Corpuscle, Proc. Soc. Exper. Biol. and Med., 1915, xii, 167.

ing the period of observation. Cup forms appear most abundantly, according to Jordan, in ordinary preparations with Ringer's solution when the cover glass is supported by a hair. The explanation that immediately suggests itself is that the floating disks become altered into cups through adjustment to the narrow confines between slide and cover glass. In other words, a cup form is conceived of as a circular biconcave disk which has become pushed out on one or the other of its concave surfaces. If these views are substantiated, it would appear that pressure is the chief factor in the production of cup forms through narrowing the confines to which the delicate disks are compelled to adjust themselves.

PUBLICITY IN LEGISLATION

The most valuable reformatory force is publicity. Those who are actuated by unworthy or selfish motives object to having their acts made public. One of the evils connected with legislation has been the ignorance, on the part of the voter, as to the position of his representative on important measures. The public has a notoriously short memory, and often the politician has been able by smooth phrases and glib generalities to explain away his record. In one state at least, however, members of the state legislature will have to stand on their record, at least so far as public health bills are concerned. In a recent issue of the *Ohio State Medical Journal* appears a tabulation of the vote of all members of the state legislature on six important public health measures before that body during its last session. A glance shows how any member stood on any particular measure. As the facts tabulated are taken from the official record of the house and senate, they cannot be disputed, while the right of the voter to know how his representative has stood on any measure is beyond question. The more the people know about their representatives, the better the chances of good government.

THE BLOOD AS A SOURCE OF AMMONIA

Those who are familiar with the modern advances in the chemistry of metabolism have seen frequently the mention of ammonia in connection with a variety of physiologic and pathologic processes. Ammonia is involved in the neutralization of the acids in excess of bases in certain conditions sometimes spoken of as acidosis. It is regarded as a stage in the denitrogenizing of proteins, formed when the nitrogenous groups are liberated from the amino-acids which enter into metabolism. Ammonia may be absorbed as a product of putrefactive changes in the large intestine and thereby reach the circulation. As a precursor of urea, it is reputed to play a significant rôle in the organism. There is, then, no lack of ways in which ammonia can enter the blood, in which it can always be detected. Less familiar, however, is the fact that ammonia arises spontaneously in blood even under aseptic conditions. For this reason the accurate determination of this component of the blood, which composes part of the now frequently estimated nonprotein nitrogen of the body fluids, is beset with difficulties. This evolution of ammonia is much greater than the preformed ammonia present in the strictly fresh blood.[1] In a search for its source, Dr. Alice Rohde[2] has attempted to ascertain whether or not, with aseptic measures, the formation of ammonia occurs in diffusible constituents of the blood after their separation from the nondiffusible constituents according to the vividiffusion method of Abel and his collaborators.[3] The outcome of her experiments indicates clearly that, in the dialysate obtained from circulating blood, there is no liberation of ammonia comparable to that which takes place in shed blood under aseptic conditions. The source of the slowly liberated ammonia is, therefore, to be sought in the nondialyzable constituents of the circulating medium.

IS THE PHYSICIAN AN "EASY MARK"?

Some time ago The Journal called attention[4] to a scheme being worked on physicians under the name of the American Medical Index Association. It was reported to be conducted by a C. A. Beck. The first complaints came from Indianapolis; later the concern opened an office in New Orleans,[5] and after securing a number of subscriptions — at $10 each — departed, leaving many physicians unsatisfied creditors. After this, the affair was heard of at various places, as has been noted from time to time in The Journal. A few days ago a Detroit physician wired The Journal that a "Dr." Beck was in that city endeavoring to start a scheme for supplying abstracts and indexes of current medical literature to physicians. On receipt of The Journal's reply, Mr. Beck was arrested. As he appears to be wanted in many cities, it is a question where he will be tried first. In one of our former comments[6] on this scheme of working doctors, we asked the question, "Is the physician an easy mark?" We may now answer — Not always!

DIURNAL VARIATIONS IN ARTERIAL BLOOD PRESSURE

The recording of body temperature in man has been a routine practice on the part of physicians for so many years that the details of experience are familiar. The clinical study of blood pressure is rapidly approaching a comparable degree of familiarity and perfection. The blood pressure gage has taken its place side by side with the thermometer and the stethoscope in the "pocket outfit" or the office desk equipment of every practitioner. Nevertheless it may, perhaps, not yet be a gratuitous task to record new data

1. Folin, O., and Denis, W.: New Methods for the Determination of Total Non-Protein Nitrogen, Urea, and Ammonia in Blood, Jour. Biol. Chem., 1912, xi, 532.
2. Rohde, Alice: Vividiffusion Experiments on the Ammonia of the Circulating Blood, Proc. Nat. Acad. Sc., 1915, i, 357; Jour. Biol. Chem., 1915, xxi, 325.
3. Abel, J. J.; Rowntree, L. J., and Turner, B. B.: On the Removal of Diffusible Substances from the Circulating Blood of Living Animals, Jour. Pharmacol. and Exper. Therap., 1914, v, 275, 611.
4. A Warning, Medical News, The Journal A. M. A., Feb. 6, 1915, p. 522.
5. Bogus Index Association Operating Among Physicians, Medical News, The Journal A. M. A., March 20, 1915, p. 1008.
6. Is the Physician an "Easy Mark"? editorial, The Journal A. M. A., April 10, 1915, p. 1247.

on healthy man; for the technic of observation has not yet been mastered in perfect fashion by every one who attempts to measure arterial pressure, and the normal variables are not yet widely appreciated. Accordingly, we quote the outcome of a series of observations on diurnal blood pressure made in the physiologic laboratory of Boston University on healthy students under studied conditions designed to afford dependable results.[1] A rise of maximum pressure averaging 8 mm. of mercury occurs immediately on the ingestion of food. A gradual fall then takes place until the beginning of the next meal. There is also a slight general rise of the maximum pressure during the day. The average maximum blood pressure for healthy young men in the neighborhood of 20 years of age is 120 mm. of mercury. This pressure obtains commonly one hour after meals. The higher maximum pressures occur immediately after meals, and the lower, as a rule, immediately before meals. The range of maximum pressure varies considerably in different individuals, but the highest and lowest maximum pressures are practically equidistant from the average pressure of any one individual. The minimum blood pressure is very uniform throughout the day, and is little affected by the ingestion and digestion of meals. When it is affected, a rise or a fall may take place. There is a tendency for a slight general lowering of the minimum pressure throughout the day. The average minimum blood pressure for healthy young men in the neighborhood of 20 years of age is 85 mm. of mercury. Thus we get an average pulse pressure of 35 mm. of mercury. Pulse pressure, pulse rate and the relative velocity of the blood flow are increased immediately on the ingestion of meals. They attain the maximum, as a rule, in half an hour, and then decline slowly until the next meal. There is a general increase in each throughout the day. The average pulse rate in these investigations proved to be 72 beats per minute.

THE MEDICAL BROTHERHOOD

On another page[2] is the announcement of the organization and membership of a new body — the Medical Brotherhood for the Furtherance of International Morality. Without knowing more of the object of this organization, or of the functions it will assume, it is impossible to comment on it extensively. Without doubt, however, the motives which have prompted the formation of this organization are of the highest. Whether these motives are too utopian or too idealistic to be accomplished practically time alone can tell. Certainly the conception of the organization is in trend with the thought that is in the minds of all who regard science; and medical science especially, as having neither national nor racial boundaries; so far as medical science is concerned, universal and continual peace is practicable.

1. Weysee, A. W., and Lutz, B. R.: Diurnal Variations in Arterial Blood Pressure, Am. Jour. Physiol., 1915, xxxvii, 330. A bibliography of the subject is appended to this paper.

2. Organization of Medical Brotherhood, Miscellany, THE JOURNAL A. M. A., this issue, p. 451.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Advisory Board Appointed.—The following physicians have been appointed members of the City Health Department of Sacramento: Dr. Andrew M. Henderson, president; Dr. William K. Lindsay, secretary; and Drs. Eugene H. Pitts and Samuel J. Wells.

Tuberculosis Hospital Ready.—The new tuberculosis sanatorium for Fresno County, erected at a cost of $12,600, was opened to receive patients, July 18. The building consists of the main structure and two wings and will accommodate fifty patients. Dr. John D. Morgan is superintendent of the institution.

Billings to Give Lane Lectures.—The next course of Lane medical lectures will be given at the medical department of Leland Stanford Jr. University, San Francisco, on the evenings of the week of September 20-25, by Dr. Frank Billings of Chicago on "Focal Infection." Dr. Billings has also agreed to give some clinical demonstrations.

Medical School Merged.—It is reported that the Hahnemann Medical College of the Pacific, San Francisco, has conveyed its property to the University of California and will cease separate instruction. Two professorships will, however, be maintained at the University of California School of Medicine, one in homeopathic medicine and the other in homeopathic therapeutics, these subjects being offered as elective courses.

Personal.—Dr. James L. Maupin has been elected president of the Fresno City Board of Health, succeeding Dr. Warden T. Barr, resigned.——Dr. Burt F. Howard, Sacramento, head of the tuberculosis department of the State Board of Health for two years, has resigned, to take effect August 1, and will practice in Sacramento.——Dr. Frank M. Lawson, Willow, has been appointed health officer and physician of Glenn County.——Dr. August Fehlen, San Francisco, suffered painful bruises in a collision between automobiles, June 29.——Dr. Byron P. Stookey, Los Angeles, has started for Europe with the intention of serving in Serbia.——Drs. Walter B. Coffey, Samuel J. Gardner and James H. O'Connor have leased the entire fourth floor of the Physicians Building, San Francisco, for a term of years.

ILLINOIS

Honor to Physicians.—Memorial portraits of the late Drs. Justus Townsend and Charles Ryan, who were members of the staff of St. John's Hospital, Springfield, for many years, have been presented to the hospital by the visiting staff and will be hung in the new reception room.

Administration of Sanatorium Approved.—The administration of the Oak Forest Tuberculosis Sanatorium has been formally approved by the advisory committee which consists of Drs. Theodore B. Sachs, Ethan A. Gray, Stephen R. Pietrowicz and Mr. James Minnick. At present the staff consists of eight physicians and fifty-six nurses and there are 586 patients in the institution.

Typhoid Fever.—The presence of forty-five cases of typhoid fever in Oak Park has caused the commissioner of health of Chicago to send Dr. Heman Spalding, head of the contagious department of the bureau of health, to Oak Park to cooperate with Dr. C. St. Clair Drake, secretary of the State Board of Health, who has taken charge of affairs there.——As twenty-five cases of typhoid fever have developed at Harvey, between July 13 and 23, the authorities appealed for help to the State Board of Health and Dr. C. E. Crawford has been sent to take charge of the situation.

Report of Tuberculosis Institute.—The Evanston Tuberculosis Institute, in its report for the year, states that the dispensary has been open on Monday and Thursday afternoons, from 3 to 4; that Drs. Stephen V. Balderston and Herman P. Harder are the physicians in charge of dispensary patients; that the medical control of the dispensary has been placed in the hands of the Evanston branch of the Chicago Medical Society which appointed a medical dispensary committee consisting of Drs. George W. Boot, Dwight F. Clark

and Mary G. McEwan, which has the medical control of the dispensary under its care.

Personal.—Dr. Clarence M. Cheadle, Rockford, has offered his services to the Serbian government to aid in the work against epidemic diseases and sailed from New York, July 19. ——Dr. William S. Pickard has been appointed health officer of Maywood, succeeding Dr. Mary McK. Harper, resigned. ——Dr. J. F. Vannice, Bishop Hill, had a slight cerebral hemorrhage, July 10.——Dr. Frank F. Gardner, Granite City, who has been actively at work in the war zone since October last, has returned home.——Dr. Frank C. Winters, Monmouth, is suffering from an infected wound of the hand and is under treatment in Augustana Hospital, Chicago.——Dr. J. H. Alpers, Rantoul, who was stricken with cerebral hemorrhage, July 3, is reported to be improving.——Dr. Clyde A. Finley, Galesburg, who was operated on in the Galesburg Hospital, recently, is convalescent and has returned home. ——Dr. Egbert K. Dimmitt, Farmington, who has been under treatment in the Proctor Hospital, Peoria, is reported to be convalescent.——Dr. Francis M. Roberts has been elected president of the village board of trustees of Chapin.——Dr. Benjamin F. Gallant, Kankakee, has been appointed assistant superintendent of the Charity Hospital, New Orleans, and assumed his new duties July 22.

Chicago

Personal.—Dr. Cassius C. Rogers has severed his connection with, and discontinued his clinic at the Frances Willard Hospital.——Dr. Hugo E. Betz has been appointed superintendent of the Iroquois Memorial Hospital, succeeding Dr. F. Patrick Machler.

Open-Door Policy Approved.—At the concluding session of the alienists and neurologists, July 16, endorsement was given to the open-door policy at the Psychopathic Hospital, as advocated by Dr. John Dill Robertson, health commissioner. By this, mental defectives may be taken to institutions without being subjected to police or court action.

Baby Welfare Week.—Infant welfare week was inaugurated by a meeting in the city council chambers, Thursday, July 15. Mr. Teter, president of the Infant Welfare Society, said there were now twenty-one infant welfare stations in Chicago, but that fifty were needed. The appropriation to the health department for infant welfare purposes was small and an appeal was made by Mr. Teter and by the commissioner of health for contributions to the cause.

Clean Bill for City Sanatorium.—The trustees of the Municipal Tuberculosis Sanatorium, after a thorough investigation, report that the charges of extravagance at the institution are groundless. It was shown by the figures that the cost per patient for April and June averaged about $12.50 a week. In April there were 314 patients at the institution, in June the number was increased to 445, and a month later 609 patients were under treatment. It is estimated that when the institution is completed and filled to its capacity of 950 patients, the cost per patient per week will be reduced to $10.

IOWA

Personal.—Drs. Henry E. Meyer, Belmond, and Walter K. Long, Hampton, have been appointed members of the medical staff of the new Lutheran Hospital, Hampton.——Dr. Charles B. Burk, Atlantic, has been elected vice president of the Southwestern Iowa Medical Society.——Dr. William S. Norton, Muscatine, dislocated his right wrist while cranking his motor car, July 10.

Contract for Buildings at Epileptic Colony Awarded.—The contract for the construction of buildings for the State Epileptic Colony, Woodward, was awarded by the State Board of Control, July 15, to a Minneapolis firm for $230,602. This contract provides for a group of thirteen buildings, ten of which are known as the hospital group, the other three being the power house, service and laundry buildings.

KANSAS

Medical Service as Memorial.—In memory of their son Robert, Dr. and Mrs. Frank Warner, Bonner Springs, have arranged a free medical service for the poor of that place during the months of July and August. The service is in the hands of Dr. Fred D. Candler, Bonner Springs, who will treat free of charge, any person in the city unable to pay for treatment and special care and a room, if necessary, will be provided.

MARYLAND

Joint Laboratory.—A cooperative laboratory in which Garrett and Allegany counties and the city of Cumberland will participate has been established in the department of health laboratory in the Cumberland City Hall. The laboratory will be in charge of a trained pathologist and bacteriologist.

United States Warned of War Diseases.—The great danger of importing to America cholera, typhus fever, the plague and other diseases from war-ridden Europe was pointed out in a communication from Dr. James A. Nydegger, Baltimore, U. S. P. H. S., who is now in London. Dr. Nydegger is interested in the campaign now being carried on in England by the National League for Physical Education and improvement to prevent the spread of epidemics by insects during the war.

Typhus in Baltimore.—According to a bulletin issued by Health Commissioner Nathan R. Gorter, a patient with typhus has just recovered in a Baltimore hospital. The case was diagnosed comparatively early by the hospital men and investigated by the Health Department and the United States Public Health Service. The bulletin, it is stated, is to acquaint physicians of the fact and put them in a position to recognize typhus and to be able to report cases promptly, should they occur, so that the department may be able to control the disease.

Personal.—Dr. Winford H. Smith, superintendent of the Johns Hopkins Hospital, has gone to Maine for his vacation, and during his absence Dr. Karl H. Van Norman, first assistant superintendent, will be in charge.——Dr. James A. O'Donnell, a Baltimore physician, was thrown from his buggy on July 22, when his horse bolted after a collision between the buggy and a wagon which ran into the doctor. Dr. O'Donnell's back was badly strained.——An oil painting of the late Dr. J. Brown Baxley, painted by L. P. Deitrich, will be hung shortly in the Baltimore General Dispensary, Paca and Fayette Streets.——Dr. David C. Streett, Baltimore, was operated on in St. Agnes' Hospital for disease of the intestines, July 6.

Social Exhibit at Hopkins.—By an arrangement with the trustees of Johns Hopkins University, the Baltimore exhibit on social and charitable work in the city and state has been installed in McCoy Hall and will remain on public view until September. It consists of thirty-seven panels and half a dozen ingenious devices. The entire exhibit is divided into six sections, including infant mortality, medical inspection of schools, mental defectives, tuberculosis among negroes, social needs at Locust Point and the social survey. There is also a special section on child labor. The special reason for displaying the exhibit is to bring it to the attention of those who are attending the summer school classes and the still larger number of persons who come for the general lectures which are held every week.

MICHIGAN

Hospital Opened.—One unit of the new Ford Hospital, Detroit, was opened last week. It is devoted exclusively to the treatment of victims of the alcohol and drug habit.

Tuberculosis Day.—The governor of Michigan has issued a proclamation setting apart August 20, as Tuberculosis Day, and requesting that all physicians in the state, on that day, make free examination of any patient believed to be suffering from tuberculosis.

New Tuberculosis Hospital.—A residence west of the State Smallpox Hospital on Lansing Avenue, Jackson, has been purchased and is being fitted up as a tuberculosis sanatorium. The building will accommodate fifteen patients and will be ready this month.

Leprosy.—The finding of a case of leprosy at Ann Arbor, July 13 has aroused considerable discussion concerning the disease. At the clinic of the Tristate Medical Society's meeting at Ann Arbor, Prof. Udo J. Wile made a plea for the better treatment of lepers and deprecated the abhorrence of the laity for a leper.

Report of State Health Officer.—In his annual report to Governor Ferris, the secretary of the State Board of Health, Dr. John L. Burkart, Lansing, mentions especially the propaganda of the board which has been a great success, calls attention to the failure of the state legislature to provide sufficient funds to carry on the department and notes that the circulation of the health bulletin has increased 2,500 during the year.

Personal.—Dr. Ralph C. Apted, city physician of Grand Rapids, who has been seriously ill at Butterworth Hospital, is gaining rapidly and has been removed to his home.——Dr. William A. Wilson, superintendent of the Florence Crittenton Home, Detroit, has been elected president of the Michigan Child Welfare Conference.——Dr. Athanase E. Gourdeau, Ishpeming, has gone to Chicago for treatment on account of disease of the throat.——Dr. Walter T. Parker, Corunna, was painfully injured in the overturning of his automobile near Owosso, July 8.——Dr. John F. Cardwell has been placed in charge of the Nose and Throat Clinic of the Grand Rapids Antituberculosis Society.——Dr. Arthur J. Carlson has been appointed full-time health officer of Escanaba.——Dr. Robert M. Gubbins, Battle Creek, was operated on for the removal of gallstones at the Battle Creek Sanatorium, July 18, and is reported to be doing well.

MISSISSIPPI

Personal.—Dr. Henry B. Powell has been elected a director and president of the Ocean Springs Country Club.——Dr. William B. Lewis, Bay St. Louis, has succeeded Dr. W. H. Moody as health officer of Hancock County.——Dr. Walter S. Leathers, University, director of the Educational Campaign on Sanitation, is said to have declined an offer to be made chief of the vital statistics division in Washington.

Pellagra.—In a bulletin recently issued by the Mississippi State Board of Health, it is said that 10,954 cases of pellagra were reported to that body in 1914 by county health officers. In 1913 there were 6,991. Though a portion of this increase is thought to be due to better reporting, it is believed that the disease is rapidly increasing in the state. There were 1,192 deaths in 1914 from this disease, as compared with 795 for 1913, although the number of deaths from all causes was about the same in the two years. The death rate for 1914 was said to be 62.7 per 100,000, as against 42.4 for 1913, an increase of over 47 per cent. The pellagra mortality based on the number of deaths from all causes was 10.9 per cent. It is recommended in the bulletin that the dietetic theory of the U. S. Public Health Service as to the etiology of pellagra be accepted and treatment carried out along the lines suggested by the service.

MISSOURI

Medical College Closed.—It is reported that the Kansas City Hahnemann Medical College has been discontinued.

Hospital Dedicated.—St. Elizabeth's Hospital, Hannibal, was dedicated July 8. The building is four stories high, has been erected at a cost of about $60,000, and is owned by the Sisters of St. Francis.

The Medical Laboratory in St. Joseph.—In the canvass for funds for the establishment and support of the medical laboratory of the Missouri Foundation in St. Joseph, an endeavor is being made to secure $25,000 for the establishment and equipment of the laboratory and a fund of at least $200,000 for its endowment.

Clinics for Negroes.—Two new clinics for colored patients have been opened by Dr. Paul Paquin, health commissioner of Kansas City. Each will be in charge of a colored physician and nurse, and at each station modified milk will be furnished at cost. One of these stations is at Troost and Independence Avenue and the other on Vine near Twenty-Third.

Personal.—Dr. Walter S. Sutton, Kansas City, has returned after five months spent as chief surgeon of the Mrs. Harry Payne Whitney Red Cross Hospital, Juilly, France.——Dr. Floyd E. Martin, Excelsior Springs, has been appointed a member of the staff of the Fulton State Hospital, succeeding Dr. W. F. Shaw.——Dr. and Mrs. George R. Stevenson and family, St. Joseph, started on an automobile trip to the Pacific Coast, July 3.——Dr. James M. Potts, city physician of Springfield, was thrown from his buggy, June 28, and painfully injured.

St. Louis

Personal.—Dr. C. A. Heckleman of the staff of Barnes Hospital is said to be critically ill as the result of persistent exposure to the Roentgen rays.——Dr. William C. Bradley has been appointed assistant surgeon to the United Physicians Company.——Dr. Richard H. McBaine is reported to be critically ill with septicemia at Barnes Hospital.

St. Louis Unit Organized.—The St. Louis University recently authorized the formation of a hospital unit to be known by its name for service in the European war. The organization is now complete and waiting call to service. It consists of thirty-two physicians and seventy-five nurses. Dr. William T. Coughlin is in charge of the unit.

Expedition to Tropics.—Dr. Edward Nelson Tobey, assistant bacteriologist; John P. Coony, professor of chemistry, and Rev. A. M. Schwitalla, professor of geology in St. Louis University, sailed from New Orleans, July 22, for British Honduras and Guatemala where they will study diseases, poison and insects peculiar to that part of the tropics, and gather material for further scientific investigation in the university laboratories.

MONTANA

Improvements at State Institutions.—The state of Montana will spend $80,000 on improvements on the Warm Springs Asylum and $20,000 on the State Tuberculosis Hospital, Galen. At the asylum a new modern kitchen is to be built and also a dormitory to hold sixty women. At the sanatorium a new dormitory is to be built.

Personal.—Dr. Frederick W. McCrimmon, Butte, sustained a fracture of the skull in a collision between his automobile and a motorcycle, July 18, and is reported to be in a critical condition in the Murray Hospital, Butte.——Dr. Arter W. Deal, Lewistown, health officer of Fergus County, and Mrs. Deal are making an automobile tour of the state.——Dr. Thomas C. Witherspoon, Butte, has been elected president of the Butte Chautauqua Association.

State Health Officers Hold Meeting.—At the annual meeting of the Montana State Health Officers Association held in Bozeman, July 12 and 13, the following officers were elected: president, Dr. Arthur Morrow, Kalispell; vice president, Dr. Drura R. Claiborn, Bigtimber; and secretary, Dr. William F. Cogswell, Helena (reelected). The next meeting will be held in Miles City. One of the principal topics of discussion was the "Rocky Mountain Spotted Fever," which was ably considered in a paper read by Surg. Lunsford D. Fricks, U. S. P. H. S., who has been making a study of this disease in Montana.

New State Officers.—The thirty-seventh annual meeting of the Montana State Medical Association was held in Bozeman, July 14 and 15, under the presidency of Dr. James H. Irwin, Great Falls. Miles City was selected as the place of meeting for next year, and the following officers were elected: president, Dr. Rudolph Horsky, Helena; vice presidents, Drs. Herbert H. Judd, Bozeman; George E. Brown, Miles City, and Edward M. Gans, Judith Gap; secretary-treasurer, Dr. Elmer G. Balsam, Billings (reelected); delegate to the American Medical Association, Dr. James H. Irwin, Great Falls (reelected), and councilors, Drs. Harry C. Smith, Missoula; Mark D. Hoyt, Glasgow, and Wimon W. Andrus, Miles City.

NEW YORK

Correction.—Dr. Roger S. Morris, Clifton Springs, whose name was erroneously given in THE JOURNAL of July 17, as Robert S. Morris, has been offered and has accepted the full-time professorship of medicine in the medical department of the University of Cincinnati.

Clinic Opened.—A clinic was opened in Little Falls, July 9, by Miss Catherine B. Dunn, who is acting as city welfare nurse. The clinic is open from 4 to 5 o'clock on Thursdays and Fridays in the Jefferson Street School Building and the physicians of the city are alternating in taking charge of the clinic.

Four-County Medical Society Organized.—At a dinner given recently at Warsaw to officers of the Medical Society of the counties of Allegany, Livingston, Genesee and Wyoming, by Dr. William R. Thomson, the suggestion was made that a four-county society be established and a preliminary meeting for this purpose was held at Letchworth Park, July 15.

Stringent Rules for Health Officers.—After November 1 of next year, local health officers may be appointed only after complying with special qualifications under regulations adopted by the State Public Health Council. This ruling of the State Department of Health affects nearly 1,200 positions throughout the state and means that officials must qualify in special health work subjects not ordinarily taught in schools of medicine.

Free Dental Institute for Rochester.—George Eastman, the head of the Eastman Kodak Company, has announced his intention of giving a site and $300,000 for a building for a free dental institution in Rochester. The gift will be

presented to the Rochester Dental Society. In addition, provided the city of Rochester will appropriate $10,000 a year for its maintenance, he will endow the institution with $750,000. It is proposed in this way to provide free dental service to all persons not able to pay for such work. In connection with the institution there will be an up-to-date laboratory for research work.

New York City

Attack the Fly Out Doors.—Since it is evident that no amount of swatting will exterminate the fly, the *Bulletin* of the health department calls attention to the necessity of vigilance to prevent the breeding of this nuisance and recommends as a valuable adjuct in the fly campaign the large outdoor flytrap. In fact the department is endeavoring to kill two birds with one stone by promoting the sale of these large flytraps which were made in the city emergency workshop under the supervision of the mayor's committee on unemployment, so that purchasing a flytrap from the city one may not only help to eradicate the fly but also to provide work for the unemployed.

Bureau of Foods and Drugs Issues Injunctions.—Dr. Lucius P. Brown, the new director of the Bureau of Foods and Drugs of the Health Department, has issued his first announcement which consists of a set of "Dont's" and "Do's" with reference to the care of food in the home, the danger of the house fly and advice on hot weather hygiene. It is announced that the inspectors of this bureau will devote their attention to an investigation of restaurants and public eating places with reference to sanitary conditions and the quality of the food dispensed and that there will be a similarly rigid inspection of the places where ice cream and soft drinks are sold. The venders who sell soft drinks for 1 or 2 cents a glass will be compelled either to cleanse their glasses with hot water or to use paper cups.

Personal.—Dr. Mark J. Schoenberg has been appointed instructor in ophthalmology in the College of Physicians and Surgeons of the City of New York.——Dr. John R. Murtin, assistant professor of physiology in Cornell University, has declined the position of biochemist to the Pellagra Hospital of the United States Public Health Service at Spartanburg, S. C., and also the professorship of physiology and physiologic chemistry in Fordham Medical School.——Dr. Joseph Wranna of the staff of St. Mary's Hospital, Jamaica, was painfully bruised, July 18, in a collision between the motor ambulance of the hospital and a trolley car in Woodhaven. ——An ambulance of the Kings County Hospital collided with the touring car of Dr. Louis M. Dusseldorf, Brooklyn, July 7, but the occupants of both cars escaped with slight injuries.

Vaccine in Whooping Cough.—The research laboratory of the department of health has been making extensive investigations in the vaccine treatment and prophylaxis of whooping cough and has reached the following conclusions:

1. Pertussis stock vaccines as prepared by the Bureau of Laboratories seem to have a prophylactic value when given in high doses.
2. In the treatment of pertussis, these vaccines seem to have shortened the duration and severity of the paroxysmal stage; the average duration of the whoop being twenty-five days, compared to forty days of those treated with drugs.
3. Further experiments with the view of obtaining more effective vaccines and a closer cooperation of the profession in public health education, may help in the eradication of pertussis, this scourge of childhood which kills yearly ten thousand American children.

In view of these results the laboratory now seeks the collaboration of private practitioners in a more extensive test of these vaccines. The necessary quantity of vaccine accompanied by a history card and directions for administration will be given to any city practitioner who will promise to report results obtained. In doubtful cases the sputum may be sent to the laboratory for examination. The sputum to be of value must be obtained early in the disease from the bronchus.

NORTH CAROLINA

Whole-Time Municipal Nurse.—Through the Antituberculosis Society of Newbern, the services of a whole-time municipal nurse have been secured to assist in the care of tuberculosis patients in the city.

Surgeons of Greensboro Organize.—The Greensboro Surgical Society was organized, July 6, with an initial membership of fifteen. Dr. John W. Long was elected president and Dr. Parran Jarboe, secretary.

Fire in Sanatorium.—On July 19 a fire occurred in a tuberculosis sanatorium at Asheville which did considerable damage to the third story of the building. Prompt action on the part of the attendants and the fire department enabled the twenty inmates to be removed without casualty.

New Health Bulletin.—*Our Communal Health* is the title of the newly issued health bulletin of the City of Wilmington and Hanover County boards of health. In the first issue it is stated that in 1915, of the population of 38,000, there will be spent in the city and county $23,575 for general health work, exclusive of garbage removal, and $23,000 for the Walker Hospital and Red Cross tuberculosis work.

Personal.—Maj. Eugene B. Glenn, Asheville, has returned after an encampment at Morehead City, at which he served as commanding officer of the sanitary corps.——Dr. Harvey P. Barret, Charlotte, has been reelected city bacteriologist. ——Dr. William F. Hargrove, Kinston, has returned from a visit to the Pacific slope.——Dr. Moir S. Martin, Stuart, Va., has purchased the Irvin Memorial Hospital, Mt. Airy, for $10,000.

Witch and Herb Doctor Discharged.—Lonnie Williams, a Negro-Indian itinerant physician, who has been operating for some time past in Rockingham County and in the adjacent Virginia counties, was recently arraigned in the local court of Sprague charged with illegal practice of medicine, but the inability of the prosecutors to show that the defendant had been paid a fee by any of his former patients, who were subpoenaed as witnesses against him, resulted in his discharge.

Hospital News.—Dr. Robert L. Holloway, West Durham, has decided to establish a baby sanatorium with accommodations for twenty-five patients at Rivermont Farm, near Durham.——The Presbyterian Hospital, Charlotte, has installed its new Roentgen-ray apparatus which has been secured at a cost of $2,000. Dr. James W. Squires will be in charge of this department of the hospital.——The Women's Hospital, Charlotte, was formally opened June 30. The institution will have accommodations for more than twenty patients and will be in charge of Drs. Charles H. C. Mills and William H. Crowell.——The Baby Hospital, Wilmington, was opened July 1.——For the time being, the Bear Annex of the James Walker Memorial Hospital, Wilmington, is being utilized, and this affords accommodation for ten patients, but if the institution proves to be a success, a permanent hospital will be erected at a cost of $20,000.

PENNSYLVANIA

Investigation of Occupational Diseases.—Headquarters are to be established in Pittsburgh for the investigation of occupational diseases. Laboratories will be fitted up at the United States Marine Hospital and the work will be under the supervision of Surgeon Joseph W. Schereschewsky, U. S. P. H. S.

Typhoid in Pottsville.—The physicians of Pottsville are fearful that the outbreak of typhoid fever will extend to a wide radius of towns in Schuykill, and Dr. Jerome B. Rodgers, president of the Pottsville Board of Health, has invoked the aid of the State Department of Health at Port Carbon where the epidemic started. There has been reported, up to July 21, a total of twenty-eight cases at Port Carbon with a dozen more at Saint Claire. A zone of fully 5,000 persons is menaced by the epidemic. A saloon property at Port Carbon was found to be infected with typhoid germs and has been closed by state authorities. The state health experts will examine all the local water sheds and particularly the milk supply.

Baby Week at Pittsburgh.—The week from June 27 to July 3 was set aside as baby week in Pittsburgh. During the week a free exhibition was held in the Wabash station where information about the campaign was obtainable and stereopticon talks were given on the care of babies. The purpose of the week was fundamentally educational. It sought to convince the people that it is sound, civic economy to reduce the sickness and death rate among babies; to impress on the community that it is responsisble for its babies; to inform the people of facts concerning the status of infant mortality in the city and what is being done to improve conditions which affect injuriously, the health of their babies; to give directly to fathers and mothers and sisters and brothers of babies, such information as will result in better care and feeding during the summer months; and to effect a better understanding in an endeavor to coordinate the various public and private agencies which have baby welfare as their primary object.

Philadelphia

Personal.—Dr. John F. McCloskey sailed for Europe to take up Red Cross work through the American Ambulance

Hospital in France.——Dr. James C. Attix was operated on July 15 in the Samaritan Hospital and is reported to be in a critical condition.

Baby Clinic.—The baby clinic of the Emergency Aid, at 1121 South Thirteenth street in the Italian quarter cares for an average of 100 babies at each clinic. These clinics are held Tuesday and Thursday morning from 11:30 to 1:30 and are under the guidance of Dr. Harriet MacSorley. Pasteurized milk is served by the nurses.

Open Sanitation Show.—The sanitation and health carnival, held by the Home and School League of the William Cramp School was opened July 19, and Director of Health and Charities, Dr. S. Lewis Ziegler was the chief speaker. The exhibit continued until July 24, and was intended to instruct residents of the neighborhood in the essentials of living in a sanitary manner. The league was assisted by the Philadelphia Sanitary Division, Department of Health and Charities, Child Hygiene, Babies Welfare Association, and different other welfare organizations.

Pennsylvania Unit in Paris.—Dr. J. William White, in charge of the University of Pennsylvania unit which went on duty July 1, at the American Ambulance in Paris, reports that all of the university party are well, and that when they assumed charge there were 181 wounded in the hospital. Public subscriptions are being taken in Philadelphia for the raising of the $10,000 required to finance the University of Pennsylvania contingent of physicians, scientists and nurses, who have taken charge of the American Hospital, Paris. Of this amount, $7,600 has already been subscribed.

Civil Service Examination.—The civil service commission of the city of Philadelphia announces that an examination for resident physician with a salary of $600 to $900 a year in the Bureau of Health of the Department of Public Health and Charities, and open to residents of Pennsylvania, will be held on August 13 at 9:30 a. m. Applicants must be graduates of recognized schools of medicine, licensed to practice in the state of Pennsylvania, must have had some institutional experience, and should be above 25 years of age. The duties of these four positions are to give medical assistance to the inmates of the institution to which they are assigned and any other appropriate duties. Applications should be made to the Civil Service Commission, City Hall, Philadelphia.

Housing Division Authorized.—On July 20, Mayor Blankenburg signed an ordinance passed by the councils at the last session for the summer, creating the new division of housing and sanitation in the department of health and charities. This puts an end to a controversy of more than two years standing between city officials and political leaders on the one hand and members of the housing commission on the other. Under the law the director of health is authorized to appoint a chief of the new division at $3,100 a year; a statistician at $1,200; three additional assistant clerks at $900 each; one additional stenographer and typewriter at $900; five additional inspectors at $1,000 each; two messengers at $480 each, and one additional cleaner at $360. These appointments were to go into effect on July 1, but the mayor's delay will make the appointments effective August 1. In connection with the establishment of this division of the bureau of health, Dr. Ziegler, the director, plans to subdivide the city into five areas for the standardization of birth and death statistics, and has tentatively created the following districts: Germantown; Frankford; North Philadelphia, between the two rivers and Wingohocking and Chestnut streets; South Philadelphia, between the rivers and Chestnut, and League Island and West Philadelphia.

VIRGINIA

Dr. Drewry's Assailant Fined.—At the trial of Frederick E. Perkins, charged with having feloniously assaulted Dr. William F. Drewry, superintendent of the Central State Hospital, on June 7, the defendant was found guilty of assault and battery, and fined $10 and costs.

Osteopaths and Surgery.—The State Board of Medical Examiners of Virginia has ruled that a knowledge of materia medica is essential to the practice of surgery and since schools of osteopathy do not teach materia medica, osteopaths are not qualified to practice surgery.

Trachoma Hospital at Coeburn.—A free hospital for the treatment of trachoma was opened July 1 at Coeburn. The expenses of the hospital are shared by the Public Health Service, the state of Virginia and the town of Coeburn. In addition to the treatment of trachoma, a campaign of prevention is also being carried out.

State Board Members Reappointed.—Drs. Lawrence T. Royster, Norfolk; Alexander G. Crockett, Max Meadows, and Reid White, Lexington, have been reappointed members of the State Board of Health.——The State Board of Health has confirmed the appointment of Dr. Roy K. Flannigan, Richmond, as assistant health commissioner, to succed Dr. Allen W. Freeman, resigned.

Personal.—Dr. H. Page Mauck, Richmond, has been appointed assistant in clinical orthopedic surgery at Johns Hopkins University, Baltimore.——J. B. Weems of Notaway County has been appointed chief chemist of the State Department of Agriculture, succeeding Dr. Magruder, resigned.——Dr. Charles E. C. Peyton, Pulaski, has been appointed assistant surgeon at the National Soldiers' Home, Dayton, Ohio.

CANADA

Dental Corps.—The Canadian dental corps is in process of organization for overseas service. It will be in command of Lieut.-Col. J. A. Armstrong, Ottawa, and with him will be associated Major Thomas Gibson, Ottawa, and Major A. A. Smith, Cornwall, Ont. There will also be twenty-four captains and twenty-four lieutenants. Several dental surgeons, already at the front, will be attached to the unit when it arrives in England.

Reciprocity Between Saskatchewan and Great Britain.—It is proposed to amend the medical profession act of Saskatchewan to establish reciprocal relations between that province and Great Britain. The amendment will provide that any practitioner duly registered by the general medical council of Great Britain may practice in Saskatchewan on payment of the necessary fees, satisfactory evidence of registration in Great Britain, and good character.

Personal.—Dr. Samuel J. N. Magwood, Toronto, has left for the theater of the war and will join the royal army medical corps as captain. At St. Michael's Hospital, Dr. Magwood was given a cheering send-off when the staff through Dr. Edmund E. King, Toronto, presented him with a wrist watch suitably engraved. Dr. J. Bryce McMurrick, Toronto, accompanied him.——The following Canadian medical men have been gazetted temporary lieutenants in the royal army medical corps: Drs. Howard H. G. Coulthard, Cedar Cottage, B. C.; Leonard A. C. Panton, North Battleford, Sask.; N. E. MacDougall, Vancouver, B. C.; Maurice J. Vigneux, Nelson, B. C.; James F. Adamson, Mannville, Alta.; Walter W. Kennedy, Vancouver, B. C.; R. Ingram, Vancouver, B. C.; Orie E. Finch, Vancouver, B. C.; William H. Lambert, West Westminster, B. C.——Dr. Hilbert W. Hill, London, Ont., executive secretary of the Minnesota Public Health Association, has been reappointed director of the Institute of Hygiene, London, Ont.——Dr. James D. Wilson, London, Ont., has been appointed physician to the jail, succeeding the late Dr. James MacArthur.——Dr. Earl S. Bolton, Medicine Hat, Alta., has been appointed medical officer of health of Brandon, Man.——Dr. J. E. McAskile, High Gate, Ont., house surgeon in Vancouver General Hospital, has left for France.——Dr. James H. Hamilton, Revelstoke, B. C., is medical officer of the fifty-fourth battalion in camp at Vernon, B. C.——Drs. F. W. Manning and Charles R. Totton, Windsor, Ont., have been appointed to staffs of hospitals in France.——Dr. Alexander B. Osborne, Hamilton, Ont., has been appointed chief of the eye and ear department of the Duchess of Connaught Red Cross Hospital at Cliveden, England.

Hospital News.—Queen's No. 5 stationary hospital which left for England a few weeks ago, is to be increased from 200 to 400 beds. It is in command of Lieut.-Col. Frederick Etherington, Kingston, Ont.——A clearing hospital has been established at Valcartier, Quebec, to receive wounded soldiers on their arrival from England.——Lieut.-Col. Wallace A. Scott, Toronto, is in command of the hospital at Shornecliffe, England. Col. George S. Rennie of Hamilton and Lieut.-Col. Henry R. Casgrain of Windsor are there also in command of No. 2 and No. 3 clearing and stationary hospitals.——Dr. Robert J. Manion of Fort William, who has been on the surgical staff of an Anglo-French Hospital, is at present in Canada, but will return to France shortly.——The following officers have joined the staff of the Canadian hosital at Le Touquet, France: Captain Jeffrey, Toronto; Capt. Edwin D. McLean, Truro, N. S.; Capt. Thomas F. O'Hagan, Calgary; Capt. Robert H. Smith, Moose Jaw, Sask.; Capt. R. F. Flegg, Ottawa; Captain Dean, Winnipeg; Capt. Kenneth D. Panton, Vancouver; Capt. Robert J. McEwen, Saskatoon.——The Vancouver Military Hospital,

accepted for overseas service, will be in command of Major Edward C. Hart, Victoria, chief of medical services in the province of British Columbia. The personnel will consist of thirty-two medical officers, one dental surgeon, two quartermasters, two warrant officers, twenty-one sergeants and staff sergeants, two buglers, 201 rank and file, and seventy-three nursing sisters. Major Frank C. McTavish, A. M. C., Vancouver, B. C., who served in South Africa, will accompany the hospital; also Dr. Arthur P. Procter, Vancouver, chief surgeon of the Canadian Pacific Railway in British Columbia; Dr. Alexander S. Monro, director of the Vancouver General Hospital; Drs. F. P. Patterson, Dr. John W. McIntosh, Austin B. Schinbein, Charles S. McKee, John H. Hogle, A. Rocke Robertson and Giles B. Murphy, all of Vancouver.——A hospital of 200 beds has been established at Camp Sewell, Man.——A hospital of fifty beds has been opened at Three Rivers, Que., in connection with the Montenegrin reservists' camp.

GENERAL

Military Preparedness.—Dr. Joseph Leidy, the Philadelphia surgeon, has announced publicly through the daily press that he will be one of the 100 men to subscribe $1,000 each to introduce military training in the high schools of Philadelphia. Dr. Leidy was delegated in June by the French Red Cross to investigate the facilities of America for supplying a large government order for artificial limbs for French army officers and privates.

Chattahoochee Valley Physicians Hold Meeting.—The Chattahoochee Valley Medical and Surgical Association held its fifteenth annual meeting in Opelika, Ala., July 13 and 14, under the presidency of Dr. O. Velpeau Langley, Opelika. About seventy-five were in attendance at the banquet, which was tendered the association by members of the Lee County Medical Society. The next meeting of the association will be held in Alexander City.

Conference on Race Betterment.—The second National Conference on Race Betterment will be held in San Francisco, in connection with the Panama-Pacific International Exposition, August 4 to 8. The program begins with a morality masque, "Redemption," which will be conducted at the Oakland Civic Auditorium. The formal numbers of the program will consist of three sessions to be held at the Inside Inn, a morning and afternoon session on August 6, and a morning session on August 7. At these sessions the evidence of the need for race betterment, the work of the agencies working for race betterment, and eugenics and the importance of the constructive program for race betterment will be discussed.

FOREIGN

The Sultan's Illness.—The *Medizinische Klinik* reports that Prof. J. Israel, the noted genito-urinary surgeon of Berlin, has been called to Constantinople for consultation at the bedside of the sultan.

Hero Medal to Italian Physician.—Dr. De Sanctis has received a Carnegie medal, with its accompanying $100, in recognition of the services rendered by him during the earthquake of January 13 in eastern central Italy.

Lieben Prize to Trendelenberg.—At its recent annual meeting, the Academy of Sciences at Vienna elected Prof. V. v. Lang as president. The I. Lieben prize was awarded to Prof. W. Trendelenberg of Innsbruck for his research on the motor disturbances in monkeys following loss of parts of the brain.

New Hospital Building.—Among the various public works to be undertaken at Dunedin, New Zealand, are two new buildings in connection with the Dunedin Hospital. The first is a new medical schoolbuilding to cost $65,000, and the second a hospital for infectious diseases which will be erected at a cost of $25,000.

Distress in Mexico.—Telegrams received at Red Cross headquarters, July 24, from Eagle Pass, Texas, picture the desperate distress of the people of Monclova, Mexico, where they are subsisting on cactus. In Saltillo the people are actually dying from starvation.——A carload of corn and a carload of beans has been sent by the Red Cross special agent into the Monclova district.

Relief Schooner Sails.—The three-masted auxiliary schooner, *George B. Cluett,* sailed from Boston on July 21 for the Arctic, in quest of the exploration party of Donald B. McMillan, and en route will call at the Grenfell Mission, St. Anthony, Laborador, taking supplies and five missionaries, including Dr. Elmer Wallace, Brockton, a dentist, The ship will then proceed to Etah, Greenland.

Hospital Resources of Portugal.—The authorities of Portugal have sent a question blank to every hospital and clinic in the country to collect data as to the number of beds, personnel, supplies of hospital equipment, etc. The *Medicina Contemporanea* remarks that this has been done "in the prevision of a probable intervention of Portugal in the European conflict, and also in preparation for a possible epidemic."

WAR NOTES

Medical Supply Exports Doubled.—The Bureau of Foreign and Domestic Commerce estimated on July 16 that during the year ended June 30, 1915, the exports of medicines and surgical instruments amounted to $35,744,000, as compared with $19,916,000 for the preceding year.

Typhus Checked.—The American vice consul at Belgrade cabled, July 22, that the typhus epidemic in Serbia and Montenegro is under control, and that an appropriation of $10,000 for use in Serbia will be ample for the control of the disease during the next two months.

Alleged Examiner of British Recruits Arrested.—Dr. Thomas Addis of Lane Hospital, San Francisco, alleged examining physician for British recruits, was arrested July 9, and released on bond on two indictments charging the hiring and retaining of recruits for the British service and conspiring to do so. Messrs. Blair and Murdock, the firm at whose office recruiting headquarters for the British army were alleged to have been maintained, were also indicted.

War Helps Medical Women.—A statement signed by the premier, Lord Curzon, and Hon. Arthur J. Balfour calls the attention of the public to the work in London of the School of Medicine for Women, which has now doubled its plant in an endeavor to cope with the war-time increase of opportunities for women physicians. The statement begins as follows: "The war constitutes the turning point in the position of medical women, for whom there are new openings and new opportunities in many directions."

Term "Sanitäter" Taboo.—The colloquial term "Sanitäter" is being familiarly applied in Germany to the members of the sanitary service of the army and the volunteer medical men and orderlies taking care of the sick and wounded. An official decree forbids the further use of the term. The lower grades in the sanitary service of the army must be designated Sanitätsoffizier, Sanitätsfeldwebel of Sanitätsmanschaften. The volunteer medical and other helpers must be designated volunteer nurse, volunteer orderly, etc. Even in personal intercourse the use of the expression "Sanitäter" is not allowed further.

Medicinal Plants in Germany.—The *Münchener medizinische Wochenschrift* states that the minister of the interior has appealed to the apothecaries to stimulate the collecting and drying of medicinal plants and parts of plants in their districts. They can then prepare them for medicinal use, each in his own laboratory or by exchanging them with others. He explains that large amounts of the plant drugs used in making medicines have always hitherto been imported from other countries for this purpose. The war has rendered it very difficult to import them now or has shut off the supply completely. A list of plants useful for the purpose is given, including the flowers of arnica, chamomile, linden, elder and mallow, and the leaves of digitalis, walnut, belladonna, colt's-foot, henbane, stramony and the buckbean and various herbs and berries. Children can be taught to collect them, and also the elderly and the otherwise incapacitated, so that there need be no difficulty in collecting an adequate supply.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession for the week ended July 24, 1915, lists the following contributions:

Dr. Charles H. Dowd, New York	$ 25.00
Dr. Emil Lofgren, Rockford	5.00
Columbia Medical Society, Columbia, S. C.	20.00
Receipts for the week ending July 24	$ 50.00
Previously reported receipts	7,700.84
Total receipts	$7,750.84
Previously reported receipts:—	
1,625 standard boxes of food @ $2.20	$3,575.00
1,274 standard boxes of food @ $2.30	2,930.20
353 standard boxes of food @ $2.28	804.84
Total disbursements	$7,310.04
Balance	$ 440.80

F. F. Simpson, M. D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

BERLIN LETTER

BERLIN, June 22, 1915.

Personal

Professor Tobler, chief of the children's hospital connected with the University of Breslau, succumbed June 2, aged 38, to sepsis, the effect of a furuncle on the back of the neck. He was born in Switzerland; studied under Vierordt and A. Czerny, and obtained his medical degree at Heidelberg where, in 1911, he was appointed professor extraordinary. Soon afterward he accepted a call to Breslau to succeed Professor Pirquet, who had gone to Vienna. Tobler published a number of works on the physiology of the child, and on the pathology of nutrition and metabolism. The article on the urogenital apparatus in Feer's "Manual of Pediatrics" was from his pen.

Professor Matterstock, the former director of the policlinic for internal and children's diseases at Wurzburg, died early in June, aged 67. He had published several notable works, especially in the field of the pathology of the heart.

Another victim to typhus is Professor Lüthje, chief of the medical clinic at Kiel. He contracted the disease on a visit of inspection to a camp of Russian prisoners, and it proved fatal in a few days. Lüthje was only 44 years old, but had published a number of exhaustive works on metabolic diseases, especially diabetes. He studied under Krehl and G. Klemperer, and early took up independent research.

The Food Supply

The restrictions that were imposed on the consumption of bread are fortunately being reduced more and more. When it was learned officially that there is a large reserve of grains to carry us to the harvest (*7 millionen Doppelzentnern Getreide*), the bread ration per capita was increased. The authorities regarded it as especially important that the bread supply for working people should be made more ample. However, every one soon became accustomed to the restrictions on bread, and no one complains any more. This is the more readily understood as the consumption of meat and of bread used to be above what was actually required—a *Luxuskonsumtion.* With regard to other foods, conditions have righted themselves so that the menus show scarcely any difference from those of peace times. The only thing in this line that reminds us of the war is the increased cost of meat and other articles of food except certain vegetables. It is remarkable, moreover, that other countries, even the neutral ones, are having a similar experience, suffering from higher prices to almost the same degree as we are.

Some official figures have been published recently comparing the prices now and a year ago. The price of 1 kilogram in May, 1914, and May, 1915, was for

1 kg. wheat flour,	May, 1914, 0.37 mark;	May, 1915, 0.55 mark
1 kg. rye flour,	May, 1914, 0.29 mark;	May, 1915, 0.55 mark
1 kg. potatoes,	May, 1914, 0.07 mark;	May, 1915, 0.15 mark
1 kg. butter,	May, 1914, 2.61 marks;	May, 1915, 3.54 marks
1 kg. milk,	May, 1914, 0.20 mark;	May, 1915, 0.24 mark
1 egg	May, 1914, 0.07 mark;	May, 1915, 0.11 mark
1 kg. sugar,	May, 1914, 0.50 mark;	May, 1915, 0.58 mark
1 kg. coffee,	May, 1914, 3.08 marks;	May, 1915, 3.35 marks
1 kg. rice,	May, 1914, 0.48 mark;	May, 1915, 1.22 marks

It should be added that the prices in May were in part lower than in the preceding months. In London, according to the London correspondent of the Swiss Zurich *Post*, flour is 71 per cent. higher than last year; butter, 24 per cent.; meat, 30 per cent.; tea, 25 per cent.; sugar, 88 per cent.; fish, 50 or 75 per cent., and refrigerated meat costs 100 per cent. more than it did last year.

Naturally the increased cost of living would bear particularly hard on the poorer classes, especially those families whose breadwinner is serving in the army, if it were not for the assistance rendered by the state, the local organizations and private philanthropy. Without exaggeration I can affirm that of my own knowledge I am not aware of any distress from the high cost of living at present more than in times of peace, and the lay press has not published anything suggesting this in any part of the empire. My assertion will receive more credence when the amount of the sums that have been contributed for assistance is realized. Although I have mentioned this before, yet I may be permitted to repeat that the social insurance companies had spent for relief purposes, in connection with the war, up to June 1, 13,000,000 marks ($3,250,000) of their reserve funds. Besides this, 56,000,000 marks ($14,000,000) have been loaned to communities for relief purposes, and they took up 290,000,000 marks ($72,500,000) of the war loans.

Recovery of Wounded Soldiers

There is not much new to report in regard to the military medical and surgical service. According to a recent report of the war department, of the wounded who have been given treatment in the hospitals in the home zone, 88.5 per cent. have been discharged as able to resume their service with the troops, and only 0.5 per cent. died.

Spectacle Wearers Among the Troops

Germany has been ridiculed as a nation of spectacle wearers, but only 3.5 per cent. of a division of 11,000 men were found to be dependent on glasses. This subject was investigated by Weigelin, an ophthalmologist of Stuttgart, who was ordered to find how many of the men in a division of 11,000 troops were dependent on glasses and how many had a reserve pair on hand. Only a few of the 386 spectacle wearers had a reserve pair; 381 were actually dependent on their glasses. Estimating the number in a whole army corps at this ratio would give 1,750 spectacle wearers. Among the 386 examined, 214 were myopic; 74 hyperopic; 12 with age impairment of vision; 81 with astigmatism, and 5 with defects it was impossible to correct.

PARIS LETTER

PARIS, July 8, 1915.

The War

ULTERIOR RESULTS OF TREPHINING IN PENETRATING WOUNDS OF THE SKULL

At the medical reunion of the fourth army Dr. H. Fresson of Shanghai reported twenty-two cases, which were followed for four and a half months, of trephining for penetrating wounds of the skull. The results comprise twenty deaths and two patients discharged cured or at least with wounds cicatrized after three months. One patient is still affected with partial hemiplegia and the other has serious mental troubles. The examination of these cases leads to some interesting conclusions: 1. Improvement generally follows operation and often leads to a belief in definite cure, the patient resuming normal life; then there suddenly occur sphincter troubles and mental disturbances, gradually leading to death in the midst of more or less distinct phenomena of meningo-encephalitis. 2. All the patients whose wounds were completely sutured in the ambulance had to have drainage put in later (five cases). In spite of these rather disappointing ulterior results Fresson will continue to trephine but with the greatest rapidity and the least disturbance of the tissues possible. He will make use of roentgenoscopy whenever circumstances permit and will never suture the wounds completely.

Dr. Paul Launay, surgeon of the hospitals of Paris, emphasizes the considerable immediate improvement obtained by trephining in both serious and light cases, and unfortunately short duration of these successes. In a few days or in a week or two, slow or rapid complications of encephalitis arise and carry off the patients, who had at first seemed to justify a hopeful prognosis. Launay likewise emphasizes the absolute necessity, in military surgery, of refraining from suturing wounds of the skull or of any other part.

Dr. Brechot of Paris also recognizes that the ulterior results of penetrating wounds of the skull with lesions of the brain are very disappointing. Unexpected complications cause sudden death in patients who seem on the road to recovery. Recently a patient on Dr. Brechot's service who had been under treatment for two and one half months died in a few days in coma with a marked elevation of temperature although it was not possible to establish the presence of any infection. The patient had seemed to be recovering. Another who had been under treatment for three months and who had been trephined seemed likely to recover after a secondary abscess of the brain. Recently his general condition changed and an incomplete crisis of jacksonian epilepsy appeared.

Dr. Lapointe, surgeon of the hospitals of Paris, remarked that the immediate or remote seriousness of wounds of the head evidently depends on the existence or absence of a brain lesion. With the dura mater intact, the immediate mortality in forty-seven of his patients operated on was only 7 per cent., while wounds involving the brain, whether the projectile was or was not retained, gave a mortality of 56 per cent. in seventy-four patients operated on. These operations were performed at the front. Lapointe was not able to follow his patients for more than a few weeks, but it is to be feared that their after-history was the same as that of Fresson's patients.

Dr. Potherat, surgeon of the hospitals of Paris, agreed with the previous speakers. It is necessary to recognize, he said, that the ulterior results of trephining for penetrating wounds of the skull with much laceration of the cerebral substance and especially with foreign bodies included do not confirm the high hopes that were originally felt for early operation. At the battle front, even in the most serious cases, operation, with removal of bone splinters and aseptic and antiseptic cleansing of the wound, may and often does give results which exceed all hopes. Prostration, stupor, coma, and partial paralyses may even disappear; fever and vomiting cease or diminish; the mind clears up and there is every indication of return to a normal condition. The patient is discharged and unless one has some warning of the possibilities still in store, the case is recorded as cured. In a little while, however—a few weeks, a month, two months, rarely longer—complications of diffuse or localized encephalitis occur, at first insidious, later pronounced, and the patient succumbs. Unless one awaits ulterior results, therefore, one runs the risk of innocently falsifying statistics; that is, of recording as cured patients who have not stood the test of sufficient time after operation for their final condition to become apparent.

Dr. Weitzel also, from his personal experience during the Russo-Japanese and Balkan wars, confirmed Fresson's conclusions.

TREATMENT OF ATONIC WOUNDS BY GYMNASTICS AND VENTILATION

In base hospitals patients are frequently seen who present old superficial wounds, sometimes of very slight extent, which show no tendency toward cicatrization. In such cases, Dr. François Debat, assistant in dermatology at the St. Antoine Hospital, at present in charge of a special service in the military hospital of Bourges, obtains excellent results from a method which consists (1) in irritating the tissues by "intermittent dressings" as little as possible and (2) by exciting their vitality as much as possible by gymnastics and ventilation. No antiseptics whatever are used. At the outset a light, soft dressing of fine gauze slightly dampened with 0.9 per cent. saline solution is applied. This is covered with a light layer of carded cotton. To avoid all maceration the wound is exposed each day to the open air for a constantly increasing period of time, the first day for two hours, and as the exudation diminishes the period of exposure is increased an hour a day. As soon as there is no more exudation it is advantageous to replace the saline solution by an application of a thick paste of zinc oxid to which 3 per cent. ichthyol has been added.

Moreover, following Jacquet's technic, Debat mobilizes the muscles subjacent to the wound for five minutes every hour, the limb being elevated meanwhile. He has the patient remain in bed if the lesion is in the legs and carry the arm, if that is the injured member, in a high sling. Daily massage is practiced consisting of effleurage of the limb and light pinching of the peripheral teguments. Once or twice a day the wound is ventilated with a little electric apparatus which projects air either at room temperature or hot. Cold air is reserved for hyperemic lesions; hot air for lesions in which the circulation is retarded. Treatments last for five or ten minutes.

This method, which heals sluggish wounds with remarkable rapidity, is contraindicated in cases of fistulous wounds, in pronounced lymphangitis and in suppurating lesions of the sheaths of the tendons and articulations.

THE TREATMENT OF SICK OR WOUNDED SOLDIERS AT MINERAL SPRINGS

I mentioned in a previous letter (The Journal, May 22, 1915, p. 1777) suggestions made for the use of our thermal stations for wounded soldiers. It is said that many soldiers are affected with sequelae of wounds or operations which would be benefited by treatment with mineral waters. The minister of war has therefore decided to use many of our mineral water stations for this purpose and has sent a circular letter to the regional directors of the medical service enumerating about thirty mineral water stations to which wounded or sick soldiers may be sent with the class of cases for which each spring is suitable.

Efficacy of Antimeningococcus Serum in the Present Epidemic of Cerebrospinal Meningitis

During this year, there has been an outbreak of cerebrospinal meningitis, undoubtedly of a much more serious type than in previous years. Notwithstanding, serotherapy has given very remarkable results, as is shown by a paper recently read before the Académie de médecine by Dr. A. Netter, agrégé professor at the Faculté de médecine de Paris. Among patients treated with antimeningococcus serum, the mortality has not exceeded the remarkably low figure of 3 per cent. Serotherapy, moreover, has been a boon in that it has attenuated symptoms, made recovery much more rapid and complications and sequelae rare. These results are obtained on condition that the serum is injected as early as possible after onset (which presupposes an early diagnosis), that massive doses of the serum are used, that the injections are systematically renewed for three consecutive days, at least, and still longer if the bacteriologic examination still shows microbes to be present and that a polyvalent serum is used as much as possible.

The less satisfactory results recorded are due to neglect of these rules and to delay in diagnosis, which is often very difficult. They are explained in part also by the confusion between meningitis due to meningococci and that due to other organisms.

Death of Dr. Fernand Guéguen

Dr. Fernand Guéguen, agrégé professor at the Ecole supérieure de pharmacie de Paris, has just died. He was a very able young botanist. Among other botanic and bacteriologic works which had earned him a high reputation in the scientific world, Guéguen had published a remarkable study on poisonous mushrooms and interesting investigations on a serum intended to combat the toxic effects of the amanita and other poisonous mushrooms.

Death of Professor Eugène Koeberlé

Professor Koeberlé has died in Strasburg, aged 87. Koeberlé owes his celebrity mainly to having successfully performed an ovariotomy, June 2, 1862 (The Journal, Sept. 7, 1912, pp. 809 and 814). At that time ovariotomy had a certain vogue in Great Britain, but in France it was regarded as a dangerous procedure. According to Moreau, the women who survived it might be compared to those lucky fellows who, thanks to some chance circumstance, like a bad cord, survived hanging. Although this operation, which was performed for the first time in the United States by Ephraim F. McDowell in 1809 had been performed in France by Woyeikowski in 1844 at Quingey, department of the Doubs, and by Vaullegeard in 1847 at Condé-sur-Noireau, its real introduction into France is due to Koeberlé. To him also is due the fixation of the operative technic in hysterectomy and the morcellation of tumors. Of late years Koeberlé had lived in deep retirement, which he devoted to works of erudition and archeology.

LONDON LETTER

London, July 9, 1915.

The War

THE HEALTH OF THE ARMY

Sir William Osler, speaking at the annual meeting of the Research Defense Society, said that the occurrence of only 1,000 cases of typhoid fever during the period of the war among the forces of this empire was something which only those who understood the history of typhoid in other wars could appreciate. It was a matter of much satisfaction that at least 60 per cent. of the wounded returned to the fight. We were not going to have the tragedy of the South African War, or the Napoleonic wars, or of the Civil War in America, with their parallel columns of figures showing the numbers of killed and wounded and the thousands of deaths from disease. We were going for the first time to have a war in which the bullet, and not disease, would be accountable for the larger number of deaths. The Research Defense Society worked in the hope that it might do something to educate the public so that it might receive the benefits which followed from protective sanitation. Fifty years ago, at the close of the Civil War in America, we had no positive knowledge of the cause of any one of the great scourges of humanity, but we now know the causes of the great majority of them. The practical bearing of this knowledge on the present war was that during the ten months of hostilities we had had no epidemics, a most remarkable result when we remembered that this country alone has millions of men under arms. Such a thing had never before occurred in the history of any war. Septic wounds had been unavoidable, owing to the methods of warfare and the environment in which the fighting took place, but even under these conditions from 60 to 70 per cent. of the wounded were able after treatment to take their place again in the fighting line. Tetanus, which at the beginning

of the war was rather serious, had now practically been abolished.

THE PAYMENT OF WAR CONSULTANTS

The government has amply provided the army with consultants and specialists of the first rank, many of cosmopolitan reputation. The sick or wounded soldier is thus insured the best skill if his case should be a difficult one. These consultants are given the rank of lieutenant-colonel and draw the corresponding pay, about $4,000 a year. For some reason the Admiralty, which is of course entirely independent of the War Office, which controls the army, appointed six consultants with a salary of $25,000 a year, who retained the right of private practice subject to the condition that it did not interfere with their official duties. An outcry at once took place in Parliament at the magnitude of the salary and the difference between it and that paid to the army consultants. The men appointed were all in the first rank, and included the president of the Royal College of Surgeons. In spite of a pronouncement from Sir William Osler that the country was receiving good value for the money, the government yielded to the protest and has made new arrangements for seven consultants who will be given temporary commissions as surgeon-generals with the corresponding pay, about $7,000 a year, and two temporary commissions as fleet surgeons of ten years' seniority, with the corresponding pay of about $3,500 a year. Their engagement will not entirely preclude private practice. The result is the opposite of what Sir William Osler asked—that the army consultants' pay should be brought up to the level of their brethren in the navy. He pointed out that many of them have fixed charges, domestic and educational, from three to four times in excess of the medical pay of a lieutenant-colonel in the army. Moreover, absence of a year or two would put them out of touch with their clientele. The government seems to have awakened to the fact that competence is not the same thing as public recognition or fashionableness, and that it is possible to get younger men quite as good as, perhaps better in some ways than, the older and fashionable men who make large incomes. There are many young surgeons of the first class who do not make large incomes, as they are known to only a small circle, and, no doubt, they will be glad to accept the appointments, quite apart from patriotic considerations.

BUDAPEST LETTER

BUDAPEST, June 10, 1915.

The War

OBSERVATION HOSPITALS IN HUNGARY

There are fourteen observation hospitals in northern Hungary, employed to check the spread of epidemic disease from sick soldiers coming from the northern battlefields. The fourteen hospitals are capable of accommodating from 80,000 to 100,000 patients. Each hospital consists of ten to twenty-five barracks. The largest one, at Miskolcz, consists of fifty-four barracks. Here the medical service is handled by thirty-four doctors, directed by the minister of public hygiene. There are about 250 male and female nurses employed. The number of sick and wounded soldiers varies between 4,500 and 5,000 daily. During April and May, the influx into these hospitals was somewhat less.

Of course, when the soldiers reach these hospitals, they are dirty, shabby and infested with lice; but no matter how dirty they may be arriving, within one hour, the wounded soldier is bathed and comes out of the bath clean shaven, shorn and free of lice and gets a snow white bed, where he is shortly examined by his doctor. Out of the fifty-four barracks in Miskolcz, eighteen are reserved for typhus and dysentery patients; the rest are kept for so-called "clean" patients. There are two surgical sections, for clean and for infected patients. The number of patients under the attendance of one doctor varies between 180 and 200. The surgeon makes rounds twice daily.

The "menu" of wounded but not sick patients, the so-called IV diet, is as follows: breakfast, milk or coffee; lunch, meat-soup, meat, vegetables or pudding; supper, goulash or vegetables with sausage or with bacon. In addition to this, every soldier gets 750 grams of bread. Every hospital is provided with electric light, water mains and a steam laundry, capable of washing and drying 1,000 pieces of linen daily.

NERVE SUTURES

Injuries of the limbs are frequently followed by paralyses, caused sometimes by the rupture of the nerve itself, or by the pressure of a hypertrophic callus, etc. Sometimes the wounds are quite unimportant, and heal in a week or two. Paralysis of the limb is the worst consequence of the injury. In such cases the nerve is sutured, the result being that in three or four weeks (with thighs two or three months) the nerve regains its activity. Dr. Paulikovics, regimental surgeon in a Budapest garrison hospital, devotes all his attention to such operations, and a considerable number of patients have been cured.

HOME FOR CONVALESCENTS IN MARIENBAD

The management of Marienbad, Bohemia, erected a doctors' home capable of accommodating fifty or sixty convalescent doctors, providing them with free board. To the free places only Austro-Hungarian and German physicians are eligible. Their families enjoy 50 per cent. reduction in the prices of hotel accommodations, while the treatment itself is quite free. The home is open from May to the end of September. The first to be admitted are those doctors who owe their disease to activities in the present war, and who by reason of gunshot wounds, rheumatic diseases or heat affections need mud or carbonic acid baths.

SOME FEATS OF OUR SANITARY ORGANIZATION

The *Orvosi Hetilap* (medical weekly) says that the military sanitary authorities in Poland found terrible hygienic conditions in the villages. The inhabitants pile the waste before the houses in rows, and it is never collected. In these places, typhus fever is never entirely absent. A surgeon-general of the Austro-Hungarian army discovered twenty cases and interned the patients in barracks contrary to their will. The houses were disinfected, and soldiers who had come in touch with such patients were quarantined. The epidemic shortly stopped and not a single soldier fell ill.

From the point of view of infectious diseases, the fight against dirt is of great importance. An aid to this end is the institution of baths in which soldiers bathe every eight or ten days and while they bathe their clothes are rendered germ free.

Apparatus for the boiling and cooling of drinking water are carried after the marching troops. All hospital trains, also, are provided with such apparatus, and in addition a bacteriologic car, consisting of three compartments: a laboratory, a writing room and a culture medium kitchen. The next car serves as a sleeping and dwelling car for the laboratory expert. Such a train in one or two hours can reach any place where there is an epidemic. For infectious patients separate cars are provided.

The surgeon-general mentioned above formed his convalescent patients into companies under the control of convalescent subalterns, supervised by medical men for the purpose of engaging in gymnastic games and moderate military exercises. He noticed that ordinarily the convalescent soldier loses his self-reliance after his recovery; but by partaking in exercises, he shortly becomes aware of his strength. He observed, for instance, that during a snow ball game, a third of the convalescents discovered that they were capable of work, and next day reported as fit for joining their respective troops in the battlefield.

THE CARE OF THE INVALIDS OF THE WAR

The Committee for Caring for the Crippled and Invalid Soldiers, with the support of the military authorities, is at work over the whole country, but its chief activity is in Budapest, where doctors, military persons and civilians are doing their utmost to render the fate of these miserable people the more endurable. The committee endeavors to cure these people and to render them capable of working. The committee will introduce three kinds of treatment: surgical after-treatment, mechanotherapy and thermal treatment. At present there are two hospitals preserved for the accommodation of crippled soldiers. Mechanotherapy is done in one of these hospitals where a Zander institute is provided, which is capable of treating 150 patients in an hour. Thermal therapy is given in the Kaiserbad in Budapest and in the artesian bath, both reaching 50 C. (122 F.). In the former there is a large swimming bath, where 240 soldiers can bathe in an hour. There are other thermal baths in Buda (a part of Budapest) which will also accept crippled soldiers. Besides bathing, the crippled and lame soldiers will be taught industrial and office work, and the best possible artificial limbs will be given to them. Efforts will also be made to find work and homes for the invalid soldiers. In this work a special committee of the Red Cross will help. Industrial teaching will be given in the industrial schools, where there

are huge workshops. Special attention will be paid to invalids who were farmers, in order that they may be able to continue their healthful occupation. June 30 a census of the invalid soldiers will be made in the whole country. The blind soldiers are supported by a special committee, the Blind Support Union, which has already collected more than 3,000,000 kronen ($600,000). One paper alone, the *Az Est*, has collected more than 600,000 kronen ($120,000) for the blind. The Budapest committee will shortly appoint subcommittees in provincial towns.

MILITARY EDUCATION OF MEDICAL AND PHARMACEUTIC STUDENTS

During the war the military training of medical students lasts six weeks with the infantry troops and ten weeks with the jaeger (hunter) troops. Afterward they commence service in the first line; according to necessity on the recommendation of the medical chief they can be employed in sanitary service. After the six weeks' education they become Gefreiter (the first rank). If they show special skill they may be promoted to the rank of corporal. The latter after another six weeks' service may be promoted to the rank of Zugesführer. Medical doctors who intend to become officers (combatant) have to withdraw voluntarily from the advantages allowed medical students. After half a year's service the medical student, if deserving, becomes an assistenzarzt Stellvertreter (auxiliary assistant doctor) and after another three months' service an assistant doctor with the rank of a lieutenant. The military education of pharmaceutic students similarly lasts six weeks. Afterward they become Gefreiter, and eventually corporals. A further six weeks' education follows, after which the corporals become Zugesführer. After six months' service, if the student shows good progress in theoretical and practical knowledge, he becomes a sergeant and afterward an accessist (the rank of a lieutenant).

Statistical Data About the Increase of Population of Europe

The Budapest statistical bureau publishes interesting data on the decrease of the birth rate in the civilized world during the last eighty years. According to this report, the number of births decreases in Europe from east to west. In 1913 the rate per thousand population was as follows: Russia, 43.9; Bulgaria, 42.0; Roumania, 39.2; Serbia, 38.5; Austria, 32.6; Hungary, 35.7; Italy, 33.3; Spain, 33.1; Portugal, 32.3; Germany, 29.8; Holland, 28.6; Denmark, 27.5; Norway, 26.1; Sweden, 24.7; Great Britain, 25.0; Switzerland, 25.0; Belgium, 23.6; France, 19.6. Hand in hand with the decrease in birth rate, however, the death rate similarly decreased from east to west. The death rate per thousand population in 1913 was: Italy, 28.9; Roumania, 24.8; Bulgaria, 23.5; Serbia, 22.1; Hungary, 23.1; Spain, 23.3; Austria, 23.0; Portugal, 19.8; France, 17.8; Germany, 16.2; Belgium, 15.2; Switzerland, 15.1; Great Britain, 14.0; Sweden, 14.0; Holland, 13.6; Denmark, 12.9. From the comparison of these two series of numbers, the following conclusion can be drawn. The increase of population in 1913 per thousand population has been: Bulgaria, 18.5; Serbia, 16.4; Holland, 15.0; Russia, 15.0; Denmark, 14.6; Roumania, 14.4; Germany, 15.6; Italy, 13.4; Portugal, 12.7; Norway, 12.6; Hungary, 12.1; Austria, 11.3; Great Britain, 11.0; Sweden, 10.7; Switzerland, 7.9; Spain, 9.8; Belgium, 8.6; France, 1.8.

Inoculation Against Cholera

The bacteriologic institution of the Budapest Royal Scientific University distributes free serum for the inoculation of those who are exposed to the danger of cholera infection: persons who disinfect, hospital laundry women, and those occupied with burying corpses of infectious patients. The instructions issued by the minister of public hygiene are as follows:

1. Inoculation against cholera is an active immunization; that is, it is done with the disease-causing bacteria themselves, so that under their action the immunizing material, the antidote, is prepared by the organism itself. Thus the inoculating substance is not a healing serum as, for instance. diphtheria serum, but a protective substance, as smallpox vaccine.

2. From the fresh culture of cholera bacillus, a bacterial emulsion is made with physiologic salt solution so that in 1 c.c. there are, as a rule, 2 mg. of bacteria. The serum is accompanied with directions explaining the mode of application. This fluid has been exposed to a temperature of 56 C. (132.8 F.) for one hour in order to kill the bacteria. Afterward for preservation, phenol is added so that the fluid shall contain 0.5 per cent. thereof.

3. Doctors are obliged to see that inoculation be made with such serum only, the sale of which is permitted by the ministry.

4. With this serum, patients are inoculated twice, at intervals of from five to ten days. At the first vaccination, 0.5 c.c., at the second 1 c.c. is to be administered from the well-shaken fluid. With persons suspected of being infected with cholera, it is better to wait the five days' latency, and the vaccination is to be performed only afterward.

5. The vaccination is performed with a carefully sterilized needle, the serum to be injected into the subcutaneous connective tissue on the arm or on the abdominal wall between the umbilicus and groins. The skin is to be painted with tincture of iodin before the injection is made.

6. If the serum has been prepared carefully, that is to say, it is free from foreign germs, and it was heated to 56 C., the reactive symptoms with rare exceptions are light, and are restricted mostly to tenderness around the site of the injection. Sometimes less or greater rise of temperature or slight diarrhea, fatigue or redness of the skin may be observed, which changes disappear in one or two days. Properly administered inoculations are quite free of any danger.

7. The immunity of the vaccinated persons sets in after several days; therefore it is advisable that those who expect to come in touch with cholera patients or will be exposed within an anticipated time to the danger of infection (doctors, nurses, disinfecting persons) shall be vaccinated at least eight days previously.

8. The duration of immunity varies within a few months and one year.

9. The degree of immunity is different. According to past experience, vaccination considerably decreases the number of deaths, and advantageously influences the course of the disease.

10. As the vaccination does not confer absolute safety, it is necessary that those vaccinated shall adhere strictly to hygienic rules applying to prevention, in which the lay public is warned by means of posters.

As a proof of the reliability of these prophylactic measures stands the low number of cases reported since they were begun. For instance, in the period from May 3 to May 9, in the whole territory of Hungary twenty-four fresh cases were reported with six fatalities. Those who were sick included one civilian—a refugee—eight captives of war, and nine military subjects. Those who died were: one civilian, one refugee and four soldiers.

Night Service in Drugstores

Before the outbreak of the war, every chemist's shop was compelled by law to employ night service. Until the beginning of this year this custom was preserved despite the relative want of assistants. Since the beginning of this year, however, the want of chemists' assistants was so noticeable in Budapest and in larger provincial towns that it has been impossible to continue the night service system. For instance, in the last month in Budapest, 120 graduated chemists have been on night duty. As the chemists complain that by continuing this system they have been unable to do day service on account of fatigue, the National Union of Chemists' Assistants has petitioned the Ministry of Public Hygiene, that from June 15 there shall be one chemist's shop in every district (Budapest to be divided into twenty districts) where night service is held. The minister of public hygiene agreed to the request, and thus from June 1 the new system will be in force.

Honor to an American

King Francis Josef has conferred on Mr. Nelson O'Shaughnessy, councilor to the Austro-American Embassy in Vienna, the first-class honor signature of the Red Cross.

Popular Lectures on Sanitation

Since November 1, there has been an exhibition in Budapest, devoted chiefly to military and public sanitation. A series of lectures has been announced on sanitary questions of public interest. The topics will include the more important sanitary aspects of public feeding, the physiology of nutrition, the feeding of healthy and sick persons, the different methods of examination of foodstuffs, particularly milk, and the feeding in hospitals. Entrance is free. The exhibition has been crowded from day to day, and the success has been beyond all expectations.

Marriages

EARLE VERNON SHEAFE, M.D., Portland, Ore., to Miss Maria Caldwell Reid of Auckland, New Zealand, at Portland, June 30.

CLARENCE ATWOOD ROSE, M.D., to Miss Myrtle O. Hallamore, both of Bryn Mawr, in Baltimore, June 10, 1914.

FRED HUTCHINSON, M.D., Oil Springs, Ont., to Miss Florence Funkey of East Hancock, Mich., July 14.

FRANK ELLSWORTH STONE, M.D., Linn, Mass., to Mrs. Sarah Jenkins Atwood of Boston, June 19.

GEORGE ALEXANDER ENION, M.D., to Miss Carolyn Banwarth, both of Philadelphia, July 13.

WIRT GOLD BRYAN, M.D., Bisbee, Ariz., to Miss Viola Katherine Snarr of Oolgah, Okla., July 6.

CLAUDE CLEMENT KENNEDY, M.D., to Miss Edyth Louise Tennyson, both of Minneapolis, recently.

ISAAC DAVIS, M.D., Pittsburgh, to Miss Florence Hirschmann of Baltimore, June 27.

JOHN F. FAIR, M.D., Freeport, Ill., to Mrs. Frances G. Footett of Mitchell, S. D., July 6.

J. SHERWOOD JACOBY, M.D., Cushing, Okla., to Miss Halcy L. Groom of Wichita, Kan., April 29.

DAN FEURT GRAY, M.D., Ironton, O., to Miss Florence L. Frazer of Columbus, O., July 15.

GEORGE HENRY NEWTON, M.D., to Miss Julia Liberty Davis, both of Fairbury, Neb., recently.

FRED HERMAN MULLER, M.D., to Miss Anna D. Fleer, both of Chicago, July 14.

JOHN HARVE PENIX, M.D., Detroit, to Miss Myra Corbin of Liberty, Mo., July 1.

LOUIS N. LESSER, M.D., to Miss Anna H. Sherline, both of Brooklyn, July 11.

Deaths

Walter Blackburn Dorsett, M.D., one of the most prominent gynecologists and abdominal surgeons of the Southwest; died at his home in St. Louis, July 27, from chronic interstitial nephritis, aged 63. Dr. Dorsett was born in St. Louis County, Missouri. He received his academic training at Washington University and took his medical course in the St. Louis Medical College, from which he was graduated in 1878. He served for a year as an intern in the St. Louis City Hospital and in the summer of 1879, during the epidemic of yellow fever, was made superintendent of the St. Louis Quarantine Hospital. From that time until 1887, he was the chief city dispensary physician, and from 1887 to 1892, was superintendent of the St. Louis Female Hospital. He was a Fellow of the American Medical Association; Chairman of the Section on Obstetrics and Diseases of Women in 1908, and a member of the House of Delegates at seven annual sessions. He had been president of the St. Louis Medical Society, Missouri State Medical Association, St. Louis Obstetrical and Gynecological Society and American Association of Obstetricians and Gynecologists; and was a member of the Medical Society of St. Louis City Hospital Alumni, St. Louis Surgical Society, St. Louis Medical History Club, Surgeons Club of St. Louis, St. Louis Academy of Science, American Association of Railway Surgeons, Western Surgical Society and Southern Surgical and Gynecological Society and Medical Association of the Southwest; he was also delegate from the state of Missouri to the international congress of tuberculosis. Dr. Dorsett's hospital service included the positions of attending gynecologist to the Missouri Baptist Sanitarium and Evangelical Deaconess Home and Hospital and consulting gynecologist to St. Mary's Infirmary, the Rebekah Hospital, and the Alta Vista Hospital, DeSoto, Mo. He had been for many years professor of gynecology and pelvic surgery in the St. Louis University School of Medicine.

Thomas Henry White, M.D. Jefferson Medical College, 1870; aged 69; a Fellow of the American Medical Association; a veteran of the Civil War; local surgeon at Connellsville, Pa., for the Baltimore and Ohio System since 1882; surgeon and trustee to the Cottage State Hospital, and secretary of the board since 1890; medical inspector of the Health Department of Pennsylvania; one of the best known practitioners of Western Pennsylvania; died at his home in Connellsville, July 13, from cerebral hemorrhage.

John Y. Murry, M.D. Jefferson Medical College, 1855; aged 86; a practitioner of Ripley, Miss., since 1849; who volunteered for service in the Mexican War and served as captain in the Confederate Army throughout the Civil War; once president of the Mississippi State Medical Association; for several terms a member of the Mississippi Legislature and treasurer and sheriff of Tippah County; died at his home in Ripley, July 12, from cerebral hemorrhage.

Thomas Sparrow Burbank, M.D. Bellevue Hospital Medical College, 1886; aged 60; formerly a Fellow of the American Medical Association; in 1890 on duty at the U. S. Marine Hospital, Wilmington, N. C.; visiting physician to the City Hospital; for several years a member of the Wilmington Board of Health and at one time a member of the State Board of Medical Examiners; died at his home in Wilmington, July 12.

William Thomas Hamilton, M.D. University of Alabama, Mobile, 1880; aged 66; of Mobile, Ala.; a Confederate veteran; surgeon of volunteers in the Spanish-American War with service in Cuba and the Philippine Islands; for many years quarantine physician in the United States Public Health Service and in the medical department of the United Fruit Company; died in the Touro Infirmary, New Orleans, July 14.

Enos S. Mann, M.D. University of Pennsylvania, Philadelphia, 1895; aged 49; a Fellow of the American Medical Association; formerly of Columbia, Pa., but for the last eighteen years a practitioner of Dallastown, Pa.; who was injured by the breaking of a tent pole in a cyclone which demolished a Chautauqua tent at Dallastown, July 19; died at his home three hours later.

Carl F. Kremer, M.D. University of Greifswald, Germany, 1867; aged 73; a fellow of the New York Academy of Medicine; for forty-seven years a practitioner of New York City and for thirty-three years of that time a member of the staff of the German Hospital; died at his country home in White Plains, N. Y., July 18.

Joseph Henry Shook, M.D. Baltimore University, 1898; aged 44; of Bangor, Pa.; for five years surgeon of the Delaware, Lackawanna and Western Railroad at Nicholson, Pa.; suffered a concussion of the brain in a collision between his automobile and a trolley car at East Bangor, July 12, and died four days later.

George Jacob Dirkes, M.D. College of Physicians and Surgeons in the City of New York, 1890; aged 48; a member of the Medical Society of the State of New York; consulting physician to the Brooklyn Eastern District Hospital and Dispensary; died at his home in Brooklyn, July 19.

George Morris Dillow, M.D. College of Physicians and Surgeons in the City of New York, 1875; aged 68; emeritus professor of renal diseases in the New York Homeopathic Medical College and a member of the staff of Flower Hospital; died at his home in New York City, July 13.

William Milton Dumm, M.D. Johns Hopkins University, Baltimore, 1912; aged 29; assistant gynecologist at Johns Hopkins Hospital, Baltimore; a native of Cheyenne, Wyo.; was accidentally drowned July 12, while attempting to swim ashore from a canoe anchored near Sparrows Point.

William J. Hanlon, M.D. Medico-Chirurgical College of Philadelphia, 1895; aged 52; of Mount Carmel, Pa.; a member of the Medical Society of the State of Pennsylvania; died in the Medico-Chirurgical Hospital, Philadelphia, July 11, from cerebral hemorrhage following chronic nephritis.

Oswald W. Hacker, M.D. Medical College of Virginia, Richmond, 1909; aged 39; a member of the Medical Society of Virginia; formerly of Roanoke, Va.; a specialist on diseases of the eye, ear, nose and throat; died at his home in Wyomissing, Pa., July 15, from acute meningitis.

James Farrell McDermott, M.B. Royal University of Ireland, Dublin, 1906; aged 37; surgeon of the Cunard Steamship *Lusitania*; was drowned when that steamer was torpedoed off the Irish Coast by a German submarine, May 7. His body was recovered seven days later.

John Berkeley Goines, M.D. Meharry Medical College, Nashville, Tenn., 1895; aged 54; a colored practitioner of Louisiana, Mo., for twenty years; member and medical examiner for the Medical Aid Association of Louisiana; died at his home, July 14, from tuberculosis.

Joseph Sherrill Leech, M.D. University of Louisville, Ky., 1881; aged 57; a member of the Kentucky State Medical Association; for more than ten years mayor of Glasgow; also senior partner in a drug firm; died at his home in Glasgow, July 10, from dysentery.

George Henry Jenks, M.D. Hahnemann Medical College, Philadelphia, 1875; aged 75; also a clergyman of Los Angeles; died in a hospital in Los Angeles, April 30, from the effects of mercuric chlorid, self-administered, it is believed with suicidal intent.

William E. Harris, M.D. University of Tennessee, Nashville, 1882; aged 60; for more than thirty years a practitioner of Oran, Mo.; who had spent the last year in Texas in efforts to improve his health; died at his home in Oran, July 10, from tuberculosis.

Winfield Beck Shepherd, M.D. University of Michigan, Ann Arbor, 1910; aged 30; a Fellow of the American Medical Association and for a year an intern in the Samaritan Hospital, Philadelphia; died at his home in Philadelphia, July 13.

Aaron B. Terrill, M.D. State University of Iowa, Iowa City, 1881; aged 72; of Manchester, Iowa; state superintendent of Sunday Schools; who left two months ago for a trip to the Pacific Coast; died in Berkeley, Calif., July 14.

Heman S. Rockwood, M.D. University of Vermont, Burlington, 1871; a veteran of the Civil War; a well known practitioner of Franklin and St. Lawrence counties, N. Y.; died at his home in Bombay, N. Y., about July 7.

John W. Corrigal, M.D. Queen's University, Kingston, Ont., 1909; aged 35; of Limerick, Sask.; a member of the Saskatchewan Medical Association; died in Weyburn, Sask., April 12, from empyema, following pneumonia.

Gustavus E. Berquist, M.D. University of Louisville, Ky., 1877; aged 62; a pioneer practitioner of McPherson County, Kan., and for thirty-three years a resident of Lindsborg, Kan.; died at his home, July 12.

Everett D. Kemp, M.D. State University of Iowa, College of Homeopathic Medicine, Iowa City, 1901; aged 41; a veteran of the Spanish-American War; died at his home in Denison, Iowa, about July 15.

Charles Shupe, M.D. University of Buffalo, 1877; aged 68; for two terms medical health officer of Attercliffe Station, Ont., and local railway surgeon; died at his home, May 6, from cardiac asthma.

Lawrence Ben Bitz, Jr., M.D. St. Louis University, 1910; of Pensacola, Fla.; aged 35; also a graduate in law; died at the home of his parents in Evansville, Ind., July 10, from tuberculosis.

Thomas W. Sparks, M.D. Meharry Medical College, Nashville, Tenn., 1892; aged 52; a colored practitioner of Terrell, Texas; while in his office, July 14, was shot and instantly killed.

Andrew Jackson Dispennett, M.D. Bennett Medical College, Chicago, 1877; aged 79; one of the oldest practitioners of Kalamazoo, Mich.; died at his home in that city, July 5.

Edward C. Pearson, M.D. University of Louisville, 1873; aged 70; of Knoxville, Ala.; a Confederate veteran; died in the old Alabama Soldiers' Home, Mountain Creek, July 4.

Robin Adair Eshenour, M.D. Syracuse (N. Y.) University, 1913; aged 27; of Jordan, N. Y.; was drowned, July 4, while swimming in Cross Lake, near Waterloo, N. Y.

William Robert Moore, M.D. University of Tennessee, Nashville, 1891; aged 55; died at his home in Greenfield, Tenn., May 18, from cerebral hemorrhage.

Warner Julian Bailey, M.D. University of Alabama, Mobile, 1872; aged 76; of Laurel, Miss.; died at the home of his son in Meridian, Miss., June 29.

Charles Edward Kuster, M.D. Rush Medical College, 1865; aged 72; formerly of Terre Haute, Ind.; died at his home in Los Angeles, July 3.

Melville Turner, M.D. Vanderbilt University, Nashville, Tenn., 1882; aged 57; died at his home in Jasper, Tenn., July 5, from nephritis.

Jacob DeCou (license Michigan, 1900); aged 80; an advertising cancer specialist of Detroit; died at his home, July 8, from heart disease.

Lucius Auld, M.D. Trinity Medical College, Toronto, 1888; aged 48; died at his home in Buffalo, July 9, from heart disease.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

M. I. S. T. NO. 2

"M. I. S. T. No. 2" is put on the market by the M. I. S. T. Co., Toledo, Ohio, a concern which seems to have for its president one S. B. Murray and for its general manager, R. M. Murray. M. I. S. T. is said to mean "Murray's Infallible System Tonic" and is characterized by its exploiters as "The Only Scrofula, Catarrh, Blood, Liver and Kidney Medicine on Earth."

M. I. S. T. is advertised under claims whose palpable fraudulence and glaring mendacity really belong to the past decade of medical swindles. Few "patent medicines" on the market today seem to be willing to go the limit in their falsifying that is attained by the exploiters of M. I. S. T. The M. I. S. T. Company fabricates with the easy abandon of one who, knowing he is beyond the pale of decency, seems to glory in the fact. The concern advertises that it authorizes its agents to "guarantee" that:

"Six to ten boxes of M. I. S. T. No. 2 will cure and remove entirely from the system Cancer and Cancerous germs."

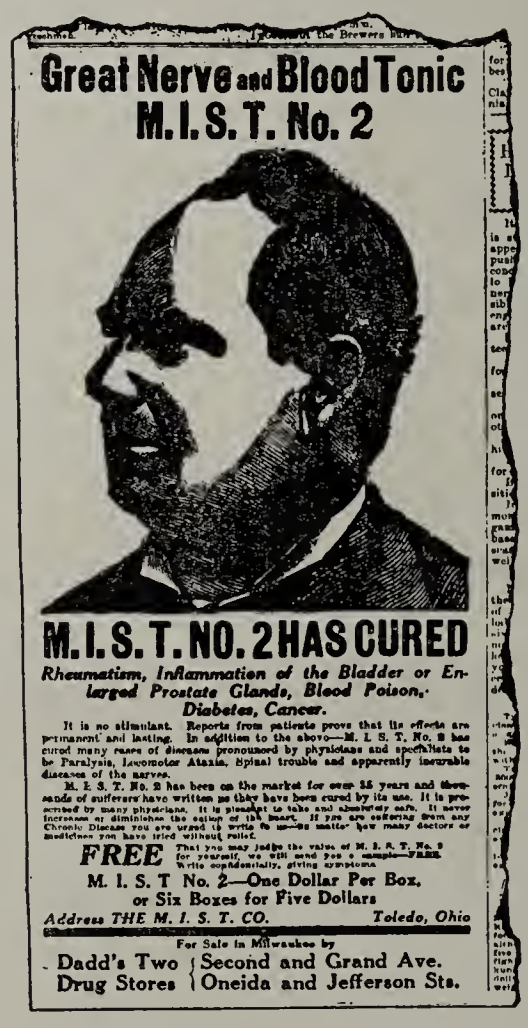
"Six boxes of M. I. S. T. No. 2 will cure all primary and secondary forms of Blood Diseases."

"Six boxes of M. I. S. T. No. 2 will cure any case of Diabetes."

Nor is this all:

"M. I. S. T. No. 2 has cured many cases of Paralysis, Locomotor Ataxia, Spinal Trouble and apparently incurable diseases of the Nerves."

"M. I. S. T. No. 2 will cure any case of Catarrh on earth . . . Also Bronchitis, Asthma and diseases of the Lungs and Stomach, Enlargement of the Spleen, Leucorrhoea, Suppressed and Profuse Menstruation and all Uterine complaints."



A typical advertisement (greatly reduced) of the "M. I. S. T. No. 2" fraud.

Apparently, there are two products, "M. I. S. T." and "M. I. S. T. No. 2," the latter, it seems, being by far the more widely advertised. The Michigan Dairy and Food Department, which has reported in its bulletin on "Fakes and Frauds" the result of a qualitative examination of M. I. S. T., states that that preparation contains aloes, cascara and licorice.

M. I. S. T. No. 2 comes in the form of brownish-black cylindrical masses each enclosed in a gelatin capsule. The masses have an odor of wintergreen and licorice and are bitter to the taste. They weigh about 5 grains each. The trade package contains thirty-one capsules and sells for $1. An original package of M. I. S. T. No. 2 was purchased and subjected to analysis in the Chemical Laboratory of the American Medical Association. The chemists reported, in part, as follows:

CHEMISTS' REPORT

Qualitative tests on M. I. S. T. No. 2 Nerve Tonic demonstrated the presence of aloes, metallic mercury (probably

introduced in the form of blue mass), powdered glycyrrhiza, powdered althea, starch, traces of calcium, a phosphorus compound, oil of wintergreen and a little sand. Zinc phosphid and nux vomica, two remedies which are frequently put into nostrums for the treatment of "lost manhood," were absent. Iodids and salicylates (except traces of oil of wintergreen), phenolphthalein and the saline purgatives were absent. Soap was not present in appreciable amounts. Cascara was not found. A quantitative determination of mercury was made and about 4 per cent. found. From this it is apparent that M. I. S. T. No. 2 Nerve Tonic is essentially an aloes-mercury mixture and whatever therapeutic power it may possess must be due principally to these drugs.

Here, then, we have what is essentially a mixture of blue mass and aloes sold as a cure for cancer, locomotor ataxia, paralysis, diabetes, suppressed and profuse menstruation and a host of other conditions. That such a mixture possesses the therapeutic properties of mercury and aloes is, of course, true. That it possesses the properties assigned to it by its exploiters is unqualifiedly false. The danger of self-treatment in syphilis is great enough at any time but when syphilitics attempt to treat themselves with nostrums whose composition is secret and the claims for which are fraudulent, the risks are enormously increased. And that risk is not confined to the individual but extends to the community. The sale of this iniquitous nostrum, "M. I. S. T. No. 2," is a menace to public safety and the methods by which it is exploited are an offense to public decency.

CALDWELL'S SYRUP PEPSIN

Caldwell's Syrup Pepsin is manufactured by the Pepsin Syrup Company of Monticello, Ill. This concern seems to have, or have had, for its directors:

ALLEN F. MOORE, president
JOHN F. HOTT, vice-president
R. E. THOMPSON, secretary
EUGENE KATZ
W. B. CALDWELL, M.D.

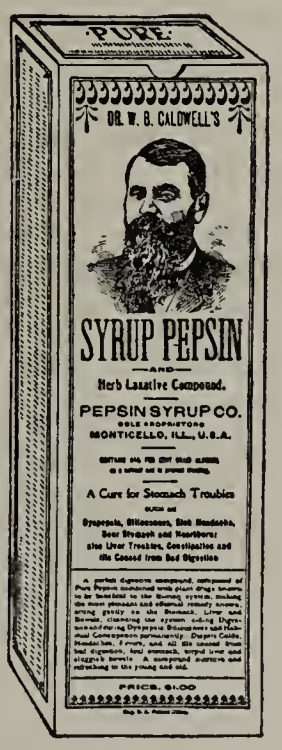
Some of the claims made for this preparation are:

"Positive Relief for Constipation."

"The Great Digestive Preparation, the Most Pleasant and Effective Remedy Known, Acting Gently, yet Promptly, on the Stomach, Liver and Bowels."

". . . the most convenient, agreeable and acceptable form of a digestive compound known."

"Dispels Colds, Headache, Fevers and all ills caused from Bad Digestion, Foul Stomach, Torpid Liver and Sluggish Bowels."



Throughout the advertising the idea is conveyed that Caldwell's Syrup Pepsin possesses peculiar value because of the alleged presence of the pepsin in it. For instance, the circular which is wrapped around each bottle reads:

"The natural demand for a digestive preparation in conjunction with a prompt and effective laxative has led to the compounding of pepsin, the greatest digestant of the age, with mild and effective laxative drugs, containing the virtues of plants known to be the most beneficial to the human system. To combine pepsin with vegetation [*sic*] to make the most effective remedy and meet with the best results has led to the manufacture of the popular remedy, Dr. Caldwell's Syrup Pepsin and Herb Laxative Compound."

The label on "Syrup Pepsin" declares the presence of 8½ per cent. alcohol. The government chemists have already passed judgment on this product and their opinion has become a matter of public record. In the hearings before the Committee of Interstate and Foreign Commerce of the House of Representatives relating to the Food and Drugs Act, published in 1912, Dr. L. F. Kebler, Chief of the Division of Drugs of the Bureau of Chemistry of the Department of Agriculture classes Syrup Pepsin among "Products for which False or Fraudulent Claims are Made." Regarding its composition Dr. Kebler stated:

"An aqueous-alcoholic solution containing laxatives flavored with oil of peppermint. Pepsin is absent or not present in appreciable amounts."

THE JOURNAL of the American Medical Association has received inquiries at various times concerning the laxative constituents of "Syrup Pepsin" and it seemed worth while to determine the nature of the laxatives in the nostrum. Accordingly the Association's laboratory examined a specimen and reported:

"Qualitative tests indicated the presence of a senna preparation as the chief laxative ingredient. Phenolphthalein was absent but the presence of small quantities of a salicylate, probably sodium salicylate, was noted" (Reports Chem. Lab. A. M. A., 1914, p. 80).

Taking the results of the federal chemists with those of the Association's laboratory, it seems that Caldwell's Syrup Pepsin is essentially a laxative of the senna type. The lack of any appreciable quantity of pepsin as reported by the federal authorities would seem to indicate that the name would constitute misbranding under the federal Food and Drugs Act.

Correspondence

Ben Franklin's Views

To the Editor:—I have read with interest the letter of Dr. Diller with its illuminating discussion of Benjamin Franklin's contributions to medicine (THE JOURNAL, July 10, 1915, p. 189). My object in writing to THE JOURNAL was chiefly to direct attention to the inconsistency in Franklin's habits and practice as contrasted with the condemnation of malt liquors contained in the extract of his autobiography published in THE JOURNAL, June 5, 1915, p. 1933. This inconsistency Dr. Diller does not question, nor can it be explained away. The brewing interests of the country, rightly concerned over the growing attitude of disfavor as regards the use of alcohol, have been exploiting the views of Franklin in the newspapers in an effort to increase the consumption of their product. Both Franklin and John Hancock have been represented as championing the cause of the brewers.

I thought I was well within the limits of moderation and understatement in regretfully referring to the maxims of Poor Richard as "archaic," and I am glad to learn that there are parts of this country where they are still honored and esteemed and—I hope—practiced. The Pittsburgh millionaire whom we know and love in New York is not exactly an exemplar of the frugal virtues and the simple life, but he is probably different in his home town. In New York, Poor Richard's philosophy is not only archaic, it is obsolete almost to the point of lacking antiquarian interest. Franklin's niggardly maxims have no show at all in the prodigal atmosphere of the white lights of Broadway. Even their language would hardly be understood by the modern Gothamite.

When you incline to have new clothes, look first well over the old ones and see if you cannot shift with them another year, either by scouring, mending or even patching if necessary.

Thus attired, Poor Richard could not today get a job in New York or Chicago.

Many a little makes a mickle.
Beware of little expenses; a small leak will sink a great ship.
It is as truly folly for the poor to ape the rich as for the frog to swell in order to equal the ox.

Great estates may venture more,
But little boats should keep near shore.

The second vice is lying, the first is running into debt.
Those have a short Lent who owe money to be paid at Easter.
Rather go to bed supperless than rise in debt.

I am afraid Poor Richard, if he came to New York, would be regarded as a cheap and rather mean type of tightwad. We are no longer oppressed and made uncomfortable by his morbid dread of debt. In Wall Street, readiness to borrow and spend is fairly considered one of the first attributes of financial ability and future greatness. In New York, those

of us who do not live in tenement houses or hotels occupy houses mortgaged to the limit. These mortgages we never intend to pay. When we need a new or better automobile, we not infrequently obtain the money for it by placing a second mortgage on our homes at a higher rate of interest. Let not Dr. Diller quote the aphorisms of Poor Richard on Manhattan Island. *Nous avons changé tout cela!*

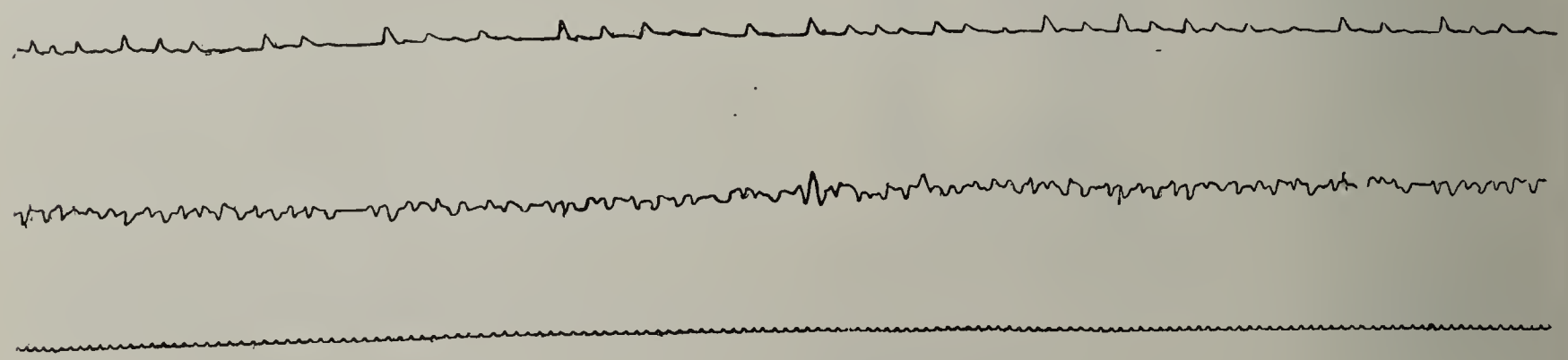
Probably the most remarkable and original contribution of Franklin to medicine was his early recognition of the value of fresh air in health and disease. His campaign for the most part, however, fell on deaf ears. His contemporaries were a stiff-necked generation, and in their fear of drafts they almost unanimously approved the sentiment contained in the old couplet:

When the wind blows through a hole,
May God have mercy on your soul!

Henry L. Shively, M.D., New York.

Auricular Fibrillation and Pulsus Alternans

To the Editor:—Dr. Harold E. B. Pardee (The Prognosis of Auricular Fibrillation, The Journal, June 19, 1915, p. 2057) uses the following phrase in his concluding sentence: "the irregularity, per se, adds little or nothing to the gravity of the prognosis." According to Lewis, the irregularity of the pulse of auricular fibrillation is the most common of the seven different varieties of arrhythmic pulse, and, of course, one of the gravest.



Tracing in a case of arrhythmia.

That the irregularity, per se, has nothing to do with the prognosis is well exemplified in the following case: A man, aged 58, has had this type of irregular pulse since he was 33. He has no valve lesion, dilatation or other muscle disease or weakness; he has had no dyspnea or decompensation. There is no history of infectious disease, such as rheumatism, which might damage the conductivity and integrity of his heart muscle. Three times he was passed in life insurance examination by competent doctors. For years he suffered from chronic diarrhea. He is thin and spare, but is very active and in good health. His pulse rate is generally above 80, always irregular; there is always pulse deficiency, the apex beat being more frequent than the radial pulse. For years he was a surveyor and was able to climb mountains, carrying instruments, and suffered no discomfort. Since his type of irregularity conforms to but one form of the seven various kinds, and that auricular fibrillation, it must be this from the character of the tracing herewith shown.

Since he has never taken digitalis, it is impossible to say whether this drug could sufficiently dominate (depress) the conductivity of the bundle of His, so as to render the pulse regular.

In some ways this perpetual arrhythmia corresponds to Mackenzie's rhythm, a form of irregularity no longer considered a distinct variety of arrhythmia by Lewis.

Dr. Caroline McGill (The Determination of Pulsus Alternans by the Sphygmomanometer, The Journal, June 19, 1915, p. 2061) rightly credits Dr. J. B. Herrick with the discovery of this valuable clinical test.

The prognosis of pulsus alternans is always grave in cases of myocarditis, and Lewis states that that is the only form of irregularity of the pulse which cannot be detected without the use of tracings or the electrocardiograph.

I can confirm all that Drs. Herrick and McGill say about the usefulness and simplicity of the method, since I have employed it for about a year in many cases. This irregularity is commoner than supposed, and can be detected without complicated apparatus.

No one with pulsus alternans can endure a major operation, as the condition is always grave and the patient is constantly in jeopardy. Merely palpating the radial artery and listening to the heart will not make the diagnosis. The pulse may be strong, the heart beats forcible and regular to the ear, and yet an operation will be followed by disastrous results.

By blocking off all the beats in the radial artery by inflating the cuff on the arm and then by deflation slowly, only the strong beats come through to the radial, while the weak ones are still blocked off; halving of the pulse rate, previously counted, permits making a diagnosis. The method is simple and should be employed by all clinicians.

Dr. Herrick might have mentioned that pulsus alternans cannot always be found in one, subject to this complaint. The alternations follow an extrasystole or are produced by exercise. This irregularity is often found with high blood pressure, angina pectoris, nocturnal asthma and Cheyne-Stokes respiration.

In 1905, Dr. James Mackenzie noted pulsus alternans in a man, and made a tracing of his pulse; by using the cuff in the method described by Dr. Herrick, he was able to block off the weak beats and allow the strong ones to be registered by the tambour. This is well shown on page 405 of the third edition of his book.

Mackenzie makes no mention of the practical bedside detection of pulsus alternans by the auscultation of the brachial or palpation of the radial, using the cuff, as employed by Dr. Herrick, and to the latter belongs the credit of directing the attention of the profession to this test.

The fact that fibrillation of the auricle exists is not itself sufficient to prevent a major operation. Recently Dr. John B. Deaver removed the half of an exophthalmic goiter in a woman who had suffered from fibrillation for years and with chronic nephritis, very successfully and with much benefit to the patient.

Robert L. Pitfield, M.D., Philadelphia.

Public Menaces

To the Editor:—I was interested in the communication (The Journal, July 17, 1915, p. 272) concerning the cigar cutter. There is another public menace which ought to be called attention to, and that is the use of the hand lever commonly seen in public urinals. This lever is used to flush the bowl. Above the lever are the words, "Please push down after using." A person with gonorrhea, after handling the penis during micturition, pushes down on the lever with the same hand that held the infected penis. Thus, during a short period of time, many persons are needlessly exposed, unless they are aware of the danger and act accordingly.

Frank E. Lewis, M.D., Newton, Mass.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF CHLOASMA

To the Editor:—Kindly let me know an efficient method for treating chloasma. I refer to those types that may have had their origin during pregnancy, but have been persistent in remaining.

LEE W. PAUL, M.D., Ilwaco, Wash.

ANSWER.—The mechanism regulating pigment formation in the skin is entirely unknown. That there is such a mechanism is indicated by the disturbances of pigmentation which appear without any demonstrable cause, and which occur in association with pregnancy, with diseases of the suprarenal glands, and occasionally with various tumors in the abdomen and pelvis. These cases of chloasma associated with pelvic and abdominal conditions are vaguely explained as being due to disturbances of the abdominal sympathetic nervous system. They are undoubtedly due to disturbances of some mechanism in the abdomen and pelvis, but that it is the sympathetic nervous system is in large part a surmise.

In the face of so obscure an etiology, there is no rational method of systemic treatment. The most that can be done is to make an effort to overcome such uterine and other pelvic or abdominal sources of irritation as may be manifest. But, truth to tell, such systemic treatment directed to the relief of chloasma is usually entirely futile.

We are left to local methods of treatment, and the best that local methods of treatment can do is to get rid of the pigment temporarily. The increased pigment in these patches is situated in the lower part of the epidermis, and this pigment can be removed by the use of applications which cause deep exfoliation of the epidermis. The commonest application is a solution of mercuric chlorid, from 1:500 to 1:250. Three or four layers of gauze are cut to correspond in shape to the patch to be treated. After being wet with this solution, this layer of gauze is applied to the surface until distinct irritation is produced. If one application does not produce sufficient exfoliation of the skin, the applications may be repeated until there is an acute dermatitis which will be followed by profuse exfoliation of the epidermis. Solutions of salicylic acid in alcohol, one-half dram or a dram to the ounce, may be used in the same way. To subdue the irritation after it has been excited by these applications, the surface should be greased several times daily with cold cream, or zinc ointment, or some similar bland ointment.

NERVE-BLOCKING

To the Editor:—What is the present status of nerve-blocking for surgical operations? C. W. LONGENECKER, M.D., Kingman, Kan.

ANSWER.—Nerve-blocking has become a well-established and successful method of producing anesthesia for surgical operations. Like most other methods of inducing anesthesia, it has its limitations; but its field of usefulness is constantly increasing with experience and better technic. Whenever nerve trunks supplying the field of operation can be successfully reached by the blocking fluid, painless operations can be performed, and in many cases in which individual nerve trunks cannot be reached, painless operations can be done by proper peripheral infiltration.

The advantages of the method over general anesthesia in suitable cases are so conspicuous that it is certain to grow in use and popularity.

COMPARATIVE VALUE OF CHLORINATED LIME AND FERROUS SULPHATE AS DISINFECTANTS

To the Editor:—Kindly give the relative merits of ferrous sulphate and chlorid of lime as disinfectants for toilets, privies, etc. How much chlorin is there actually present in the commercial product, chlorid of lime?

S. B. WELD, M.D., Becket, Mass.

ANSWER.—Ferrous sulphate is odorless and a good deodorant, but a feeble disinfectant or germicide. Chlorinated lime (chlorid of lime) is less efficient as a deodorant and gives off an unpleasant odor itself, but is an efficient germicide, used particularly for the disinfection of sewage and water. The present pharmacopeia calls for 35 per cent. of available chlorin in chlorinated lime; in the forthcoming edition, we understand, the percentage is to be reduced to 30. The commercial product is extremely variable in chlorin content.

Book Notices

GESCHICHTE DER AUGENHEILKUNDE. Von Dr. J. Hirschberg. Drittes Buch, Zehnter Abschnitt—Englands Augenärzte 1800 bis 1850. Paper. Price, 24 marks. Pp. 483, with 30 illustrations. Leipzig: Wilhelm Engelmann, 1915.

This work forms part of the second edition of that remarkable "Handbuch der gesamten Augenheilkunde" which, begun in 1898, is not yet finished. The present contribution to that encyclopedic treatise forms only a small part of the author's "History of Ophthalmology from the Earliest Times to the Present Day," and some idea of the enormous amount of labor expended on it by the venerable and erudite writer is gained by referring to the fact that his as yet uncompleted task began with Part 4 in 1899, was continued through many other parts, and already fills 2,793 pages! Fortunately, this protracted and detached method of publication does not materially affect Professor Hirschberg's subject, because the facts of history—unlike for example, the theories of bacteriology and pathology—do not grow stale in fifteen or twenty years.

The present portion of the history hardly equals in merit the author's previous contributions. This failure is probably the fault of British ophthalmologists themselves, because, as Hirschberg explains in his preface, "the people who added so much to our knowledge of the eye and its diseases do not seem to have found time to write much about themselves!"

Hirschberg is unfortunate in the title of his monograph, because under the caption "England," he includes Ireland, Scotland and other components of the British Isles, and has thrown in for good measure the remainder of the empire. It is as if an Englishman had given us an account of German medicine under the caption "Prussia's Physicians."

The author seems to have drawn liberally from Hirsch's Lexicon, and we presume the reason this prolific source of information is so little acknowledged by Professor Hirschberg is that he felt at liberty to use, as his own, the material gathered by a writer on the same subject in the first edition of the Handbuch.

A good deal of padding has also been resorted to by including descriptions, more or less complete, of men and activities that properly belong to decades after 1850, not to mention the inclusion of a number of subjects strictly pertaining to the United States. As examples of the former fault, there are included men like T. Pridgin Teale, Jr., who is still living, and who did not enter the medical profession until 1855; Thomas Shadford Walker, who did not begin to practice till 1858, and George Edward Walker, who was not born until 1840.

But Professor Hirschberg's literary sins of commission are not so noticeable as his errors of omission. Of important ophthalmologists whose work was wholly, or almost entirely performed within the period (1800-1850) which the author nominally assigns to himself, the following may be mentioned: Henry Gray (1825-1861) received in 1849 the triennial prize of the Royal College of Surgeons of England for his essay "On the Anatomy and Physiology of the Nerves of the Human Eye," one of the most highly original and valuable of all English contributions to ophthalmology. The omission of this well-known writer's name is all the more striking because the great majority of English and American surgeons have obtained their knowledge of the anatomy of the eye (as well as of anatomy in general) from that great English textbook, Gray's "Anatomy, Descriptive and Surgical."

The life of John Harrison Curtis, although adequately sketched in the American Encyclopedia of Ophthalmology, is not even referred to by Hirschberg. He was born in 1778, was a man of great influence both in Britain and on the continent, and in 1833 wrote his masterpiece, "A Treatise on the Physiology and Diseases of the Eye."

Henry Edward Eastlake, an important obstetrician and ophthalmologist, a Ph.D. of Heidelberg, as well as a fellow of Kings' and Queens' College of Physicians, Dublin, is absolutely omitted by Hirschberg; George H. Fielding, F.R.S., well known in his day, published (about 1832) several impor-

tant monographs on ophthalmic subjects; William Sharpey (1802-1880), celebrated oculist, described (1835) a number of original and relatively important experiments on the eye, including "An Account of the Discovery by Purkinje and Valentin of Ciliary Motions," and made numerous observations on the eyes of mammals and reptiles; yet his name is not even mentioned by the author.

Robert Crawford Mayne (1811-1864), F.R.C.S., wrote the very creditable article on "The Optic Nerve," in Todd's Cyclopedia, but Hirschberg passed him by; William Newnham, F.R.C.S., born 1790, wrote on "Melanosis of Eyeball," etc., but was also overlooked!

Hugh Neill was one of the most famous British ophthalmologists and otologists. For several years, beginning with 1834, he issued a series of valuable "Reports of the Liverpool Eye and Ear Infirmary." He also published (London, 1848) a monograph "On the Cure of Cataract with a Practical Summary of the Best Modes of Operating, Continental and British," and numerous journal articles, and yet we look in vain for mention of him or his important contribution to ophthalmic science; John Hatch Power (born 1806) of the Royal College of Surgeons, professor of anatomy (later of surgery) at Dublin, a celebrated operator on the eye, and author of "On the Structure of the Optic Nerve in Relation to Reversed Retinal Vision," is altogether omitted by Hirschberg. This omission is all the more striking, as Power was also author of the world-renowned "Surgical Anatomy of the Arteries." All that Hirschberg deigns to say about Sir David Brewster, to whom ophthalmology owes so much, and who was one of the most distinguished physicists of all the ages, is contained in one single sentence (page 399), and this in the face of the important part which the stereoscope (the invention of this talented Scotch scientist) even now plays in the office of every oculist, to say nothing of Brewster's numerous other optical discoveries, such as the kaleidoscope, the laws of polarization by reflection and refraction, the laws of metallic reflection, the connection between the refractive index and the polarizing angle, etc. Compare this one poor sentence with the pages of wordy and frequently irrelevant adulation devoted to Albrecht Haller in the same author's "Deutschland." Charles Wheatstone is treated even more cavalierly, Hirschberg recording merely that Nunnely mentions the fact that Wheatstone discovered (as he certainly did!) the reflecting stereoscope. The author does not consider it worth while to give separate mention to Wollaston (1804), the inventor of periscopic lenses, but disposes of him, very incidentally, under the sketch of W. Mackenzie, in just five words. Wollaston not only discovered periscopic lenses (a discovery which should have had some attention paid to it), but in 1802 he also wrote the extremely valuable "A Method of Examining Refractive and Dispersive Powers by Prismatic Reflection." Finally, not to weary the reader with too many instances, we cannot find any reference, in these verbose pages, of the man—George Airy—who first fitted a cylindrical lens for astigmatism. One would certainly expect to find at least a mention of this wonderful man and his epoch-making discovery, but this very reasonable expectation, like scores of others, is doomed to be disappointed.

Those portions of the British Empire known to be of little or no ophthalmic importance before 1850, Hirschberg treats in a most peculiar fashion. For example, Canada is dismissed in three quarters of a page by entirely ignoring, *inter alia*, the activities of Henry Howard, who in 1850 published at Montreal one of the earliest and one of the best textbooks on ophthalmology—"Anatomy, Physiology and Pathology of the Eye"—in which he describes and pictures several original devices; also Frank Buller (1844-1905), a pupil of von Graefe and Schöler, whose eye shield in gonorrheal ophthalmia and other contributions to ophthalmic surgery are well known wherever that science is studied. On the other hand, he does give a perfunctory account of those Canadian colleges in which ophthalmology is *now* taught, and adds the names of the *present* teachers in these institutions, hardly one of whom saw the light until long after 1850.

Just what the issues of the Great War have to do with a history of British ophthalmology in the first half of the nineteenth century, it is difficult for us to imagine—certainly Hirschberg throws no light on the mystery—but he does not hesitate to drag them into a book already swollen by irrelevant padding. This overzealous son of the Fatherland cannot resist the temptation to play the part of political propagandist in a *Nachwort* that is not only an exhibition of exceedingly poor taste, but is, to say the least, a doubtful tribute to the men whose life work he so ably describes and whose memory he has helped to preserve. We sincerely wish, for the sake of the venerable author, that the editor of the Handbuch had been wise enough to draw a firm but kindly blue pencil through the page in question.

A Practical Treatise on Diseases of the Skin. For Use of Students and Practitioners. By Oliver S. Ormsby, M.D., Professor and Head of the Department of Skin and Venereal Diseases, Rush Medical College (in Affiliation with the University of Chicago). Cloth. Price, $6 net. Pp. 1168, with 342 illustrations. Philadelphia: Lea & Febiger, 1915.

Ormsby's work must inevitably be looked on as a successor to the well-known treatise by Drs. Hyde and Montgomery; he, if any one, embodies the traditions of those authorities. While the preface acknowledges considerable indebtedness to that text, the material has been so recast in the light of the writer's later experience, and such thorough consideration has been given to recent advances in dermatology, that there is nothing suggestive in this book of a mere revision of the older one. An occasional resemblance to Dr. Hyde's distinctive diction and usage and a few familiar plates are the most evident links connecting the author's work with that of his predecessors.

The work has been written with especial insight into the difficulties which dermatology presents to the student and to the practitioner, and much attention has accordingly been given to the introductory chapters. Here the author is at his best. These chapters may be read with interest and profit by both the general medical reader and the expert dermatologist. A notable point in the introduction is a complete outline in topical form for a thorough routine dermatologic examination. It furnishes a plan of examination which can be well adopted by the beginner in dermatology and will prove very useful to the practitioner in working out his dermatologic cases.

The body of the work has been carefully planned and the various dermatoses fully considered. An accurate description of the elementary lesions is given, and sharp emphasis laid on distinctive points in the case of most dermatoses. Two especially good sections are those on the trichophytic organisms and on syphilis. The account of syphilis—that most difficult subject to write on at present—is well balanced, comprehensive and sane. There is an especially serviceable digest of modern methods of treatment of this disease.

To the author's colleagues it must remain a source of regret that he did not attempt to define some dermatologic conditions in more definite and comprehensive terms than by mere condensation of the symptomatology. While the views of an investigator on problems of dermatologic classification properly appear in monographs rather than in textbooks, the time is surely ripe for freer and more original discussions of such matters in reference books. Such discussions perform the invaluable function of giving a dynamic quality to the author's presentation, and enlist and stimulate the interest of the student in corresponding degree.

The design and appearance of the book are excellent. The volume is not too bulky, the paper is well suited for illustrations, and the half-tone figures are clear. It is to be regretted that the author or his publishers have yielded to the blandishments of colored plates. The inferior equipment for color reproductions at the command of American publishers, and the extraordinary difficulty of doing justice to skin diseases in this medium, make our attempts at colored illustrations of dermatoses of little value.

On the whole, the author has successfully performed a laborious and difficult undertaking; he has written an excellent text on dermatology.

A Work on Special Dental Pathology. Devoted to the Diseases and Treatment of the Investing Tissues of the Teeth and the Dental Pulp, Including the Sequelae of the Death of the Pulp; Also, Systemic Effects of Mouth Infections, Oral Prophylaxis and Mouth Hygiene. By G. V. Black, M.D., D.D.S., Sc.D., Professor of Operative Dentistry, Northwestern Dental School. Cloth. Price, $6. Pp. 476, with 518 illustrations. Chicago: Medico-Dental Publishing Co., 1915.

This volume will stand alone in dental literature for a long time, and will place the histopathology of the investing tissues of the teeth on a basis of scientific equality with standard volumes on other highly specialized tissues. The complexity of dental tissues is illustrated both by descriptive text and by photomicrographs. The volume is the crowning touch to a lifetime spent in a thoroughgoing, exact study of dental tissues. One is at once impressed with the scholarship of the author. The freedom of the work from the blind faith in drugs is wholesome and refreshing. The author studies in detail the gums and gingivae, cementum, peridental membrane and alveolar process, and in these studies develops a new nomenclature. Several pages are devoted to a study of saliva and salivary calculus. The chapters on gingivitis are notable. One hundred pages are devoted to the histology, physical functions and diseases of the dental pulp. Acute and chronic alveolar abscess, with sequelae, receives appropriate treatment. The closing chapters are devoted to oral hygiene, oral prophylaxis and examination of the mouth, the latter by Dr. A. D. Black. A careful study of the book reveals the fact that the author's interest in the gums and peridental membrane is paramount, although the work is splendidly balanced. Taken as a whole, it may properly be considered the most comprehensive and satisfactory text on the subject in print.

Operative Gynecology. By Harry Sturgeon Crossen, M.D., F.A.C.S., Associate in Gynecology, Washington University Medical School. Cloth. Price, $7.50. Pp. 670, with 770 illustrations. St. Louis: C. V. Mosby Company, 1915.

This book is a comprehensive work on operative gynecology, discussing the standard operations used today in work on the female generative organs. The author describes the various operations clearly and concisely, and numerous accompanying plates are excellent. The steps in the various operations are adequately illustrated so that they may be followed without difficulty. Each chapter is complete. The author's individuality is clearly shown, and to this he has added the best work of the various American and foreign authors. His book is a valuable one.

Miscellany

Organization of Medical Brotherhood

The following statement has been issued by Dr. S. J. Meltzer, president:

An appeal to the men and women engaged in medical practice and the advancement of the medical sciences:

The present horrible war among civilized nations has brought out impressively certain sad facts: that although there are civilized individual nations, we are still very far from having a civilized humanity—there is an abyss between intranational and international morality; that, no matter how cultured and enlightened nations may be, they still settle their international differences by brute force, by maiming and killing their adversaries and, finally, that the present high development of science and invention in individual nations only serves to make the results of this war more destructive than any other in history.

The war has demonstrated, however, one encouraging fact, namely, that among all the sciences and professions, the medical sciences and medical practice occupy an almost unique relationship to warfare, and that, among all the citizens of a country at war, medical men and women occupy a peculiar and distinctive position.

No discovery in medical science has been utilized for the purpose of destroying or harming the enemy. Medical men in each of the warring countries are as courageous, as patriotic, as any other citizens, and are as ready to die or to be crippled for life in the service of their country as any other class of their fellow countrymen. But their services consist in ministering to the sick and to the injured and in attending to their sanitary needs. Furthermore, they often risk their lives by venturing into the firing line to bring the injured to places of safety and to attend to their immediate needs. In these heroic and humanitarian acts, friend and foe are treated alike. Finally, the majority of the members of the medical profession and of the medical journals of the neutral as well as of the warring countries abstain from public utterances that might be grossly offensive to any of the belligerent nations.

These facts—this advanced moral position in international relations which medicine and its followers are permitted to occupy in all civilized nations—ought to be brought to the full consciousness of the men and women engaged in the medical sciences or in medical practice. Such a realization could not fail to have an elevating influence on the medical profession itself, and would probably exert a favorable influence on the development of international morality in general.

At the dawn of history, medical men were frequently also the exponents of philosophy and morals. In the middle ages, when knowledge became specialized, medical men more and more devoted their activity exclusively to medical practice. Because of its inefficiency at that time, medicine lost its prestige. In recent times, however, medicine is becoming an effective science; one marvelous discovery has followed another, and the efficiency of medical practice has been rapidly increasing. Medicine makes habitable to man hitherto uninhabitable parts of the world. It prevents disease; and, with increasing theoretical and practical efficiency, medicine is learning to alleviate and cure disease and injuries. Medical sciences and medical men have steadily risen in the esteem of civilized mankind. May not the medical sciences and medical men become again the standard bearers of morality, especially of international morals?

To accomplish these objects, it is proposed to organize as large and effective an association as may be possible, of men and women engaged in the medical sciences or in medical practice under the name of The Medical Brotherhood for the Furtherance of International Morality. It is obvious that such a brotherhood could not exercise an important influence at once. But our modest expectation for prompt results should not prevent us from attempting now to take the first step in the right direction. Many important results have often had small beginnings. A committee of physicians and medical investigators requests you herewith to enroll as a member, and to declare your willingness to endorse and support the moral standard which the medical profession generally upholds when called on to perform its patriotic duties in all international strife.

It should be expressly understood that it is not the object of the proposed brotherhood to influence the feelings and views of anyone regarding the problems involved in the present war. It is desired merely to bring to the full consciousness of the members of the medical profession the exceptional moral position which all civilized nations, even while at war, permit and expect medical men to occupy, at least as long as they remain in the medical profession and act in this capacity. This consciousness cannot fail to elevate the moral standards of physicians. Furthermore, after the close of the present war, the brotherhood could without doubt facilitate the reunion of the members of the medical profession of all the nations which are now at war and increase good feeling among them. A humanitarian body such as the proposed brotherhood, if already in existence and ready for service, might and could be of the greatest usefulness in many ways.

Executive committee, made up of residents of the city of New York—President: Dr. S. J. Meltzer, member, Rockefeller Institute; first vice president, Dr. Rufus Cole, director, Rockefeller Hospital; second vice president, Dr. S. Josephine Baker, director, Department of Child Hygiene; first secretary, Dr. William J. Gies, professor of biologic chemistry, Columbia University; second secretary, Dr. Harlow Brooks, professor of clinical medicine; treasurer, Dr. Robert T. Morris, professor of surgery, Post-Graduate Medical School.

Council—Dr. Abraham Jacobi; Dr. Robert Abbe, surgeon to St. Luke's Hospital; Dr. John Winters Brannan, president, medical board, Bellevue Hospital; Dr. J. A. Fordyce, professor of dermatology, College of Physicians and Surgeons; Dr. Nellis B. Foster, assistant professor of medicine, Cornell University Medical School; Dr. S. S. Goldwater, commissioner, Department of Health; Graham Lusk, professor of physiology, Cornell University Medical School; Dr. William H. Park, professor of bacteriology, University and Bellevue Medical College; Dr. John Allen Wyeth, president, New York Polyclinic.

Honorary presidents—Dr. Russell H. Chittenden, director, Sheffield Scientific School, Yale University, New Haven, Conn.; Dr. W. T. Councilman, professor of pathology, Harvard Medical School, Boston;

Dr. W. C. Gorgas, Surgeon-General of the Army, Washington, D. C.; Dr. W. S. Halsted, professor of surgery, Johns Hopkins Medical School, Baltimore; Dr. W. H. Howell, professor of physiology, Johns Hopkins Medical School, Baltimore; Dr. Abraham Jacobi; Dr. W. W. Keen, president, International Surgical Congress; president, American Philosophical Society, Philadelphia; Dr. Edward L. Trudeau, Saranac Lake, N. Y.; Dr. James Tyson, professor of medicine, emeritus, University of Pennsylvania, Philadelphia; Dr. Victor C. Vaughan, professor of hygiene and physiologic chemistry, Ann Arbor, Mich.; Dr. William H. Welch, president, National Academy of Sciences; professor of pathology, Johns Hopkins Medical School, Baltimore.

Honorary vice presidents—Dr. J. J. Abel, professor of pharmacology, Johns Hopkins Medical School, Baltimore; Dr. Herman M. Biggs, commissioner, State Board of Health, New York; Dr. Frank Billings, dean, Rush Medical College, Chicago; Dr. Clarence John Blake, professor of otology, emeritus, Harvard Medical School, Boston; Dr. W. B. Cannon, professor of physiology, Harvard Medical School, Boston; Dr. W. H. Carmalt, professor of surgery, emeritus, Yale University, Medical School, New Haven, Conn.; Dr. George Dock, professor of medicine, Washington University Medical School, St. Louis; Dr. James Ewing, professor of pathology, Cornell University Medical School, New York; Dr. Alice Hamilton, expert on occupational diseases, Federal Bureau of Labor Statistics, Washington, D. C.; Dr. L. Hektoen, professor of pathology, Rush Medical College, Chicago; Dr. Howard A. Kelly, professor of gynecology, Johns Hopkins Medical School, Baltimore; Dr. Robert G. Leconte, president, American Surgical Association, Philadelphia; Dr. Rudolph Matas, professor of surgery, Tulane University, New Orleans; Dr. William J. Mayo, Rochester, Minn.; Dr. Charles K. Mills, professor of neurology, University of Pennsylvania, Philadelphia; Dr. John B. Murphy, professor of surgery, Northwestern Medical School, Chicago; Dr. E. L. Opie, professor of pathology; dean, Washington University Medical School, St. Louis; Dr. Charles A. Powers, professor of clinical surgery, emeritus, University of Colorado, Denver; Dr. W. L. Rodman, president, American Medical Association, Philadelphia; Dr. G. E. deSchweinitz, professor of ophthalmology, University of Pennsylvania, Philadelphia; Dr. Henry Sewall, president, Association of American Physicians, Denver; Dr. F. C. Shattuck, professor of medicine, emeritus, Harvard Medical School, Boston.

Advisory committee—Dr. Isaac Adler, consulting physician, German Hospital, New York; Dr. Fred H. Albee, professor of orthopedic surgery, New York; Dr. Carl L. Alsberg, chief of Bureau of Chemistry, Washington, D. C.; Dr. James M. Anders, professor of medicine, Medico-Chirurgical College, Philadelphia; Dr. John F. Anderson, director of Hygienic Laboratory, Washington, D. C.; Dr. John Auer, associate member, Rockefeller Institute, New York; Dr. Edward R. Baldwin, Saranac Lake, N. Y.; Dr. Helen Baldwin, attending physician, New York Infirmary for Women and Children, New York; Dr. J. C. Bloodgood, associate professor of surgery, Johns Hopkins Medical School, Baltimore; Dr. George Blumer, professor of medicine; dean, Medical School, Yale University, New Haven, Conn.; Dr. Joseph A. Capps, associate professor of medicine, Rush Medical College, Chicago; Dr. A. J. Carlson, professor of physiology, University of Chicago, Chicago; Dr. Henry Dwight Chapin, professor of medicine, New York Polyclinic, New York; Dr. Henry A. Christian, professor of medicine, Harvard Medical School, Boston; Dr. Frank S. Churchill, associate professor of pediatrics, Rush Medical College, Chicago; Dr. S. Solis Cohen, professor of clinical medicine, Jefferson Medical College, Philadelphia; Dr. C. G. Coakley, professor of laryngology, University and Bellevue Medical College, New York; Dr. Warren Coleman, professor of clinical medicine, Cornell Medical School, New York; Dr. Joseph Collins, neurologist, Neurological Institute, New York; Dr. T. S. Cullen, associate professor of gynecology, Johns Hopkins Medical School, Baltimore; Dr. Elizabeth M. Cushier, New York; Dr. Samuel G. Dixon, commissioner, State Board of Health, Philadelphia; Dr. Theodore Diller, associate professor of clinical neurology, University of Pittsburgh, Pittsburgh; Dr. I. Dyer, dean, Tulane University, New Orleans; Dr. F. X. Dercum, professor of nervous and mental diseases, Jefferson Medical School, Philadelphia; Dr. Harold C. Ernst, professor of bacteriology, Harvard Medical School, Boston; Dr. D. L. Edsall, professor of clinical medicine, Harvard Medical School, Boston; Dr. C. A. Elsberg, surgeon, Mount Sinai Hospital, New York; Dr. Henry L. Elsner, professor of medicine, University of Syracuse, Syracuse, N. Y.; Dr. Joseph Erlanger, professor of physiology, Washington University Medical School, St. Louis; Dr. Charles H. Frazier, professor of clinical surgery, University of Pennsylvania, Philadelphia; Dr. T. B. Futcher, associate professor of medicine, Johns Hopkins Medical School, Baltimore; Dr. Henry B. Favill, professor of clinical medicine, Rush Medical College, Chicago; Dr. Fielding H. Garrison, editor, *Index Medicus,* Washington, D. C.; Dr. Arpad G. Gerster, professor of clinical surgery, Columbia University, New York; Dr. Joel E. Goldthwait, orthopedist, Boston; Dr. Virgil P. Gibney, professor of orthopedic surgery, College of Physicians and Surgeons, New York; Dr. H. A. Hare, professor of therapeutics and diagnosis, Jefferson Medical School, Philadelphia; Dr. R. A. Hatcher, professor of pharmacology, Cornell University, Medical School, New York; Dr. I. Minis Hays, secretary, American Philosophical Society, Philadelphia; Dr. F. P. Henry, professor of medicine, Woman's Medical College of Pennsylvania, Philadelphia; Dr. Yandell Henderson, professor of physiology, Yale University, New Haven, Conn.; Dr. A. W. Hewlett, professor of medicine, Ann Arbor, Mich.; Dr. James B. Herrick, clinical professor of medicine, Rush Medical College, Chicago; Dr. C. F. Hoover, professor of medicine, Western Reserve University, Cleveland; Dr. J. W. Holland, professor of physiologic chemistry, emeritus, Jefferson Medical College, Philadelphia; Dr. John Howland, professor of pediatrics, Johns Hopkins Medical School, Baltimore; Dr. Reid Hunt, professor of pharmacology, Harvard Medical School, Boston; Dr. Woods Hutchinson, New York; Dr. Holmes C. Jackson, professor of physiology, New York and Bellevue Medical College, New York; Dr. Philip Mills Jones, editor, *California State Medical Journal,* San Francisco; Dr. George W. Jacoby, president, Neurological Society, New York; Dr. Theodore C. Janeway, professor of medicine, Johns Hopkins Medical School, Baltimore; Dr. Frederic Kammerer, professor of clinical surgery, College of Physicians and Surgeons, New York; Dr. Frederick S. Lee, professor of physiology, Columbia University, New York; Dr. E. Libman, physician, Mount Sinai Hospital, New York; Dr. Howard Lilienthal, surgeon, Mount Sinai Hospital, New York; Dr. Warfield T. Longcope, professor of Medicine, Columbia University, New York; Dr. F. J. Lutz, professor of clinical surgery, Washington University Medical School, St. Louis; Dr. Hanau W. Loeb, dean, St. Louis University School of Medicine, St. Louis; Dr. Walter Mendelson, trustee, Columbia University, New York; Dr. Rosalie S. Morton, president, New York State Woman's Medical Society, New York; Dr. W. G. MacCallum, professor of pathology, Columbia University, New York; Dr. L. B. Mendel, professor of physiologic chemistry, Sheffield Scientific School, New Haven, Conn.; Dr. Charles H. Mayo, Rochester, Minn.; Dr. James F. McKernon, president, Post-Graduate Medical School, New York; Dr. Joseph L. Miller, Associate professor of medicine, Rush Medical College, Chicago; Dr. Albert P. Mathews, professor of physiologic chemistry, University of Chicago, Chicago; Dr. Ward J. MacNeal, director, New York Post-Graduate Hospital, Medical School, New York; Dr. F. G. Novy, professor of bacteriology, University of Michigan, Ann Arbor, Mich.; Dr. Albert J. Ochsner, professor of surgery, University of Illinois, Chicago; Dr. G. M. Piersol, editor, *American Journal of the Medical Sciences,* Philadelphia; Dr. W. M. Polk, director, Cornell University Medical School, New York; Dr. W. A. Pusey, professor of dermatology, University of Illinois, Chicago; Dr. Stewart Paton, neurologist, Princeton, N. J.; Dr. Richard M. Pearce, professor of experimental medicine, University of Pennsylvania, Philadelphia; Dr. Joseph H. Pratt, Harvard Medical School, Boston; Dr. J. J. Putnam, professor of neurology, emeritus, Harvard Medical School, Boston; Dr. Howell T. Pershing, professor of neurology, University of Colorado, Denver; Dr. David Riesman, professor of Clinical Medicine, University of Pennsylvania, Philadelphia; Dr. M. J. Rosenau, professor of preventive medicine, Harvard Medical School, Boston; Dr. Beverley Robinson, professor of medicine, emeritus, University and Bellevue Medical School, New York; Dr. B. Sachs, neurologist, Mount Sinai Hospital, New York; Dr. P. A. Shaffer, professor of biologic chemistry, Washington University Medical School, St. Louis; Dr. C. G. Stockton, professor of medicine, Buffalo Medical College, Buffalo; Dr. Thomas L. Stedman, editor, *Medical Record,* New York; Dr. Torald Sollmann, professor of pharmacology, Western Reserve University, Cleveland; Dr. Allen J. Smith, professor of pathology, dean, University of Pennsylvania, Philadelphia; Dr. Winford H. Smith, superintendent, Johns Hopkins Hospital, Baltimore; Dr. Frank F. Simpson, Pittsburgh; Dr. W. T. Sedgwick, professor of biology, Massachusetts Institute of Technology, Boston; Dr. Mabel Ulrich, Minneapolis; Dr. A. Morgan Vance, Louisville, Ky.; Dr. Martha Wollstein, associate, Rockefeller Institute, New York; Dr. George B. Wallace, professor of pharmacology, New York University Medical School, New York; Dr. J. Whitridge Williams, dean, Johns Hopkins Medical School, Baltimore; Dr. J. C. Wilson, professor of medicine, emeritus, Jefferson Medical College, Philadelphia; Dr. Hiram Woods, professor of ophthalmology, University of Maryland, Baltimore; Dr. Jonathan Wright, New York; Dr. H. Gideon Wells, professor of pathology, University of Chicago, Chicago; Dr. Ray L. Wilbur, professor of medicine, dean, Leland Stanford Junior University, San Francisco; Dr. Richard Weil, assistant professor of experimental therapeutics, Cornell Medical School, New York.

Physicians are requested to enroll as members. There is no membership fee. But voluntary contributions for the purpose of upholding the organization, distribution of literature, etc., will be gratefully accepted. Replies and contributions to be sent to the Medical Brotherhood, care of Dr. S. J. Meltzer, 13 West One Hundred and Twenty-First Street, New York.

Study of the Placental Blood

In the Board of Health laboratory of the Canal Zone (April Report), studies were made of the placental blood film in cases in which there was a possibility of estivo-autumnal malaria being associated with pregnancy and the puerperium. From these studies it was decided that the placental blood film made from the maternal surface of the placenta immediately after labor possesses important diagnostic value, because, from the third month on, the placenta becomes even a better medium for the location of this parasite than the peripheral blood; in many cases it will show the parasites when the latter will not. The parasites are more numerous and larger, and the phagocytosis of pigment is much more apparent. In the late stages of pregnancy it is said that the placenta in some of its vascular peculiarities corresponds more nearly to the appearance of the spleen and bone marrow, and therefore offers favorable features for the localization and development of parasites. The examination of films from the placenta will frequently aid in differentiating puerperal sepsis from malaria, and the test might be used as a routine in tropical obstetrics. The pregnant state seems to encourage outbreaks of latent malaria late in the pregnancy, and also predisposes the individual to primary infection when exposed to malaria. It is not believed that congenital malaria ever occurs without some associated accident of pregnancy, such as injury to the placenta.

Hospital Efficiency

The committee on hospital efficiency, appointed two years ago by the Philadelphia County Medical Society, has made several reports on the subject, which have been embodied in a pamphlet by the society. It is said that there are in the United States 6,665 institutions on record for the care of the sick, with a total capacity of 600,000 beds, representing an outlay of over $1,500,000,000 and a yearly expenditure for maintenance of over $250,000,000. It is stated that per-

haps 20 per cent. of this sum is wasted through lack of hospital efficiency, and that the waste of human labor and opportunity is incalculable. There is no standard of hospital efficiency, and the committee has undertaken to formulate one. The committee also approves the request of the American Medical Association, the surgeons and the American Hospital Association that the Carnegie Foundation report on the classification and standardization of hospitals in a manner similar to the work done in the matter of medical education.

Illegitimacy in California

In a study of this question by Maude Lane Andersen, in the *Baby Hospital Bulletin*, it is noted that the death rate among illegitimate children is sometimes more than twice as high as among legitimate children. In a study of 163 cases, 25 per cent. of the mothers were the only children in the family, and the percentage of illegitimacy gradually decreased as the size of the family increased. This was regarded as testimony to the value of large families.

Medicolegal

Surgical Patient Jumping from Unguarded Window

(Breeze vs. St. Louis & S. F. Ry. Co. (Mo.), 147 S. W. R. 409)

The Supreme Court of Missouri, Division No. 1, holds that the defendant was not liable for the death of an employee who, while in its hospital after a surgical operation had been performed on him for appendicitis, jumped from an unguarded window of his room on the second floor. The court says that there was no evidence introduced tending to show that the patient was possessed of suicidal mania, or mania of any kind, for that matter; at most it was that he was insane at intervals, but with no indication whatever, prior to the fatal leap, that he intended to do himself or any one else any personal harm. In the absence of such a showing, there was no evidence tending to show that the defendant had any reason to anticipate that the patient contemplated self-destruction. In other words, his act, in leaping from the window, in the absence of suicidal mania, was not the ordinary or usual conduct that the defendant, as an ordinarily prudent person, should have anticipated he would have done under the circumstances. It is not every man that is temporarily unbalanced from the effects of a surgical operation that possesses suicidal mania, and in fact there are but few cases of that character, as common observation and experience teach us; and, in the absence of evidence tending to show such bent of mind on the part of the patient, the court would not have been justified in submitting that question to the jury, for no one, as previously stated, would have anticipated such conduct on his part.

Power of Board of Medical Examiners to Employ Counsel

(State ex rel. State Board of Medical Examiners et al. vs. Clausen, State Auditor (Wash.), 146 Pac. R. 630)

The Supreme Court of Washington denies the application made for a writ of mandamus directing the state auditor to issue a warrant for $200 in favor of an alleged regularly retained and employed attorney and legal adviser of the board, the auditor having refused to issue the warrant on the ground that the medical board was without power to hire or employ private counsel at the expense of the state. It was alleged that it was impossible for the board properly to discharge the duties imposed on it by the statute creating it without the aid of legal counsel whom it could at all times consult and who was conversant with the work of the board and the legal questions constantly arising out of such work, and that it had been the custom and practice of the board, since its creation by the statute of 1909, to employ and pay private counsel, as well as the practice of medical boards acting under like and similar statutes existing prior to the enactment of the statute creating the present board. The court says that it cannot think material the allegations of the petition concerning the inability, neglect and refusal of the attorney general and the various prosecuting attorneys of the state to attend on and advise the board, and to prosecute violators of the provisions of the medical act. They were inserted in the petition, no doubt, to show the necessity for the employment of private counsel. But there is no express provision in the act creating the medical board empowering it to employ private counsel. Conceding that the board may find it necessary, in the performance of its imposed duties, to have advice and assistance, and is obligated by law to seek such advice and assistance, from the attorney general of the state, or from some one of the various prosecuting attorneys of the state, it cannot, merely because these officers are unable, or because they neglect or refuse to furnish it with such advice and assistance, employ private counsel for that purpose. The term "necessity" in such cases means "legal necessity" as distinguished from "actual necessity." In other words, if a person or board is charged by law with a specific duty, and the means by which the duty is to be accomplished are not specially provided for, the person or board so charged has the implied power to use such means as are reasonably necessary to the successful performance of the required duty, which in the present case might include the power to employ private counsel. But where a person or board is charged by law with a specific duty and the means for its performance are appointed by law, there is no room for implied powers, and the means appointed must be followed, however inadequate may be the result. So, here, if the law has made the attorney general and the several prosecuting attorneys of the state the legal representatives of the board of medical examiners, these are the only persons who can lawfully be paid for the work, no matter how indifferently they perform their duties. On the other hand, if these officers have not been constituted by law the legal representatives of the board, then the board may hire and pay with state funds such assistants, in the way of legal counsel, as it may find reasonably necessary to the performance of its duties; but this is not the case here.

Law Sufficient as to Chiropractors

(Locke vs. Ionia Circuit Judge (Mich.), 151 N. W. R. 623)

The Supreme Court of Michigan grants a writ of mandamus requiring the circuit judge to set aside an order quashing an information filed charging one D. J. Healey with having wilfully and illegally engaged in the practice of medicine in violation of Act No. 237 of the Public Acts of 1899 and acts amendatory thereto. The court says that the issue before it was the validity of this information. It turned on the two questions of whether that with which the accused was charged could, in common acceptation and as generally construed by the courts, be regarded as engaging in the "practice of medicine," and whether the title of the act was sufficiently broad to include the same. If so, the information was good under the original act, irrespective of the amendment. The title of the original act is: "An act to provide for the examination, regulation, licensing and registration of physicians and surgeons, and for the punishment of offenders against this act, and to repeal acts and parts of acts in conflict therewith." The court is unable to discern any material difference in scope and meaning between this title and the titles of similar laws in other states passed "to regulate the practice of medicine" dealing with the various activities of those who, assuming special skill and knowledge in the treatment of disease, engage in such work for profit, and which, under such titles, provide for their examination as to qualifications, registration and license to practice, with resulting punishment for those offending against such provision. It needs no citation of authority to sustain the proposition that practicing medicine, surgery and the healing art generally or professing to heal the afflicted in any manner by any means as a vocation for hire are related subjects, ostensibly to the same end, naturally affecting one way or the other, and germane

to the public health. The comparatively early case of *People vs. Phippin,* 70 Mich. 6, plainly aligned this state with those refusing to restrict the practice of medicine to the administration of drugs or use of surgical instruments, and, although then rendered less binding as a controlling precedent by a division of the court, it has not since been questioned, but, on the contrary, both cited with approval by this court and strengthened as an authority by abundant and carefully reasoned decisions in other jurisdictions. As before suggested, the validity of this information was not contingent on the legality of provisions relative to licensing in the amended act. That it is within the police power of the state and the scope of the title to so provide, or not, in the discretion of the legislature, the court is well satisfied. Neither can the court concern itself with whether "the system of treatment practiced by chiropractors is a separate, systematic, coordinated, and arranged branch . . . which has firmly established its worth," or merely of the class of alleged methods of treatment without proved merit, often skilfully heralded with extravagant assurances and new-coined names as a thing inspired for the healing of the nations, to which the sick and afflicted searching a cure in their extremity are prone to harken with credulity. It may be all the accused claimed for it, but it is a calling directed to the serious business of treating human ailments for the purpose of restoring the sick to health, and directly related to the public health, to protect which is peculiarly within the police power of the state.

Society Proceedings

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting Held May 5, 1915

The President, Dr. James C. Wilson, in the Chair

Cardiovascular Poisons; Their Methods and Results

Dr. Robert N. Willson: To those who know the heart simply as a muscular pump, the function of which is to supply the various parts of the body with blood, the term "cardiovascular poison" will mean little more than a drug which causes the heart to misbehave or to functionate badly. It is no very recent discovery that if any human organ is overrich in its nerve supply, the heart is that one. It is an exceedingly important item of knowledge that one of the main nervous distributions in the heart is subendocardial. Highly important also is an appreciation of the probability that the cardiac nervous structures enter in greater or less degree into the inception and the discharge of each and all of the main functions of the heart. Of three groups of cardiovascular poisons, the first is decomposition of food products. These I believe constitute the causal factor in arterial changes and the hypertension contributing so actively to the cardiac disease of later years. A second class of cardiovascular poisons consists of micro-organismal influences which make their attack from without. The infectious diseases approach without adequate warning, and the harm is accomplished before the danger is realized. Syphilis, tuberculosis, rheumatism, so-called, and diphtheria illustrate fairly well the various forms of micro-organismal invasion of the heart and vessels. Syphilis and tuberculosis begin with heredity, and very frequently we find the children of luetic or tuberculous parentage the subjects of myocardial or valvular defects. The tubercle bacillus and its toxin also furnish us with an invariably diseased heart. Regarding the acute rheumatic infection, we are in an uncertain and a transition stage with respect even to its etiology. In diphtheria we experience nearly 100 per cent. of instances of myocardial involvement.

The third class of cardiovascular poisons is that of tobacco and alcohol. It is my belief that between tobacco and the various forms of food toxemia can be divided the responsibility for the vast amount of arteriosclerosis not attributable to syphilis and old age. From the evidence at hand, it seems fair to conclude that degenerative processes are at work in every tobacco-poisoned heart. Alcohol is almost the twin of tobacco in its anesthetic and narcotic effect. We need not discuss its lack of claim to a food value. This lack has been demonstrated beyond all peradventure and accepted as a working principle in all of the foremost laboratories. We know that in small doses and in large, alcohol in continued use soon depresses and then paralyzes the vasomotor nerves. While we do not know that alcohol produces arteriosclerosis, we know that tobacco does, and that the use of alcohol practically implies the craving for tobacco. Other excesses in food and venery are closely associated with alcoholism and the tobacco habit that tend equally toward sclerotic vessels and myocardial disease. It is impossible, therefore, either to indict alcohol on the score of directly producing arteriosclerosis, or to relieve it completely of either a direct contributory or indirect responsibility for much of the rapidly increasing cardiovascular disease. It is only fair to exonerate the drug alcohol from contribution to the sclerotic total when used by the physician in therapeutic dosage, if there be any such thing. There is an abundance of reliable evidence to show that the administration of alcohol lowers the vital resistance to bacterial infections by diminishing the power of the human economy to marshal its phagocytes at will and to manufacture the antitoxins requisite to combat the infections which work mainly as toxemias. The only conceivable occasion on which the drug could assist in a grave toxemia would be in such an infection as typhoid fever, occurring in a strong, robust individual of high antitoxic resisting power, in whom there was a too wholesale destruction of bacteria in the tissues with danger that the patient may poison himself to death through the very process that usually works the cure. In the vast majority of typhoid patients, however, this danger is not present. There are few physicians approximating above or below 40 years of age who feel that a place remains for alcohol in the pharmacopeia of the well-read and conscientious physician, except as an emergency stimulant, and then only in minimal dosage, which does not mean a half ounce or an ounce at intervals of a few hours. The physiologic effect of alcohol is better comprehended by the lay public today than by the average medical man, judging by the tide sweeping over the country.

DISCUSSION

Dr. H. A. Hare: The first mistake in Dr. Willson's paper is that of making sweeping statements without the slightest justification for many of them, and some of them in direct controversion to known laws of physiology and pathology. To state, for example, that in the early stage of the influence of alcohol this drug stimulates the circulation by stimulating the vagus is to show an entire ignorance of what every second-year student in medicine knows: that the function of the vagus is inhibitory and that in its action it decreases functional activity of the heart rather than increases it. When the statement is made that alcohol produces arteriosclerosis and arterial spasm, and in the same breath the assertion is made absolutely that alcohol depresses the entire vasomotor apparatus, it is difficult to agree, for it is not easy to see how a drug can produce a rise of blood pressure at the same time that it is producing a lowering of blood pressure by depressing the vascular system in general. Dr. Willson does not seem to be familiar with what physiologists and pharmacologists recognize as the true physiologic action of alcohol. So far as the circulatory action of alcohol is concerned, in moderate amounts it does not act as a stimulant or as a depressant, but it equalizes the circulation. There is no drug that has physiologic power which, if wrongly used, will not also have the power to do harm. In a recent meeting of the County Medical Society a gentleman who read one of the papers said that alcohol was always contraindicated in tuberculosis. While such a statement is too sweeping to bear weight, published under certain circumstances it might do harm. While the harmfulness of alcohol in miliary tuberculosis is well known, in fibroid phthisis with cough inter-

fering with digestion, the administration of alcohol is the administration of food which is burnt up in the body, which lends energy to that body which stimulates digestion, and which, if given in the proper form, may even help him to expectorate the material which is in the cavities. What is needed, I take it, is the presentation of a paper which recognizes that when alcohol is abused it does harm; when used rightly, it has a definite, specific and often a very valuable place in medicine. This is true in diabetes mellitus, in which, in certain cases, alcohol burnt up in the body possesses a distinct food value. Dr. Willson made the dogmatic statement that *all*—I think he said *all*—researches show that alcohol decreases the ability of the blood to combat infection. I will be equally dogmatic and say they do not do anything of the kind. On the contrary, there are researches which show that alcohol increases the ability of the body to protect itself in certain instances. Some time ago I presented the results of a research to the effect that in typhoid fever and tuberculosis alcohol in proper doses increases very materially the bacteriolytic action of the blood. The technic by which the studies were made was according to directions given by Dr. Simon Flexner. On one point Dr. Willson and I agree, that the crusade in the profession which has been waged against alcohol has diminished the size of the dose which many physicians now give.

DR. H. C. WOOD: There are several loose expressions in Dr. Willson's paper which I do not think should be allowed to go uncorrected. He speaks of the "cardiovascular action" of drugs. It is well known that a drug may have one action on the heart and an opposite action on the blood pressure. Because a drug lowers blood pressure is no proof that it depresses the heart, and vice versa. Pharmacologists always separate these two actions and study the effect of the drug on the heart as distinct from its effect on the blood vessels. If he had made this distinction he would probably not have fallen into the error of comparing alcohol to nicotin in its physiologic action. It is hard to imagine two drugs more widely different in physiologic effect than alcohol and nicotin. Dr. Willson, in drawing his conclusions from the experiments quoted, fails to make sharp the distinction between the therapeutic and the toxic dose of alcohol. He speaks of the secondary results of alcohol as if the depressant effect followed when therapeutic quantities were given; whereas, I understand that the depressant results are the effect of toxic doses. Dr. Willson quotes the experiments of Dr. Dixon, but neglects to say that Dixon reached the conclusion that alcohol acted as a foodstuff for the heart. It is a long time since I read Kochmann's paper, which he has also quoted, but the impression made on my mind at that time was that he regarded alcohol in proper dosage as a stimulant to the heart muscle. I do not think there is any reliable scientific evidence that the secondary effect of small doses is a depressant action on the heart muscle.

DR. ROBERT N. WILLSON: Dr. Hare ventured the assertion that I was guilty of ignorance of the first principles of cardiac physiology on the basis of my having made a statement (as claimed by him) that alcohol or any other drug stimulates the heart by stimulating the vagus nerve. What I actually did say was that alcohol causes a stimulation of the cardiac action through its depressant action on the vagus nerve. Dr. Hare by his remark would appear to lay himself open to the suspicion of possible ignorance with respect to the action of the sympathetic nerve when the controlling influence of the vagus is set aside. Again, I made no such statement as that alcohol produces arteriosclerosis. Indeed, I made absolutely the opposite statement, namely, that there exists no final evidence that alcohol does produce arteriosclerosis. I did show that the combination of tobacco with alcohol often results in the production of arteriosclerosis. I also took pains to refer to the fact that the combined action of the two drugs gives a different result from that of alcohol alone. Dr. Hare claims that the difference between the action of alcohol and tobacco lies in the fact that tobacco raises the diastolic, and lowers the systolic blood pressure, whereas alcohol lowers both in its secondary action. Dr. Hare is correct in his belief that the dominant action of alcohol is vasodilator after its first temporary splanchnic-constrictor influence, but he forgets the important fact that vasodilation also characterizes tobacco after its early vasoconstrictor action, and becomes its permanent influence. The evidence obtained from the action of both of these drugs is to the effect that vasoconstriction and the elevation of blood pressure are not indispensable to the production of arterial disease. I was sorry to hear Dr. Hare revert to the fallacy that alcohol is a food in any true sense of the word. Dr. A. E. Taylor showed in a most conclusive manner that alcohol is never a food in the true sense, and that to call it such shows an entire ignorance of the readily available laboratory findings. Dr. Taylor's statement represents the consensus of intelligent medical opinion on the subject.

AMERICAN ASSOCIATION OF IMMUNOLOGISTS

Second Annual Meeting, held at Washington, D. C., May 10, 1915

(*Concluded from page 358*)

The Virulence of Various Strains of Human Tubercle Bacilli

DR. GEORGE BURTON GILBERT and DR. HAROLD GREGG, Colorado Springs: The use of living bacilli for the production of immunity has been of little avail because of our inability to control the exact number and the virulence of the bacilli. Using the ingenious device of Prof. M. S. Barber for the isolation and inoculation of any given number of living virulent tubercle bacilli, it has been possible to show great variation in the minimum lethal dose of different virulent cultures. In an effort to obtain a culture of moderate virulence for future work along immunologic lines, we decided to obtain a large series of cultures of tubercle bacilli from different types of cases and from different organs of the body, and then to study these in detail as to virulence. The cultures were obtained, using the mediums advocated by Petroff, consisting of 1:1,000 gentian violet, two parts of whole egg, and one part meat juice. Definite numbers taken from the fresh cultures less than one month old were inoculated subcutaneously in the nipple area of guinea-pigs. Both local and internal lesions were studied. Owing to the lack of guinea-pigs, only six cultures can be reported on at the present time. The results show the absence of both local lesions and local regional glands in seven instances in which macroscopic disease was found in one or more internal organs. This was quite unusual in our experience. It is safe to assert that great difference in virulence occurs in virulent cultures obtained from various cases. Whether or not cultures obtained from various organs differ regularly remains to be determined.

An Analysis of Laboratory Methods Used in the Examination of Cerebrospinal Fluids

DR. RICHARD DEXTER and DR. CLYDE L. CUMMER, Cleveland: We have examined a number of spinal fluids by means of the Wassermann reaction, cell count, globulin content and, more recently, by the Lange colloidal gold reaction. The number of fluids examined was considerable, embracing 177 from cases of indubitable lues of the central nervous system and 132 spinal fluids in which lues was either nonexistent or nonactive. It may be said that the use of amounts of spinal fluid up to ten times the amount of the Wassermann test dose will increase the number of positive Wassermann reactions in syphilitic disease of the nervous system. The use of such large amounts of spinal fluid does not tend to nonspecific binding in nonluetic cases. The use of double our maximum dose in the control tube rarely tended to anticomplementary action. The Lange colloidal gold reaction in the spinal fluid would seem to be present in cases of syphilitic involvement of the central nervous system more frequently than a positive Wassermann reaction, an increased cell count or an increased globulin content. The colloidal gold test was

constant in paresis, and the "typical curve" was also very constant. While strong reactions occur in tabes and cerebrospinal syphilis, we have rarely seen the "typical curves" described for these conditions.

DISCUSSION

Dr. W. Egbert Robertson, Philadelphia: I have reached the same conclusions with respect to the amounts of spinal fluid to be used in making the Wassermann test. For two years I have used as a routine three tubes containing 0.5 c.c. and 1.5 c.c., respectively. Occasionally only the largest amount will yield a positive result. In paresis, however, it is the rule to find all three tubes positive. In every instance I not only made a Wassermann on the spinal fluid, but also counted the cells, and did a Nonne, Noguchi, Fehling's and gold solution test. Dr. Paul Weston of the Warren State Hospital, Pennsylvania, made a very large number of counts and found that they varied day by day and without any apparent reason. In all instances, counts were made within a few minutes of taking the spinal fluid, so that no opportunity for cytolysis was given. In my experience there was always a direct relationship between the degree of pleocytosis and the protein content of the spinal fluid. As to the gold solution, though the preparation of the solution is extremely difficult, the application of the test is very simple and the results of considerable value, not alone in suspected cases of syphilis, but also in disease of the brain and cord or their coverings, whether of a primary or secondary nature. For instance, in uremia one finds almost constantly that the first tube will go down completely, while the others remain unchanged, or but so slightly changed as to be of no special moment. In one instance with a negative Wassermann, both in the blood and spinal fluid, with a low cell count, an absent Nonne and Noguchi and reduced Fehling's, Tube 5 became water clear, while all the rest remained unchanged. In genuinely specific cases the gold reaction is a variable one; for instance, in advanced cases of paresis and tabes, all of the ten tubes which we employ in our series may become water clear. Speaking very generally, we have usually found that the curve of paresis is more apt to be irregular, the first two or three tubes being water clear, then two or three tubes of variable color, while perhaps six and seven may again be water clear with little or no change in the last two or three. In tabetics of the less advanced type, the earlier changes will be slight, while Tubes 4, 5 and 6 will often be water clear, and perhaps the rest of the series water clear. In one case of gumma of the brain, the first two tubes were slightly changed, while the remainder from the third to the tenth were all water clear. In one case of multiple sclerosis in which the spinal fluid was under considerable pressure, there was a negative Wassermann both in the blood serum and in the spinal fluid, with a slight increase in the cell count, with a positive Nonne and Noguchi, Fehling's reduced, and the gold solution showed no change in the first six tubes, slightly progressive change in the seventh and eighth, while the ninth and tenth were water clear. Our work has not been sufficiently extensive to enable us to draw definite conclusions on the value of the gold solution reaction, but we can state positively that the character of the curve varies materially with the improvement or retrogression of any particular case, and in two instances in which we had positive Wassermann reactions in cases of tabes, with marked gold solution reactions, when the patients improved clinically and the Wassermann reactions became negative, the gold solution likewise became negative.

Dr. George P. Sanborn, Boston: We have made 200 observations. In paresis we have obtained from the analysis of the cerebrospinal fluid just what had been obtained at the Johns Hopkins Hospital in Baltimore in tabes. In tabes we have never obtained tubes that were absolutely decolorized. In the suspected cases which gave the clinical signs of tabes and those alone, the tubes were decolorized in the first three or four days; but in these cases the nerve infection was more extensive than the clinical diagnosis suggested. There might have been a paretic element in the case. We have also found that after the injection of the salvarsanized serum in a number of cases the intensity of the gold solution reaction diminished with successive treatments, in some instances from three to four days. I have never seen a case of tabes in which we could get any definite decolorization in one tube and the ordinary growth in the rest of the tubes.

Dr. Richard Dexter, Cleveland: It is well to continue the treatment with small doses of a definite titration.

The Blind Dental Abscess

Dr. Henry L. Ulrich, Minneapolis: Blind dental abscess is a rather loose term. Other terms, such as alveolar abscess, peridental or apical abscess, though not entirely satisfactory, are better. Apical abscesses are never found at the roots of vital teeth. The pathologic anatomy of these areas is not very well understood. At the University of Minnesota Hospital, in an effort to correlate oral sepsis with systemic lesions, a special inspection of mouths was made for pyorrhea, gingivitis, caries and, by means of the Roentgen ray, for apical abscesses. We were struck by the frequency of apical abscesses in these cases. Over 68 per cent. of all artificially devitalized teeth were found with apical abscesses and the total number of abscesses, including those found in pulpless teeth due to caries or death from accident or too proximal fillings, was 83 per cent. In the examination of 500 cases, 1,350 dead teeth were found, and of these 976 had root canal fillings. Of these, 159 cases with apical abscess had bacteriologic review, and of 107 cases from the university clinic, 100 showed the presence of *Streptococcus viridans*. Of fifty-two cases from my private clinic, fifty gave a *S. viridans* or a *S. hemolyticus;* occasionally *S. mucosa* was recovered. The *Staphylococcus aureus* or *albus* or the *Micrococcus catarrhalis* was also observed in conjunction with the streptococcus. The apical abscess is merely another evidence of a focus of streptococcal focal infection, just as the heart, the mucosa of the stomach, the articulations or the kidneys are evidence of secondary deposits. In other words, it is of hematogenous origin. The pathogenicity of these abscesses and their relation to other concurrent foci have had ample clinical verification. A recent analysis of seventy-six cases in which a streptococcus was isolated from apical pockets showed that thirty-eight cases belonged to the rheumatoid group, six cases to the cardiovascular group, three to the asthenic, four to the gastro-intestinal, and two to the genito-urinary. A subgroup of eight cases consisted of those in which the streptococcus focal infection was superimposed on syphilis, tuberculosis, primary anemia or vice versa. The striking feature of this analysis was the diversity of clinical manifestations for which streptococcal focal infection was responsible. The blind dental abscess has a very practical significance; it may be the only focus left and may hold the balance of power in the struggle of the body for complete sterilization. In every case of streptococcal infection its presence or absence must be determined. Such a focus will furnish material for the preparation of vaccines, and much trouble and disappointment from attempting cultures from glands and tonsils can thus be avoided. Of the more striking symptoms in these groups, we had manifestations of rheumatoid conditions in 51 per cent.; heart lesions, 47 per cent.; secondary anemia, 43 per cent.; tonsils, 40 per cent.; pyorrhea, 25 per cent.; kidneys (albuminuria and nephritis), 34 per cent.; caries, 15 per cent.

DISCUSSION

Dr. George P. Sanborn, Boston: In cases of rheumatism or joint infections, we should find some local infection which is the cause of the trouble; eliminate that cause and good results will follow. There are many cases in which it is impossible from the clinical history to locate the infection; in such cases the use of the Roentgen ray is of great value in seeking for this local infection in the mouth.

Dr. Joseph Head, Philadelphia: I recall a case in which the tonsils appeared to be all right; but they were removed.

The joint affection persisted. It then occurred to me that the Roentgen ray might reveal some foci of pus around the roots of the teeth which accounted for the symptoms, and it did.

DR. A. PARKER HITCHENS, Toledo, Ohio: I suffered from pyorrhea alveolaris, and once in a while there would occur an acute "blow up." I also had a severe tonsillitis which was treated with silver nitrate, sprays, etc. The interesting thing was that the tonsillitis always came along with the acute exacerbations of the pyorrhea. Since the pyorrhea has been cured by the extraction of certain teeth, there has not been any trouble with tonsillitis.

DR. GERALD B. WEBB, Colorado Springs: I wish to inquire if the use of the Roentgen ray would enable one to make a diagnosis of pus at the apical portion of the teeth.

DR. HENRY L. ULRICH, Minneapolis: We are still at sea regarding the value of the roentgenogram in this disease. As a matter of fact, after extracting teeth because of abscess formation, when we made sections we did not find necrosis, but the results of ordinary inflammatory conditions. Histologically, we have not worked out the study to our satisfaction. It is of particular interest that these abscesses are found so frequently, and I believe they must be secondary and not any primary foci of infection. With regard to the relief of the tonsillitis after the extraction of teeth, this is readily explained, I believe, by the vaccine theory.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

July, LXXII, No. 1, pp. 1-208

1 *Effect of Pubiotomy on Course of Subsequent Labors. J. W. Williams, Baltimore.
2 *Use of Galvanocautery Knife for Excision of Mammary Tumors for Microscopic Diagnosis. J. W. Bovée, Washington, D. C.
3 *Sweat-Gland Tumors of Vulva (Adenoma Hidradenoides Vulvae). G. W. Outerbridge, Philadelphia.
4 Case of Primary Syncytioma of Ovary. E. Ries, Chicago.
5 An Improved Ionization Method for Treatment of Carcinoma of Cervix. G. B. Massey, Philadelphia.
6 Uses of Desiccation Surgery in Gynecology. W. L. Clark, Philadelphia.
7 Static Currents of Value in Gynecology. A. B. Hirsh, Philadelphia.
8 Roentgenotherapy in Uterine Fibroids and Uterine Hemorrhage. G. E. Pfahler, Philadelphia.
9 Radium in Gynecologic Practice. W. B. Chase, Brooklyn.
10 Treatment of Advanced Carcinoma of Cervix with Radium. B. M. Anspach, Philadelphia.
11 *Study of Specificity of Ferments in Pregnancy and Mechanism of Abderhalden Reaction. Serum Studies in Prgenancy. J. A. Kolmer and P. F. Williams, Philadelphia.
12 Statistical Study of Frequency of Funnel Pelves and Description of New Outlet Pelvimeter. H. K. Thoms, New Haven, Conn.
13 *Etherometer, Means for Mechanical Anesthesia. F. Montgomery, New York.
14 Heart Disease in Childhood. H. E. Tuley, Louisville, Ky.

1. **Effect of Pubiotomy on Course of Labors.**—Williams' article is based on the study of thirty labors, which occurred subsequent to pubiotomy in twenty individuals. Thirteen full-term and three premature children were born spontaneously. In somewhat more than one third of the cases, particulary in funnel pelves, pubiotomy has resulted in sufficient enlargement of the pelvis to permit subsequent spontaneous labor. Williams' experience has taught him greater conservatism in the employment of pubiotomy which, he says, should not be regarded as an elective operation, except in funnel pelves in young women. In contractions of the superior strait, the ideal should be to differentiate the patients into those requiring cesarean section at the onset of labor, and those in whom a spontaneous outcome may reasonably be expected. Pubiotomy should be employed in the latter only when failure of the head to engage after a prolonged second stage has demonstrated that the prognosis was erroneous.

Pubiotomy does not compete with elective cesarean section at the onset of labor, but is far safer than conservative cesarean section late in the second stage. In moderate degrees of contraction of the pelvic inlet, the great field for pubiotomy is in patients who have not been seen until late in labor, or who have been examined by those whose technic is questionable. In such circumstances, conservative cesarean section is too dangerous, so that the choice lies between pubiotomy, cesarean section followed by removal of the uterus, or craniotomy on the living child. If definite infection is present, pubiotomy is contraindicated. In version or breech extraction when there is moderate disproportion, prophylactic laying of the Gigli saw adds greatly to the peace of mind of the operator, as it enables him to resort promptly to pubiotomy if unexpected difficulty is encountered. The most promising field for pubiotomy is in funnel pelves in young women, as it not only permits the delivery of a living child, but offers a reasonable prospect of permanently enlarging the pelvis, so that subsequent labors will end spontaneously. With proper training in the treatment of labor complicated by contracted pelvis, Williams believes that the induction of premature labor can be abandoned definitely.

2. Abstracted in THE JOURNAL, June 19, 1915, p. 2092.

3. **Sweat-Gland Tumors of Vulva.**—Of recent years there has come to be recognized a fairly definite group of tumors of the vulva, usually involving the labia majora, and believed to originate from sweat glands. The tumors are small, rarely exceeding a centimeter in diameter, slow-growing, painless and present few clinical symptoms. They may be single or multiple, unilateral or bilateral. On microscopic examination, they present a papillary cystadenomatous structure, in which certain characteristics of the finer anatomy of normal sweat glands are reproduced. Both histologically and clinically, the tumors of this class so far reported appear to have been for the most part benign, although the possibility of recurrence after removal, or of carcinomatous degeneration, must not be lost sight of. Outerbridge reviews the literature and reports one personal case.

11. **Serum Studies in Pregnancy.**—Kolmer and Williams summarize their work as follows: Proteotoxins are produced during the Abderhalden pregnancy reaction which, when injected intracutaneously and intravenously into normal animals produces local and general changes analogous to anaphylactin reactions. Proteotoxins produced in a mixture of human pregnancy serum and human placenta are toxic for normal guinea-pigs. The ninhydrin test with dialysates and intracutaneous and intravenous injections of the serum in the Abderhalden reactions yielded fairly parallel indices of the degree of protein digestion and proteotoxin production. The addition of various tissue substrates other than placenta, to human pregnancy serum, was followed occasionally by proteotoxin production as shown by intracutaneous and intravenous tests with the serum, but except when a substrate of human kidney was used the amount of proteotoxin produced was usually much less than that produced in mixtures of pregnancy serum and human placenta. Similar results were observed with inorganic adsorbents, as kaolin, starch quartz, etc.

The proteolytic ferments in healthy normal serum may produce small amounts of proteotoxins when tissue substrates are added and occasionally and to less degree with inorganic absorbents as kaolin and starch.

Complement in itself has no direct relation to the ferments in pregnancy serum. Inactivation of serum probably reduces its digestive power through destruction of a normal proteolytic ferment, and reactivation of a serum by means of the addition of serum complement increases its digestive power to a slight degree, probably by reason of the addition of these normal ferments. In pregnancy serum there are two sets of proteolytic ferments, normal and nonspecific and specific ferments. The former may be released through absorption of the antiferment by means of various nonspecific organic and inorganic substances, whereas the latter are released through the absorption of the antiferments by means of the specific protein antigen alone. Kolmer and Williams' experi-

ments also suggest that the protein matrix in the Abderhalden reaction is not only the protein of the serum but also to some extent that of the tissue substratum itself.

13. **Etherometer, Means for Mechanical Anesthesia.**—The device used by Montgomery consists of an air-tight graduated glass container having a cap arranged with two valves. One valve is an inlet valve for air, similar to the valve in an automobile or bicycle tire which permits air to enter but has a shut-off to prevent its escape. The other valve is an outlet valve to control the flow of anesthetic forced out under the air pressure. This valve is so adjusted that the number of drops per minute discharged from the container may be very accurately controlled. The air pressure necessary to operate the device is obtained by means of a small rubber hand bulb similar to an atomizer bulb. This bulb is only used to charge the apparatus after which it is removed just as in the case of a bicycle-tire pump, after the tire is inflated. When the etherometer is filled with the anesthetic and charged with air in this way it is ready for use and will operate automatically until it is emptied. The anesthetic is discharged through a long flexible tube to the face mask where it is diffused on the gauze by means of multiperforated tubes arranged in the mask. All the anesthetist has to do is to place the mask on the patient's face and turn the valve so that the requisite number of drops per minute are flowing to the mask. The rate of flow is observed through the glass sight-feed on the cap.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

June, II, No. 12, pp. 735-782

15 Mosquito Eradication and Prevention. W. D. Wrightson, New Orleans.
16 Anopheles Production from Malarial Survey. H. R. Carter, U. S. P. H. Service.
17 Experiment with Stomoxys Calcitrans in Attempt to Transmit Filaria of Horses in Philippines. M. B. Mitzmain, U. S. P. H. Service.
18 *Intravenous Mercuric Chlorid in Malaria. N. Barlow, Cuyamel, Honduras.
19 Point to be Considered in Utilizing Duck as Mosquito Destroyer. F. C. Bishopp, Dallas, Tex.

18. **Intravenous Mercuric Chlorid Malaria.**—Barlow cites the case of a native who had suffered for nine days with typical malarial paroxysms occurring every other day. The blood showed a very heavy tertian infection, with but one brood of plasmodiae. An intravenous injection of slightly less than one-forth grain of mercuric chlorid was given at 10 a. m., the chill being due the same day at 4 p. m., the parasites varying from three-quarters grown to nearly developed schizonts, with numerous gametes. The paroxysm did not appear, but was replaced by a gentle fever beginning without a chill at 2 p. m., gradually rising to 101.6 at 5 p m., and subsiding by lysis. With the exception of a single 5-grain capsule of quinin, taken previously and which had produced no appreciable effect either on the fever or on the blood picture, the patient had no other medication, either before or after the injection. There were no further symptoms of malaria.

Six weeks later, a series of blood specimens were taken at frequent intervals. There were no parasites found and the differential leukocyte count was normal. The action on the parasites was very interesting, and in marked contrast to that observed by the author after the administration of quinin by the intravenous route. The ameboid motion in fresh specimens was retarded by mercury, but was more active after quinin. The rate of growth, judged by comparison of successive stains, was made more slow or checked altogether by mercury, but was accelerated by quinin. Of the nearly developed schizonts, only a few proceeded to full development after mercury, while all did so after quinin. The entrance of the merozoites into the red cells was unaffected by the presence in the blood of 20 grains of quinin; no evidence of its occurrence was seen after mercury. The action of quinin was evident only on the partly grown schizonts. Mercury was destructive to all forms. The gametes were not promptly affected by either; but entirely disappeared thirty hours after the mercury, while their complete disappearance after quinin occurred only after several days.

Annals of Surgery, Philadelphia

July, LXII, No. 1, pp. 1-128

20 Notes on Military Surgery. G. W. Crile, Cleveland.
21 *Sarcoma of Breast. S. H. Geist and A. O. Wilensky, New York.
22 Carcinoma of Stomach. G. Woolsey, New York.
23 Leather Bottle Stomach. M. F. Porter, Fort Wayne, Ind.
24 *Cancer of Testis. W. B. Coley, New York.
25 Perienteritis Membranosa. A. G. Gerster, New York.
26 Bone Graft Peg in Treatment of Fractures of Neck of Femur. F. H. Albee, New York.

21. **Sarcoma of Breast.**—Of 558 cases of breast tumor, including chronic inflammatory growths, both simple and specific, analyzed by Geist and Wilensky, 22, or 3.9 per cent., were sarcomas of various types; 260, or 46.5 per cent., were carcinomas. Of the malignant tumors 7.7 per cent. were sarcomas. According to their histologic types, the 22 sarcomas are grouped as follows: fibromyxosarcoma, 5; spindle-cell sarcoma, 5; round-cell sarcoma, 4; cystosarcoma phylloides, 4; giant-cell sarcoma, 2; and perithelioma, 2. The tumors occurred in women between the ages of 29 and 49. All the women were married, and the majority had borne children. In two cases, one a fibromyxosarcoma, and the other a cystosarcoma phylloides, a history of trauma was obtained. In three other cases there was a history of a previous inflammatory condition. In two of these instances, both of them cystosarcomas, there was a history of mastitis, one eight years and one four years previously. In the third case, a perithelioma, a breast abscess had occurred twenty-seven years previously, on the same side. In three instances there was a history of a previous breast tumor; in two of these the tumors were in the opposite breast. In 57 per cent. of the patients the right breast was involved, in 33 per cent. the tumors were bilateral, and in 10 per cent. the tumor grew in the left breast. In one third of the cases, the skin was fixed to the tumor. Pain existed as a prominent symptom in one third of the cases.

Of the 22 cases, 11 patients were subjected to the radical Halstead operation; one patient had an amputation of the breast and dissection of the axilla; in one, a simple breast amputation was done; in five the tumor itself was excised; in one only a specimen was removed, and in the remaining three cases the type of operation was not described. With the exception of one patient, who died shortly after the operation, all the patients left the hospital in good condition. In three cases there were local recurrences after the tumors had been excised; in one case, three weeks; in the second, one month, and in the third, six months after operation. Of the 18 operated cases, 11 were traced. All of the patients but one are alive, the time since operation ranging from four months to nine years. Among them were five fibrosarcomas, on two of which radical Halstead operations had been performed. The other three were excised locally. One patient with round-cell sarcoma died of shock following a Halstead operation; a second patient, after bilateral local excision, returned in six months with recurrence. In two cases of peritheliomas, for which the radical Halstead operation was done two and nine years ago, respectively, the patients are alive and well now.

24. **Cancer of Testis.**—During the past twenty-five years, Coley has personally observed 65 cases of sarcoma of the testicle. In 52 cases the disease occurred in the normally descended testicle and in 12 cases, in the undescended testicle. Coley believes that his own series of cases show that cancer of the testis treated by simple orchidectomy, without any appreciable risk, and followed by a thorough course of treatment with mixed toxins of erysipelas and *Bacillus prodigiosus* (also without risk), have a far better prognosis than those subjected to the very extensive laparotomy with removal of the lumbar glands, as advocated by Chevassu and Hinman. In the majority of cases the disease was far advanced at the time when the patients came under observation. In only 9 the toxins were given immediately after primary operation before recurrence had taken place, and yet in spite of this,

13 patients were well beyond a period of 3 years, and only 2 of these recovered without the use of the toxins; furthermore, both cases were of the teratoma type, one almost a pure teratoma and probably not malignant; the other a teratoma with carcinomatous degeneration. Two of the cases of this series were cancer of the undescended testis. In one case the toxins were used after operation and the patient remained well over three years, when he died either of metastases or tuberculosis, probably metastases. In the other, the toxins were used as a prophylactic after operation; the patient is now well, eight years after.

Archives of Internal Medicine, Chicago

July, XVI, No. 1, pp. 1-148

27 *Digitalis Dosage. C. Eggleston, New York.
28 *Diagnostic Value of Uric Acid Determinations in Blood. O. Folin and W. Denis, Boston.
29 Case of Open Ductus Arteriosus (Botalli), with Necropsy. J. L. Stoddard, Boston.
30 *Clinical Actions of Veratrum. R. J. Collins, Cleveland.
31 *Relation of Calcium to Delayed Coagulation of Blood in Obstructive Jaundice. R. I. Lee and B. Vincent, Boston.
32 *Complement Fixation in Pertussis. M. Olmstead and P. Luttinger, New York.
33 Three Cases Showing Changes in Location of Cardiac Pacemaker Associated with Respiration. F. N. Wilson, Ann Arbor, Mich.
34 *Symptoms of Urinod Poisoning. F. A. Hartman, Boston.
35 Study of Several Factors of Acid Excretion in Nephritis. W. W. Palmer, Boston, and L. J. Henderson, Cambridge, Mass.
36 *Studies on Pathologic Physiology of Heart. C. J. Wiggers, New York.

27. **Digitalis Dosage.**—The cat method of standardization of digitalis, Eggleston found, yields results on which the dose for man can be based. The average therapeutic dose of digitalis, given orally to man in the form of the tincture or infusion, is 0.146 cat unit or about 0.146 c.c. of an average high-grade tincture per pound of body weight, as established by thirty-three observations. Fifteen observations have established 0.066 cat unit, or 0.023 mg., per pound as the average therapeutic dose of crystalline digitoxin. In approximately half of a total of 48 courses of administration of either digitalis or digitoxin, full therapeutic effects were secured with doses falling within 15 per cent. above or below the average dose. Doses considerably larger than the average were taken in 17 instances without the production of more than mild toxic symptoms. The activity of the preparation of digitalis has no material influence on the dose required in terms of cat units. Age, sex and cardiac condition do not seem to influence the size of the dose required. Both digitalis and digitoxin are probably rapidly and fairly uniformly absorbed from the alimentary canal of man, but digitalis is less completely absorbed than is digitoxin. Strophanthus, the strophanthins, ouabain, true digitalin, and some other digitalis substances are poorly or irregularly absorbed when given by mouth to man or to the higher animals and are unsuited for therapeutic use in this way.

28. **Uric Acid Determinations in Blood.**—In making use of blood analysis to decide whether a given doubtful case of joint disease is gout or arthritis, Folin and Denis state that it is absolutely necessary to determine the nonprotein nitrogen (or at least the urea) in the blood as well as the uric acid. And before the blood is drawn for such analyses it is indispensable that the patient should have been on a purin-free diet for at least two days. The level of the protein metabolism should also be ascertained by means of a nitrogen determination in the twenty-four-hour urine passed during the last day of the experiment. In gout the blood is almost invariably abnormally high in uric acid, while the other waste products represented in the nonprotein nitrogen of the blood are usually within the normal limits. In arthritis also the blood is not infrequently abnormally high in uric acid, but most such cases have abnormally high nonprotein nitrogen as well. Neither qualitative tests for uric acid in the blood nor quantitative determinations of the uric acid alone can be depended on in the differential diagnosis of gout and other joint diseases. For a differential diagnosis in doubtful cases of gout or arthritis by means of blood analyses the patient must be put on a purin-free diet and uric acid determinations must be accompanied by determinations of the nonprotein nitrogen (or urea).

30. **Clinical Actions of Veratrum.**—The preparation used by Collins was the 10 per cent. tincture from *Veratrum album*. Each dose was given in seven cases with from one to three glasses of water. By mistake one patient received only an equivalent of one-fourth glass and complained that each dose caused considerable gastric irritation, of which none of the others complained. All patients noted a fulness and throbbing in the head when the pulse rate reached its minimum. The therapeutically effective dose of the tincture of *Veratrum album* for adults ranged from 30 to 75 minims. Clinically, the effects of veratrum resemble the pharmacologic effects, and consist of a slowing of the pulse rate amounting to 12 to 42 beats per minute, and a fall of systolic blood pressure amounting to about 39; of the diastolic, 32 mm. The two hypertonus cases showed a fall of systolic blood pressure amounting to about 49 mm.; of the diastolic about 8 mm. The circulatory effects produced by veratrum take place independently of the "toxic" symptoms, such as nausea and vomiting.

31. **Relation of Calcium to Delayed Coagulation of Blood.**—The results of the studies made by Lee and Vincent would tend to show further that while the effect of bile in delaying coagulation is largely counteracted by calcium, yet bile has in addition an inhibitory effect on the formation of thrombin and on the action of thrombin already formed. Moreover, bile in very strong concentration in vitro entirely prevents coagulation even in the presence of an excess of calcium. It is doubted, however, if in obstructive jaundice such concentration of bile ever occurs as will entirely prevent coagulation of blood. Clinically this need of calcium can be met by the administration of any calcium salt. The authors have mainly used calcium lactate in the dosage of 100 grains a day. It must be administered over a period of several days before any marked effect on the coagulation time is seen. The necessity of employing large doses depends on the difficulty of securing the absorption of calcium from the gastrointestinal tract rather than the need of such large amounts of calcium.

32. **Complement Fixation in Pertussis.**—The most reliable antigen for complement fixation tests in whooping cough was obtained by Olmstead and Luttinger, by autolyzing an aqueous emulsion of a twenty-four to forty-eight-hour growth of the Bordet-Gengou bacillus for from eighteen to twenty-four hours at 56 C. and shaking for several hours. The closeness of relationship of the Bordet-Gengou strains is still under investigation. To obtain the maximum number of positive reactions it may be necessary to use a polyvalent antigen. Active serum may give nonspecific positive reactions. A negative reaction given by active serum is stronger evidence of the lack of an infection than is a negative reaction given by inactive serum. For fixation one-half hour in the water bath or one hour in the incubator is absolutely reliable. Icebox fixation probably gives reliable results; the optimum period is still to be determined. Fixation at room temperature for four hours is unsatisfactory, at least in rooms with variable temperature. About 40 per cent. of whooping-cough cases have given a positive reaction with antigens of the Bordet-Gengou bacillus, when inactive serum was used. The highest percentage of positives is given by convalescent vaccinated cases. Ten per cent. of whooping-cough cases have given a positive reaction with antigens of hemoglobinophilic strains. A $++$, $+++$, or $++++$ reaction by inactive serum with an antigen of the Bordet-Gengou bacillus is diagnostic of whooping cough, a $+$ or $\pm$ reaction is suspicious, a negative reaction has little significance. Complement fixation tests on serum from 111 cases of pertussis or suspected pertussis support the theory that the Bordet-Gengou bacillus is the etiologic factor in the disease.

34. **Symptoms of Urinod Poisoning.**— Urinod is prepared from the distillates of acid-treated urines. It is a neutral malodorous oil boiling at 108 C. with 28 mm. pressure. It is a cyclic ketone with the empiric formula C_8H_8O. The symp-

toms produced by urinod ordinarily are: nausea, headache, loss of appetite, heaviness of the stomach after meals, twitching, irritability of temper, mental dulness, physical weariness, drowsiness, dyspnea, convulsions and a state of non-irritability. Urinod appears to be one of the most toxic substances in urine. Cases are cited by Hartman in which there have been indications of urinod retention in the body. The symptoms of urinod poisoning resemble the nervous symptoms of uremia. Urinoid retention, therefore, might partly account for these nervous symptoms.

36. **Studies on Pathologic Physiology of Heart.**—It is concluded by Wiggers (1) that the characteristics changes of the pressure curve in the central vessels, as recorded by optical manometers, cannot be explained by any reflex vasometer mechanism set in operation by the production of an insufficiency, and (2) that the dynamic changes are accounted for by the fact that an aortic regurgitation increases the initial intraventricular tension, owing to a regurgitation of pressure during diastole; this, in turn, causes a more vigorous ejection of a larger blood volume in the early portion of the next systole. This may be accompanied by an actual decreased ejection during the latter portion of systole, thus, at once, accounting for the facts (a) that the systolic decline becomes steeper and (b) that the total systole output may not increase appreciably beyond normal.

Boston Medical and Surgical Journal

July 15, CLXXIII, No. 3, pp. 75-112

37 Newer Views of "Cancer," and Their Present Relation to Responsibility of Practitioner. E. Reynolds, Boston.
38 Surgical Treatment of Cancer of Cervix Uteri. F. Cobb, Boston.
39 Inoperable Uterine Carcinoma. Method of Applying Heat in Its Treatment. J. F. Percy, Galesburg, Ill.
40 Case of Pyelonephritis, Complicated by Adenocarcinoma and Chyluria. E. T. Gray, Boston.
41 Limitations of Radical Operation for Cervical Cancer of Uterus. H. T. Hutchins, Boston.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

July, VIII, No. 1, pp. 1-18

42 *Pollinosis (Hay Fever)—Consideration of Its Treatment by Active Immunization. S. Oppenheimer and M. J. Gottlieb, New York.

42. **Pollinosis.**—The technic which Oppenheimer and Gottlieb followed during 1913 and 1914 has given an effective antigen for curative purposes. The pollen was ground up for several days with sand and a sufficient amount of 5 per cent. sodium chlorid solution with 0.5 per cent. phenol (carbolic acid) added to prevent the growth of micro-organisms. This mixture was placed in the thermostat for seventy-two hours at 37 C. and then filtered by suction. None of these extracts by this method gave the biuret reaction and few gave a positive ninhydrin reaction. The filtered extract was then precipitated with eight parts of absolute alcohol and filtered quickly in a Buchner funnel to avoid any denaturization, if possible, of the active principle by so strong a concentration of alcohol. The precipitate was dried and weighed. This precipitate, on testing has never given a biuret or ninhydrin reaction. It is partly soluble in 0.85 per cent. sodium chlorid and physiologically active in very weak solutions. A total nitrogen content of one of the extracts of ragweed was performed and it showed 0.066 per cent. of nitrogen. This same solution, on Dec. 20, 1913, gave a positive ninhydrin reaction, whereas on March 24, 1914, three months later, the test was doubtful. This shows that pollen extracts in solution deteriorate on standing. The dried precipitate was dissolved in 0.85 per cent. sodium chlorid solution with 0.25 per cent. of phenol, and serial dilutions made. With these solutions the patients were treated by hypodermic injections.

Eleven patients were treated in 1914, before and during the season for autumnal catarrh. Six patients were treated in advance of the attack. One of these was cured for the season, four had very mild symptoms, and one was not improved. Five patients were treated during the attack. The symptoms of four subsided after receiving from one to four injections, whereas one patient received no benefit. Altogether there were five cures for the season. In four patients there was marked improvement. Of the two patients that were not improved, one had a polypoidal degeneration of the middle turbinate and underlying bone necrosis. The patient had distinct asthmatic attacks every night and it was impossible to say whether the attacks were due to the pollinosis or to the local nasal condition. The other was a physician who reacted both to ragweed and goldenrod pollen. He received in all thirty-three injections, alternating the ragweed and the goldenrod extracts. He came very irregularly for treatment. It is possible that at times the treatment was too intensive and his physical condition was so poor that possibly he could not develop a tolerance. Nine of the patients reacted to ragweed pollen and two reacted to that of both ragweed and goldenrod. Both of these latter patients received both goldenrod and ragweed antigen hypodermically. One was cured but the other was not improved. The best time to begin treatment is probably about ten weeks before the attack may be expected to occur. Regularity of attendance at about weekly intervals is important. The authors feel that cures were not accomplished in two patients because treatment was begun too early; and in two other patients, because they were treated too irregularly. Furthermore, it is probable that some of these cases were susceptible to pollen other than that of ragweed and goldenrod.

Illinois Medical Journal, Chicago

June, XXVII, No. 6, pp. 413-484

43 This Generation's Contribution to Progress of Medicine. A. L. Brittin, Athens.
44 Clinical and Experimental Study of Postoperative Ventral Hernia. W. Bartlett, St. Louis.
45 Early Diagnosis of Pulmonary Tuberculosis. R. H. Babcock, Chicago.
46 What Constitutes Proper Carbohydrate and Protein Diet in Treatment of Tuberculous. J. Ritter, Chicago.
47 Case of Tuberculosis of Larynx. J. Holinger, Chicago.
48 Tuberculin in Diagnosis and Treatment. M. Maxey, Mount Vernon.
49 Treatment of Carcinoma of Uterus. M. W. Bacon, Chicago.
50 Deformities of Nasal Septum and Their Correction. E. F. Garraghan, Chicago.
51 Morphin and Cocain Addiction with Special Reference to Prognosis. H. W. Powers, Wauwatosa, Wis.
52 Case of Juvenile Paresis. E. F. Leonard, Chicago.
53 Perineal Lacerations. T. H. Lewis, Martinsville.
54 Prognosis in Eye Injuries. R. J. Tivnen, Chicago.
55 Preinstitutional Care of Insane. C. C. Ellis, Dunning.
56 Relaxation of Muscles in Treatment of Fractures. A. J. Graham, Chicago.
57 Nitrous Oxid and Oxygen Analgesia for Obstetrics from Anesthetists' Viewpoint. E. O. Luther, Chicago.

Journal of Abnormal Psychology, Boston

June-July, X, No. 2, pp. 81-152

58 Anger as Primary Emotion and Application of Freudian Mechanisms to Its Phenomena. G. S. Hall.
59 Necessity of Metaphysics. J. J. Putnam, Boston.
60 Remarks on Dr. Coriat's Paper "Stammering as Psychoneurosis." M. Solomon, Chicago.

Journal of Infectious Diseases, Chicago

July, XVII, No. 1, pp. 1-275

61 *Etiology of Typhus Exanthematicus. H. Plotz, P. K. Olitsky and G. Baehr, New York.
62 Elmhurst Epidemic of Sore Throat and Virulence of Streptococci Isolated from Milk. E. C. Rosenow and V. H. Moon, Chicago.
63 Predominance Among Members of Bacillus Coli Group in Artificially Stored Water. W. W. Browne, New York.
64 *Method of Transmitting Known Numbers of Trypanosomes; Numeric Relation of Trypanosomes to Infection. J. A. Kolmer, Philadelphia.
65 Coccidiosis in Cattle and Carabaos. C. H. Schultz, Manila.
66 Reaction of Bacteriologic Culture Media. W. M. Clark, Washington, D. C.
67 Characteristics of Bacteria of Colon Type Occurring on Grains. L. A. Rogers, W. M. Clark and A. C. Evans, Washington, D. C.
68 Differentiation of Bacteria of Colon-Aerogenes Family by Use of Indicators. W. M. Clark and H. A. Lubs, Washington, D. C.
69 Chromogenesis in Cultures of Sporotricha. D. J. Davis, Chicago.
70 Numerical Interpretation of Fermentation-Tube Results. M. H. McCrady, Quebec, Canada.
71 Complement Fixation in Hog Cholera. D. J. Healy and W. V. Smith, Lexington, Ky.
72 *Bacteriology of Ulcer of Stomach and Duodenum in Man. E. C. Rosenow and A. H. Sanford, Rochester, Minn.
73 Variability of Fermentative Reaction of Bacteria, Especially Streptococci. W. C. Thro, New York.

74 Infection with Paratyphoid Bacillus (B. Paratyphosus B.). E. E. Irons and E. O. Jordan, Chicago.
75 Inhibitory Action of Heterologous Protein Mixtures of Anaphylaxis. J. H. Lewis, Chicago.
76 Anaphylactic Reaction with So-Called Proteoses of Various Seeds. H. G. Wells and T. B. Osborne, New Haven, Conn.

61. **Etiology of Typhus Exanthematicus.**—In the experiments cited it has been shown a bacillus, identical with that recovered from patients with typhus, was isolated by the authors from the blood of animals in which the disease had been reproduced by inoculation of typhus blood. In such animals, the frequency of the bacilli in the blood was directly proportionate to the severity of the illness. In individual animals it was greatest at the height of the disease. It was also noted that with the bacilli isolated from epidemic cases of typhus, it is possible to reproduce the disease in animals. And furthermore, at the height of the disease in such animals, the identical organism can be recovered from the circulating blood. Finally, it was found that typhus blood is only infective if it contains a sufficient number of these bacilli. From these observations and the results of the bacteriologic and serologic studies, the authors believe themselves justified in concluding that this bacterium is the causative agent in typhus exanthematicus.

The organism is a small, pleomorphic, obligatory anaerobic gram-positive bacillus, not motile, not encapsulated and not acid-fast. Its length varies from 0.9 to 1.93 microns, its breadth being from one fifth to three fifths its length. Most of the organisms are straight; occasional ones are slightly curved. Coccoid forms also occur. The ends are rounded or slightly pointed. In smears from solid mediums, the organisms lie end to end, side by side, or at angles to one another, there being no definite arrangement. Degeneration and involution forms appear early, so that after repeated transplants the organism may assume a different morphologic appearance from the bacilli in the original culture. The organism produces no spores. Polar bodies are occasionally demonstrable with the pyoktanin, acetic acid, Bismarck brown stain. When present, they usually appear at one end of the bacillus, but may appear at both ends. The organism grows much better in solid than in fluid mediums; in solid mediums it requires carbohydrate and serum; the optimal medium in the studies thus far made is 2 per cent. glucose serum agar. For keeping the organism alive, however, 0.5 per cent. glucose serum agar was used, as the larger glucose content was presumed to decrease virulence to a greater extent.

64. **Transmission of Trypanosomes.**—A method for transmitting approximately known numbers of trypanosomes, which has proved comparatively simple, fairly accurate, and very useful has been worked out by Kolmer. By this method, it is possible to infect a large series of rats with any desired number of trypanosomes, in a sterile manner, and without sacrificing the seed animal. The method consists in securing a definite volume of blood in a blood corpuscle-counting pipet and mixing it with a definite amount of diluting fluid that hemolyses the erythrocytes, and fixes and stains the trypanosomes. The trypanosomes are then counted by means of a Thoma-Zeiss counting chamber and the number in a cubic centimeter of undiluted blood calculated. With this data at hand, 0.1 c.c. of blood is drawn aseptically from the heart of the seed animal in 0.9 c.c. of a 10 per cent. solution of sodium citrate in normal salt solution. With this blood, dilutions are made in warm, sterile, normal salt solution until a cubic centimeter or a fraction thereof contains the required dilution and number of trypanosomes determined on for the purpose of infecting a series of rats, or for any other purpose.

72. **Bacteriology of Gastroduodenal Ulcer.**—Rosenow and Sanford record the results of cultures and of the histologic examination of the tissues in a series of ulcers and lymph glands draining the ulcers, excised at operation. Cultures have been made from ulcers or regional lymph glands or from both in thirty-one cases. Chronic appendicitis was associated with ulcer in seven of the cases, cholecystitis in five, and pancreatitis in three. Appendicitis, ulcer, and cholecystitis coexisted in two cases; ulcer, cholecystitis and pancreatitis in one case. The age of the patients ranged from 20 to 72 years. The duration of the symptoms of ulcers at the time of operation ranged from six months to twenty-three years. Cultures were made from the wall of ulcers in twenty-four cases. In these, streptococci were isolated in varying numbers (1-5,000 colonies) in pure culture from nine ulcers, and in mixtures in all but one of the remaining fifteen. In two cases of duodenal ulcer (of one and twelve years' duration), in which the ulcers were so situated as to make their total removal impossible, the usual streptococcus was isolated from a thin layer of the inflamed peritoneum directly over the ulcer, and in one from the hyperemic parietal peritoneum directly opposite the ulcer. In the former, diplococci were demonstrated in the tissue. In the latter, this was not attempted. Nonhemolysing staphylococci were isolated from ten cases, but never in pure form. *Staphylococcus aureus* was found in one ulcer, but not in pure form. *Bacillus welchii*, in small numbers, was found in the ulcers or glands in four cases. They developed only in those tubes containing a large amount of the emulsion. A gram-positive bacillus, probably belonging to the subtilis group, was found in six cases and a large unidentified gram-negative bacillus in three. The colon bacillus was found in rather large numbers in two patients after death, and in small numbers in a duodenal ulcer in one patient during life. Yeast cells were isolated in large numbers from three ulcers and in small numbers from one. A few sarcinae were grown in one case, and diphtheroid bacilli in three cases.

Lymph glands draining the ulcers were cultured in eleven cases. Of these, five appeared to be sterile, four yielded streptococci in pure culture, two streptococci together with a few colonies of *Bacillus welchii*. Colon bacilli were not found in any of the glands. The glands which proved sterile were all from cases of ulcer of long standing in which no exacerbation of symptoms occurred shortly before surgical intervention. The apparently almost constant occurrence of streptococci in the depths of human ulcer, commonly the more numerous the younger the ulcer and the more marked the cellular infiltration, to the total or almost total exclusion of other bacteria, and the fact that when injected into animals such streptococci show a marked tendency to localize in the stomach or duodenum, a property which other strains of bacteria isolated do not possess, taken in conjunction with clinical facts, the authors believe constitutes good evidence that the streptococci are not merely accidental secondary invaders of the tissues, but are commonly the original cause, as well as the important factor in preventing the healing of the ulcer.

Journal of Nervous and Mental Disease, Lancaster, Pa.

June, XLII, No. 6, pp. 321-464

77 Cerebral Morphology in Its Relation to Cerebral Localization. C. K. Mills, Philadelphia.
78 Nervous and Mental Diseases and Newer Pathology. F. X. Dercum, Philadelphia.
79 Morphology and Functions of Corpus Striatum. J. H. Lloyd, Philadelphia.
80 Psychology of Misers. C. W. Burr, Philadelphia.
81 Remarks on Central Representation of Sensation. W. G. Spiller, Philadelphia.
82 Founders and Work of Philadelphia Neurologic Society. T. H. Weisenburg, Philadelphia.
83 American Neurologic Association. G. W. Jacoby, New York.
84 American Neurology of Past and Future. M. Prince, Boston.
85 Neurology in West. H. T. Patrick, Chicago.
86 Nerve Physicians and Other Physicians. H. M. Thomas, Chicago.

Journal of Sociologic Medicine, Easton, Pa.

June, XVI, No. 3, pp. 133-196

87 Rules and Regulations in Operating Plants—Carelessness and Recklessness. J. B. Lowman, Johnstown.
88 Health Measures Affecting Factory Employees—Remarks on Medical Phases of Such Legislation. J. E. Tuckerman, Cleveland.
89 Happiness as Factor in Efficiency. W. Hutchinson, New York.
90 Industrial Injuries; Treatment. W. L. Estes, So. Bethlehem.

Lancet-Clinic, Cincinnati

July 3, CXIV, No. 1, pp. 1-28

91 Gastric Carcinoma.. D. W. Palmer, Cincinnati.
92 Malignancy in Case of Ulcerative Sigmoiditis. T. H. Kelly, Cincinnati.

93 Cancer. W. D. Haines, Cincinnati.
94 Carcinoma of Rectum—Selection of Cases—Third Sphincter. G. B. Evans, Dayton.
95 Recent Advances in Cancer Problem. M. Casper, Louisville, Ky.

July 10, No. 2, pp. 29-52

96 Removing Visible Restraint from Harmless Insane. W. H. Solle, Chicago.
97 Diagnostic Value of Stained Blood Film with Especial Reference to Differential Leukocyte Count. E. F. Horine, Louisville, Ky.
98 Clean Milk as Factor in Reduction of Infant Mortality. A. Friedlander, Cincinnati.
99 Allen Treatment of Diabetes Mellitus. L. G. Heyn and P. R. Hawley, Cincinnati.
100 Organs of Special Senses in Life Insurance. W. A. Peterson, Chicago.

Laryngoscope, St. Louis

June, XXV, No. 6, pp. 321-384

101 Cases of Nasal Deformity Corrected by Bone Transplantation. W. W. Carter, New York.
102 End-Results of Radical Mastoid Operation. S. M. Smith, Philadelphia.
103 Case Showing Bipolar Origin of Faucial Tonsil. N. Schoolman, Chicago.
104 Chorda Tympani Nerve in Otology. C. E. Perkins, New York.
105 Transitional Epithelium in Rhinopharynx. W. S. Bryant, New York.
106 Simple Inflammatory Stenosis of Esophagus. R. McKinney, Memphis, Tenn.
107 Partial Paralysis of Soft Palate Following Removal of Tonsil and Adenoids. D. Roy, Atlanta, Ga.
108 Gold Platinum Inserted in Middle-Ear for Adhesive Processes in Middle-Ear. S. H. Large, Cleveland.

Medical Record, New York

July 17, LXXXVIII, No. 3, pp. 89-130

109 Bacterial Flora of Trees and Men. S. J. Maher, New Haven, Conn.
110 Autonomous Nervous System and Gastro-Enteric Functions. C. S. Fischer, New York.
111 *Internal Aspects of Prostatic Suppuration. H. Brooks, New York.
112 Nature of Neuroses. L. Casamajor, New York.
113 Staphylococcus Septicemia Complicated by Subpectoral Abscess. G. A. Rueck, New York.
114 Some Difficulties in Diagnosis of General Paralysis of Insane. W. F. Rice, Washington, D.C.
115 An Improved and Simplified Technic for Autoserotherapy. E. E. Palmer and W. L. Secor, Kerrville, Tex.

111. Internal Aspects of Prostatic Suppuration.—Throughout the entire course of the process until the pus finds escape, Brooks says, the chief clinical characteristic of the disease is the prostration which in many if not most instances exactly approximates that of a true typhoid. A very astonishing feature of the disease may be the lack of localizing symptoms. In several cases seen by Brooks no local complaints whatever have been made by the patient and the condition has been discovered only when pus appeared in the urine, when a perineal abscess pointed, or when as a matter of clinical routine a rectal examination disclosed the origin of the disease picture. The chief points in early differential diagnosis are mostly those of laboratory detail. The Widal reaction is always absent, though, as in most febrile conditions, it may be simulated at times. Blood and urine cultures are negative as to typhoid and paratyphoid bacilli. The final and absolutely diagnostic feature of the syndrome is the examination of the prostate per rectum, and the consequent discovery of an abscess or of a prostatitis. The treatment of the condition is surgical. In cases in which the operation is refused or deemed unwise Brooks suggests the possibility of successful vaccine treatment.

New York Medical Journal

July 17, CII, No. 3, pp. 117-168

116 Psychology of Stammering. G. H. Makuen, Philadelphia.
117 Irrigation, Transinsufflation and Visualization on Intestines by Duodenal Tube. I. O. Palefski, New York.
118 Syphilis of Nervous System. W. V. P. Garretson, New York.
119 Unsuccessful Adenoid Operations. W. Brady, Elmira.
120 Microscopic Localization. P. A. Sheaff, Philadelphia.
121 Late Congenital Syphilis. S Berkowitz, New York.
122 Prevention of Syphilis. A. W. Stillians, Chicago.
123 Gouty Individual. W. R. Stone, New York.
124 Life Insurance and Kidneys. J. S. Lankford, San Antonio, Tex.
125 Pulmonary Tuberculosis and Diathermia. A. C. Geyser, New York.
126 Treatment of Diarrhea. J. C. Simpson, Philadelphia.
127 An Improved Urethroscope. E. G. Ballenger and O. F. Elder, Atlanta, Ga.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

June, XX, No. 6, pp. 315-366

128 Toxemia in Its Relation to Certain Mental and Nervous Disorders. J. K. Hall, Richmond.
129 Some Theoretical Aspects of Vaccine Therapy. E. C. L. Miller, Richmond.
130 Some Facts and Vagaries Viewed from Medical Standpoint. B. C. Keister, Roanoke.
131 Unreliability of Aconite. J. S. Wine and J. C. Ford, Richmond.

Southern Medical Journal, Birmingham, Ala.

July, VIII, No. 7, pp. 557-648

132 Cancer Problem. J. C. Bloodgood, Baltimore.
133 Cancer and Pre-Cancerous Conditions. M. H. Biggs, Rutherfordton, N. C.
134 Cancer of Breast. W. L. Rodman, Philadelphia.
135 Operative Treatment of Chronic Intestinal Stasis. W. S. Bainbridge, New York.
136 Pathology and Treatment of Cutaneous Cancer. H. H. Hazen, Washington, D. C.
137 Importance of Destroying Cervical Mucosa in Subtotal Hysterectomy as Cancer-Preventing Measure. G. T. Tyler, Greenville, S. C.
138 Early Diagnosis of Cancer of Rectum. E. H. Terrell, Richmond, Va.
139 Diagnosis and Treatment of Ectopic Pregnancy; Report of Cases. W. C. Gewin, Birmingham.
140 Postoperative Results in Nine Cases of Gastro-Enterostomy, with One Case in which More Than Two-Thirds of Stomach was Resected for Cancer. G. Torrance, Birmingham.
141 Central Nervous System in Its Relation to Certain Traumatic Affections. J. N. Baker, Montgomery.
142 Traumatic Epilepsy (?); Case Report. C. V. Stephenson, Centerville, Tenn.
143 Heart Arrhythmias. E. C. Thrash, Atlanta, Ga.
144 Causes of Indigestion; Study of One Thousand Cases. D. VanderHoof, Richmond, Va.
145 Management of Functional Nervous Affections. T. A. Williams, Washington, D. C.
146 Present Status of Local Health Administration; Outlook. O. Dowling, Shreveport, La.
147 Condensed Skimmed Milk Menace. M. M. Carrick, Dallas, Tex.
148 Filarial Infection — Investigation of Its Prevalence in Charleston, S. C. F. B. Johnson, Charleston, S. C.
149 Asthenopic Symptoms Relieved by Correcting Slight Errors of Refraction. T. W. Moore, Huntington, W. Va.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

July, XXIII, No. 7, pp. 193-228

150 Cancer of Uterus. H. S. Crossen, St. Louis.
151 Non-Surgical Treatment of Malignant Growths. E. S. Lain, Oklahoma City.
152 Part General Practitioner Must Play in Control of Cancer. A. E. Hertzler, Kansas City, Mo.
153 Prevention of Gastric Cancer. C. J. Fishman, Oklahoma City.
154 Carcinoma—Early Danger Signals. L. Long, McAlester.

West Virginia Medical Journal, Wheeling

July, X, No. 1, pp. 1-34

155 Cancer — Its Origin, Diagnosis and Treatment. C. R. Enslow, Huntington.
156 Dangers of Cancer and Advantages of Early Operation. J. E. Cannaday, Charleston.
157 Observations on Cancer with Special Reference to Cancer of Uterus. F. L. Hupp, Wheeling.
158 Operability of Uterine Cancer. J. R. Hunter, Hansford.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

July, XII, No. 139, pp. 193-224

1 Bacteriology of Cerebrospinal Fever. D. Nabarro.
2 Pulmonary Tuberculosis in Children. J. M. Campbell.
3 Case of Syphilis Meningovascularis, Congenital Syphilis, Choroiditis, Optic Atrophy, Herpes Zoster, Multiple Root Lesions. L. Guthrie and E. G. Fearnsides.
4 Form of Self-Mutilation of Penis in Young Boys. T. H. Kellock.

British Medical Journal, London

June 26, I, No. 2843, pp. 1073-1104

5 Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. D. Bruce.
6 What Mankind May Have Lost Through Evolutionary Development. W. A. Hollis.

7 *Early Treatment of Projectile Wounds by Excision of Damaged Tissues. E. T. C. Milligan.
8 Non-Tuberculous Hip Disease Successfully Treated by Double Splint and Over-Abduction. R. Parker.
9 Case of Concealed Accidental Uterine Hemorrhage; Spontaneous Delivery; Recovery. R. B. Johnston.
10 Technic of Analgesia in Intranasal Surgery. W. Wilson.

7. Treatment of Projectile Wounds by Excision of Damaged Tissues.—Milligan places on record a method of treatment which has given most gratifying results, and which, he says, if practiced thoroughly will materially lessen the time a wounded man is absent from the firing line. This method consists in the extirpation of the devitalized tissues. An anesthetic is given when indicated. The wound of the skin is boldly cut out with a sharp scalpel and so completely removed that clean healthy incised wound replaces the contused and infected wound made by the projectile. There should be nothing of the old wound remaining. The wound of the superficial and deep fascia should be treated in the same way. The wound of the muscle is dealt with in the same fashion. It presents, however, more difficulties because of the retraction of severed fibers, and because of the distance of the depths of the wound from the surface of the body. This latter difficulty is overcome in many cases by making larger incisions.

Removal of loose and fixed bits of obvious foreign and dead matter is essential. Ample exposure and drainage of the wound is necessary, and those wounds which are too extensive to retain a drainage tube after the above treatment do better than those in which a tube is necessary on account of their depth and narrowness. By this procedure the wound is put in the best possible conditions for the bactericidal actions of the tissues and the outpoured lymph. Milligan remarks that it is not wise to impair the resisting and offensive powers of the artificially obtained healthy tissue surfaces by the use of strong or injurious antiseptics. This method, when combined with the surgical essentials of perfect rest, cleanliness and frequent suitable dressings, has resulted in the healing of projectile wounds without any appearance of pus in wounds of the skin and of the superficial fascia.

Indian Medical Gazette, Calcutta

June, L, No. 6, pp. 201-240

11 Litholapaxy in India. D. F. Keegan.
12 Casualties in Persian Gulf. C. A. Gill.
13 Gunshot Wound; Peculiar Symptoms of Shock. G. Fowler.
14 Prevalence of Intestinal Parasites in United Provinces. J. G. Mukerji and B. Dass.
15 Beta Naphthol Poisoning Occurring During Treatment of Ankylostomiasis. W. B. Orme.
16 Suspected Case of Kedani River Fever in Federated Malay States. R. Dowden.
17 Inoculation against Plague and Pneumonia and Experimental Study of Therapeutic Methods. W. M. Haffkine.
18 Studies in Malaria. H. Stott.
19 Open Method of Treatment of Fractures. T. Jackson.
20 Case of Fish Poisoning. S. K. Mazumdar.
21 Use of Hexamethylene Tetramine in Septic Inflammations of Cornea and Conjunctiva. H. Kirkpatrick.
22 Case of Bite from Naia Tripudians; Recovery. B. R. Khisty.
23 Case of Asphyxia, Result of Inhaling Food Most Probably in Act of Vomiting. C. C. Murison.

Journal of Laryngology, Rhinology and Otology, London

July, XXX, No. 7, pp. 265-296

24 Nasal Conditions of Cerebrospinal Meningitis. E. A. Peters.
25 Lumbar Puncture in Aural and Nasal Cases; Pathology of Fluid. W. Wingrave.
26 Herpes Zoster Oticus. A. R. Tweedie.

Lancet, London

July 3, II, No. 4792, pp. 1-54

27 Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. D. Bruce.
28 *Right-Sided Murmurs of Mitral Stenosis. J. F. Goodhart.
29 Case of Congenital Hemihypertrophy. J. M. Fortescue-Brickdale.
30 *Leprosy and Kedrowsky's Bacillus. H. Fraser and W. Fletcher.
31 Two Cases of Gastric and Duodenal Perforation; Use of "Corner's Plug." H. W. Mills.
32 Case of Extraordinary Traumatic Deformity with Edema. P. C. P. Taylor.
33 An Unusual Case of Perforated Ulcer of Esophagus. G. W. Christie.

28. Right-Sided Murmurs of Mitral Stenosis.—There occurs in the later stages of mitral stenosis a regurgitant murmur over the right ventricle, and as Goodhart believes, at the tricuspid orifice, as a result of hypertrophy and dilatation of the right side of the heart. These changes may be so extreme that the right ventricle comes to occupy the place of, and thus to simulate the left ventricle at the surface, and therefore to get at the left it is necessary to go round to the inferior angle of the scapula. Further, not only is the ventricle dilated, but the pulmonary artery also and the sigmoid valves are more or less incompetent, and then there is generated a peculiar diastolic murmur at the orifice of the pulmonary artery that often has something in it of the quality of a venous murmur; it is long and sustained and sometimes musical. This murmur is quite distinct from the diastolic murmur supposed to be a long or early presystolic bruit. In collating the notes of eighty-four cases of mitral stenosis Goodhart found one or other of these murmurs present in 17 of them; the tricuspid murmur alone in 7; the pulmonary artery diastolic alone in 6; and the two were in company in 4 others.

If the quasi-mitral murmur be tricuspid as Goodhart maintains, the regurgitation would necessarily produce a reflux in the veins and appear as a pulsation in the neck, with other evidences of backward pressure, but it is a fact that in some of these cases there may be no such pulsation, for having paid special attention to this point Goodhart has often found it absent, or inappreciable. The external jugulars may even be found full yet not pulsating. Whenever the patient is suffering by default of the left ventricle even when it may be especially due to an overtaxed right, Goodhart says, digitalis may be expected to do good; convallaria may be useful; opium is often better still, by steadying the heart's action, and perhaps better than all in bad cases come leeches or venesection. There are other important points also pointing in the same direction of lessening the volume of the circulation. Diet also needs consideration. Many of these people find out for themselves, that they are only comfortable when their meals are of the smallest. A small piece of fresh and tender meat, with a piece of toast and a little junket or custard, are better than much vegetable and stodgy pudding. Further, a great deal of good may often be done by limiting the food entirely for a week or ten days to buttermilk or whey, or even water.

30. Leprosy and Kedrowsky's Bacillus.—Material was excised by Fraser and Fletcher in fifty-two nonulcerating cases of nodular leprosy. There was in every case abundance of acid-fast bacilli in the tissues excised and inoculated on the large variety of mediums employed, including those of Kedrowsky and Bayon.

Bulletin de l'Académie de Médecine, Paris

June 15, LXXIII, No. 24, pp. 685-706

34 *The General Shock from Explosions. (Des variations du "syndrome commotionnel," suivant la nature des traumatismes, et de son unité.) A. Mairet, H. Piéron and Bouzansky.
35 Diplococcus Typhoidal Meningitis. (Typho-diplococcie et méningite cérébro-spinale.) A. Sartory, L. Spillmann and P. Lasseur.
36 Functional Myocardial Insufficiency Sequel to Articular Rheumatism. (Les troubles cardiaques discrets des rhumatisants sans lésions valvulaires ni péricardiques.) C. Lian.

34. The Shock from Shell Explosions.—Mairet discusses the various elements of the shock from explosion of a shell nearby, without direct injury, as he has encountered it in twenty-one cases. In this "global commotional syndrome," as he calls it, we recognize features of the various disturbances that have been signaled for years as following severe accidents or violent emotions, railroad, factory or mine accidents, the Messina earthquake, etc., and observed in the Russo-Japanese war. The various manifestations are innumerable and widely diverse, but there is a unity in the syndrome, and this is the general perturbation, the commotion.

Presse Médicale, Paris

June 17, XXIII, No. 27, pp. 213-220

37 *Lavage of the Spinal Canal in Cerebrospinal Meningitis. C. Aubertin and H. Chabanier.

38 Prophylaxis of Typhoid. A. Colard.
39 Inheritance of Immunity to Tuberculosis. (L'hérédité tuberculeuse.) C. Sabourin.

June 24, No. 28, pp. 221-228

40 The "Trench Echo" and the "Devil's Bugle." (Les journaux des tranchées.) F. Helme.
41 Necessity for Routine Operations for Abdominal Wounds. R. Leriche.
42 *Resection of Wounded Knee Instead of Amputation. T. Tuffier.
43 Wounds from Hand Grenades and Other Close Firing. (Les plaies par "crapouillots.") L. Devraigne.

37. **Rinsing Out the Spinal Canal in Meningitis.**—Aubertin says that he has been impressed with the extremely thick consistency of the pus obtained by lumbar puncture from men with cerebrospinal meningitis brought to the hospital in coma in the course of the epidemic of this disease now prevailing among the soldiers quartered around Paris. Instead of the usual technic for lumbar puncture, he withdrew 50 or 60 c.c. of the purulent fluid from the seated patient and injected a like amount of saline, then waiting a few minutes, repeated the procedure two or three times until the spinal canal was thus cleared out. The concluding injection was of 50 c.c. of antimeningococcus serum. The whole procedure seemed entirely harmless in the fifty cases in which it was applied, and the beneficial influence was promptly apparent. The amount of pus thus cleared out is considerable; it formed on settling fully half of the fluid withdrawn in some cases.

42. See Paris Letter in The Journal, July 10, p. 183.

Revue Médicale de la Suisse Romande, Geneva

June, XXXV, No. 6, pp. 297-360

44 *Operative Treatment for the Gastric Crises in Tabes. G. Patry.
45 Two Months of Military Surgery. E. Gay.
46 Advantages of Combining Epinephrin with a Longer Acting Vasoconstricting Substance. (Action synergique de corps vasoconstricteurs dans l'anesthésie locale.) J. Burmann.
47 Instrumental Reduction of Dislocated Lower Jaw. (Luxation invétérée du maxillaire inférieur. Réduction à la clef anglaise.) C. Roux.
48 Eyeball Struck by Mother Owl. A. Collomb.

44. **Operative Treatment for Gastric Crises in Tabes.**—Patry compares a personal case with the literature on this subject, his conclusions being that operative measures are justified in distressing cases, notwithstanding the high mortality, the difficult technic and the liability to recurrence. He operated by Guleke's technic which obviates many of the complications of the Förster and Franke methods. The technic proposed by Sauvé and Tinel seems still more promising, but it has not been applied in the clinic alone to date, to his knowledge. Their suggestion is to ligate the intercostal nerves between the ganglion and the dura (The Journal, 1913, lx, 1111). Patry's patient was a man of 53, and marked improvement in the general condition and relief of the pains followed, but nothing has been heard from the man during the two years since he left the hospital, six weeks after the operation. The seventh, eighth and ninth pairs of posterior roots were resected; then as the tenth right root was severed, the heart and lung action suddenly stopped, but the heart started up again in ten seconds and pressure on the thorax started breathing anew. This reflex can be avoided by deadening the sensibility of each nerve in turn just before it is cut.

Deutsche medizinische Wochenschrift, Berlin

June 10, XLI, No. 24, pp. 697-724

49 Symptomatology and Treatment of Typhoid, and Preventive Vaccination. F. Schultze.
50 *Subcutaneous Symphyseotomy. E. Vogt.
51 Gastro-Colon Ptosis. O. Strauss.
52 Bullet Wounds of Stomach and Intestines. (Verletzungen von Magen und Darm durch das Infanteriegeschoss.) H. Boit.
53 Treatment and Prognosis of Extensive Wounds of the Urethra. (Harnröhrenzerreissungen.) Bonne.
54 *Capillary Drainage After Wounds of Blood Vessels. (Neue Behandlungsmethode von Verletzungen grösserer Gefässe und Aneurysmen mittels Kapillardrainage und breitester Vereinigung der Wundflächen.) W. Rühl.
55 Induced Retardation of Local Pulse as Test for Femoral Aneurysm. Wigdorowitsch.
56 Rabbit Meat. (Wert des Kaninchenfleisches für die Volksernährung. II.) Schottelius.

50. **Subcutaneous Symphyseotomy.**—Vogt analyzes the experiences at Dresden with this method of facilitating delivery with dystocia, as applied in thirty cases. In seven the pelvis was extremely contracted. The operation was not used for primiparas except in two whose vagina was very wide and there was comparatively little danger of its tearing during delivery. The great advantage of symphyseotomy is that it allows the accoucheur to wait for spontaneous delivery. This occurred in nineteen cases; the others required intervention in the interests of the child. Good labor contractions are indispensable for spontaneous delivery, and intramuscular injection of hypophysis extract may be necessary for this. He makes the injection while the woman is still on the table, and generally waits until the head enters the pelvis and thus all danger of prolapse of the cord is past, before she is taken back to bed. The interval before expulsion ranged from three minutes to four hours and forty minutes, the longest interval in one primipara with rigid soft parts. There were no signs of injury of bladder or urethra in any instance except that in one case the urine was transiently blood stained. No by-effects nor complications were observed. The button-tipped knife protects against possible injury of the peritoneum, but there may be a hematoma of venous blood and aseptic thrombosis in the veins in the vicinity. Embolism was never encountered but absorption of the hematoma was probably responsible for the febrile course of the puerperium in 44 per cent. of the thirty cases and in 38 per cent. of Frank's 140 cases. There was infection in only one of Vogt's thirty cases. The uterus of one woman had already ruptured before the operation was done, and this was not suspected. All the other women made a smooth recovery, and all but three of the children were born in good condition; the symphyseotomy was unable to save these three. There has been much less extravasation of blood and less tendency to thrombosis since a small, curving button-tipped knife has been used to scrape away the ligaments and corpora cavernosa of the clitoris from the edge of the bone. When this is done gently and cautiously there is no bleeding from the corpora cavernosa.

54. **Treatment of Wounded Blood Vessels.**—Rühl relates experiences which show that the usual gauze tamponing of a wounded blood vessel invites infection while interfering with normal healing. The drainage should be merely capillary, a thread laid smoothly into the depths, stopping short of contact with the vessel. A row of four threads will thus effectually drain an ordinary vessel wound after the vessel has been ligated above and below the injury. With extensive wounds a wick of gauze might supplement the thread, but the gauze should not extend more than half way the length of the thread.

Jahrbuch für Kinderheilkunde, Berlin

June, XXXI, No. 6, pp. 465-562

57 *Measles in Two Infants, Sixteen and Eighteen Days Old. M. Winter.
58 Anal Stenosis in Boy of 7 Simulating Hirschsprung's Disease. O. Sachs.
59 *Management of Whooping-Cough. (Zur Lehre vom Keuchhusten.) A. Czerny.
60 Hypersusceptibility to Tuberculin and the Reverse Condition Realized Under Tuberculin Treatment. (Die Tuberkulinüberempfindlichkeit und die durch Tuberkulindarreichung zu erzielende Tuberkulinunempfindlichkeit.) G. Bessau. Commenced in No. 5.

57. **Measles in Young Infants.**—Winter has compiled a number of cases from the literature in which the mother and infant developed measles together a few days after its birth, the infection having apparently befallen both while the child was still in the uterus. In Ballantyne's case the measles seemed to have been responsible for the premature delivery, and the child presented the typical eruption when born. In contrast to these experiences, Winter has been unable to find records of any cases of extra-uterine acquired measles in infants less than 5 months old except in an account of an epidemic in Ireland, and this does not state the exact age of the infants, so that in some or all of the cases the infection might have been intra-uterine. Sperk asserts of measles

that it occurs only rarely in infants from 1 to 3 months old; between the third and fifth months in about 50 per cent. and declares that all exposed infants from 6 to 12 months old develop measles. These facts render interesting Winter's report of a measles eruption developing in two infants at the sixteenth and eighteenth days of life. There had been prodromal symptoms the day previous in both cases. The mother of the youngest babe had developed measles just one day before, but in the second case the mother did not have measles. Winter adds that as the incubation period of measles is generally accepted as from thirteen to sixteen days, the children must have become infected the first and the third days after birth.

59. **Pertussis.**—Czerny relates that for eighteen years he has made a practice of refraining from isolating children with whooping cough, as he has found that a few simple precautions are all that is necessary to prevent infection of others with this disease. Every child that coughs is regarded as a pertussis suspect, and is never allowed to come closer than 1.5 meters (about 5 feet) to the other children. No droplets can be expelled by a child farther than this, and the disease is not carried by the attendants' hands or clothing. No cubicles or boxes are necessary, merely reliable attendants to see that none of the pertussis children approach nearer than 5 feet to any of the other children in the ward. By care in this way there need be no fear of a child's contracting pertussis when in the hospital for some other disease. He has never had whooping cough spread in the institution. In the home, if the pertussis child is never allowed to approach his brothers and sisters nearer than 5 feet, they will not contract whooping cough from him. The above applies only to children over a year old. Infants are peculiarly susceptible to pertussis and the attendants are liable to convey infection from one babe to another. When each infant has its own nurse, this does not occur. Infants are peculiarly susceptible to infections of the nose and throat, and they begin to cough on the slightest provocation, and the cough is liable to be of a spasmodic type. His extensive research has not demonstrated any causal connection between the Bordet-Gengou bacillus and pertussis. It was found only sixteen times in forty-two cases but Inaba was able to cultivate it from seventy-seven of eighty-one cases. Czerny has always found pronounced lymphocytosis in the cases of pertussis examined for it, so that the absence of lymphocytosis justifies exclusion of pertussis in a child with spasmodic cough. The spasmodic cough also may persist as a purely nervous phenomenon after the pertussis mucosa affection has long healed. The contagious phase seems to end with the subsidence of the lymphocytosis, but proof of this is difficult to produce. The younger the child the greater the liability to spasm of the larynx with every cough. Infections are liable to induce tetany, and especially laryngospasm. Another sign that the nervous excitability is increased in pertussis is that the zone in which the knee-jerk can be elicited is much wider than in normal conditions. A tap anywhere in the vicinity of the tendon elicits the reflex. Czerny's experience with restriction of fluids in treatment of affections of the air passages has been so favorable that he suggests its systematic application in pertussis.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

June, XLI, No. 6, pp. 457-526

61 *Transparency of Abdominal Walls in Pregnancy at Term. F. Ahlfeld.
62 Advantages of Index Finger Alone for Internal Examination in Pregnancy. (Wie soll die innere Untersuchung Schwangerer und Gebärender ausgeführt werden?) F. Ahlfeld.
63 Clinical Experiences with Synthetic Oxytocics. (Synthetisch dargestelte Wehenmitteln.) A. Voirol.
64 *Autoinfection of Parturients. (Zur Frage der unverschuldeten endogenen puerperalen Spontaninfektion.) K. Bollag.

61. **Transparency of Abdominal Walls at Term.**—Ahlfeld has occasionally found the walls of the abdomen at or near term stretched so thin that it was possible to inspect the contents of the abdomen and actually see the pulsation of the umbilical cord as it lay over the back of the child. The woman is placed on a high couch or table, elevated so that the observer can inspect the abdomen throughout without lowering his head. In one woman the walls were so transparent that the different parts of the uterus, the ovaries and tubes could be inspected with ease, and several graphic tracings were taken of the child's breathing. The practical importance of transparent abdominal walls was confirmed by a recent case of cesarean section. Direct inspection through the abdominal walls revealed a large distended vein on the median line just where the incision would have been made if the vein had not been seen in time.

64. **Autoinfection of Parturients.**—Bollag reports the case of a healthy woman of 35 spontaneously delivered of a healthy child at term without having been subjected to internal examination. The fourth day fever developed and the woman died of streptococcus sepsis a month later. The most careful scrutiny failed to reveal any focus from which the streptococci could have invaded the genital organs. The primary trouble was unmistakably streptococcus thrombosis in the internal genital organs.

Münchener medizinische Wochenschrift, Munich

June 8, LXII, No. 23, pp. 769-804

65 *Training After Wounds of the Brain. (Uebungsschulen für "Gehirnkruppel": Sprachkranke und andere Gehirnverletzte.) F. Hartmann.
66 Improved Technic for Producing Cholera Vaccine. (Cholera-impfstoff.) B. Fischer, L. Bitter, and G. Wagner. Concluded in No. 24.
67 Roentgen Treatment of Hay Fever. (Ein Versuch, den Heuschnupfen durch Röntgenstrahlen zu beeinflussen.) K. Schmidt.
68 Vaccine Therapy of Dermatomycoses. B. Bloch. Commenced in No. 22.
69 Tardy Complications After Freezing. O. Burkard.
70 Improved Technic for Cultivation of Cholera Germs. (Fleischnatronagar als Choleraelektivnährboden.) P. Esch.
71 Feeding in Typhoid. (Zur Frage der Typhusernährung im Kriege.) Rohmer.
72 Splints and Casts for the Wounded. (Unsere Schienenverbände im Felde.) A. Peiser. (Zur Gipsverbandtechnik bei Frakturen mit ausgedehnten Weichteilverletzungen.) Mayer and Mollenhauer.
73 Orthopedic Aftertreatment for the Wounded. Milner.
74 Correction of Flaccid Paralysis of the Foot. (Spitzfussstiefel.) A. Ritschl. (Zur Vermeidung der Spitzfussstellung.) J. E. Schmidt.
75 Wounds of the Eyes. (Augenerkrankungen im Felde.) M. Zade. Commenced in No. 21.
76 *Wooden Clothes-Pin to Open Locked Jaws. (Einfachste und billigste Apparat zur Dehnung der Kiefermuskeln und Bänder bei Kieferklemme.) J. Bock.
77 *Prophylaxis of Typhus. Gerwin.

65. **After-Treatment for Wounds of the Brain.**—Hartmann has opened a special department in his clinic (Graz) for men with aphasia and similar troubles resulting from a wound of the brain. Systematic training to overcome the resulting disturbances is giving very fine results, and he appeals for helpers, and for others to take up similar work elsewhere.

76. **Clothes-Pin to Pry the Jaws Apart.**—Bock relates that ordinary spring wooden clothes-pins are the most effectual means for this purpose as he has repeatedly found in his work among the wounded soldiers. The broad handle ends are worked between the teeth, and the powerful spring action exerts constant pressure to spread the jaws apart, without injuring the teeth.

77. **Protection Against Typhus.**—Gerwin advises having a wooden frame nailed to the floor to enclose the bed of a typhus patient. A groove running along the top of the frame is kept full of a strong disinfectant, and the frame where it joins the floor is smeared with medicated paraffin. This will prevent the passage of lice, and the physician is thus protected in visiting the typhus patient.

Wiener klinische Wochenschrift, Vienna

June 3, XXVIII, No. 22, pp. 579-610

78 Dysentery Y Bacilli in the Blood. A. Ghon and B. Roman. Concluded in No. 23.
79 Variability of the Dysentery Bacilli in the Galician-Russian Epidemic 1914. W. Falta and H. Kohn.
80 Typhoid Plus Dysentery. A. Galambos.
81 *Action of Papaverin and Emetin on Protozoa. E. P. Pick and R. Wasicky.

82 *Signs Enabling Detection of Epileptics. M. Benedikt.
83 Epidemic of Ulcerative Stomatitis. A. Zörnlaib.
84 Heating of Hospitals, etc. (Aufstellung der Heizkörper in Kranken- und Humanitätsanstalten.) M. Setz.

June 10, No. 23, pp. 611-636

85 *Wounds of Peripheral Nerves. O. Marburg and E. Ranzi.
86 Vaccine Therapy of Typhoid. C. Brach and J. Fröhlich.
87 Differential Diagnosis of Typhoid. K. Wagner.
88 *Palpation by Electricity. (Faradopalpation; Arsofaradisation.) M. Kahane.
89 Technic for Roentgen Work in Base Hospitals. (Zum Röntgenbetriebe in Verwundetenspitälern.) N. Swoboda.
90 Etiology and Treatment of Progressive Paralysis. A. Pilcz.
91 Treatment of Extensive Wounds of the Jaws in War. (Ueber geheilte mit umfangreichen Weichteilverletzungen verbundene Kieferschussfrakturen.) M. Kraus. Commenced in No. 21.

81. **Action of Papaverin and Emetin on Protozoa.**—Pick and Wasicky report that their laboratory research has amply confirmed their assumption that papaverin has the same toxic action as emetin on protozoa. Emetin has a more destructive effect on the *Paramecium caudatum* but papaverin is much more toxic for trypanosomes and the other protozoa tested. It therefore deserves a trial at least in treatment of ameba dysentery as it seems to be free from the by-effects of emetin on the heart and vessels.

82. **To Recognize Epileptics at a Glance.**—Benedikt states that normally the right side of the forehead is usually a little smaller and lower than the left, the right ear is farther back, the skull back of and below the right ear is more prominently developed, and other signs of asymmetrical development are evident, corresponding to the preponderant functioning of the right side. Asymmetry seems to be a prerogative of man; the animals rarely display this crossed asymmetry in physiologic conditions. He has found that it is lacking also in families inclined to epilepsy and insanity, and he urges systematic study of cranioscopy on the families with inherited taint in one's environment. The simplest form of the abnormal type is a pronounced aplasia of the right side of the skull. It is particularly significant when the aplasia on both sides causes the skull to be of a general wedge shape. The median parietal arc should be the same length as the median frontal arc. In epileptics the former is usually 3 or 4 c.c. shorter, or the proportion may be reversed. The necessity for excluding epileptics from service at the front is bringing cranioscopy into repute, as epileptics are liable to conceal their infirmity.

85. **Wounds of Peripheral Nerves.**—The outcome in two nonoperative and forty-eight operative cases has confirmed the necessity for waiting several weeks after all suppuration has subsided before attempting any operation on a wounded nerve unless done at once after the injury. Otherwise an operation is required when there is no response at all to electric stimuli, or the reaction of degeneration remains stationary for several weeks, or shows a progressive tendency and the motor and sensory deficit phenomena require remedying.

88. **Needle Electrode.**—Kahane has been using electrodes of the smallest possible diameter for diagnostic and therapeutic purposes. The method can be applied with the faradic, galvanic or high frequency current, as he describes in detail, analyzing the physical effect of each method. As the needle electrode can be thoroughly sterilized, it might be used for direct faradization of the heart muscle in case of arrested heart action in general anesthesia or poisoning from other cause.

Zentralblatt für Chirurgie, Leipzig

June 12, XLII, No. 24, pp. 425-440

92 Bone as Substitute for Eyeball. (Ersatz des Augapfels durch lebenden Knochen.) F. Oehlecker.
93 Fat Implant for Rebuilding the Face. (Gesichtsplastik mittels freier autoplastischer Fetttransplantation.) K. Kolb.

June 19, No. 25, pp. 441-456

94 Importance of and Technic for Saving as Much of Limb as Possible at Amputations. (Zur Vermeidung von Nachamputation.) H. Hans.
95 Dislocation of Lower End of Fibula. (Isolierte Luxatio fibulae im Talocruralgelenk.) H. Hartleib.
96 Roentgenography of Joints from Two Angles at Once. (Zur Aufnahme von ankylosierten Gelenken.) A. Schwarz.

Zentralblatt für Gynäkologie, Leipzig

June 12, XXXIX, No. 24, pp. 409-424

97 *Symptomatology of Corpus Luteum Cysts, and Treatment. J. Halban.

June 19, No. 25, pp. 425-440

98 *Some Minor Technical Points in Obstetrics. (Betrachtungen zur geburtshilflichen Operationslehre.) K. Holzapfel.

97. **Corpus Luteum Cysts.**—Halban warns that menstruation is generally arrested when a cyst develops in the corpus luteum. If the cyst retrogresses or is cut out, menstruation is liable to return but then may be irregular. These features of corpus luteum cysts aid in their differentiation. Corpus luteum cysts may subside spontaneously, hence operative treatment is not advisable at first. Alternating cysts, that is, cysts that develop and retrogress in the ovaries in turn are of this type. They have very thin walls and rupture easily, even under cautious bimanual examination alone. The details of nine cases are given in which he resected a corpus luteum cyst. Two of the women were pregnant but the operation apparently did not affect the pregnancy.

98. **Minor Points in Obstetric Maneuvers.**—Among the points mentioned by Holzapfel is the confusion liable to result in reports and descriptions unless the directions are always given according to the direction of the parturient's body. This is especially necessary in teaching the use of the forceps. He gives a number of minute directions for this. In all cases of transverse and breech presentation, the principle should be borne in mind to use always the opposite hand. In pulling on the breech he does not exert traction as at a normal delivery, but pulls the trunk downward and back until the scapula is reached. That is, he does not pull along past the perineum but directly down on it. This gradually stretches the perineum and facilitates the later extraction of the head.

With breech delivery, the finger is the best instrument to use. He urges practicing to make it strong enough. The finger can be changed, using one after the other or two at a time, if there is room. If this or an oiled rubber tube sling does not accomplish the purpose, a hook can be used, not too narrow, slipped inside a greased rubber tube. If the perineum is extremely resistant, he stretches it with his hands or makes an incision in or near the raphe, as this is easier to suture than a side incision. But this is not necessary unless the sphincter is menaced. Any manipulation of the head by way of the rectum he stigmatizes as a crime against asepsis. It is immaterial in respect to cutting the cord whether or not the pulsation in the cord has ceased. The child's breathing and the pressure on the placenta in the uterus are the important elements here. The cord should be cut when the child's cry has been heard, and the cutting should be done during a contraction of the uterus. This latter point is especially necessary if the child is not breathing well. The first contraction of the uterus after the expulsion usually comes in less than five minutes, and while waiting for it, the child's air passages should be cleared of mucus or amniotic fluid. If the child gets too much blood from the placenta it might induce jaundice; but more blood than the minimum would certainly be an advantage. He has never seen severe jaundice develop under these conditions in the eighteen years he has followed the above technic.

Zentralblatt für innere Medizin, Leipzig

June 12, XXXVI, No. 24, pp. 373-388

99 Recurrence of Long Cured Malaria During Mercury-Salvarsan Treatment of Syphilis. E. Liebmann.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 10, XXXVI, No. 46, pp. 721-736

100 *Measurement of Pressure of Cerebrospinal Fluid. S. Indelicato.
101 *Immunization and Fixation Abscesses. A. Cerioli.

June 13, No. 47, pp. 737-752

102 Biologic Reactivation of the Wassermann Reaction. A. S. d'Emidio.
103 *Epidemic Meningitis. P. Costantini.

100. **Pressure of Cerebrospinal Fluid.**—Indelicato declares that estimation of the pressure of the fluid merely by the way it spurts or drips is liable to mislead as to the actual tension. The manometer is indispensable for anything like precision

and for correct judgment of the underlying conditions in the case.

101. **Fixation Abscesses.**—Cerioli has modified Fochier's original technic for the fixation abscess and advocates its use not only in acute but also in chronic diseases. It might even be given a trial in nervous affections and in syphilis. In acute infectious diseases he has found it of great advantage to supplement it with serotherapy. He injects 1 c.c. of a mixture of 16 parts eucalyptol and 4 parts turpentine, instead of all turpentine. This causes a large abscess to form which shows fluctuation in time but resolution follows and usually without the abscess opening outward. The whole disappears in ten or twelve days. Only in children the abscess generally opens spontaneously. No incision and no dressing are needed therefore for adults, as the evacuation of the contents of the abscess is not the important factor, except in arsenic and lead poisoning, when the abscess is induced to carry off part of the indestructible poison. The purpose of the injection is defeated if the fluid gets into a vein and thus into the general circulation. This happened in one of his cases and transient disturbances and a strong taste of eucalyptol were noticed and no abscess developed. He gives the details of a case of puerperal fever, one of anthrax and one of a deep phlegmon in the neck, all treated by the fixation abscess and serotherapy with favorable outcome. He warns that the cessation of symptoms does not necessarily imply the death of the germs, and hence treatment should not be abandoned too early. In polyneuritis, in facial paralysis, in nodose erythema, and in acute articular rheumatism, he has obtained excellent results with the fixation abscess. In pleurisy it almost invariably renders puncture unnecessary or prevents return of the effusion after thoracocentesis. The work issues from the public hospital at Lonato and concludes with reports of the application of the method in surgical tuberculosis, injecting tuberculin later into the artificial abscess. The results seemed to be favorable. This was still more marked in some cases of sciatica. The modern theories as to vaccination, and especially autogenous vaccines, have much in common with the principle of the fixation abscess, and if the latter can be made a simple and harmless lesion, as is the case with the technic described, it seems to open a prospect of effectual mobilization of the individual defensive forces, under control, as an important aid in the treatment of the most diverse affections.

103. **Epidemic Meningitis.**—Costantini ascribes the recovery in one of the three cases reported to the intravenous injection of 2 c.c. of a 3 per cent. solution of phenol as the last resort. Two injections a day were given at first and then one a day, after failure of a persevering course of lumbar punctures and antimeningococcus serum. There were a number of other cases of meningitis in the barracks at the time but the other men recovered under serotherapy alone.

Policlinico, Rome

June 20, XXII, No. 25, pp. 821-852

104 Principles for Care of Wounded Limbs to Prevent Crippling. (Profilassi di talune debilitazioni dell'apparechio del movimento, consecutive a traumi.) R. Dalla Vedova.
105 Chloroform as a Vermin, Helminth and Other Parasites Exterminator. (Le malattie da parassiti animali negli eserciti combattenti.) G. Alessandrini.
106 Cardiovascular Disease in the War. G. Galli.

June, Surgical Section, No. 6, pp. 265-312

107 *Polycystic Kidney. R. Mosti.
108 Urea Test of Kidney Functioning. (La prova dell'azoturia come metodo di esame della funzione renale.) E. Pirondini. Commenced in No. 5 and continued.
109 *Hot Air Jet to Promote Healing. G. Simoncelli. To be continued.

107. **Polycystic Kidneys.**—Mosti states that in the 515 cases of polycystic kidney on record the affection was bilateral in the overwhelming majority, as also in a personal case described in detail, with the histologic findings in the kidney removed. The other kidney had given evidence that it was functioning satisfactorily, but after the nephrectomy it broke down and the man died after a few days of anuria. Polycystic kidney is most common in men, and usually the patients are between 40 and 60.

109. **Hot-Air Jet to Promote Healing.**—Simoncelli has found the jet of superheated air an excellent means to stimulate and hasten the repair of torpid lesions which show no tendency to heal. On recent and active granulating wounds it does no good but rather retards healing.

Riforma Medica, Naples

June 19, XXXI, No. 25, pp. 673-700

110 *Intravenous Serotherapy of Cholera; Sixty-Nine Cases. S. Livierato.
111 *Enlargement of the Skull with Web Fingers and Toes. (L'acrocefalosindattilia di Apert considerata come una varieta fetale della cranio-sinostosi patologica.) M. Bertolotti and G. B. Trotti.

110. **Serotherapy of Cholera.**—Livierato had 147 cases of cholera in his charge during the 1913 epidemic in Italy. Serotherapy was applied in sixty-one of the severer and in twelve of the milder cases. The mortality was 55.74 per cent. in the sixty-one graver cases, while all died in the seventeen other severe cases not given serum treatment. In most of the cases he supplemented the serotherapy with intravenous injection of a hypertonic salt solution, according to Rogers. The latter had a remarkable action on the vomiting and diarrhea, but all recovered of the six patients with a very severe form of cholera who were given the serotherapy alone. The anticholera serum has an unmistakable antitoxic action and thus effectually supplements the hypertonic solution.

111. **Pathologic Synostosis.**—The girl of 5 presented an extremely typical example of the deformity of the skull and symmetrical growing together of the fingers, with six rudimentary toes on each foot—the deformity which Apert described in 1906, calling it acrocephalosyndactylia. Nine illustrations are given and the case is compared with the literature on similar deformities, and the mechanism is discussed.

Semana Medica, Buenos Aires

May 6, XXII, No. 18, pp. 561-592

112 *Calculus of the Urethra in a Woman. J. M. Caballero.
113 Functional Stomach Trouble. VI. (Hiperestenias gastricas primitivas.) T. Martini.
114 Toxicity of Certain Stains for Protozoa. (Accion de los colorantes imino y fenolicos nitrados.) L. Guglialmelli and J. J. Carbonell.

May 13, No. 19, pp. 593-624

115 *Liver and Spleen Syphilis. (Los grandes sindromas viscerales de la Sifilis.) J. J. Viton.

May 20, No. 20, pp. 625-656

116 Vaccine Therapy. (A proposito de algunas vacunas.) A. Gutierrez.
117 Medical Inspection of Rio Schools. (Cuerpo medico escolar.) M. Etchegaray.

112. **Calculus in Female Urethra.**—Caballero's patient was a multipara of 60. He removed the large calculus through an incision in the anterior wall of the urethra. By this means all danger of a fistula into the vagina was avoided. The external subsymphyseal urethrotomy was done by Legueu's technic and confirmed its advantages anew. A curving incision is made between the meatus and the clitoris, the concavity toward the former, and then the anterior wall of the urethra is incised, extending both incisions until it is easy to extract the calculus.

115. **Liver and Spleen Syphilis.**—Viton recalls that syphilitic visceral affections have no special signs to distinguish them, while many nonsyphilitic lesions simulate the clinical picture of liver and spleen syphilis. This is particularly confusing when the patient happens to be a syphilitic. The benefit from mercurial and potassium iodid treatment clears up the diagnosis for visceral as well as respiratory affections. Syphilis of the respiratory apparatus, especially syphilitic asthma, generally yields completely to specific treatment. The liver stands like a filter between the umbilical and the general circulation in the fetus, and it is easy to understand how it strains out and retains the spirochetes, and the damage that results. The liver and spleen are even more closely connected together in pathologic than in normal conditions, while the abundant blood supply of both these organs keeps them flooded with the germs when there are any in the blood stream. They enlarge in consequence, but the secondary phenomena generally dominate the clinical picture, anemia,

jaundice or ascites as the case may be, or still other secondary symptoms may predominate. He discusses each of the possible clinical pictures in turn, in both children and adults. In treatment, effusions in abdomen or chest should be aspirated out and the heart toned up, preliminary to vigorous specific treatment. The drugs act most directly, perhaps, on the liver when given by the mouth, but they should be commenced cautiously and gradually, with small doses.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 5, I, No. 23, pp. 1927-2018

118 Laboratory Research on Irregular Heart Rhythms. (Hartbi-, tri- en polygeminie.) S. De Boer.
119 *Traumatic Injury of the Optic Nerve; Six Cases. (Verwonding van de gezichtszenuw.) J. H. A. T. Tresling.
120 Puerperal Auto-Infection. (Zelfbesmetting in het kraambed.) C. Meuleman.

119. **Wounds of the Optic Nerve.**—Tresling's six cases had nothing to do with war wounds. The injury was from an accident or a stab wound. In three cases the optic nerve was injured on the side of the trauma, in the others on the opposite side. The changes in the optic nerve tended to retrogress in two; they remained stationary in two and in two they continued a progressive course. In one case the blade of a knife was broken off in the tissues without appreciable reaction, and for nearly three weeks its presence was unsuspected although it was 9 cm. long by 2 wide. The stab wound was just below the left eye, and the sight of the right eye was lost, but in the left eye vision, tension and visual field were normal. The tip of the blade had penetrated to the top of the right orbit, the cutting edge forward. Its presence was a casual discovery at the routine roentgenoscopy.

Hospitalstidende, Copenhagen

June 16, LVIII, No. 24, pp. 581-612

121 *Chronic Hemolytic Jaundice. (Den kroniske hæmolytiske Ikterus.) K. Faber.

June 23, No. 25, pp. 613-636

122 The Bordet-Gengou Bacillus Probably Responsible for Whooping-Cough. (Undersøgelser over Kighostebacillen.) I. Jacobsen and A. H. Meyer.

121. **Chronic Hemolytic Jaundice.**—Faber reports the details of a case in a girl of 17 whose father and four of the seven other children also present the typical picture of what he calls the Minkowski-Chauffard disease. In all the six members affected, of the family mentioned above, the spleen was enlarged, resembling in size and consistency the spleen of leukemia. Faber reports further another case, typical in every respect, in a girl of 18. All the other members of her family were healthy, without any signs of jaundice, anemia or splenic enlargement. In this and in his other case the red cells were destroyed in salt solutions that were almost isotonic, 0.64 and 0.7 per cent. The latter figure belongs to the sporadic case. In thirty-three healthy persons or patients with other diseases. hemolysis does not begin with a stronger than a 0.42 or 0.46 per cent. solution, and total hemolysis only with a 0.32 to 0.34 per cent. solution. This decreased resistance of the red cells is easily determined by preparing a set of test tubes with salt solution of graduated strengths and adding to each a few drops of the blood of the patient under examination. He appends the case histories of three patients with the familial type of the disease and treated by splenectomy. The fragility index of the blood was determined before and again three or four years after splenectomy, and also for the other members of the two families. The fragility index was found just as high at the later examinations; in all three hemolysis was evident in the 0.8 per cent. salt solution. Although the red cells were thus still abnormally fragile, yet the patients had been restored to clinical health by the splenectomy. The fragility of the blood is the primary factor in the disease and this is the anomaly that is inherited. The red cells were abnormally small in the cases examined for this. The spleen enlarges secondarily, but after its removal the red cells seem to be able to hold their own and hemolysis does not occur so readily. (Compare with recent editorial, July 17, p. 225.)

Hygiea, Stockholm

LXXVII, No. 10, pp. 513-576

123 Sources and Modes of Infection with Tuberculosis, Especially in Childhood. (Infektionskällor och infektionsvägar vid tuberkulos särskilt i barnaåldern.) G. Hedren.

No. 11, pp. 577-639

124 Terminal Drop of Temperature in Pulmonary Tuberculosis with Albuminuria. (Kritiska temperaturfall straxt före döden, s. k. kollapstemperatur, vid lungtuberkulos; 107 dödsfall.) E. Danielsson.
125 *The Meiostagmin Reaction in Cancer. J. Jacobowsky.
126 Pseudomyxoma in Peritoneum of Man. E. Michaelsson.

125. **The Meiostagmin Reaction with Cancer.**—Jacobowsky applied the meiostagmin test in fourteen cases of cancer and two suspected and seventeen nonmalignant cases. The findings were conflicting and unreliable with four of the five antigens tested. The most instructive responses were obtained with an acid antigen; with this two out of four cancer cases were positive while all the six noncancer cases were negative.

Ugeskrift for Læger, Copenhagen

June 10, LXXVII, No. 23, pp. 923-988

127 *Determination of the Blood Pressure. (Blodtryksmaaling i Kliniken.) H. I. Bing.
128 *The Blood Pressure in the Obese. (Blodtryk og Adipositas.) E. E. Faber.

June 24, No. 25, pp. 1027-1056

129 Roentgenoscopy of the Normal Large Intestine. (Bidrag til den normale Tyktarms Rontgenologi I.) T. E. H. Thaysen. Commenced in No. 24.
130 *Bloodless Stretching of a Nerve Scarcely Possible. (Er ublodig Nervestraekning mulig?) F. Sadolin.

127. **The Blood Pressure.**—Bing reviews the history of methods for determining the arterial pressure, remarking that the cuff apparatus has proved most reliable, but that it would be a great advantage if a standard width, etc., were used to permit comparison. The systolic pressure can be determined by either palpation or auscultation, but auscultation is best for the diastolic pressure. In 138 men examined, all inmates of an institutional "home," the systolic pressure ranged from 115 to 145. In 160 in the hospital department it ranged from 128 to 158. All but 46 in the first group were under 70 and all but 84 in the second group. The normal systolic blood pressure seems to be from 100 to 130, but it is seldom within this range after 60.

128. **The Blood Pressure with Obesity.**—Faber recorded the blood pressure in 211 patients at the hydrotherapeutic institute. Over 52 per cent. had a pressure under 140 but in the others it ranged from 145 to over 200. In 182 cases there was no manifest kidney or vascular disturbance and among these the proportion was unusually high of cases with blood pressure of 145 to 160 (16 out of 59); 165 to 180 (9) and 185 to 250 (4). The pressure was often found high with functional neuroses and further with rheumatism, neuralgia and dyspepsia, for all of which overeating may be incriminated. It is possible, he adds, that the overeating may send up the blood pressure even when or before it has induced obesity. In most of the patients the high blood pressure did not seem to have any connection with the symptoms observed.

130. **Bloodless Stretching of a Nerve is a Fiction.**—Sadolin refers to the attempts to stretch a nerve in treatment of nervous trouble. Weights are applied for the extension, as a rule, and physicians are complacent over the benefits realized by the procedure. It is impossible, however, that the nerve can be really stretched. It does not lie taut, like a violin string, but lies loose, and the dragging on the limb from the weights merely takes up some of the slack. A nerve responds very readily to actual mechanical influences, as when a foot "goes to sleep" when it hangs pendent overlong, and the reaction when the elbow is lightly hit. If extension could be induced by weighting, the acrobats who hang by their feet or their hands would soon show the effects of stretching of their nerves. But nothing of the kind is observed in them. These and other facts cited apparently demonstrate that nonoperative stretching of a nerve is a fiction.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 6 CHICAGO, ILLINOIS AUGUST 7, 1915

DERMATOLOGY OF THE ANCIENTS *

HOWARD FOX, M.D.

NEW YORK

The present condition and the future prospects of dermatology have been ably discussed by former chairmen of this section. Since Hippocrates has said that the physician must know what his predecessors have known, if he does not wish to deceive both himself and others, it has seemed to me that an account of the dermatologic knowledge of our earliest predecessors might prove of interest if not of practical value.

An historical sketch of dermatology of the ancients properly begins with the Egyptians, as there is no doubt that the written account of their civilization is the oldest that is known. According to Comrie,[1] the medical practitioners in the early days of Egypt belonged to a learned class, enjoyed a high social position and were in many cases the friends and counselors of kings. This is shown by monuments that were erected to them, one of their number, indeed, I-em-hotep (3000 B. C.) having been later deified. As a rule, however, the names and personalities of the physicians, however skilful or famous they may have been, remain unknown.

The source of our knowledge of ancient Egyptian medicine is mostly derived from six papyri, all having been discovered and deciphered within recent years. The most important of these is the famous Papyrus Ebers,[2] a manuscript nearly 65 feet in length. It consists of 108 columns (or pages), each composed of about twenty lines of so-called hieratic script, beautifully written in red and black ink. This precious document, together with five other papyri, contain in less than 185 pages a most valuable amount of information about medicine and pharmacology of the ancient Egyptians. From various data it was calculated by Ebers that the Papyrus which bears his name was written about 1552 B. C., at a period before the exodus of the Jews from Egypt. It is now generally agreed that the Ebers Papyrus is not the work of any single author but a compilation of medical knowledge of many previous centuries. Like the Hearst Papyrus, as Reisner[3] says, it is "only a collection of practical remedies intended for the use of practicing physicians."

While the Egyptians doubtless had a considerable knowledge of practical medicine, they felt that its effectiveness was increased by the addition to some of their prescriptions of various magic incantations. Many of their drugs had a real therapeutic value, while others contained various disgusting ingredients whose purpose it was to drive out the wicked demons from the bodies of the unfortunate sufferers. An example of the latter class is shown by a prescription in the Berlin Papyrus, containing seven ingredients, five of which consisted of the dung of various animals.

The dermatologist should be especially interested in the medicine of the ancient Egyptians on account of the prevalence among them of skin diseases. We learn of this indirectly from Pliny and other writers, and have direct evidence from the numerous references to diseases of the skin and scalp that appear in the medical papyri. In a tabulated list of various diseases in the Papyrus Ebers, von Klein[4] mentions, among diseases of the scalp, "tumors, alopecia and eruptions," also prescriptions to prevent hair from turning gray, to produce its growth on bald heads, to promote the growth, to make it grow on cicatrices, to depilate the scalp and to dye the hair. Under facial diseases he mentions sunburn, freckles, wrinkles, discolorations, roughness and blotches; under diseases of the skin, pustules, prurigo, swellings, tumors with fetid suppurations, leprosy, eczema, scabies, itching cankers, boils and carbuncles. In addition, von Klein mentions gangrene, eschar formation, burns, spots or white cicatrices which such sores leave and alteration of the hair on the burnt surfaces, perspiration of the feet, sore toes, corns, bunions, callosities of all sorts and falling nails. In Chapter 12 of the Hearst Papyrus there are thirteen remedies, according to Reisner, "relating to the hair and skin, etc."

Some of the dermatologic prescriptions in the Ebers Papyrus are extraordinary, to say the least, in their composition. As an example, equal parts of the toes of a dog, ripe dates and asses' hoof were suggested as a remedy to make hair grow, the ingredients first being boiled carefully in a pan of oil. Another prescription for baldness, that has been frequently quoted, consisted of equal parts of cerebrospinal fluid and writing ink. Perhaps the most unusual recipe for the cure of baldness consisted of equal parts of the fat of a lion, hippopotamus, crocodile, goose, snake and ibex. Thus we see that goose grease, which has recently been recommended as a very penetrating ointment base, is not particularly new to the medical profession. Most of the ancient Egyptian prescriptions were ordered to be taken for a period of not more than four days, a fact that might account for the prevalence of skin diseases which, as we know,

* Chairman's address, read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Comrie, J. D.: Medicine Among the Assyrians and Egyptians in 1500 B. C., Edinburgh Med. Jour., 1909, ii, 101.
2. Ebers, G. M.: Papyrus Ebers, Das Aelteste Buch über Heilkunde (German trans. by Joachim), Berlin, 1890.
3. Reisner, G. A.: The Hearst Medical Papyrus, Leipzig, 1905, p. 4.
4. Von Klein, C. H.: The Medical Features of the Papyrus Ebers, THE JOURNAL A. M. A., Dec. 23, 1905, p. 1928.

are so often distressingly chronic. While most cases of scabies might have been cured by appropriate treatment of four days, we hate to think of the disappointment of the sufferers from psoriasis or chronic eczema, whose physicians felt content with such a short course of treatment.

"The question of syphilis," writes Comrie, "has been raised in connection with the advanced atheroma that has been found in the large arteries, the diffuse signs of periostitis and particularly in regard to a case of ulceration of the skull described recently by Professor Lortet. No absolutely conclusive evidence as to the existence of this disease in early Egypt has, however, yet been found, and Professor Elliot Smith has demonstrated that the supposed ulceration is probably due to the attack of insects ages after the bones were buried."

That specialism in medicine is not confined to modern times is shown by the account of Herodotus, who was one of the two chief authorities on Egyptian medicine in the fifth century before Christ. Referring to the medical practitioners of Egypt, Herodotus says, "The art of medicine is divided among them. Each physician applies himself to one disease only and not more. All places abound in physicians. Some physicians are for the eyes, others for the teeth, others for the belly and others for the internal disorders." The fame of at least one Egyptian specialist in skin diseases, it appears, was great enough for him to be summoned to Greece in consultation.

The conception of medicine among the ancient Egyptians was certainly much broader than that of the present day. Thus the subject of cosmetics was not considered beneath the dignity of the profession to practice as a special art. According to Paschkis, identical substances that are in vogue today as cosmetics were used thousands of years ago in Egypt. No less a personage than Cleopatra is said to have written a treatise on the subject, which has unfortunately perished. Furthermore, the duties of the medical fraternity included the work that is nowadays performed by professional vermin exterminators, and we find in the papyri recipes for preventing bees from stinging, flies from biting and rats from eating corn.

Among the ancient Hebrews the art and science of medicine occupies a peculiar position from the fact that all of our knowledge on the subject is derived from nonmedical sources. There were no ancient Hebrew books devoted especially to medicine, and we cannot properly speak of a system of Hebrew medicine comparable to that of the ancient Egyptians, Hindoos or Greeks. The sources of our information are chiefly the Bible and Talmud. The oldest Hebrew literature was the Pentateuch or Mosaic Law, revealed to Moses by Jehovah on Mount Sinai, and centuries after committed to writing. According to Jewish belief, other revelations beside this "written law" were made to Moses, which were handed down from generation to generation as oral traditions and eventually compiled and recorded in the third century of the Christian era. This compilation was known as the Mishnah, and consisted of a "collection of binding precepts and legal decisions deduced by the ancient rabbis from the Pentateuch and itself forming a second or oral law." In the course of time, numerous commentaries and discussions relating to the Mishnah were also compiled and committed to writing, which were known as the Gemara. The Mishnah and Gemara together constituted the Talmud, of which there were two, the Palestinian and Babylonian Talmuds. Of these the Babylonian Talmud was much more voluminous and of somewhat later date than the Palestinian compilation, being completed about the sixth century A. D.

The references to medical subjects in the Bible and Talmud deal mostly with the prevention rather than the treatment of diseases, and the remark of Bennett[5] seems quite proper that "the Mosaic sanitary code may be said to constitute the basis of modern sanitary legislation." One of the functions of the priest, who may be considered as a sort of health officer, was to decide whether a skin disease was "clean" or "unclean," though nothing is said about his having to treat these diseases. While it is quite likely that the priests and some of the prophets had more or less medical knowledge, the practice of medicine, such as it was, was carried on by the physician or rophé. That the esteem in which the physician was held varied considerably may be seen from a saying in the Talmud that the proper place for the best physician was in Hades, while according to another more flattering saying, the wise man was advised not to live in a town that has no physician or bloodletter.

Before discussing particular diseases of the ancient Hebrews, I should like to mention the difficulty of their recognition as pointed out by Higier.[6] As this writer says, we are often puzzled at the present day to make a diagnosis when a patient is presented to us for examination with a full history. When a history alone, without the patient is presented, our difficulties increase. When, however, the history was written many centuries ago by physicians whose terminology and conception of medicine were different from our own, we are still further embarrassed. But when such ancient histories of disease were written by laymen, we must admit in most cases our complete helplessness in making a proper diagnosis. It is such difficulties as these that are encountered in the study of biblical leprosy.

To the modern dermatologist, the subject of leprosy as described in the Old Testament is as fascinating as it is difficult. The question to be settled is whether the disease described by Leviticus as Zaraath and translated as leprosy in the Authorized Version really refers to the modern disease leprosy, with which we are all familiar. The thirteenth chapter of Leviticus contains fifty-nine verses which consist of hard and fast rules for the differentiation of leprosy from harmless diseases of the skin. An idea of their medical value may be obtained by reading the following verses:

1. And the Lord spake unto Moses and Aaron saying
2. When a man shall have in the skin of his flesh a rising (sëeth) a scab, (sappachath) or bright spot (bahéreth) and it be in the skin of his flesh like the plague of leprosy; then he shall be brought unto Aaron the priest or to one of his sons the priests:
3. And the priest shall look on the plague in the skin of the flesh: and when the hair in the plague is turned white, and the plague in sight be deeper than the skin of the flesh, it is a plague of leprosy: and the priest shall look on him and pronounce him unclean:

Reading further, we are told that if the symptoms of white hair and depression of the patches are not present, the individual is to be isolated for further

5. Bennett, Sir R.: The Diseases of the Bible, 1887.
6. Higier, H.: Was lehren uns die Bibel, der Talmud, und das Evangelium über Lepra und Syphilis? St. Petersburg Med. Wchnschr., 1907, xxiv, 67.

observation, and if at the end of two weeks the "scab" has spread, the case is pronounced leprosy.

McEwen,[7] who has recently written a most interesting and careful analysis of the subject, says that the "differential criteria, white hair, depression and spreading, are absurdly insufficient to constitute a dividing line between harmless skin diseases and leprosy." He then proceeds to tabulate the eleven pathologic conditions of the skin mentioned in the remaining verses of the chapter, which he states are "far too scant effectually to distinguish leprosy from the many other skin diseases which must have been prevalent at that time." With this opinion, I most heartily agree, as also with that expressed by my father, Dr. George Henry Fox,[8] who said in referring to the Mosaic law that "there are no scriptural references to any disease which is unmistakably the leprosy of the present day." If the description in Leviticus does not accord with the conception of modern leprosy, how much less do certain miraculous statements convey the idea of this disease, as when we read in Exodus 4-6, that Moses put his hand into his bosom at the command of the Lord "and when he took it out, behold his hand was leprous as snow."

Various modern writers, including von Bärensprung,[9] Danielson, Neumann,[10] and Bloch,[11] consider the Zaraath of the Bible to have been true leprosy. Preuss,[12] who is an authority on the medicine of the Bible and Talmud, is also of this opinion, and calls attention to the chronicity of the disease, to the fear in which it was held and to the fact that its victims were not bedridden. He argues that there are only two diseases, namely, syphilis and leprosy, which could inspire such fear, and, by the easy exclusion of syphilis, concluded that the disease Zaraath referred to true leprosy. On the other hand, Münch[13] considered the disease to be an endemic vitiligo, and Katzenelson and Sack[14] thought it a form of dermatomycosis from the references to spreading of the lesions and to leprosy of garments. Finaly[15] thought it syphilis, while Ebstein[16] considered that Zaraath represented a composite name for various skin diseases that cannot now be recognized.

While it thus seems difficult or impossible to understand the significance of the word Zaraath from a medical standpoint, a more reasonable explanation is afforded from the religious point of view as expressed in the conclusion of McEwen[17] that "the word leprosy did not refer ever and always to true leprosy, but was rather a generic term covering various sorts of inflammatory skin diseases, which rendered the one afflicted unfit to associate with others, not because his condition was contagious as a disease, but because by virtue of the belief among the Hebrews in the principle today known as 'taboo,' it disqualified him for the worship of Jehovah, threatened others by contact with a like disqualification, and required ceremonial procedure for removal."

Among the references in the Bible of dermatologic interest may be mentioned the disease with which Job was afflicted. We read in the description that he was smitten by Satan "with sore boils (schechin ra) from the sole of his foot unto his crown," and, furthermore, that "he took him a potsherd to scrape himself withal." It would seem that a diagnosis of boils would hardly be compatible with the pruritus that would cause the patient to sit in the ashes, as we read, and scratch himself with a piece of pottery. From a consideration of the entire narrative, Preuss considers the disease of Job to have been a universal eczema.

An interesting case of hypertrichosis is mentioned in the Bible in the person of Esau, the twin brother of Jacob, who at his birth was "all over like a hairy garment," and of whom Jacob later said "Behold, Esau my brother is a hairy man and I am a smooth man."

The medicine of the ancient Hindoos ranks next to that of the Egyptians, Babylonians and Hebrews in point of antiquity. It is superior to the former, according to Baas,[18] and not far behind Grecian medicine in the extent and elaboration of its doctrines. The oldest and most celebrated treatises on Hindoo medicine that are now extant are the Charaka Sauhita and Susruta Ayurveda. "An older work," writes Dutt,[19] "called Ayurveda is mentioned in both these works as having formed a part of Athar Veda. It is said to have been originally composed by Brahma the Creator and to have consisted of a thousand chapters and a hundred thousand slokas. Afterward in consideration of the short lives and small intellects of human beings it was abridged into eight chapters. The Ayurveda with a hundred thousand slokas is probably a myth, but the Ayurveda with its eight divisions seems to have had a real existence although it is not available at the present day. It probably became obsolete after the works of Charaka and Susruta were composed." The works of Charaka and Susruta are supposed to be commentaries on the Ayurveda, and though written by men, are given divine origin. Thus, it is said that Charaka was prepared by Atreya, who was instructed by Indra the King of Heaven, while Dhanwantaree, the physician to the gods, imparted his knowledge to his pupil Susruta. Charaka is the more ancient work, and is thought by many to have been written about the time of Christ. Susruta was probably of later origin, and is especially noted for its attention to surgery.

The relation of all the ancient systems of medicine to the priestly class is nowhere better shown than in India, where the art of medicine was controlled by Brahmins, although for a time Buddhist priests contested their supremacy in this field. Medicine in ancient India was very highly respected, as may be judged by the saying that one of the fourteen precious objects which their gods are believed to have produced by churning the ocean was a learned physician. While the Brahmins themselves were philosophers and teachers, the actual practitioners of medicine were the Vaidyas or a sub-caste of the powerful and aristocratic Brahmins.

7. McEwen, E. L.: The Leprosy of the Bible in Its Medical Aspect, Biblical World, 1911, xxxviii, No. 3.
8. Fox, G. H.: Biblical and Modern Leprosy, Pop. Sc. Month., 1884, xxiv, 797.
9. Von Bärensprung, F.: Die Hautkrankheiten, Erlangen, 1859, p. 1.
10. Neumann, I.: Lehrbuch der Hautkrankheiten, Vienna, 1880, p. 1.
11. Bloch, I.: Der Ursprung der Syphilis, Part 2, Jena, 1911, p. 486.
12. Preuss, J.: Biblisch-talmudische Medizin, Berlin, 1911, p. 369.
13. Münch, G. N.: Die Zaraath (Lepra) der Hebräischen Bibel, Dermatologische Studien, 1893, xvi, 72.
14. Sack, A.: Was ist die Zaraath (Lepra) der Hebräischen Bibel? Virchows Arch. f. path. Anat., 1896, clxiv, 201.
15. Finaly, S.: Ueber die wahre Bedeutung des Aussatzes in der Bibel, Arch. f. Dermat. u. Syph., 1870, ii, 125.
16. Ebstein, W.: Die Medizin im Alten Testament, Stuttgart, 1901, 89.
17. McEwen, E. L.: The Leprosy of the Bible: Its Religious Aspects, Biblical World, 1911, xxxviii, No. 4.
18. Baas, J. H.: Outlines of the History of Medicine and the Medical Profession, New York, 1889, p. 49.
19. Dutt, U. C.: The Materia Medica of the Hindus compiled from Sanskrit Medical Work, Calcutta, 1877, p. 6.

The teaching of the ancient Hindoos in anatomy and physiology shows that they were not accustomed to dissect the human body or those of animals. In their description of anatomy it is stated that the body contains 500 muscles, though only 490 in women, from 300 to 360 bones, twenty-four nerves and, of special interest to us, that the skin consisted of seven layers or membranes. According to Wise,[20] the skin was supposed to be healthy when it was soft and had much hair.

"Hindu physiology," writes Garrison,[21] "presupposes that the vital processes are actuated by means of the air (below the navel), the bile (between the navel and heart) and the phlegm (above the heart) from which are derived the seven proximal principles chyle, blood, flesh, fat, bone, marrow and semen."

The ancient Hindoo conception of the cause of disease included many natural phenomena, such as exposure, climate, irregularity in food, exercise, etc., which were supposed to corrupt or derange the humors. They also thought that diseases could be caused by sins committed in the present or in a former life. Thus, one who killed a cow might suffer from lepra. A drunkard might be punished by a skin disease, and an incendiary by erysipelas, etc.

While we have seen that Egypt was the land of specialism in medicine often carried to an absurd extreme, the opposite condition prevailed among the ancient Hindoos. As Baas says, "Indian medical practice is distinguished from that of all other people of antiquity by the fact that it recognizes no proper specialties but simply physicians practicing general medicine." Though there were no skin specialists in ancient India, there evidently would have been plenty of occupation for such, had they existed. Many diseases of the skin are mentioned by the ancient Sanskrit writers, and this in spite of the strict regulations that were given concerning personal hygiene and diet. Such regulations involved a daily bath and inunctions with oil, especially about the head, ears and the soles of the feet. Their clothing had to be absolutely clean, as it was said that soiled clothes produced skin diseases. The nails, beard and hair were to be kept clean and cut every fifth day, etc.

Of the many diseases described by the ancient Sanskrit writers, none is of greater interest to the dermatologist than leprosy, especially as the disease is now so prevalent and severe in Asia. The early descriptions of leprosy, as in every country, appear to have included other harmless diseases of the skin. According to Wise, the "Hindoos distinguished three kinds of leprosy, a black, white and red variety and eighteen forms; seven of those are severe in their nature and eleven are mild." One of these spurious varieties is evidently ichthyosis, in which the patient does not perspire and presents large, oblong patches like the scales of a fish, rough like the skin of an elephant and of a dark brown color. Portions of the description, however, point unquestionably to leprosy, such as the hands and feet becoming stiff, insensible, ulcerating and dropping off, the nose falling in, the eyes becoming red, and the voice unnatural and hoarse

In the differential diagnosis of leprosy, the modern physician would certainly excel his ancient Hindoo colleague, though in regard to treatment he would have little to suggest, except as to the benefits of segregation. What better advice could we give than that of the ancient physician who instructed his leprous patient to "bathe, to avoid wine and fatigue and to attend to diet, take a proper degree of exercise and wear clean clothes." Some of their medicines would not be considered so favorably, as, for instance, tumeric powder in cow's urine to be taken every day for one month. The seriousness of leprosy was recognized by the ancient Hindoo physician, who classified it among the seven diseases which had a bad prognosis.

The ancient Hindoo account of elephantiasis is short but unmistakable. To quote from Wise, "It is stated that damp and cold situations produce this disease, that it attacks different parts of the body, and that it is incurable after it has remained upwards of a year, or is very large." We read of "small eruptions appearing upon the face at the time of puberty, produced by phlegm, wind and blood," evidently a description of acne. For dandruff, which is supposed to be due to deranged phlegm and wind, Susruta recommends bleeding, a rather heroic method of treatment. A remedy recommended by Chakradatta for a peculiar itching of the scrotum (possibly eczema) would not be suitable to an acute condition at least. This consists of sulphate of iron, concrete juice of the bile of the cow, sulphate of copper, sulphuret of arsenic and of antimony, to be made up in a paste with acid rice water. For the cure of external worms (pediculosis), fluid mercury is to be rubbed with sulphur until a homogeneous black mass is produced and rubbed over the affected part. Among other cutaneous affections described by the ancient Hindoo writers may be mentioned acne, boils, carbuncles, abscesses, alopecia, canities, erysipelas, urticaria, purpura, nevus, verruca, ulcers, diseases of the nails and chicken pox.

In the very extensive materia medica of the ancient Hindoos there were a good many remedies recommended which appear to us rather grotesque. Thus, it is hard to see any value in using the moisture contained in cow dung for inflammation and discoloration of the skin. On the other hand, the Hindoos deserve credit for having used arsenic not only in leprosy but also in other diseases affecting the skin. Mercury also, according to Royle,[22] appears to have been externally employed in the time of Pliny. Their external remedies included oils, plasters, poultices, baths, hot applications for inducing perspiration, fumigation for ulcers and skin diseases, and the cautery, both actual and potential.

Whatever opinion we may hold in regard to the medical knowledge of the ancient peoples of whom we have spoken, it must be admitted that the real foundations for the scientific study of medicine were laid by that remarkable race, the ancient Greeks, under the leadership of the immortal Hippocrates. Although himself a descendant of a long line of priest-physicians, Hippocrates (460-377 B. C.) was the first to separate medicine from religious superstitions and philosophical sophistries. He said that disease arose from natural causes and not from the anger of the gods. He was a great exponent of the vis medicatrix in advising us to "follow nature," and he recognized that accurate observation was necessary for all medical progress.

20. Wise, T. A.: Review of the History of Medicine, London, 1867, p. 181.
21. Garrison, F. H.: An Introduction to the History of Medicine, Philadelphia and London, 1913, p. 50.
22. Royle, J. F.: An Essay on the Antiquity of Hindoo Medicine, London, 1837, p. 45.

Without much knowledge of anatomy and little or none of physiology, it is hardly surprising that little progress was made by Hippocrates and his followers in ascertaining the essential nature of disease. Like the four elements, earth, air, fire and water, and the four qualities, heat, cold, moisture and dryness, there were supposed to be four cardinal fluids or humors in the body, the yellow bile, blood, mucus and black bile, in the order named. By a uniform mixture and adjustment of all of these, health was maintained. The basis of life was the innate heat, the evaporation of which caused death. The presence of air that was supposed to exist in the vessels was also considered essential to life. In a disease running a normal course, the process went through the stages of "crudity," "coction" and "crisis," the first being a degeneration of the fluids, the second a preparation stage for their removal and the third their actual removal.

In regard to the Hippocratic conception of skin diseases, it is not to be doubted, as Kaposi[23] has said, that certain affections were considered to be independent or idiopathic in their origin. Others were thought to consist of deposits on the skin (apostases) which resulted from certain morbid conditions of the humors within the body. In this sense the Hippocratic writers spoke of a skin disease as an eruption, a breaking out or an efflorescence (exanthema). They looked on many diseases of the skin as curative attempts of nature which should not be disturbed, as otherwise the morbid condition might return inward or be "driven in," to use an expression that is frequently heard at the present day among the laity. While mainly considering skin diseases from the humoral-pathologic standpoint, Hippocrates also discussed the etiologic effect on them of age, sex, climate, seasons and even the weather.

As Rayer[24] says, Hippocrates "enquires into the symptoms of eruptions rather than attempts to describe them." Indeed, from his descriptions, it is difficult for us to judge of the original meaning of the terms, many of which are still in use in our dermatologic nomenclature. The form and color and certain features are often mentioned, but there are no exact descriptions of appearance and locality of skin disease.

In a critical study of the names of skin diseases used by Hippocratic writers, von Bärensprung says that the word "exanthemata" is used to refer without distinction to the "most diverse, acute, and chronic, itchy and non-itchy, dry and moist, flat and vesicular forms of eruption." Under this general conception are included three groups of disease. The first of these are the phymata, to which belong "all boils or tumors that rise upon or under the skin and gradually undergo suppuration." In this class are included furuncles (dothienes and terminthoi). The second group of diseases consists of the dry, scaly eruptions, the lopoi (from lopos the epidermis and lepo to scale). This includes lepra (which was doubtless psoriasis), lichen and pityriasis. A third group of exanthemata helchodea comprised the moist eruptions such as kerion, and achor, the moist eczema occurring in the scalp and face of children and eruptions consisting of vesicles or pustules (phlyctenai).

Attention is also called by von Bärensprung to the broad conception that was intended for the words "herpes" and "psora." Herpes referred to eruptions that gradually crawl or spread from a given point. One variety, herpes esthiomenos, appeared to be synonymous with phagedaina, a term with which we are all familiar. By psora was understood every pruritic eruption, whether dry or moist in character. Among other Greek names that are now in common use for skin diseases may be mentioned erysipelas, gangraina, petechia, ephelide, ecthyma and alopecia.

Among the famous aphorisms of Hippocrates which have been commented on by such a host of writers for the past 2,400 years may be mentioned several of dermatologic interest. Hippocrates says, for instance, "In dropsical persons, ulcers forming on the body are not easily healed," a statement with which all will agree. Again he says, "It is better not to apply any treatment in cases of occult cancer, for if treated the patients die quickly, but if not treated they hold out for a long time." Accepting the view of the ancient commentators that "occult" may mean deep seated, Adams[25] says that the conception of this aphorism will be that when cancer is superficial it can be removed by knife or cautery, but is best left alone when it is deep." In some of the aphorisms the meaning is not very clear, as in the statement that "broad exanthemata are not very itchy," or that "patients who have become bald are not subject to large varices, but should such varices supervene upon persons who are bald, their hair again grows thick."

One of the case histories of Hippocrates that is of interest to the dermatologist was that of a man who had suffered severely from general pruritus and thickening of the skin. Failing to obtain relief he went to the island of Melos where hot baths were to be found. We then read that he was cured of his pruritus and thickening of the skin but unfortunately developed dropsy and died, a statement that illustrates the honesty of Hippocrates, in consequence of which he was spoken of by jealous rivals as a practitioner of the "medicine of death."

If the reputation of the ancient Romans depended on their medical instead of their military and political achievements, we would indeed have a poor opinion of their genius. There was no such thing as a Roman system of medicine, and, indeed, there were comparatively few Roman physicians. The practice of medicine was almost entirely in the hands of the Greeks, who were responsible for all scientific progress and most of the literature. Before the appearance of Greek physicians, the Romans, as Pliny says, had gotten along without physicians for six hundred years, relying on simple remedial herbs, charms, etc. In their superstitious effort to be protected from illness, they worshipped innumerable goddesses of disease, among them being a goddess of scabies.

The physicians of the early Romans were looked on with contempt, and were not even entitled to citizenship until the time of Julius Caesar. The prejudice against them, however, gradually lessened until they were finally accorded unusual privileges. "The honorarium of a physician," writes Baas, "for an ordinary visit amounted to about 29 cents," though Pliny mentions a high priced physician who was paid the equivalent of ten thousand dollars by Manlius Cornutus for relieving him of a skin disease. The medical profession in ancient Rome, it may be added, was

23. Kaposi, M.: Diseases of the Skin, New York, 1883, p. 3.
24. Rayer, P.: Treatise on the Diseases of the Skin, London, 1835, xxxv.
25. Adams, F.: The Genuine Works of Hippocrates, New York, 1886, ii, 256.

not in any way responsible for the splendid achievements in hygiene, such as the building of great aqueducts, sewers and public baths, which were undertaken without their aid or advice.

While the practice of medicine, as has been said, was chiefly carried on by the Greeks, the best account of the art at that time was written by a Roman, Aulus Cornelius Celsus[26] (25 B. C.-50 A. D.). In spite of his masterly descriptions of diseases, it is even doubtful whether Celsus was a physician. He certainly did not engage in practice for a livelihood. In addition to his work on medicine entitled "de re medica" and consisting of eight books, he was the author of treatises on agriculture, philosophy, jurisprudence and history. Though Celsus made no impression on his contemporaries or the medieval writers, his work on medicine was eventually appreciated and is the only part of his writings that has survived.

The work of Celsus is of special interest to the dermatologists on account of the comparative importance given to diseases of the skin. In the fifth book, twenty-eighth chapter, of his "de re medica," a number of diseases are described with considerable accuracy and can be easily identified. They include carbuncle, furuncle, carcinoma, phagedenic ulcer (therioma, corresponding to the herpes esthiomenos of the Greeks), scrofuloderma (phygethlon) abscess, fistula, kerion, warts (achrocordon and myrmecia) and corns. A few other diseases whose identity we can probably recognize were venereal warts (thymia), acne, pustules (phlyzakia), erythema multiforme (epinyktis) and anthrax (from a remark that certain cases of carbuncle are painless.)

The terms "impetigenes" and "papulae" included eczema, while "pustulae" referred not only to what we term pustules but also lesions of urticaria and miliaria. Scabies referred to various forms of eczema, and vitiligo included three affections, alphos, leuce and melas. Of these, alphos might have been guttate psoriasis from the description, which reads, "It is called alphos when it is white; it is commonly a little rough and not continued, but appears like drops dispersed here and there. Sometimes it spreads wider leaving some places between free."

In his sixth book, Celsus describes various conditions of the hair and beard. He recommends frequent shaving for hair that falls after an illness, and adds with great truth that "no remedy whatever can prevent the heads of some people from becoming bald with age." The term "porrigo" was used for ordinary dandruff and probably eczema as well. The latter disease was also apparently included under the name "sycosis." Under the title of "area" is described alopecia areata, often spoken of as area Celsi. He writes that it is "almost folly" to cure freckles, "but it is impossible to prevent women from being nice in what regards their beauty." Other dermatologic affections that are described by Celsus include elephantiasis Graecorum, ulcers and burns, condyloma, varicose veins and gangrene.

Pliny the historian (23-79 A. D.) mentions several diseases that were not included by Celsus, among them being herpes zoster, which was described by Scribonius Largus under the title of Zona. Pliny also speaks of several unusual diseases, among them the cutaneous affection called mentagra, which some have erroneously considered to be syphilis. Caelius Aurelianus wrote about phtheiriasis and elephantiasis; while, according to Bloch,[27] who is our best dermatologic historian, the first accurate description of leprosy was written by Arataeus the Cappedocian (30-90 A. D.).

As the period of ancient history is considered to end with the fall of the Roman Empire in 476 A. D., it would hardly be proper to lengthen this address to include an account of the Byzantine and Arabian writers, who cannot strictly be classed among the ancients. It is sufficient to say that valuable contributions to dermatology were made by the Arabian physicians, especially in their account of leprosy and of elephantiasis. Rhazes (860-932) was the first to accurately describe smallpox and measles. Avicenna and Haly Abbas wrote careful descriptions of diseases of the scalp, and Avenzoar is said to have discovered the parasitic cause of scabies.

In conclusion, I hope that I have shown that the study of the history of ancient medicine is not altogether a thankless or uninteresting task. I can merely add that I not only appreciate the honor of my position as chairman but also the opportunity it has afforded me for dermatologic studies of fascinating interest.

26. Celsus, A. C.: Medicine in Eight Books, Trans. by Grive, London, 1838.

27. Bloch, I.: Aufgaben und Ziele einer Geschichte der Hautkrankheiten im Altertum, Monatsh. f. prakt. Dermat., 1898, xxvii, 605.

TRANSVALUATIONS *

NORVAL H. PIERCE, M.D.
CHICAGO

A kindly French philosopher has said that it is better to be 50 than 40 years of age, for 40 is the old age of youth, while 50 is the youth of old age. Having reached this venerable juvenility in life's journey and having passed more than half of these years in the active practice of the special branch of medicine to which this section devotes itself, your chairman feels himself in a position to scrutinize, in the light of experience, certain otolaryngologic tendencies.

If we charted human endeavor as we do our fevers, we would find that the curve displayed by progress resembles in a way that characteristic of sepsis which ends in recovery—first a high elevation, followed by a recession to below normal and then a return to the norm. Medical progress, being only a part of the whole, has displayed no exception to this rule. The introduction of a valuable innovation has been followed by an enthusiastic exaggeration of its value. Then, depressed by disappointment, its value is underrated. In the end, however, sober judgment prevails and its true value is established. The phase of overestimation, underestimation and "return to soberness" following the introduction of tuberculin and salvarsan to the medical profession may be cited as examples of the flow and ebb of medical opinion. These phases vary as to the time required in transition. In the case of tuberculin, the first period, the period of exaggerated hope, was quite short in duration, followed by a rather long period of underestimation; while in the case of salvarsan, the first and second periods were much shorter. But our observation leads us to the conclusion that not only the newer innovations are subject to these remissions of enthusiasm, but also even the oldest and most time honored are subject to

* Chairman's address, read before the Section on Laryngology, Otology and Rhinology, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

the same law. Take, for example, tympanic inflation, a procedure the value of which is still apparently greatly overestimated in the minds of many of my confrères. Not wishing to be misunderstood as being ignorant of this very valuable aid in the treatment of properly selected cases, I will state my position in relation to its value.

The middle ear may be regarded as a modified pulmonary alveolus, modified to the extent that it contains the sound-conducting mechanism of the organ of hearing, but retaining its ancient power of absorbing oxygen and giving off carbonic acid gas. Any obstruction to the admission of air through the eustachian tube will, therefore, cause a diminished gas pressure in the tympanic cavity. The atmospheric pressure in the external auditory canal will press the tympanic membrane inward to just the degree that the pressure in cavum is diminished by absorption, thus more or less dislocating the ossicular chain and diminishing its conductivity for sound waves. The conducting apparatus under normal conditions is held in such marvelous equilibrium that it transmits sound waves that transcend the power of the finest microscopic measurements. According to the amount of displacement of these various factors in this transmitting apparatus, various degrees of hardness of hearing result. If, by inflation, we can restore the ossicular chain to its normal position, immediate and marked improvement in hearing occurs, and we may infallibly judge the degree of mobility by the resulting improvement in hearing. There comes a stage, however, when inflation is absolutely ineffectual because of adhesions, ankylosis, dislocations, etc., and yet, I have known innumerable instances in which men have continued to perform this medical ceremony for months at a time, without any benefit to the patient—thus bringing discredit on themselves eventually and inviting the transmission of that discredit to otology as a whole. Let us admit at once that inflation has a very limited field of usefulness. In acute cases to prevent adhesions after the acute inflammatory process has subsided; in subacute cases to restore equilibrium while we remove the cause of tubal obstruction; to remove secretions from the tube and middle ear when perforation of the tympanic membrane has occurred—these are the principal indications for inflation. But if we are amazed at the men who endeavor to mobilize in cases of middle ear deafness when the malleus and incus are permanently fixed, what are we to think of the colossal faith of those who continue to indulge their fetish in cases of otospongiosis when the stapes is fixed in the fenestra by bony ankylosis, or when the hardness of hearing is due to dissemination of the spongifying process elsewhere in the labyrinth, or in cases of nerve degeneration. Is it faith that permits them to go so far astray, or is it ignorance of diagnostic methods?

Another correlated subject, and one of great importance, is the etiologic relationship of the nose to diseases of the ear. Far be it from me to underrate the frequency with which acute inflammations of the ear find their origin in diseases of the nose, but more frequently in the pharynx, or the influence certain chronic conditions have in perpetuating inflammatory tubal insufficiency. Nevertheless, I am convinced that the importance of the nose in relation to diseases of the ear is grossly exaggerated in the minds of many specialists. I agree with Felix Semon that:

> Even in cases of complete obstruction of both nostrils by multiple polypi, ear complications of any kind have been extremely rare in my practice. And if further evidence were needed, it is afforded by the fact that even in cases of complete bilateral congenital occlusion of the choanae by bony or membranous diaphragms, perfect hearing power and absence of any aural symptoms have been observed by others as well as by myself. You will understand, then, that I profess myself to be rather skeptical concerning the asserted great influence of nasal stenosis without concomitant chronic catarrh upon all possible ear trouble.

I do not hesitate to say that the slight variations from the normal in the septum and turbinated bodies which are so frequently seen and nearly as frequently operated on have no bearing whatsoever on ear diseases. After permanent changes have taken place in the ear, such as adhesion and ankyloses, it is futile to correct even marked abnormalities in the nose in the hope of exerting beneficial influence on the aural condition. Notwithstanding this, it is to my knowledge a not infrequent occurrence for patients to be promised restoration of hearing after the performance of such operation—again discrediting the practitioner and bringing discredit on otology.

Indeed, the accusation that there has existed among practitioners in our specialty a certain lust for operating is not without foundation. The patients come to us to have something done while we, on our part, are always on the lookout to find disease. As Dr. Goodheart remarks:

> There are times when the sick are not reasonable beings and unless they have a bottle of medicine to anchor their faith to they are in a state of unrest that is positively harmful to their progress.

And, as Semon says in commenting on this:

> This is certainly true. And, further, when with a little experience to guide one, one sees that the patient, disappointed at not getting what he wants, thinks: "That doctor does not understand my complaint," and that he is sure to fall into the hands of the topical enthusiast, or of somebody worse, who will be equally sure to mulct him in a perfectly unnecessary operation. One is confronted by the difficult question whether in the patient's own interest it would not have been better to comply with his wish and to give him something local which, if absolutely useless, would have been at any rate harmless, and would have set his mind at rest. I dare not say that this "pia fraus" must never be practiced. But against it are three very grave reasons, which I would particularly recommend to your consideration. In the first place, when prescribing some local application, which, of course, has to be repeated at stated intervals, you involuntarily become the patient's accomplice by concentrating his mind on his local sensations, whilst in his own interest you ought by all possible means to divert it from them. Secondly, you lend yourself to supporting the general notion, which you know is neither correct nor desirable, namely, that all affections of the upper air passages ought to be treated locally. And thirdly, and most serious of all, by yielding to the temptation you may unconsciously, and with the best intentions in the world, yet very actually, transgress the line between legitimate practice and quackery. Under all circumstances, therefore, the pious deception of which I have just spoken ought to be practiced only in the rarest of cases, and the doctor ought to stiffen his back and harden his heart against meekly complying with every unreasonable wish expressed by an unreasonable patient. Better, I think, to lose such a one if he will not listen to well-meant advice than to confess to yourself that you have descended to the level of habitually acting against your own better conviction.

When I began the study of this specialty it was little more than a matter of sprays and spurs, of

snares and syringes. Now, we are firmly emplaced on a broad surgical basis. No longer do we confine ourselves to intralaryngeal, intranasal or intra-aural operations, but by most radical external surgical procedures we aim to cure the most extensive disease of the nose and accessory sinuses, the larynx and pharynx, the ear and neighboring parts within the cranial cavity. This change has taken place gradually. It took years of endeavor to set the bounds of laryngoscopy, rhinoscopy and otoscopy. But latterly, by the work of Killian, Jensen and many of our own Fellows, the advance has been more rapid, so that at the present time the well-rounded and successful specialist not only must possess that special skill and dexterity which enable him to successfully examine the larynx, the nose, with the orifices of the several accessory sinuses, the ear, both by otoscopy and by means of the complex functional tests, but also he must combine with this a broad surgical knowledge equal to that of the general surgeon, and an ever-accessible knowledge of regional anatomy superior thereto.

Thus have we clearly proved our right to exist as specialists and members of the surgical department of the great science and art of medicine.

But may I express a fear that the pendulum may swing too far in the direction toward radicalism? With the technic of the external operation firmly in our grasp, are we not liable to resort to them prematurely—to forget the much that may be done by more conservative local measures? Let us not cease to cultivate to its highest development that special manipulative dexterity in the local examination and treatment of the nose, throat and ear which has made men like MacKenzie, Stoerk, Chiari, Politzer and many others, among our own members, famous, and which is followed in suitable cases by the most brilliant results.

For instance, when I hear a colleague say that he puts every laryngeal case on the table and examines the larynx by means of Killian's suspension apparatus, I am convinced that his zeal has outrun his discretion. I would make a plea to you that in our enthusiasm over direct laryngoscopy we do not abandon the cultivation of skill in the employment of indirect laryngoscopy. Nearly as much can be accomplished by the latter as the former and with not nearly so much discomfort to the patient.

The same may be said as regards operative procedures. Without constant practice in this regard, with indirect laryngoscopy that virtuosity which made the old masters so wonderfully skilful in the removal of growths in the larynx may be lost to the profession; and this, to my mind, is something to be avoided.

In conclusion, I wish to voice a fear that too much faith has been engendered by the enthusiastic members of our profession in the use of serum and vaccine in the treatment of nose, throat and ear affections. My personal experience has been most disappointing. I cannot recall one case of chronic aural trouble, in which the presence of bone affection was proved, that was influenced in any way by the administration of serum or vaccine. The same may be said in relation to diseases of the accessory sinuses. We must be careful to avoid that isolated position which was prophesied for our specialty some years ago. There are signs that this prophesy is reaching somewhat of a fulfilment. The remedy for this is a close affiliation with medicine as a whole. There is nothing so deplorable as the specialist who has lost sight of the rest of the organism and sees nothing but the special domain in which he is engaged. Advancement takes place, as I said in the beginning, in phases. Let us try to avoid overenthusiasm and zeal; let us endeavor to cultivate an unceasing sobriety with a large field of vision in our administrations to the sufferers who come to us for relief.

22 East Washington Street.

INTESTINAL OBSTRUCTION

A PROTEOSE INTOXICATION *

G. H. WHIPPLE, M.D.
SAN FRANCISCO

The poison under discussion may be obtained from the fluid above an intestinal obstruction, from a closed washed loop of small intestine or from the mucosa of a closed loop or a loop draining externally through an enterostomy wound. The intoxication which develops with intestinal obstruction or after producing a closed or drained intestinal loop is very similar, differing only in intensity. In like manner one can inject this poison into a dog and produce more or less profound intoxication, depending on the amount of poison introduced. This intoxication resembles closely that observed following intestinal obstruction. The evidence is overwhelming that an active poison is concerned in the production of the clinical picture of intestinal obstruction and of the closed intestinal loops.

The poison is found in rather concentrated form within the lumina of the closed loops of the small intestine. Dogs can be immunized by sublethal doses and can then withstand lethal doses of this poison, but the immunity cannot be carried very high. Moreover, these immune dogs can survive intestinal obstruction or closed loops much longer than controls. This immunity is associated with a developing capacity of the organ cells of the body to destroy this toxic substance. Filtered immune organ extracts, presumably containing active enzymes, can destroy this poison in vitro, but the blood of immune animals contains no such enzymes and is inactive toward the poison.

If a loop of small intestine is washed out thoroughly, its ends closed and the continuity of the intestine established around it by means of a gastro-enterostomy or entero-enterostomy, any intoxication which may ensue must be due to one of two things: (1) bacterial activity; (2) perverted activity of the loop mucosa (or both factors in conjunction).

We have been able to show conclusively that the intestinal mucosa is essential to the production of this poison because with destruction of the mucosa by means of sodium fluorid the formation of the poison ceases. Whether bacterial activity is essential to the production of this poison is less certain, but no conclusive evidence that bacteria are essential has been

---

* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* From the George Williams Hooper Foundation for Medical Research. This work was begun in Baltimore with the cooperation of Drs. Stone and Bernheim and continued in San Francisco with the assistance of Drs. Cooke and Rodenbaugh. The detailed experiments will be published in the near future.

brought forward. It is certain that bacteria alone cannot form this poison.

Absorption of this poison from the intestine raises a very interesting and perplexing point. When it is noted that the poisonous substance is most abundant and easily demonstrated in the lumina of closed loops, one's first thought is that absorption must be mainly from the lumen, but this is not so. Some absorption may take place from the contents of the loop, particularly if the mucosa is damaged or inflamed, but fatal intoxication will usually result from a loop draining externally and washed daily. Moreover, the introduction of large amounts of poison into a loop will not alter the course of the intoxication and such animals show no more intoxication than controls with loops washed and left empty at the operation. The poison is not absorbed from the normal intestine. All evidence indicates that the absorption of the poison in intestinal obstruction or in closed loops will take place mainly from the mucosa regardless of the material in the lumen of the gut. Our attention should center on the mucous membrane which forms this poison and passes it into the blood stream. This pernicious activity may be carried on to a fatal termination by a mucosa which may be to the naked eye as well as the microscope quite normal except for capillary engorgement.

The *chemical nature* of this poison is of great interest, because once known it will be possible to concentrate attention on the action of similar poisons and finally uncover the best method of the body defense and cure. It is a very elusive substance and necessarily concealed in a mass of confusing materials. Many workers have hazarded guesses about this poison but it has never been isolated in anything like purity or identified. Almost all of the conflicting statements about this poison can be easily explained when it is realized that it is a primary proteose. We have been able to show that it is thrown out of a solution rich in albumins by boiling (adsorption) but that after autolysis or digestion it may be boiled without harm. Its proteose nature explains why the poison is held back in fine earthen filters, as stated by other observers, but not held back by paper filtration. The poison is not destroyed by digestion with pancreatin or fresh pancreas for a period of one week. It is not destroyed by autolysis with intestinal mucosa for a space of weeks but may be completely destroyed in months. Its reaction after intravenous injection in dogs closely simulates anaphylactic shock in these animals, but the poison cannot sensitize guinea-pigs for the characteristic anaphylactic phenomena.

Alcohol precipitates this poison and this is a most important step in the separation of this substance from the mass of extraneous material in the intestinal loop fluid. Five volumes of 95 per cent. alcohol will precipitate completely all of this poison, whether the fluid is freshly removed from an intestinal loop rich in albumins or has been digested to a clear broth. The alcoholic filtrate has been tested repeatedly and contains not a trace of the poison, but does contain the substance which produces the short initial fall in blood pressure (the "tissue extract" reaction). The alcoholic precipitate contains all of the poison. This precipitate may be extracted with ether for days without removing any of the poison and the ether extract gives no reaction when given intravenously in dogs. Water will remove all of the poison from the alcoholic precipitate and the poison goes into solution very rapidly. The residue may be filtered off, giving a clear opalescent solution. This of course contains some albumin, which may be removed in great measure by boiling in faintly acid reaction, and filtration. The resultant filtrate contains the poison, as shown by repeated experiments.

The poison may be still further purified by precipitation at room temperature with equal parts of a saturated solution of ammonium sulphate. This gives a delicate precipitate which may be collected by centrifugalization, dried between filter paper, again dissolved in water and boiled with a drop of acetic acid to remove the last trace of albumin. This gives a solution almost water clear but slightly opalescent. Dialysis of this pure solution against normal salt will remove the most of the ammonium sulphate but will not change the toxic action of the poison, which does not dialyze in the least. This pure solution gives biuret precipitates with phosphotungstic acid or saturation with sodium chlorid. Estimations of dry weight show that 100 mg. of this pure poison is sufficient, if given intravenously, to poison fatally a 15-pound dog.

This process of chemical isolation gives a *primary proteose* and eliminates practically all other substances except sodium chlorid and a trace of ammonium sulphate. Because of the fact that this proteose resists digestion it may be classed as a heteroproteose. The symptoms of proteose intoxication are identical with those of poisoning by loop fluid, and sublethal doses of other proteoses will immunize against this poison and prolong the life of dogs with closed intestinal loops, beyond the controls. The anatomic picture is the same in fatal proteose intoxication and in poisoning with loop fluid. We may assume with certainty that the intoxication of intestinal obstruction and closed intestinal loops is due in great measure to the absorption of a primary proteose from the intestinal mucosa.

It has been shown by Chittenden and Mendel that proteose injected into the blood may be excreted with some rapidity in the urine. We have not been able to detect this substance in the urine perhaps because of the small amount which is fatally toxic and because the flow of urine is inhibited after a large dose. The proteose may be changed in some manner before it is eliminated. Dogs with a trace of albumin in the urine usually show some proteose by Hammarsten's method and this introduces a confusing factor.

It is obvious that diuresis will help in the elimination of this toxic proteose and this explains the beneficial effect of salt infusions in intestinal obstruction. This brings up another point of some interest and of considerable importance from the standpoint of diagnosis.

The injection of this toxic proteose causes a great rise in the incoagulable nitrogen of the blood, which shows a curve rising with the intensity of the intoxication from a normal 30 mg. to 70 or 80 mg. shortly before death, and this change may take place in acute poisoning within a space of three hours.

Dogs with intestinal obstruction may show an incoagulable nitrogen as high as 200 mg. and about the same is true of the closed-loop dogs. The rise in incoagulable nitrogen of the blood seems to depend on the intensity and rapidity of the intoxication and is of considerable prognostic and diagnostic value.

Tilleston has reported two observations on human cases with very high incoagulable nitrogen of the blood in intestinal obstruction.

In conclusion it is to be emphasized that the intoxication of intestinal obstruction and closed intestinal loops is due to the absorption from the intestinal mucosa of a *primary proteose*. This proteose intoxication may be associated with a rise in the incoagulable nitrogen of the blood to four or even ten times normal. This fact may be of value in diagnosis and prognosis.

University of California.

ABSTRACT OF DISCUSSION

Dr. Victor C. Vaughan, Ann Arbor: Would a loop in one part of the intestine furnish the same poison as a loop in another part? Did 100 mg. kill the dog, and how was it administered? Intravenously?

Dr. G. H. Whipple, San Francisco: Yes.

Dr. Vaughan: Did Dr. Whipple make a biuret test? Is there any blood coagulation after death; any coagula found? Does it resemble beta-iminazolylethylamin in its poisonous action? Can you get an immunity by injecting small doses? I understand that boiling does not destroy it; therefore it cannot be a ferment, like the extract from the lungs, nor the ordinary extract from the epithelium of the duodenum.

Dr. Fred T. Murphy, St. Louis: In working on this problem for several years, first in the laboratory of the Harvard Medical School with Dr. Vincent, and later at Washington University Medical School, St. Louis, with Dr. Brooks, in preparation of the papers of which Dr. Whipple spoke, we thought that we had proved that this poison found in occluded loops was not a specific secretion of the mucous membrane and was not produced without the action of bacteria. The experiments which we considered as conclusive were as follows: After drainage for a long period we obtained a loop of intestine in which the content remained sterile. When obstructed no symptoms were caused and the content of the loop was not toxic. After infection had been introduced, symptoms were produced and the content became toxic. Gallbladders in which a circulatory disturbance had been caused by ligation of the cystic duct and vessels caused no acute symptoms, and the content remained nontoxic so long as bacteria were not introduced into the gallbladder; but when the content was infected by cultures from the intestinal tract, acute symptoms were produced identical with those in intestinal obstruction, and the content on injection showed the same toxicity as the content of an obstructed loop of intestine. Having these gallbladder experiments in mind, I wish to ask if in attempting to determine the specificity of this toxin any hollow organs other than the intestine had been used. In a rather cursory attempt to isolate a definite toxin from these obstructed loops, we were much impressed by the similarity between the toxin which we obtained and that which Faust described years ago in his study of the ptomains. We were unable to get anything as specific as Dr. Whipple has, and he is to be congratulated on his results.

Dr. G. H. Whipple, San Francisco: This pure substance gives a very beautiful biuret test. I may say, too, that this substance is thrown down by complete saturation with sodium chlorid. It has been thoroughly established that closed loops of the lower part of the intestine are very much less toxic than high closed loops. We do not know the reason. That is one of the difficult things to solve, which we may be able to get at by studying the activity of the mucosa. Loops of the large bowel in dogs give such slight intoxication that one can almost disregard it. The animal will live for months, and if the animal is sacrificed the large intestinal loop will be found to be filled with material that looks exactly like normal feces. The different parts of the intestinal tract have different activities as regards the production of this poison. We have attempted to get the most concentrated poison, and for that reason have used the duodenum with a part of the jejunum, varying in different experiments.

The reaction in the blood following the injection of this poison is very characteristic. There is a definite amount of antithrombin produced, as with the injection of Witte's peptone. The blood is not always incoagulable. It is notorious that the introduction of various amounts of peptone will give different amounts of antithrombin. Sometimes one may get absolute incoagulability of the blood, again only slight antithrombin production. Beta-iminazolylethylamin of Dale, mentioned by Dr. Vaughan, is alcohol soluble and nonprecipitable by ammonium sulphate; also the substance sepsine mentioned by Dr. Murphy and investigated by Faust. All ptomains are alcohol soluble, and I believe the initial treatment with five ounces of alcohol excludes all such substances. Immunity can be produced to a slight degree only. I have never been able to immunize an animal to more than a double lethal dose, and the immunity disappears shortly after production—I mean in a matter of weeks. Immunity, as we have shown already, resides in the activity of tissue cells; it is not in the blood. The immune organs can destroy this poison, or rather, extracts of those immune organs can destroy this poison in vitro. Boiling does not injure the substance. When it is boiled in a fluid containing albumin it is taken down by adsorption.

Dr. Murphy raised the point about occluded gallbladders infected by bacteria. We have never tried any such experiment, but it is quite conceivable that the action of bacteria on the injured mucosa of the gallbladder may produce toxic proteoses. I should think it would be extremely interesting to see whether that toxic substance produced in such gallbladders is a proteose or some other substance.

PROGNOSIS IN HEART DISEASE

FROM THE POINT OF VIEW OF ETIOLOGY *

W. H. WITT, M.D.
NASHVILLE, TENN.

The tendency to a more scientific classification of diseases of the heart—using so far as possible the etiology as a basis — is decidedly to be welcomed. And it is a source of congratulation to us that certain of our own physicians, notably Dr. Cabot, have taken the lead in this work. This more rational classification will work for good in every phase of our study of cardiac conditions, but it is particularly to the matter of prognosis that I wish to call attention.

Prognosis in heart cases has been discussed from many angles, as, the valve involved—if it be a valvular lesion — the physical signs of decompensation, symptoms, changes in blood pressure, age of the patient, his habits, etc.; but there is also excellent ground for a discussion of prognosis in a general way, taking into account the causes of the disease process and how that process may be modified by treatment. For I use the word "prognosis" not in its narrower meaning of forecasting the ultimate issue, but in a broader sense that includes a knowledge or attempted knowledge of the processes at work and their susceptibility of modification by therapeutics of whatever sort. It is recognized that any of the causes that operate to produce heart disease may bring about similar lesions that give similar symptoms and physical signs, but these symptoms and signs will have different meaning depending on the underlying cause. And the value of appreciating the underlying cause no one will deny. An aortic insufficiency from rheu-

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

matic endocarditis is a different thing from that of syphilis or arteriosclerosis—and a mitral regurgitation of rheumatic origin is different from that following dilatation of the left ventricle. Both prognosis and treatment are modified by these differences.

From the standpoint of etiology the great majority of patients that suffer from cardiac disease come under the following classification: Simple endocarditis and its resulting changes, chiefly valvular, syphilitic, nephritic and arteriosclerotic, which may be syphilitic or of renal association, or without either of these attendant conditions. There is a goodly number of other situations in which the heart comes in very justly for consideration but in which other pathology overshadows that organ in our minds at least. In this class I would put the hearts in septic endocarditis, hyperthyroidism, adherent pericardium, and other conditions, including pulmonary and bronchial disease. The first, septic endocarditis, is not essentially a heart disease and the patient does not die a cardiac death. The others have features that do not admit them to the right to be discussed here.

Heart disease in children and young adults has, in most cases, a relatively simple etiology in that the great majority arise from what we call rheumatic infection. And we so speak of them whether or not the joint symptoms are present, bearing in mind that clinically or experimentally there is ground for associating arthritis, tonsillitis, endocarditis and pericarditis, chorea and even additional lesions. We recognize of course a lack of finality in our teaching along bacterial lines, but we are no doubt justified in recognizing a close etiologic kinship in these lesions and, further, in holding to the reasonableness of speaking of simple or benign endocarditis.

There are, of course, less benign cases, even serious cases, not to be distinguished etiologically from the usual ones, as there are cases of endocarditis from other causes, as scarlet fever, diphtheria, gonorrhea; but even then we can say with Osler that "All other causes sink into insignificance before the endocarditis-producing poison of this motley (rheumatic) group." This group probably comprises nearly half, though it has not been so in my own experience, of patients who come to us because of cardiac symptoms or accidentally found cardiac defects. The prognosis in these cases assumes great importance and I am glad to say the picture is not nearly so dark as many have thought.

There stand out two main facts in the behavior of acute simple endocarditis. The first is that in the very great majority of first attacks the patients recover not only from the illness but with fairly capable hearts. The second fact, and one of immense importance, is that there will probably be a recurrence. The younger the patient the greater the liability of recurrences, the greater also the liability that the infection may be masked and unnoticed by reason of the absence of troublesome joint symptoms. In the first attack, then, the prognosis is good—not so good, of course, if pericarditis is present or probably if chorea is present. The danger, however, lies largely in recurrences: it lies to a less extent in the slow sclerotic process that may attack the crippled valve and gradually interfere with its function or produce similar changes in the orifice which it protects.

It is chiefly the children that have recurrences, and the deaths that I have seen in endocarditis of young people have all occurred, not from chronic development of heart difficulties, but in a recurrence in which were exhibited almost all the features of an acute attack with probably pneumonia or pleurisy added. In adults gradual decompensation without fresh infection is commoner, as there is also greater danger that patients of this age may develop a septic type on what has been a simple type and die weeks or months—in one instance under observation recently, fifteen months—after reinfection. Avoidance of reinfection, then, becomes of great importance; in fact in children it is almost the whole thing. How far this can be done can only be ascertained after extended clinical experience. Long before a bacterial cause of rheumatic fever was accepted the association of that disease with sore throat was well recognized. The stimulation given the subject in the last few years has shown almost as definite a relation of sore throat to the cases of endocarditis that have no arthritic signs. While other foci of infection, the teeth, for instance, may have a clinical relation to endocarditis, as yet the tonsils are thought to hold chief place. The rôle of adenoids we do not so well know. Anyhow, removal of tonsils and adenoids, I think, constitutes our best means of avoiding recurrence in endocarditis. Most patients will recover from the first attack with a rather good heart even if there is a persistent murmur: but whether good or somewhat crippled, with pallor and shortness of breath on exertion, they are proper subjects for surgery. For I cannot believe that there is as much danger in an anesthetic as there is in a recurrence. Not that a cripple will be whole after surgery, but he will have a better life expectancy.

Physicians have been keen enough to insist on the removal of foci to prevent arthritis, but they have not had the same boldness in the presence of evidences of valvular crippling. Also it is hardly realized that it is of more importance to prevent a recurrence of rheumatic fever in the young with a view to saving the heart than to saving the joints. A great deal will depend on the confidence the family doctor has in such measures and the boldness with which he urges them. It might be thought that this advice is superfluous, that it is being constantly acted on. I hardly think so. There is still on the part of many physicians too much dread of a murmur. Some good authorities seem timid. Dr. Poynton, who has done so much good work on rheumatism, writing in Osler's Modern Medicine, last edition, says: "With chronic tonsillar disease the desirability of complete removal should be considered." But this is too weak and does not sufficiently safeguard the child. In contrast with this, however, I quote the following from Hirschfelder:

> The patients almost always recover from the first attack (of endocarditis): Recurrence is especially common and is the danger against which precaution must be taken—the more so as the second attack often spreads to another valve or even to two more. . . . When the patient is still subject to recurrence of his rheumatism or tonsillitis . . . the probability that the cardiac lesion will remain quiescent is a small one.

The surgery must of course be thorough surgery.

The prognosis of syphilis of the heart is being worked out anew. That syphilis has a tendency to attack arteries, the coronary as well as the aorta and the aortic valves, has long been known and a proper valuation has been put on disease of at least some of these tissues. Until recently it has been accepted that

these changes occurred almost entirely in the later stages of the disease. The work of more recent years has brought forcibly home to us the fact that syphilis may and often does attack the heart in the secondary stage with rash and mucous membrane lesions, and that these lesions grow largely out of changes in the ramifications of the coronary arteries, thus reaching the heart muscle itself. True gumma is still regarded as rare, but no less real changes occur in various portions of the organ. Grossman stated that in some 40 per cent. of cases of secondary syphilis some heart disturbance was shown.

Brooks of New York, and his associates, have done much in their writings to develop interest in this field and seem to have made out a case of neglect on the part of physicians in general, in that they seem to have proved that early cardiac syphilis is common and that it is almost as commonly overlooked. At necropsy and by therapeutic test they have demonstrated the presence of specific lesions. It is not claimed that there are definite symptoms of cardiac syphilis that serve to distinguish it from trouble arising from other causes, but there are cases of cardiac symptoms and physical signs, especially arrhythmias and precordial pains arising, often early, in the course of syphilis—that cannot be accounted for readily on the more common ground for such symptoms and that have cleared up completely on specific medication. These writers and others believe that cardiac syphilis is much more common than is generally suspected and urge a more careful history taking and serologic examination in suggestive cases.

What are suggestive cases? If we see a patient at or under middle life developing heart difficulties we are accustomed to inquire carefully into rheumatic history, and other infections, such as influenza, are included, but we are not so careful to unearth a history of syphilis, especially if the difficulties do not seem associated with the aorta or aortic valves. Failing to get a history of rheumatic infection in some of its manifestations, whether or not nephritis be excluded, syphilis looms up as our best guess as a cause of infection; and with due respect for the proprieties, its existence or nonexistence should be at once established.

It is trite to say that a patient's statement as to rheumatism is never to be taken. The proper questions must be put to ascertain whether he has had what may properly be called rheumatic fever or its equivalent. This for the general practitioner or consultant who sees the case as a heart case. More satisfactory discovery of these luetic cardiopaths must come by way of special watchfulness on the part of the specialist in venereal diseases and the great bulk of general practitioners who treat this disease. It is common enough to have the syphilitic strip at certain intervals and have his skin and mucous membranes and lymph glands examined with great care but it is just as common to forget to examine the heart or to inquire into slight evidences of cardiac involvement. Etiologic diagnosis, then, not anatomic diagnosis, is the great desideratum. Etiologic treatment, also, not simply cardiac treatment, is the thing. Now it is probably fair to say that the prognosis in this form of heart disease is going to be in exact relation to the time at which the trouble is recognized. If known early and properly treated, clinical experience so far as reported seems to bear out the reasonable view that many cases can be completely cured. The later cases, as has so long been known in the aneurysmal and similar cases, cannot be relieved, though no doubt we modify what would be their natural evolution.

I do not think cardiac lesions, recognizable ones at least, will have as good prognosis as many other visceral changes of syphilis. The ease with which this incidence is overlooked, the delicate and important nature of the anatomic structures involved, with the development of irreparable damage before treatment is established, impair what one might think a favorable prognosis. But it is not too much to hope that the increased interest in this subject, coupled with the great enthusiasm in the treatment of syphilis engendered by modern discoveries, will materially lessen the arterial and other circulatory troubles of middle and later life. These lesions, however, when once established, belong in the class of essentially progressive, degenerative changes, and the prognosis partakes of the character naturally attaching to that class.

THE ARTERIOSCLEROTIC GROUP

To establish the fact that a heart is laboring under degenerative changes that grow directly out of arteriosclerosis is not always easy. There are certain infecting agents—such as syphilis or influenza—that may attack the heart in people of advanced years. At the same time we are usually satisfied with such etiology if we have age, gradual onset of symptoms, of which precordial pain is important, and evidences of vascular changes in other parts of the body. The pressure is often, but not always, high. If we can satisfy ourselves of the presence of myocardial changes due to arterial changes in its walls, how do we reason for a prognosis? In the presence of such pathology we are confronted with a clinical course varying from that of endocarditis of rheumatic origin, in that the tissue change is essentially a progressive affair. The conditions that predispose to arterial change will for the most part persist. Age, mental strain, bodily strain, imprudent eating, high pressure, continue to operate to the hurt of our vascular systems. These factors may be further supplemented by alcohol and syphilis. With the possible exception of the syphilitic attack, changes in blood vessels must be regarded as permanent and as a result nutritional deficiency is permanent.

It is quite true that some of the factors leading to arteriosclerosis can be abated, such as mental and physical strain, or overeating. But even these things are two-edged swords. Not every man profits by giving up business and leading the so-called quiet life. He often chafes under his restraints, and frets, or he may become too idle for his own good, or he may eat too much. I feel quite sure the stress of modern life, combined with hasty and liberal feeding, is a real factor in the apparent increase of heart cases. In the very great majority of instances there is established high pressure, vascular change and cardiac phenomena before we know anything of the case and then it is too late. Even if the doctor happens to pick up some shreds of information, as in life insurance examinations, the patient is not likely to heed his warnings. We are committed to our time and do not relish existence in Cathay.

We have no drug that can relieve, as in syphilis, the pathologic changes in these hearts. There is no recur-

rence of infection to head off as in endocarditis. I do not doubt that a kind of healing is possible after some acute changes that follow severe strain or a dilatation or a thrombosis, so that the immediate symptoms induced by the accident may greatly clear up, but they are rather sure to come again and the most that we can do is so to order life as to minimize the chance for this recurrence. If evidences of breakdown occur in pursuit of one's ordinary duties, to which one is accustomed and at which one must remain, the prognosis takes on a more serious aspect than if symptoms occur under unusual circumstances. A farmer of 66 years of age passed through a strenuous session of the legislature, losing sleep and enduring considerable mental strain. He all but broke down —with precordial distress and shortness of breath. Returning to the bucolic life and living in the way to which he had been accustomed, he comes now, four years later, feeling quite well and not short of breath.

Every such individual has the elements of a breakdown and only needs unusual strain to produce it. If he pursues his ordinary pursuits his prognosis is good. I rather feel that the prognosis is least good in those persons who have led more or less uneventful lives, with little mental or physical strain. If such persons develop myocardial symptoms, there is little that they can do to improve on their usual mode of life. There is this proviso, however, that in a limited group of persons, particularly if these troubles develop say before 55, a more active life in the open with less heavy diet may actually develop greater cardiac capacity.

The Schott treatment is suitable for a rather fair-sized group of cardiopaths of middle age. I think it is rather difficult to make selections, but I should be guided largely by the age, the absence of precordial pain, the nature of the previous life, and habits of eating and drinking. In the presence of anginoid pains I think such treatment had best be taken cautiously. In many cardiopaths of middle age and just above it is not unlikely that we overestimate the proportion of change effected by vascular disease. It occurs to me that quite a few may owe their distress to a flabby heart, as other muscles are flabby, coupled with a sluggish peripheral circulation. The high blood pressure necessitated to flush the capillaries puts a strain on a heart not educated to do hard work and gradual failure occurs. A change of mode of life to one of more active type may restore circulatory power and greatly improve the prognosis.

Eliminating the probability of actually improving the condition of the circulatory apparatus our prognosis in these cases comes to rest very largely on symptoms and the ease of their production. In many respects pain becomes an excellent prognostic symptom. We are accustomed to attach great importance to so-called true angina, but I am not sure that slight precordial pain, if easily produced, is not just as serious as the more severe attacks. I have seen some cases of severe angina drift along for several years and I have seen some slight precordial pain go out suddenly after only a few attacks. The ease with which shortness of breath is produced, the associated pathology, as of the lung, the presence of edema and many other features, affect the prognosis but have no bearing on this type of heart case essentially different from that in the other types.

The height of the blood pressure with or without renal change has a bearing on prognosis. However much we may regard high pressure as in a sense a physiologic condition, we are compelled to assume that the heart is doing more work than it can hope to keep up indefinitely. While work begets hypertrophy and increases capacity, yet in the presence of any coronary disease or probably without it—failures must come earlier than in a heart that is not called on to drive so strongly. If pulse pressure is high the danger of failure with dilatation is greater. A high pressure that cannot be brought to a lower stage by nondrugging measures carries with it a bad prognosis; not for the immediate future, probably, but life expectancy is impaired.

When the heart trouble is complicated by chronic interstitial nephritis the prognosis is no doubt affected by that circumstance, but to what extent it is difficult to say, there is such a wide variation in the behavior. Indeed, there is wide difference of opinion as to what constitutes interstitial nephritis. The anemia of that disease, the toxemia, whatever the nature, the accompanying arterial change, all probably have their bearing on the evolution of the cardiac features, but clinical observation would suggest that they must operate with very varying degrees of activity in different cases. Some certainly go to pieces rapidly; others, and not a few, have considerable lease of life.

The types of nephritis associated with edema often develop cardiac elements and the prognosis of a heart case of this association is bad. The edema, probably cardiac as well as general, increasing as it does the work the heart has to do and impairing its power to do it, the toxins of the nephritis, often very active, do not often admit of any great improvement and as a usual thing the end is not far off.

In the matter, then, of favorably influencing the prognosis in these types of cardiac failure the profession has in sight very little encouragement. It is rather their incidence that must be affected by preventive measures, but what those measures are to be is largely a matter for evolution.

142 Seventh Avenue North.

ABSTRACT OF DISCUSSION

DR. C. S. WILLIAMSON, Chicago: Dr. Witt stated that the prognosis of heart lesions depended first on the etiologic relations and much less on anatomic considerations. I should like to add that functional considerations are as important as the etiologic relations. In an article in THE JOURNAL this year, I hold it is impossible to find in a general way the functional capacity of the heart. We are familiar with the high blood pressure of renal diseases, but the cases in which it is probably most difficult to give a scientific prognosis are those in which we have a murmur when we are not certain whether it is so-called accidental, anemic, or due to organic change. I tried measuring the heart by a particular Roentgen method. With a normal individual at a distance of 7 feet, 1 inch, with the breath held, taking a picture in systole and diastole, then subjecting the patient to stair-climbing, to the extent of about eighteen or twenty thousand foot-pounds of work, I found the normal heart contracts definitely and cleanly. That has been asserted and denied first by the Schott and Nauheim school and later by others. I found the normal heart gives a clean-cut contraction of about 1 cm. Then in low grade stenoses insufficiencies, cases of definite heart lesion, I subjected the patients to exercise to the extent of their powers, and I found that about one-half of them showed a definite contraction, the other half showing some dilatation of perhaps a few millimeters. In severely damaged hearts, patients with edema and enlargement of the liver, we

found that after exercise about one-half of them still showed a contraction, and that I think is a new observation. The point bearing on the delightful paper of Dr. Witt is that we can add a certain modicum to our prognosis if the patient is capable of exercise, by taking the roentgenogram before and after. If the heart contracts down clean and squarely, a centimeter or a centimeter and a half, you may be sure the heart is comparatively sound. A leakage that contracts down well is better in prognosis than a heart of obscure lesion that does not so contract. There are many things to be considered in the prognosis of disease of the heart, but the only little thing I can add is the possibility of determining the reserve force of the heart in the manner I have indicated.

DR. JAMES S. MCLESTER, Birmingham, Ala.: I have in the last two years acquired great respect for syphilis as a cause of myocardial disease. In the Hillman Hospital a surprisingly large number of our patients with heart disease give a positive Wassermann reaction. I have been particularly impressed with this in those patients presenting the syndrome which we commonly know as chronic parenchymatous nephritis. All of these show myocardial disease and nearly all give the serum reaction of syphilis.

DR. JOHN A. WITHERSPOON, Nashville: As to endocardial troubles from focal lesions, not only the tonsil is responsible for many of these acute cases, but alveolar abscesses are particularly liable to cause them. It is not safe to rely either on the appearance of the gum or the diagnosis of the dentist. Repeatedly I have sent patients to dentists and they would report the gums perfectly normal. Roentgen-ray pictures of such cases frequently revealed an abscess at the root of one or more of the teeth; possibly the entire root separated from the alveolar chamber. On removal of the affected teeth immediate improvement occurs. It does not matter how badly the heart is acting, the only thing to do is to remove the focal infection. I do not think we are ever justified in permitting the cause to remain. In the Nauheim treatment, it is the system used, associated with the baths. The diet and the regulation of the habits of the patient permit of the contraction of the heart. It is ridiculous for us to attempt to measure the heart by auscultation and percussion, when it can be done accurately only by the use of the Roentgen ray.

DR. GEORGE E. EBRIGHT, San Francisco: I should like to confine my remarks to acute endocarditis in children. It is true, as Dr. Witt suggests, many patients probably recover from the first attack. There are several reasons for that assumption. One is that in adults chronic endocarditis is frequently found without a history of a definite previous endocarditis. Undoubtedly many cases of acute endocarditis in children are overlooked. It is necessary in the treatment of such cases that the child should remain in bed for a sufficient length of time not only for the active endocardial inflammation to subside, but also for a sufficient length of time to allow for the subsidence of the myocardial irritability which persists longer than the active inflammation. Broadbent has suggested as the usual minimum three months, and from that to eight months or even longer; otherwise avoidable dilatation and consequent hypertrophy will ensure, resulting in later years in a cardiac cripple. It should certainly be assumed that where a primary focus of inflammation is found such as diseased tonsils or teeth, the eradication of the tonsils or the proper treatment of the dental infection is imperative, but it may not be possible to demonstrate such a focus, or the initial inflammation may be entirely healed and the endocarditis easily still continue.

DR. W. H. WITT, Nashville: In the individual case the modes of testing the capacity of the heart are quite important. In reference to syphilis of the heart, as I intimated, it is a subject that has not been worked up as it should be, although it has received considerable study in certain quarters. I live in the South where we have a great many negroes with untreated syphilis, and while it has been known that aortitis and aneurysm are frequent in the negro, the incidence of cardiac syphilis in these untreated patients has not been so well worked out. We have set to work to determine the frequency of these conditions in untreated syphilis. In reference to treating children for endocarditis, we have been practically dependent on the advices particularly of the English physicians, along the line of prolonged rest, to give time for recovery of cardiac tone. It is only in a limited number of families that such directions will be carried out. We should try to get rid of the focus of disease, which is much more important. It is much safer to remove the focus of infection than to take the chances of no recurrence and of the patient's being good to himself and not overdoing the capacity of his heart. Focal infection as the cause of cardiac lesions is undoubtedly important in old people, but so many factors are present in older people that it is difficult to determine in many cases where the focus is. But when we can detect a focal lesion, it should be removed.

CONCERNING END-RESULTS OF GALLBLADDER AND DUCT DISEASES*

JOHN A. LICHTY, M.PH., M.D.
Associate Professor of Medicine, University of Pittsburgh

AND

EDWARD W. ZURHORST, M.D.
Demonstrator in Medicine, University of Pittsburgh

PITTSBURGH

The late Dr. Maurice H. Richardson[1] said: "Diseases of the biliary tract from diagnosis to established convalescence are attended by responsibilities of human fallibility of the highest order." It was he also who said that no two cases of biliary tract lesions will be exactly alike, and as compared with lesions of the appendix the possibilities are infinite. It is the evident difficulty of telling from the beginning the end-results of gallbladder and duct disease which has led us to a review of our cases. This review includes all the cases occurring in our private and hospital practice during the past twenty years in which a diagnosis of some lesion of the gallbladder and ducts was made. This period is happily coincident with the time when diseases of this part of the anatomy have first begun to be considered from a surgical standpoint. The report, therefore, includes both operative and nonoperative cases, of whatever pathology, which may have been found at operation or necropsy or which may have been diagnosed clinically as having a pathologic entity. It must be admitted from the outset that we cannot speak definitely of a diagnosis unless the case has come to operation or necropsy. In fact, we might suggest that even an operation does not always reveal the whole or underlying pathology. It is for this reason that the subject of this paper is made so indefinite, so far as the accepted and classical nomenclature of the pathology of the biliary tract is concerned. The report is to comprehend all cases having some lesion of the biliary tract, 193 cases with operation and 407 without operation. Every effort has been made by direct communication, correspondence and in other ways to keep ourselves informed of the conditions of those patients still living, and of the determining cause in those who succumbed soon after the operation, or of those in whom death occurred some time after the operation. It is to be regretted that our diagnosis in some cases could not be any more definite, and that the end-results cannot be reported more completely.

---

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Richardson, Maurice H.: Remarks Upon the Diagnosis and Treatment of the Biliary Tract with Especial Reference to the Difficulties and Dangers, St. Paul Med. Jour., February, 1912.

We feel justified, however, notwithstanding these discrepancies, to present this compilation, for it may add to our knowledge of the comparative frequency of gallbladder and duct diseases as found clinically, may furnish an opportunity for emphasizing the necessity of more definite application of well-known and accepted curative measures, and it will enable us in a way to make a comparison between the results of the so-called medical treatment and of the surgical treatment. Many other points of interest appear in this compilation, such as sex, age, the relation of gallbladder and duct disease to pancreatic disease; the frequency of previous infections, especially of typhoid fever; the frequency of an associate glycosuria; the effect, if any, of diseases of the biliary tract on gastric function, the frequency of malignancy, etc. The number of cases observed by us are, of course, too few to justify our drawing any conclusions as to these interesting points. We must be satisfied by merely calling attention to their incidence in our experience.

Inasmuch as most of our gallbladder and duct cases were diagnosed cholelithiasis, it might be well to refer to the incidence of gallstone as found in large compilations taken from necropsy reports. Hesse[2] studied the postmortem material of a large hospital in St. Petersburg and among 17,402 necropsies done in ten years, found 378, or 2.17 per cent., of gallstone cases. From nineteen European and American pathologic reports, including 80,802 necropsies, he found 4,848. or about 6 per cent., of gallstone cases. The proportion of males to females was one to seven. The most frequent age, that is, at the time of coming to necropsy, was from 60 to 70 years, and of those 4,848 necropsies revealing gallstones, in only 16 per cent. were there any symptoms referable to gallstones. The old saying, "dead men tell no tales," can justly be applicable here, for it has been no unusual experience with us in cases when operations were instituted for other conditions and gallstones unexpectedly found, to get a good and satisfactory subsequent history of previous gallstone symptoms. If the patient had succumbed and no subsequent history could have been obtained, it would readily confirm misleading statistics which are advanced to prove that gallstone patients are in a great percentage of instances without symptoms. While we are not satisfied with the popular symptom complex of "fair, fat and forty with flatulence," we find in our experience, especially in so far as history taking is concerned, that gallbladder trouble and especially gallstone disease, can be diagnosed not infrequently without the cardinal classical textbook symptoms and signs.

Of the 614 cases of gallbladder and duct diseases tabulated, 193, or 31 per cent., of patients were operated on and 421 were not operated on. These 614 cases occurred among 3,487 cases diagnosed as having some pathology, or at least some decided functional disturbance of the digestive system, and in which no other diagnosis seemed satisfactory. And they occurred among 14,000 patients as they appeared in private hospital and consulting practice. From these figures it will be seen that about 4.3 per cent. of cases of all kinds presented gallbladder and duct diseases, and that these comprised about 17.2 per cent. of all patients having diseases of the digestive system. Two hundred and fifty-one were males and 363 were females. Of the gallstone cases, 163 patients were males and 283 were females, while of the cancer cases three were males and eight were females.

Of the 193 patients operated on 137 had gallstones and two had gallstones, besides being malignant. Fifty-four had a cholecystitis or a chronic angiocholitis. Of the 137 gallstone patients operated on, 83 were cured, 13 were relieved, 8 experienced no benefit, 11 died within a month from the operation. 8 died later, and from 14 we have not received any report recently. Of the 11 who died within a month from the operation, 6 were common duct cases and 5 were simple gallbladder cases. The fact that more than half of the fatal cases were common duct cases is significant. One of these had had gallstone symptoms for twenty years, another for fourteen years, two for six years and two for five years. The extent of the pathology found at the operation seemed in direct proportion to the duration of the disease. Of the eight patients who died later than one month, four died from causes other than gallstones. Four patients, on account of recurring attacks, were operated on more than one time.

Of the 54 patients having cholangitis, and who were operated on, 22 were cured, 10 were relieved, 13 received no benefit, 2 died within a month after operation, 2 died several years after the operation

TABLE 1.—GALLBLADDER AND DUCT CASES—OPERATIVE

	No.	Male	Female	Cured	Relieved	No Benefit	Died Within 1 Month	Died Later	No Report
Cholelithiasis, common duct	16	34	103	83	13	8	6	1	14
Gallbladder	121						5	7	
Cholangitis	54	25	29	22	10	13	2	2	5
Cancer	2	0	2	0	0	0	0	2	0
Total	193	59	134	105	23	21	13	12	19

from other causes, and 5 could not be traced. This class of cases gave the most unsatisfactory results, largely, we think, because of the divergent pathology found. Some were cases of simple chronic cholecystitis, others were cases of cholangitis showing the various types, catarrhal, suppurating and gangrenous, while still others showed a pericholecystitis. The majority were associated with other pathology, more or less grave, which determined the results. Of the two cancer patients who were operated on, one was of the ampulla and the other of the fundus. These two, as well as the nine malignant gallbladder cases in which operation was not performed, died in due time.

In explanation of our mortality, we must call attention to the fact that these patients were operated on by twenty-four different surgeons, under varying circumstances and conditions. They were not selected cases. We do not recall that any patient was refused operation by the surgeon unless it was to wait until jaundice had cleared to an extent, or to await the subsiding of an accompanying acute inflammatory condition. On the other hand, it is needless to say that many patients for whom operation was agreed on as the advisable procedure, refused operation, preferring to follow medical treatment or seek other advice. Otherwise, our list of operated cases would be much larger. In this respect the treatment of gallbladder and duct diseases differs widely from that of diseases

2. Hesse, E. R.: Frequency of Gallstones, Russk. Vratch, 1914, xiii, No. 9, p. 289.

of the appendix. In acute appendicitis the physician frequently can justly assume the attitude of a "hold-up man": "Be operated on now or you may lose your life"; and on account of the stress of circumstances and the absolute confidence exhibited by the physician, the patient almost invariably consents to the operation.

In gallbladder and duct diseases, on the other hand, when the patient is in greatest pain and is most willing to do anything to avoid a recurrence, he must be told by the physician, and by the surgeon if he is called, that the time is not opportune for operation until the attack is over and the acute inflammation and jaundice, if they are present, have subsided, when an operation will be advisable and necessary. Not infrequently after the attack there is such a feeling of well being that no amount of pressure will convince the patient that an operation must be done to prevent future complications. This is one explanation for the large proportion of unoperated cases in this report. It must be admitted, therefore, that the internist is probably in a better position to speak of the end-results in gallbladder and duct diseases than the surgeon. The surgeon sees usually only the operated cases, whereas the internist meets and must stay with or follow the large number of patients in whom the severity and complications of the disease prevent an operation.

In presenting the 421 unoperated cases in this report we do so with a keen appreciation of the difficulty of making a definitely reliable diagnosis, a fact to which we have already referred in the introduction to this paper. But we feel that a diagnosis of a lesion of the gallbladder or ducts is not much more difficult than the diagnosis of acute appendicitis, and probably not nearly so difficult as the diagnosis of chronic gastric or duodenal ulcer. Both of these diagnoses are frequently accepted without question before operation or necropsy. We will not enter into a description of the routine diagnostic methods which we employ. In some patients we recovered gallstones from the stools; in some jaundice was present, and many we saw in repeated attacks and observed for long periods. Of the cases comprising this group, 309 were diagnosed as possible gallstone, 103 as possible cholecystitis and 9 had cancer. In referring to our results, we will not

TABLE 2.—GALLBLADDER AND DUCT CASES—NOT OPERATED

	No.	Male	Female	Relieved	No Benefit	Died	No Treatment or No Report
Cholelithiasis	309	129	180	114	47	13	238
Cholecystitis	103	60	43				
Cancer.....	9	3	6	0	0	9	0
Total.....	421	192	229	.....	....	22	

consider any patient as cured, though some have passed gallstones and have not had any attacks since, and many report themselves "perfectly well." One hundred and fourteen are relieved, 47 declare they are no better, 13 died and 238 either were not treated or could not be followed. The thirteen patients who died were not under our observation at the time, but from what we could learn five died from other causes than gallbladder and duct disease.

The group represented in Table 2 were called "not operated," largely to avoid the term "medical cases." They are properly, with few exceptions, all surgical cases. Since, however, it is difficult to interest a surgeon in a patient who will not or does not come to operation, the internist or the family physician must institute a care of the patient's diet and mode of life as well as a line of symptomatic medical treatment which will afford as much comfort as possible under the existing circumstances. This line of treatment, which was rarely the same in two cases, frequently led to a remarkable amelioration of symptoms. It is not our purpose at this time to present this part of the subject.

In making this compilation of cases many interesting points have appeared aside from those included under the subject of the paper.

TABLE 3.—AGE INCIDENCE IN GALLSTONES

Age at Operation	No. of Cases	Sex	Per Cent.	Duration Average, Years	Average Age at Onset	Age at Onset	Average Age at Operation
20 to 29....	11	F 9 M 2	18	5	22	Under 40	
30 to 39....	31	F 28 M 3	10	6	29	57%	
40 to 49....	37	F 27 M 10	27	6	39	....	45
50 to 59....	27	F 19 M 8	30	6	48	Over 40	
Over 60....	16	F 8 M 8	50	15	49	43%	
All cases...	122	F 91 M 31	25	6¾ 7½	36 42	....	F 43 M 50

1. The Average Age of Gallstone Patients at Onset and at Operation.—For the women the average age of onset was 36 years, and the average age at operation 43; while for men the average age was 42 at onset and 50 at operation. Most of the cases occurred between the ages of 40 and 50. The average time of existence of symptoms before operation is seven years.

2. The History of Acute Infections.—It is generally thought that a history of typhoid fever would suggest gallstones. Of the 122 cases of gallstone disease, only twenty-one patients gave a history of typhoid, and of the fifty-four cases of cholecystitis, twenty patients gave a history of typhoid. Other infections were not tabulated.

3. Glycosuria.—In the literature attention has frequently been called to the relation of gallbladder and duct disease, as well as gallstone disease, to pancreatic disease. The epoch-making work of Opie is well known. In our 614 cases we found only six patients, or 1 per cent., having glycosuria. One of these patients developed glycosuria about five years after a successful operation for gallstone associated with empyema of the gallbladder. She continued having sugar, though there were no gallstone symptoms, for three years, when she died from an accident. In reviewing our records of patients having diabetes mellitis, we find 150 cases among about 14,000 patients. In our experience, therefore, the incidence of glycosuria in gallbladder and duct diseases as compared with the incidence of glycosuria in all diseases, is only about one-tenth per cent. higher.

4. Gastric Secretion.—In June, 1910, one of us (Lichty[3]) read a paper before the American Gastro-Enterological Association on the relation of gallbladder disease to gastric function. It was attempted in this paper to show by experiments on dogs and also from the clinical material then at our command, that gallstones are usually associated with a hyperchlorhydria. We are gratified to report that our clinical experience still confirms the opinion held at that time. Of eighty-two gallstone cases in which operation was performed, in which gastric analyses were made, 73 per cent. had hyperchlorhydria, and of thirty-six cases of cholecystitis in which operation was performed, in which gastric analyses were made, 70 per cent. had a hyperchlorhydria.

CONCLUSIONS

1. From the fact that only five of the 121 patients having stones in the gallbladder operated on died, and as many as six out of sixteen having stones in the common duct died, it seems evident that early operation, before the case becomes a common duct one, is by far the safest procedure.

2. From the fact that only thirteen of 174 unoperated patients whom we have followed died, it seems evident that the nonoperative or so-called "medical treatment" has a mortality scarcely any higher than the operative.

3. From facts which are not shown in the tables, but which have frequently been observed by us, reduction of mortality should not be the sole consideration in treating these patients. Many of the nonoperated patients, on account of their extreme suffering during the attacks, and on account of anxiety and their limited diet between attacks, are leading a miserable and almost useless existence. Many are drug habitués.

4. Patients having disease of the gallbladder and ducts present great difficulties from the standpoint of conducting an accepted rational and scientific treatment. This is no doubt due to the protean character and periodicity of the symptoms, and to the peculiar traditions and attractive quackery which constantly appeal to them.

ABSTRACT OF DISCUSSION

DR. J. N. HALL, Denver: Dr. Lichty's figures, as he states, would indicate nearly as high a death rate in the patients treated surgically as medically, but emphasis should be laid on the fact that those cured surgically nearly all stay cured, while the alleged medical cures have the possibilities of trouble still with them. As in the case of the appendix, a medical recovery means ordinarily merely a remission. As in the case of the appendix again, the mortality is practically all from the complications of the disease rather than from the original illness. In the present series the mortality from the common duct stones was nearly ten times that of the cystic calculi. In a series of cases seen and operated under the earliest and most favorable conditions, a mortality of 1 per cent. is probably attainable, and without such favoring conditions, 2 per cent. has already been reported in very extensive series. Yet Hans Kehr, perhaps the greatest of the German operators, has reported a mortality of 10 to 15 per cent. in large groups of operations. It is remarkable that he should criticize American surgeons for operating too early and yet admit their low mortality rates. We have seen the appendix patient so convinced by his own observations among his friends that he comes and asks to be operated, and we may hope for a more favorable attitude on the part of the gallstone victim. Otherwise we shall still have many patients invalided with morphinism, myocarditis, stricture of the duct, septic complications, and especially cancer. It should be noted that in any large series the latter affection alone is found in approximately 3 per cent. of the cases, which exceeds a normal operative mortality in selected cases.

DR. MAX EINHORN, New York: I am also in favor of early operation in the gallbladder cases, but I do not think operation is necessary in all cases. The clinician cannot recommend operation at once in all early cases. But if attacks are frequently repeated or are very severe, then surgery is called for. In regard to medical treatment, I have found glycerin given internally has a beneficial effect on the secretory function of the liver. We can demonstrate that the duodenal contents and bile of individuals who take glycerin will not decompose for two or three days, whereas without glycerin they become putrid in two or three hours. So that as a therapeutic measure we may give glycerin in teaspoonful doses in the treatment of these cases.

DR. JOHN A. MCGARRY, Los Angeles: Dr. Lichty reported only a small percentage of his gallbladder cases in which typhoid fever was an etiologic factor. We formerly believed typhoid fever to be a very important factor in the causation of gallbladder disease. I would like to ask what other special factors he found in its etiology.

DR. J. A. LICHTY, Pittsburgh: I was rather surprised by my statistics. I live in a neighborhood where formerly we had many cases of typhoid annually, whereas now we have very little. I was expecting, therefore, to find that many gallbladder cases would prove to be of patients who had had typhoid fever, but such was not the case. I have no opinion to state at all as to etiology, except that possibly long-continued digestive disturbance, hyperchlorhydria or ulcer of the stomach or duodenum may cause changes which lead to disease of the gallbladder and ducts. As to treatment, this is not included under one subject. We of course could not stand idly by and let these patients go without care, so we have done all we could with dietetic and medical treatment, and it is surprising the results we could report in some cases, and also how decidedly medical treatment often fails. I was glad to hear of Dr. Einhorn's treatment with glycerin, but I hope it will not become known among the laity, for I recall the unfortunate results of such general knowledge in the case of the olive oil treatment and the many patients it led to delay proper treatment. I am fearful that the glycerin treatment will prove much like the olive oil treatment. I agree with Dr. Einhorn that you cannot at once say to the patient that an operation is necessary, but it does seem to me that in cases in which the symptoms speak definitely of some pathology, the operative treatment is the only rational treatment of these cases.

3. Lichty, J. A.: The Relation of Diseases of the Gallbladder and Biliary Ducts to the Gastric Function, Am. Jour. Med. Sc., January, 1911.

April Health Report.—During the month of April there were 34,125 employees in the Canal Zone. The total admissions to hospitals and quarters was 802, a rate of 282.02 per 1,000 as compared with 312.82 for March and 350.59 for the corresponding month of April, 1914. The total number of deaths was eight. Five died from disease or 1.76 per 1,000, as compared with 4.91 for the preceding month and 5.53 for the corresponding month of last year. The constant noneffective rate was 9.85. The total admission rate for malaria was 28.48 compared with 46.99 for the previous month and the total noneffective rate was 0.95 compared with 1.11 for the preceding month. Diseases next to malaria causing the highest admission rate were diseases of the digestive system, venereal diseases, disease of the skin and cellular tissue and of the respiratory system. The typhoid admission rate was 0.35 as against none for the previous month, and 2.01 for the corresponding month of the previous year. It will be seen that the health conditions were good in the Canal Zone, the admission and mortality rates being on the average lower even than usual.

FASCIAL TUBULIZATION IN THE REPAIR OF NERVE DEFECTS *

EDWIN G. KIRK, M.D.
AND
DEAN LEWIS, M.D.
CHICAGO

It is difficult to determine the value of the different methods which have been employed to promote reconstruction of defects in nerves caused by accident, or to restore their continuity after resection because of painful scars, malignant growth, etc. The clinical reports are often meager and in many instances the patients have not been traced long enough to permit of any definite conclusions concerning the ultimate result. The results frequently admit of more than one interpretation. In many of the cases reported sensation and motion have not been carefully tested and often, in estimating final results, account has not been taken of the fact that sensation, and even motion, may be present, at least to some extent, in the area supplied by the nerve which has been divided or resected.

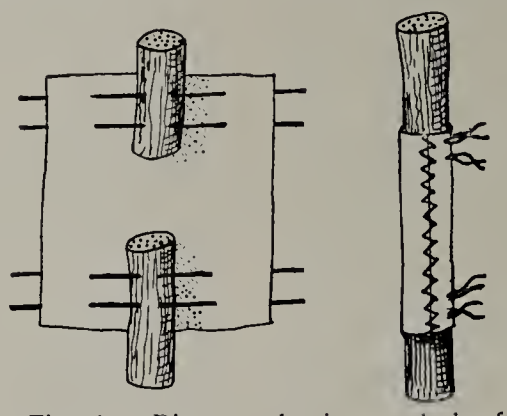


Fig. 1. — Diagram showing method of construction of fascial tube.

Vanlair[1] (1882) first suggested that defects in nerves might be repaired, if a pathway were provided, along which the axis cylinders developing from the proximal stump might pass to invade the distal part of the nerve. A number of different materials, silk protective, fresh and hardened blood vessels of the same or different species, epidermis, magnesium and hardened gelatin tubes have been used in clinical and experimental work for this purpose. That none of these is highly satisfactory is indicated by the few clinical cases in which any one has been used and by the lack of uniformity in the results obtained.

Huber,[2] after careful experimental work, came to the following conclusions concerning the bridging of nerve defects:

1. It is possible to restore functional activity to the peripheral part of a divided nerve with loss of substance, if the resected ends are united by a segment taken from some other nerve trunk, by a catgut bridge, bone drain or tubular suture.

2. The most favorable results are obtained after implantation of nerve segment, the two ends of which have been sutured with one or several catgut sutures to the resected ends of the injured nerve.

3. Regeneration of the peripheral end is the result of the outgrowth of new axis cylinders from the undegenerated axis cylinders of the proximal stump, the budding axis cylinders following the paths of least resistance to reach the peripheral part of the resected nerve.

4. That degenerated fibers of an implanted nerve segment offer much more favorable mechanical conditions to the downgrowing axis cylinders than does the loose connective tissue which supplants the catgut sutures, when this type of bridging is attempted or the bone drain, is shown by the fact that the new nerve fibers have a much straighter course and more regular arrangement in the tissue uniting the resected ends than in the case in which the latter procedures are employed.



Fig. 2.—Section of regenerated segment (within fascial tube) 1.5 cm. below level of plane of proximal section, four weeks after operation (from photomicrograph × 60).

Kilvington[3] (1908), in reviewing the literature, found that the results of homoplastic nerve transplantation were uncertain. Sherren[4] cites one success in six cases and collected twenty cases, six of which could be regarded as successful. He found record of but two cases of autoplastic nerve transplantation, one of which was successful. Kilvington experimented with free nerve transplantation and obtained poor results with heterotransplants; fair with homotransplants, and good with autotransplants. With autotransplants he obtained what he considered functionally perfect results in five out of seven cases. The gross appearance of the nerve when removed was good and there were few adhesions. In one case he bridged a gap of 2 inches in the sciatic nerve. After one hundred days there was complete recovery of sensation and motion. The value of Kilvington's work is somewhat impaired by the criteria adopted by him regarding successful results, namely, the gross appearance of the regenerated

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* From the Department of Experimental Surgery, Morris Institute of Medical Research of Michael Reese Hospital.

1. Vanlair: De la néurotisation du cartilage osseux dans la suture tubulaire des nerfs, Arch. de Physiol., 1882.

2. Huber, G. C.: A Study of the Operative Treatment for Loss of Nerve Substance in Peripheral Nerves, Jour. Morphol., 1895, xi, 630.

3. Kilvington: Brit. Med. Jour., 1908, p. 1414.

4. Sherren: Edinburgh Med. Jour., September, 1906.

segment, the functional recovery of the muscles and the reaction to electrical stimulation. The inadequacy of these criteria will be discussed later. Microscopic examinations were made of but four cases. Kilvington believed that the axons of the free transplant survived and assumed function. This position is untenable in the light of recent and past neurologic research, as it has been conclusively demonstrated that the axis cylinders degenerate in a free transplant and that the sheaths merely form conduits through which the newly formed axis cylinders can pass.



Fig. 3.—Distal segment four weeks after operation, showing invasion of regenerated axis cylinders, some of which are arranged in bundles (× 130).

The best results in transplantation are obtained by tissue removed from the same individual. Nerves and blood vessels frequently cannot be sacrificed to bridge defects in nerves. A tube formed of fascia, providing it did not collapse and undergo secondary cicatricial contraction would be ideal, for the supply is unlimited; a tube of any size can be fashioned to be applied to the nerve in question; and fascia when appropriate conditions are provided contracts no adhesions and remains viable.

TECHNIC OF OPERATION

After the sciatic nerve of the dog is exposed and the section removed, a piece of fascia lata of approximately the required size is removed. No muscle fiber is included. The smooth shiny surface of the fascia lying next to the muscle becomes the inner side of the tube. Some fat usually remains attached to the outer surface. In some cases the loose areolar tissue covering the fascia on the muscle side was scraped off. This seemed to favor contraction and was discontinued in the later experiments. The method of formation and fixation of the tube is indicated in Figure 1. In some experiments the nerve was exposed, cut, and the ends crushed. After two weeks or more the nerve was again exposed, the ends recovered and freshened, after which the fascial tube was applied.

Several points are deemed to be of especial importance in the technic. All trauma to nerve, fascia and surrounding tissue must be avoided. A sharp dissection should be made and hemostasis should be as perfect as possible. The suture must be applied loosely so as not to strangle any part of the nerve. Hemorrhage from the ends of the nerve must be controlled, for blood within the tube will prevent the axis cylinders passing downward. The tubes in cases in which hemorrhage occurred into them were almost occluded by scar tissue. To prevent blood passing from the surrounding tissues into the tube both end-sutures are so tied as to approximate the fascia snugly to the nerve. The tube should have a large lumen to guard against secondary contraction if this occurs. The lumen should be twice the size of the nerve end.

We have performed the operation of tubulization on the sciatic nerve of forty dogs. Ten of these are still living at periods varying from seven days to nineteen weeks after the operation. Two were discarded because of local infection and death from pneumonia. Seven specimens have not yet been studied histologically. This report is based on the study of twenty-two specimens, the animals having been killed at periods varying from one day to sixteen and one-half weeks after the operation. Most previous work on nerve regeneration has been conducted on young dogs. We have used dogs of all ages. Casts were used on the first five dogs, but not on any of the remaining.

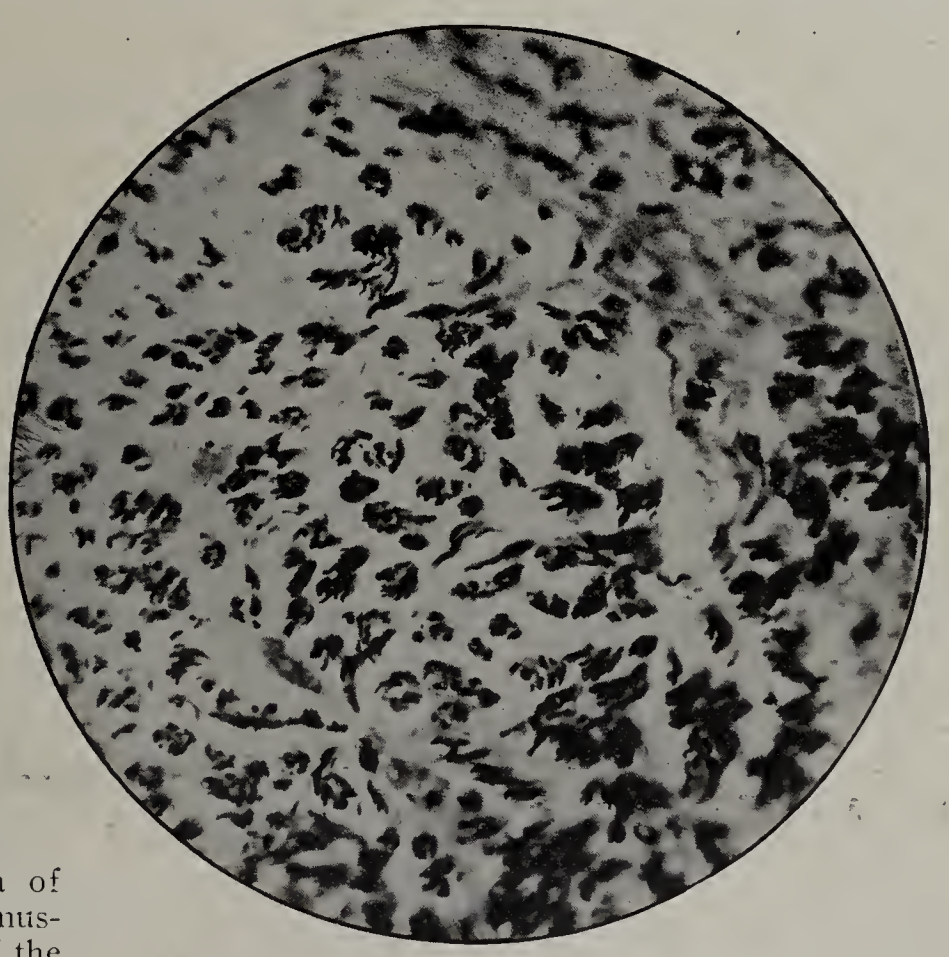


Fig. 4.—Proximal segment just above level of proximal plane of section six weeks after operation (× 325). Note enormous increase of nonmedullated axis cylinders. A few medullated fibers are seen surrounded by several nonmedullated axis cylinders (newly formed), situated under and applied to the neurilemma sheath.

The histologic technic was the following: Immediately after death the nerves were excised, stretched on

glass tubing, carefully orientated and fixed. In general two methods were employed in studying the changes, the most important being the Cajal silver method as

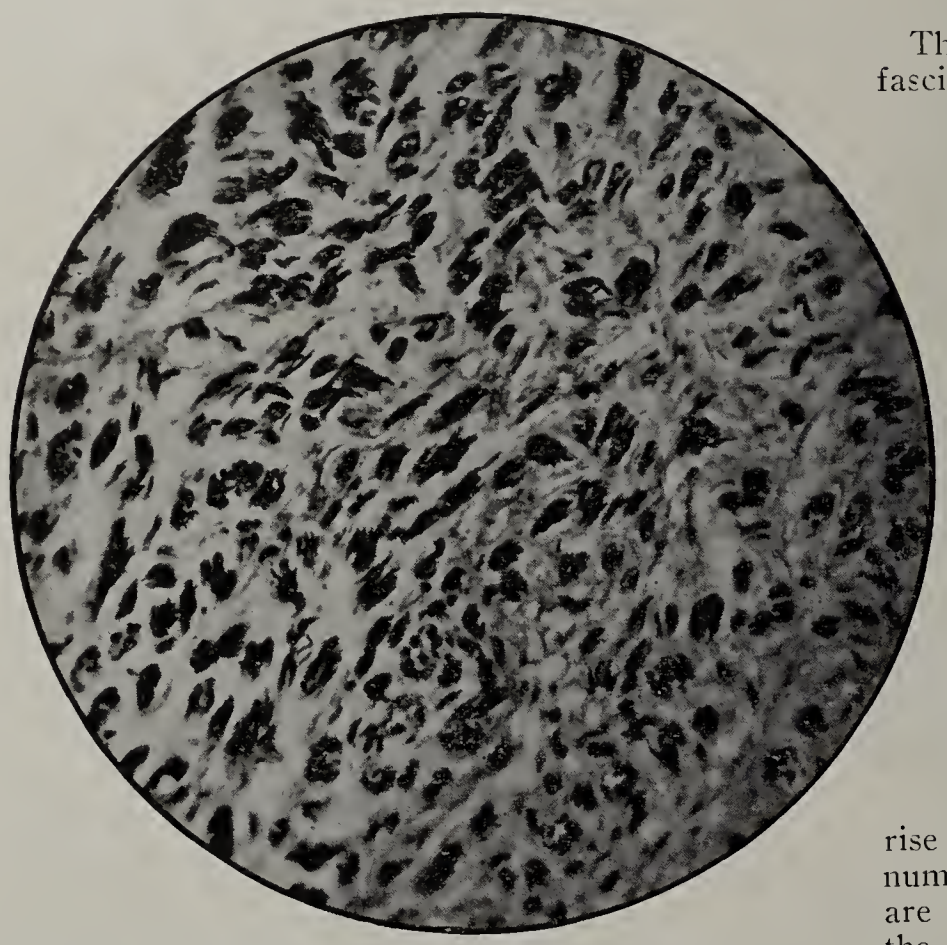


Fig. 5.—Regenerated segment six weeks after operation (× 325). Great numbers of nonmedullated axis cylinders arranged in orderly bundles are shown.

modified by Ranson. Other pieces of the nerves were fixed with liquor formaldehydi and Zenker, and stained by Malory's phosphotungstic hematoxylin method. Hematoxylin and eosin were also employed.

CRITERIA AS TO SUCCESS OF BRIDGING

Several criteria indicative of successful bridging have been suggested. Recovery of function, which will occur only after months when resection is made at a distance, cannot be relied on, especially when the experimental animal is a dog and the operation is performed on the sciatic nerve, for fair function returns about as soon as the postoperative tenderness is gone. The rapid return of function is probably dependent on anatomic peculiarities of innervation in the dog. Improvement in the foot drop is probably indicative of successful bridging, but as the axis cylinders have such a distance to travel, a negative result in the earlier weeks does not mean that the defect has not been successfully bridged. We have seen the foot drop disappear completely in one dog after fifteen weeks and in another dog after twenty weeks. The reaction to electric stimulation cannot always be depended on in estimating the amount of repair, for as Forsmann[5] has shown, irradiation of the current may occur, leading to contraction of muscle even when repair is not complete. The best criteria of regeneration are the gross appearance and the histologic findings.

All the specimens which we have removed have been carefully examined microscopically, after fixation, and staining methods have been employed to differentiate axis cylinders.

GROSS AND MICROSCOPIC CHANGES OBSERVED AFTER TUBULIZATION

The most interesting changes are observed in the fascial tube. At the fifth day the tube is partially filled with a soft, grayish white pulpy material resembling somewhat in appearance soft gray brain matter. No blood is found, providing hemostasis has been good, an essential to nerve regeneration through a fascial tube. Microscopically this pulpy material is finely granular and homogeneous, evidently coagulated lymph containing a few mononuclear leukocytes. The middle of the tube, that portion most remote from the divided ends, is empty. The microscopic changes in the proximal and distal stumps correspond to those described by Ranson and others in their studies dealing with nerve regeneration, and will be given but brief consideration, except in relation to the bridging of the defect.

In the eight and eleven-day stages the proliferative changes in the proximal stump of the resected nerve are marked. About one half of the medullated axis cylinders have given rise by division and lateral branching to a large number of nonmedullated axis cylinders. These are grouped in bundles of twenty or thirty about the original medullated axis cylinder. These regenerative changes involve the terminal 0.5 cm. of the proximal stump. The newly formed nonmedullated axis cylinders penetrate a little way into the pulpy material which fills the proximal end of the tube. In specimens examined after two and three weeks a solid downgrowth from the proximal stump has invaded the pulpy material. The axis cylinders develop

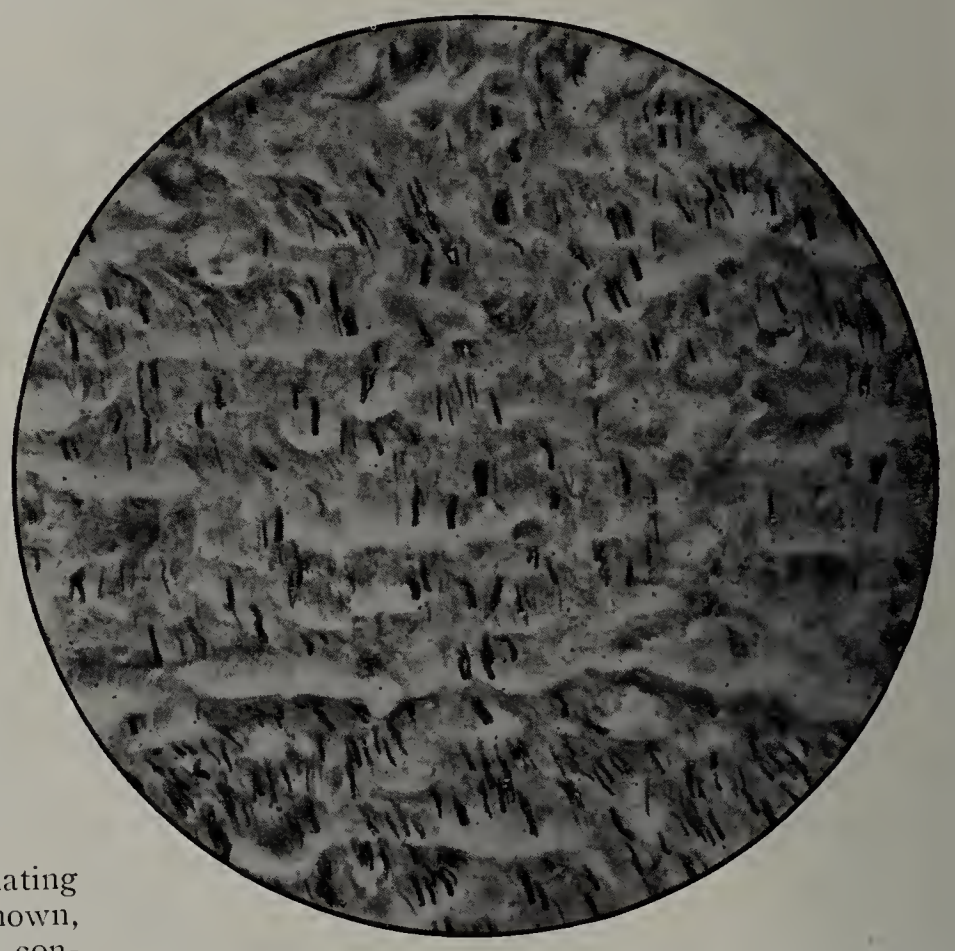


Fig. 6.—Distal segment 11 mm. below level of plane of distal section six weeks after operation (× 200). Shows regenerated axis cylinders arranged in bundles, also remnants of degenerating medullated fibers.

5. Forsmann: Zur Kenntniss des Neurotropismus, Beitr. z. path. Anat., 1900, xxvii, 407.

first and most rapidly along the side of the tube, and the nerve end, originally cut transversely, has become oblique. The axis cylinders at this stage have penetrated 1 or 2 mm. further into the ground-work of the tube than would be judged from the gross appearance. During the first week the macroscopic corresponds with the microscopic tip, but from that time on the distance to which the axis cylinders have penetrated is judged with difficulty by the gross appearance.

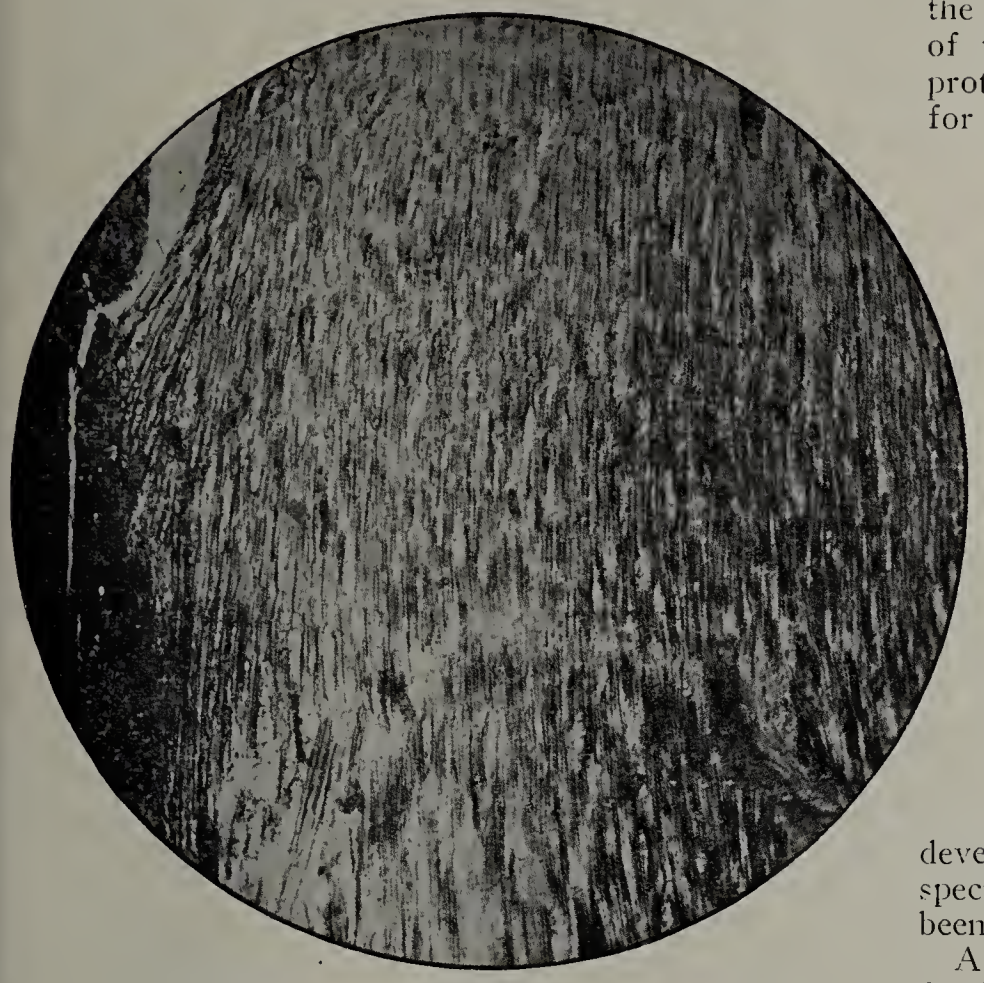


Fig. 7.—Distal segment seven weeks after operation (× 70).

After four weeks the gap, if 1 cm. or less in length, is completely filled with a firm, pearly white mass, having longitudinal striations. If the gap is longer there will still be found a part of the tube which is filled with a substance softer than the nerve, dark gray in color, into which the axis cylinders have not penetrated. At this period, in the length of gap mentioned above, a moderate number of axis cylinders have completely bridged the defect and invaded the distal segment. The axis cylinders on reaching the distal segment are no longer arranged in bundles. They are doubtless separated while passing through the material filling the tube, but the separation is mostly due to the more rapid advance of some of the fibers than of others, for in the later stages the fibers which have invaded the distal segment are again arranged in bundles.

Even at the fifth week the proliferative changes in the proximal stump and the regenerative changes are very marked. Enormous numbers of nonmedullated axis cylinders arranged in bundles of from twenty to sixty are found. Even as high as 2 cm. above the plane of section, nonmedullated axis cylinders are present in large numbers, but the medullated ones predominate. The advancing axis cylinders end in terminal bulbs at various levels. The axis cylinders which are grouped together are obviously derived from a single axon. The axis cylinders and medullary sheaths of the distal segment in the second and third weeks have undergone almost complete degeneration. Active proliferative changes in the neurilemmal cells are found, and the cytoplasm of these cells has become arranged in the form of protoplasmic bands which later will act as conduits for the advancing regenerating axis cylinders. The changes observed in this distal segment are those ordinarily noted after section of a nerve; the myelin sheath being broken up, the axis cylinders absorbed, a homogeneous matrix, evidently protoplasmic band substance being found. In the later stages, from seven to nine weeks, the distal segment contains a large number of nonmedullated axis cylinders, many being grouped to form distinct bundles, while others run singly.

That fascial tubes will remain patent and form a path for developing tissues has been demonstrated in the repair of tendons. Lewis and Davis[6] have had the opportunity of examining a fascial tube which was inserted for the purpose of permitting regeneration of the flexor sublimis and profundus digitorum tendons of the ring finger which had been lost as the result of infection. This tube, which measured three and one half inches in length, had been filled by a tendon developing from each flexor, as was shown when the specimen was examined 255 days after the tube had been inserted.

A serious objection which has been raised against fascial tubulization is contraction. If the fascial tube should undergo a great degree of cicatricial contraction, the purpose of the operation would be defeated, for the newly formed fibers would be strangulated.



Fig. 8.—Regenerated segment eight and one-half weeks after operation (× 325). End bulbs are seen at the growing tip of some of the axis cylinders. Arrangement in bundles is already well marked.

6. Lewis, Dean D., and Davis, Carl B.: Repair of Tendons by Fascial Transplantation, THE JOURNAL A. M. A., Feb. 21, 1914, p. 602.

Fascia is probably not used more frequently for neurolysis because of the fear of cicatricial contraction.

Fascia contracts immediately after being removed. This primary contraction is probably due to the elastic fibers which it contains and can be disregarded because it has reached its maximum by the time the fascial tube is inserted. The contraction which extends over a long period may be called the secondary or cicatricial contraction, and if this occurred to any extent in the fascial tubes, it would preclude the possibility of their use for nerve repair and neurolysis. There is but little secondary contraction if the fascia is sutured into place, and is subjected to the same conditions as regards stress and strain as in the part from which it was removed.

In the experimental work which has been hitherto done to demonstrate this cicatricial contraction, the fascia has been placed about the bowel, and it is probable that the changes in the fascia have been secondary to those in the peritoneum.[7] In this connection it should be mentioned that fascia undoubtedly undergoes cicatricial changes when placed adjacent to scars. Kredel has recently reported a case in which fascia was placed about an injured nerve in which there was a recent scar. Another operation had to be performed later because of pain which increased in severity, and it was found that the fascia had undergone cicatricial changes and was constricting the nerve. Kredel therefore regards it as inadvisable to use fascia for neurolysis. We believe that Kredel should not have used fascia about this recent scar. In such a case it would be better not to have attempted neurolysis, or to have resected the scar and after end-to-end suture to have performed a fascial neurolysis. Fascia in the presence of a recent scar or hemorrhage tends to undergo cicatricial contraction.



Fig. 9.—Distal segment eight and one-half weeks after operation (× 325). Utilization of old neurilemma sheaths as conduits by newly formed axis cylinders; note also grouping into bundles.

That fascia may be used successfully in neurolysis is indicated by a patient operated on by one of us (D. L.) eighteen months ago. This patient's radial nerve was cut in an automobile accident. Immediate suture was done, but an infection occurred and there was loss of radial function. In this case the scar uniting the nerve ends was resected at a second operation, and an end-to-end suture performed. A fascial flap was then placed about the line of suture. There has practically been a complete return of function following resection with suture and fascial neurolysis.

7. Kolb: Deutsch. Ztschr. f. Chir., 1913, cxxv, 399.

To avoid the possibility of cicatricial contraction, a lumen large enough for the developing nerves should be provided. The lumen of the tube in this work has been made approximately twice as large as the ends of the nerve. The fascia at first is much thicker than the perineurium, but in many cases it gradually becomes thinner and finally continuous with it. In some cases after from five to eight weeks, only the black silk orientation sutures remain to mark the original limits of the fascial tube at the ends of the gap. In other cases, as in one at four and one half months, it retains to a great extent its original characteristics; we have not yet been able to determine the factors which control this absorption or nonabsorption of the tubule.

In one case (Dog 17) the fascial tube was made so small that its lumen was less than 1 mm. in diameter, not more than one third of that of the nerve. This dog was killed six weeks and one day after the operation, and it was found that the tube had been converted into a connective tissue mass. But few regenerating axis cylinders had reached the distal stump.

In two cases veins were used instead of fascia. In one (Dog 15), a fresh segment of jugular vein obtained from the same animal was used. This procedure is more difficult than fascial tubulization. The vein wall is thinner and tears more easily when sutured. The specimen was examined after five weeks. Histologic examination showed that the endothelium and tissues of the vein wall had formed a cicatricial tissue which had grown inward and obliterated the lumen. Only a few axis cylinders had penetrated the center. Veins furnish no better results than fascia, and the technic of insertion is more difficult and time consuming.

Failures after tubulization may be due to several factors. Hemostasis must be as perfect as possible, hemorrhage from the cut ends of the nerve being carefully controlled, for a blood clot in the tube stimulates a fibroblast reaction which may be followed by dense scar formation. The soft brain-like pulp consisting of coagulated lymph and a few mononuclear leukocytes remains soft for some time and forms a bridge for the developing axis cylinders which is easily penetrated. The tube should not be applied under tension. It should be sufficiently long to be comparatively loose when fixed in position.

The reaction of fascia when placed over a recent scar has been already discussed when mention was

made of Kredel's unsuccessful case of fascial neurolysis. In order to avoid the possibility of much scar formation all dissections should be made with sharp instruments, laceration and contusions of the nerve ends and surrounding tissues being carefully avoided.

DISCUSSION OF RESULTS

Defects in nerves may be successfully bridged by fascial tubes. Histologic preparations show that the continuity of the nerve is reestablished. The medullary sheaths have not yet been formed in the specimens examined by us. These are formed late in the process of nerve regeneration.

Regeneration of the fibers which bridge the gap takes place entirely from the proximal stump, as has previously been shown by Ranson, Ranvier, Vanlair and Forsmann.

The proliferative changes in the proximal stump are very active. From fifty to one hundred times the number of axis cylinders normally found in a nerve are formed. If one out of fifty of these axis cylinders enters the empty sheaths of the distal segment it seems certain that both an anatomic and physiologic restoration of the nerve would occur. It has been demonstrated that a comparatively few axons will permit of functional activity on the part of the muscles supplied by them (Vulpius and Stoffel).

The time required for bridging depends on the length of the defect, also on the age of the animal, and the amount of tension exerted on the nerve ends. We believe that a gap of 1 cm. with proper use of this technic will be bridged in nine weeks, the axis cylinders at this time having passed well into the distal segment.



Fig. 10.—*A*, appearance of nerve removed seven weeks after operation, reduced one-half. Lines indicate approximate extent of fascial sheath. *B*, same specimen divided longitudinally. Lines in fascial sheath indicate extent of former gap.

The oldest observations have been made on animals ten and sixteen and one half weeks after tubulization. Von Fleischhauer[8] in his clinical observations has found that a cicatrix in a nerve usually undergoes contraction seven or eight weeks after injury. In our oldest experiments there has been no evidence of secondary contraction in the tube. It has often thinned out so as to be almost indistinguishable from perineurium. We believe that the possibility of cicatricial contraction of the fascia is precluded when the proper technic is employed and the fascia inserted only under proper conditions.

ABSTRACT OF DISCUSSION

DR. A. A. LAW, Minneapolis: I think the simplest illustration of the tendency of the proximal nerve fragment to regenerate is shown in the neuroma. Levings showed us how, after resection of a nerve, with implantation of the severed ends between parallel muscle fibers, the proximal fragment sends out axons and causes regeneration. Forsman's theory of neurotropism explains the tendency of the nerve cells to find one another. Dr. Lewis has spoken of the various foreign bodies introduced about these nerve fragments in an attempt to aid regeneration, such as bone or magnesium, cylinders, blood vessels of men or the lower animals, Cargile and eggshell membrane, etc. These are all foreign bodies and as such must be taken care of by the host; and while they give a certain percentage of success, they are not of as much avail as autogenous transplants. The saphenous nerve resected and transplanted is interesting, but I am convinced that it is of little value over other methods, as the axons die. The blood vessels are objectionable, of which Dr. Lewis spoke, because they become occluded. In the University of Minnesota we have repeatedly wrapped sutured nerves with fascia or fat flaps. In recently operating on an avulsed brachial plexus, after section of the clubbed ends of the nerves and proper suture, we wrapped one trunk with a pedicled flap of aponeurosis and another with fat. The doctor spoke of the time element. Eight weeks ago we operated for destruction of the musculospiral nerve in a man who had been operated on four times before; after resection of the clubbed ends we found there was destruction of the nerve for three inches. Tubulization was done by fascia lata and at the end of eight weeks there was complete return of sensation and marked return of muscular control of that forearm. This fascial tube permitted nerve regeneration through it. There was a nonunited fracture of the humerus for which a bone inlay transplant was done; so we had two autogenous transplants in contact in the same field. We must conclude, then, that up to the present there is nothing available which parallels the value of fascia lata in aiding the regeneration of nerves.

DR. JOHN F. GOLDEN, Chicago: In Dr. Murphy's work we have found that the most difficult thing is to get function where we have a defect in the continuity of the nerve. We have gone through the various methods, including muscle implantation according to the method of Levin of Milwaukee, the use of catgut and the transplantation of nerve from the cadaver. The latter method we have found to be a failure. The other methods have been successful in proportion to the length of the defect in the nerve. As a later method of getting function we have been transplanting the tendons of functionating muscles into paralyzed muscles, or into the muscle which is negative through insufficient nerve supply. This has proved the most satisfactory. In neuroplastic work I should like Dr. Lewis to discuss the necessity of approximating like axons. One of the first principles in handling defects in nerves is to cut off the cicatricial neuroma that forms, or the brush-like ends, and prevent or stop any hemorrhage. The regeneration of nerves by the aid of fascial tubulation now seems to be successful, as shown by the histologic sections of Dr. Lewis, and this has perhaps solved the problem of supplying the defect in the nerve, which up to the present has had no real solution.

DR. KENITH MACKENZIE, Portland, Ore.: Four or five years ago I handled a case in which there was growing rapidly from the sheath of the sciatic nerve a sarcoma of low grade malignancy, producing disturbances which were very conspicuous. The patient complained of trouble with his foot on the affected side, which became severe. It became necessary to resect the sciatic nerve. I removed the nerve

8. Von Fleischhauer: Berl. klin. Wchnschr., 1915, lii, 212.

from the lower border of the gluteus maximus muscle and exposed the two ends of the popliteal. Following this operation there was trophic disturbance and it looked as though the leg would drop off — blebs, bullae, etc., and ulcerations occurred. In this crisis it occurred to me that I might do a neuroplastic operation, so I exposed the nerve and brought the fibers to the end of the popliteal, making first an anastomosis between the external and the internal popliteal. The flap was nineteen inches in length and it bridged the gap. The only thing I did to protect the filaments was to cover over with muscle; this is important I believe. The main effect of this operation was striking. Almost instantly the trophic disturbances ceased and color and animation came back to the leg. In four weeks I attacked the internal popliteal segment and treated it in the same way, bridged it with muscle and got primary union. There was no motion in the leg for some months afterward. One day he began to manifest signs of movement of the toes and this continued and sensation became restored, and after eighteen months the man was able to run and walk, although he had much loss of sensation. With fascial tubulization and utilization of tendons one may get recovery of function, together with sensation and motion by that operation which may seem best to do at the time.

DR. F. W. RINKENBERGER, Los Angeles: I wish to report a case bearing on this subject, showing benefit from the fascial flap. A man was caught in the gears of a motor boat and had his left arm badly mangled, both ulnar and median nerves being severed. We did a primary suture, getting success with the median but failure with the ulnar, paralysis resulting. He had trophic disturbances over the wound, in the skin, for six months. We grafted twice. At the second operation, after removing the cicatricial tissue, the nerve was too short to unite so there was a question in our minds as to the best procedure. The nerve was transplanted from behind the condyle and passed through a tunnel in the pronator group and then a fatty fascial flap thrown around the point of union, leaving the pedicle attached. The man is an ardent sportsman and I had a letter last week in which he said, "Doctor, I am able to handle my gun for the first time and I have more grip." It is too early for a final report as yet, although apparently successful the second time.



Fig. 11.—Histologic preparation of fascia at end of sixteen and one-half weeks. This fascia has undergone no cicatricial changes and is in the same condition as at the time inserted. After this length of time no contraction or replacement of the fascia is expected.

DR. DEAN LEWIS, Chicago: It is a matter of prime importance in nerve surgery to recognize the arrangement of motor and sensory axis cylinders. It seems probable that many of the poor results in nerve surgery are due to our failure to recognize this arrangement. As the degenerated distal sheaths act as conduits for the regenerating axis cylinders, we should have the ends of the fibers in as near a line as possible, for our results will be vitiated if motor axis cylinders pass down the degenerated fibers of sensory nerves. Until we know differently, it is well to preserve this relation, for neurotropism, as far as I know, cannot direct motor axis cylinders into the sheaths of degenerated motor fibers of the distal segment, and we have to depend on good alignment to secure this result. I believe that the good result in Dr. MacKenzie's case is due to the muscular tubulization which he performed when he sutured the muscle about the nerve fibers employed in the neuroplastic operation. Muscle has been used for tubulization, but it has its disadvantages. In the first place, muscle is subject to contraction and relaxation when in action, interfering with the caliber of the tube. A tube can be formed from fascia which will conduct nerve fibers and will not contract. The supply is practically unlimited and the fascia can be removed without interfering with function of the part from which taken — decided advantages over any other kind of autoplastic material.

BOTULISM, AN EXPERIMENTAL STUDY

A PRELIMINARY REPORT *

ERNEST C. DICKSON, M.B.
SAN FRANCISCO

An experimental study of botulism was suggested by the fact that in the investigation of an epidemic which occurred at Stanford University in the autumn of 1913, Wilbur and Ophüls[1] found that it differed from the previously reported epidemics in two important respects, namely, that the poisoning was apparently caused by the ingestion of a salad which had been prepared from home-canned beans, and that on postmortem examination of the only fatal case it was found that there was a widespread thrombosis in the blood vessels at the base of the brain and in some of the small blood vessels in the substance of the brain. Since in previous reports on botulism it has been emphasized that the condition is produced only by the ingestion of spoiled meats, and that the characteristic lesions occur only in the Nissl granules and nuclei of the nerve cells, it was deemed important to determine whether it is essential that animal protein be present in order that the *Bacillus botulinus* may produce its toxin, and whether the lesions are in fact confined to the finer elements of the nerve cells.

The facts that botulism is due to the action of a specific toxin, and that the toxin is produced by the growth of a strictly anaerobic, spore-bearing bacillus

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* From the Division of Medicine of Leland Stanford, Jr., University School of Medicine.

1. Wilbur, Ray Lyman, and Ophüls, William: Botulism, A Report of Food Poisoning Apparently Due to Eating of Canned String Beans, with Report of a Fatal Case, Arch. Int. Med., October, 1914, p. 589.

in a pabulum which contains animal protein, were established by van Ermengem[2] during the investigation of an epidemic which occurred in Ellezelles in 1895. Van Ermengem found that the poisoning had been produced by the ingestion of spoiled ham, and he was successful in reproducing the condition in animals by feeding the ham and by injecting small quantities of the macerated ham. He also found that in the ham and in the spleen of one of the victims there was a large, gram-positive bacillus which proved to be anaerobic and spore bearing. In his further experiments he found that the bacillus itself was not pathogenic to animals which were susceptible to botulism, but that if the bacillus were grown in a medium containing meat a toxin was formed which produced the symptoms. The experiments of van Ermengen and others showed that the toxin was produced only under strictly anaerobic conditions, that it was rarely found unless the medium was alkaline in reaction, and that it was rapidly destroyed in the presence of light or air or by heating to 80 C. (176 F.). They noted that the presence of the organism was indicated by a peculiar rancid odor which strongly resembles that of butyric acid.

Botulism has long been recognized as a distinct type of meat poisoning, and many epidemics have been recorded in literature, especially in Germany. It has been most frequently observed after the ingestion of spoiled sausages and so obtained its name. With the exception of Wilbur and Ophüls' series, I have been able to find but one report of an epidemic in which the condition was recognized as botulism and which was proved to be due to the ingestion of spoiled vegetables. An epidemic occurred in Darmstadt in 1904 in which twenty-one persons became ill and eleven died after eating bean salad. Landmann[3] investigated the epidemic and proved that the beans were responsible for the poisoning. He successfully inoculated white mice with salt solution in which the beans had been macerated and he recovered the *B. botulinus* from the beans, but he concluded that the beans must have been cooked with pieces of meat because "it is not possible to cultivate botulinus on other than meat-containing medium." There have been, however, at least two epidemics in California which are of interest in this respect. In 1910, Peck[4] reported a series of eleven fatal cases of "ptomain poisoning" in which death followed the eating of "sour" home-canned pears, and in which the symptoms which he described are very similar to those observed in botulism; and quite recently there was an epidemic in Fallbrook in Southern California in which a diagnosis of botulism was made, and in which the most probable cause of the poisoning was spoiled home-canned apricots.

The symptomatology of botulism has been summarized by van Ermengem as a neuroparalytic symptom-complex with disturbances of secretion, and symmetrical partial or complete motor paralyses which apparently have their seat in lesions of the central nervous system. The first symptoms do not occur earlier than from twelve to twenty-four hours after ingestion of the infected food, although they may appear much later. In contrast to the usual types of food poisoning there is apt to be little evidence of acute gastro-intestinal disturbance, and obstinate constipation is more frequent than is diarrhea. There is usually a decrease, but there may be an increase in the secretion of saliva and of mucus in the mouth and in the throat, and when mucus is present it is extremely viscid. There is early disturbance of the external and internal muscles of the eyes which manifests itself by blepharoptosis, mydriasis, disturbances of accommodation, diplopia and strabismus. General muscular weakness is common. There may be dysphasia or aphonia and there is usually great difficulty in swallowing. The absence of sensory disturbances is characteristic.

The symptoms gradually increase in severity, and when death occurs it is usually from respiratory or cardiac failure, as in bulbar paralysis. When recovery takes place there is a long and tedious convalescence with a slow return of muscular strength. The condition so closely resembles that seen in gelsemium or hyoscyamin poisoning, poliomyelitis, cerebral syphilis and bulbar paralysis, that isolated cases may readily escape recognition, but when a series of cases is seen, and especially if all have partaken of a common article of food, there is usually little difficulty in establishing a diagnosis.

Although the symptoms are essentially those indicative of involvement of the central nervous system, comparatively few brains of human victims have been carefully studied. Almost all of the observations on the type of the pathologic lesions have been made on the brains and cords of animals in which the poisoning has been experimentally produced. Van Ermengen[2] made a careful study of the tissues from the animals of his original series and he described, as the most important lesion, a type of degeneration in the Nissl granules of the ganglion cells. The lesions were most marked in the cord and were almost entirely restricted to the cells in the motor portions of the cord. They were less numerous in the medulla, pons and peduncles, and were almost entirely absent in the forebrain. He also described a hyperemia of the blood vessels in all the organs, and he believed it to be a primary hyperemia because of the presence of degenerative processes in the endothelial cells, and of numerous "microscopically diffuse" hemorrhages in the intestine, stomach, liver, kidneys, lungs, muscles and central nervous system, especially about the cord and medulla. He noted leukocytic infiltration in many of the organs, and early parenchymatous degeneration in some. Marienesco[5] also studied the brains and cords of the animals of van Ermengem's series and his findings agreed with those of the latter. The lesions of the Nissl granules seem to have attracted the most attention, and their occurrence was confirmed by Kempner and Pollack,[6] Römer and Stein[7] and Ossipoff,[8] although the latter author made the additional observation that within the hyperemic blood vessels, as well as on the outside, there were many white blood corpuscles, and that within the blood vessels these leukocytes were often "bunched in masses."

In the examination of the tissues of the patient who died in the Stanford University epidemic, Ophüls[1] found a well-marked thrombosis of the vessels of

2. Van Ermengem: Ztschr. f. Hyg. u. Infectionskrankh., 1897, xxvi, 1; Arch. de pharmacod., 1897, iii, 213, 499; Handb. d. path. Microorg., Kolle und Wassermann, 1912, iv, 909.
3. Landmann: Hyg. Rundschau, 1904, xiv, 449.
4. Peck: South. California Pract., 1910, xxv, 121.
5. Marienesco: Presse méd., 1897, v, 43.
6. Kempner and Pollack: Deutsch. med. Wchnschr., 1897, xxiii, 505.
7. Römer and Stein: Arch. f. Ophth., (Graefe's), 1904, lviii, 291.
8. Ossipoff: Ann. de l'Inst. Pasteur, 1900, xiv, 769.

the meninges and of the brain, a type of lesion which had not previously been described. Thrombi were present in the right vertebral artery, in the basilar artery and several of its branches, in the veins around the medulla and pons, and in the vessels of the tela choroidea. There were also thrombi in many of the blood vessels in the substance of the stem, some of them being in close proximity to the important nuclei. The thrombi contained much fibrin and many leukocytes but there were very few conglutinated blood platelets. In the cortex of the cerebrum there was marked hyperemia but no thrombi. The Nissl granules appeared to be normal. There was marked hyperemia of the abdominal viscera. One small thrombus was found in a vein of the intestinal submucosa and a few in the cortex of the ovaries, but there was no evidence of a general tendency to thrombosis.

The normal habitat of *B. botulinus* is not known, although Kempner and Pollack[6] succeeded in cultivating the organism from pig's feces. It is of interest that in the reports of two of the California epidemics it was noted that the people lived in unhygienic surroundings, and that pigs were kept near the house, but it is impossible to say whether this had anything to do with the contamination of the foodstuffs.

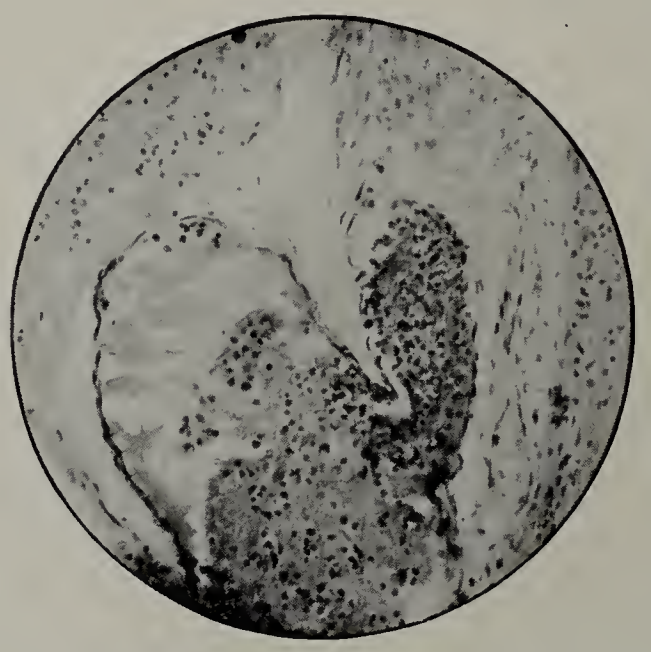


Fig. 1.—Thrombosis in vein in deep sulcus of cerebrum of Cat 35. Note the large number of leukocytes which are enmeshed in the fibrin. (Toxin from canned beans.)

As I have already stated, the object of our experiments was twofold: first to determine whether it is possible for the toxin of botulism to form in a vegetable medium, and second, to see whether the lesions that result from the intoxication are confined to the nerve cells of the central nervous system. The first series of experiments were carried out as follows: About 1 c.c. of a suspension of *B. botulinus* in normal saline was injected through a nail-hole in the tops of cans of string beans which were then resealed with solder. The beans were obtained from a grocery store and were high-grade, one-quart cans, and the strain of *B. botulinus* was obtained from the New York Museum of Natural History. The cans were allowed to incubate at room temperature for periods of from three to twelve months, after which they were opened, the reaction of the contents was tested in nearly all cases, aerobic and anaerobic cultures on various mediums were made, and portions of the fluid from the cans were injected into guinea-pigs, rabbits and cats.

In order to supplement the first series of experiments another series was undertaken in which infusions of canned string beans, canned peas, pork and beef were inoculated with the same strain of *B. botulinus* as was used in the first experiments, and with another strain which was obtained from Prof. Hans Zinsser of Columbia University. In the second series the mediums were made alkaline to phenolphthalein, and about 1 per cent. of glucose was added as was recommended by van Ermengem. Anaerobic conditions were produced by covering the fluid mediums with a thick layer of liquid petrolatum. The cultures were incubated at from 22 to 28 C. for from three weeks to two or three months. The meat infusions were used to determine whether the toxin which was produced in a meat medium would produce the same type of lesions as that which was produced in a vegetable medium. The inoculations were made in the same species of animals as were used in the first series.

In Series 1, twelve cans of beans were inoculated in the manner described, but four of them were later discarded because four of the control animals died shortly after they had been inoculated with fluid from the cans. It may be stated, in passing, that the cause of death in the four control animals was not ascertained. The reaction of the contents of the cans after incubation ranged between 1.7 and 3.2 per cent. acid to phenolphthalein, the majority varying from 2 to 2.5 per cent.[9] From six of the cans *B. botulinus* was recovered in pure culture. Sixteen guinea-pigs, 16 rabbits and 13 cats were injected with the fluid from the cans, and of these, 4 guinea-pigs, 7 rabbits and 5 cats died as a result of the injections. A number of the animals showed some symptoms for a few days after injection but eventually recovered. Of the 16 animals which died, 13 (3 guinea-pigs, 6 rabbits and 4 cats) showed the characteristic lesions which will be described below.

The proportion of the animals of Series 2 which succumbed to the injections cannot be given at present as the experiments are not yet completed and there are still a number of animals under observation However, there are 22 cases in which death occurred after inoculation and which show the same type of lesions as was found in the animals of Series 1. Of these, 1 guinea-pig, 1 rabbit and 2 cats were injected with infusion of canned string beans, 2 guinea-pigs and 1 cat were injected with infusion of canned peas, 3 guinea-pigs, 3 rabbits and 4 cats were injected with beef infusion and 2 guinea-pigs and 3 rabbits were injected with pork infusion.

Van Ermengem has described the symptoms of botulism in animals as follows: In rabbits the appearance is that of a more or less marked local or general paralysis. The animals remain motionless with the front legs stretched out, the hind legs drawn close to the body and the head turned to one side. Respiration is shallow and stertorous. The pupils are dilated, there may be exophthalmos, and the nictitating membrane is flaccid. There may be retention of the urine and feces. At times there may be clonic convulsions, and the animal frequently utters a loud cry during the death struggle. In guinea-pigs the appearance is very similar. The first indication of poisoning may be a relaxation of the abdominal muscles which can be easily made out by palpation. The

9. The reaction is given in terms of the standard recommended by the American Public Health Association for the standardization of the reaction of culture mediums.

animals lie motionless with all the legs extended. Frequently in the more chronic cases there is a persistent prolapse of the penis. In cats the symptoms are so characteristic as to be pathognomonic. There is early mydriasis and often paralysis of the lids. There is frequently aphonia, a croupy cough due to the presence of thick mucus in the larynx, dribbling of mucus from the mouth and prolapse of the tongue. There may be retention of the urine and feces and complete anorexia. In the acute cases there may be complete paralysis of the voluntary muscles, but in the chronic cases the paralysis may be local and may persist for weeks. In some cases in which the progress of the condition is prolonged there may be only a progressive cachexia which may persist for weeks.

In the majority of our cases the more acute manifestations of the poisoning were absent and the animals survived for from three to six or seven weeks after the administration of the poison, but a few died within ten days after inoculation, and in these the symptoms corresponded closely to those described by van Ermengem. In the cats especially the symptoms were very noticeable and there was no difficulty in recognizing the symptom-complex that has been described.

At necropsy in the fatal cases the characteristic hyperemia of the abdominal viscera was well marked in nearly all cases, and in a moderate number there was a definite enlargement of the spleen. In a few cases the *B. botulinus* was recovered from the spleen, but as a bacteriologic examination was not made in all cases it is impossible to say in what proportion they may be found. The meninges of the brain were usually congested and occasionally macroscopic hemorrhages were seen. In fact the gross appearance of all the organs was identical with that which has been described by van Ermengem and others.

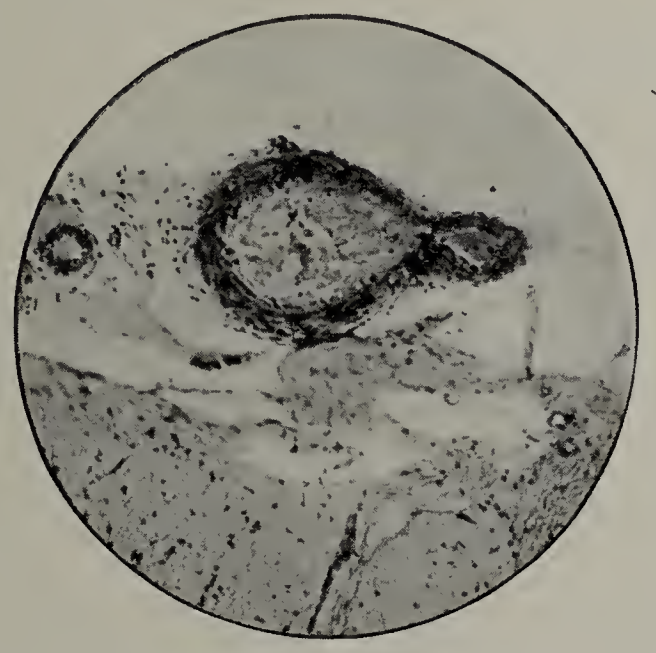


Fig. 2.—Thrombosis in posterior cerebral artery, Guinea-pig 53. (Beef infusion.)

In the present report no attention will be paid to the microscopic pathology of any of the organs excepting the brain and the upper portion of the cord, as the study of the other organs has not yet been completed. In the brain the lesions correspond accurately to those which were observed by Ophüls in the case which he and Wilbur reported. The vessels of the meninges and of the brain are all much congested, and it is not at all uncommon to find large and smaller hemorrhages in the meninges, especially in the folds in the sulci of the cerebrum and the cerebellum. A very frequent seat of hemorrhage is in the dorsal sulcus of the stem beneath the posterior portion of the cerebral hemispheres. At times the hemorrhages are strictly confined to the meninges, but very often they invade the peripheral portion of the brain tissue for varying distances. At times there are also small and larger hemorrhages in the tissue of the brain, and these have been seen in the stem, in the cerebrum and in the cerebellum.

The most striking feature in these cases, as also in Wilbur and Ophüls' case, has been the presence of thrombus in the blood vessels of the meninges, and occasionally of the brain itself. In the case in which but little thrombus is found it is more frequently situated in the veins of the folds of the meninges within the sulci of the cerebellum and the cerebrum or between the cerebrum and the stem. In other cases in which there is more thrombosis, practically all of the large and smaller veins of the meninges as well as many of those in the tela choroidea may be involved. In a fair percentage of cases the arteries also contain thrombi, and in a few cases thrombi are seen in the small vessels in the interior of the brain.

The appearance of the thrombus varies considerably. At times it consists of dense masses of fibrin in which neither leukocytes nor conglutinated blood platelets are seen, but more frequently there are many leukocytes enmeshed in the fibrin so that it appears as a closely packed mass of cells. At times there are masses of conglutinated blood platelets in the thrombus, and in a few cases there are masses of conglutinated blood platelets in which leukocytes are embedded in places where no fibrin is seen. The appearance of these masses corresponds closely to the description of the masses of leukocytes which were described by Ossipoff.

The appearance of the lesions differs to a certain extent in each of the species of animals that was used, although, on the whole, there is a remarkably close resemblance in all. In the guinea-pigs and in the rabbits there is much greater tendency to hemorrhage than in the cats, and in the cats there is much more marked infiltration with leukocytes than in the guinea-pigs and rabbits. However, the difference is not very clearly defined and in some of the animals of all the species the lesions are practically identical.

The extent of the distribution of the thrombosis has not yet been determined. Thrombi have been seen along the upper portion of the cord, along the pons and medulla, in the meninges of the cerebellum and in the meninges of the cerebrum. Complete examination of the whole of the central nervous system has not yet been made, but it seems probable that the lesions which occur are secondary to disturbances of blood supply. That certain groups of vessels are usually involved is indicated by the uniformity of the clinical symptoms, but there seems to be no doubt that lesions may be found in any part of the central nervous system, their location being dependent on the more or less accidental distribution of the thrombosis. It has not as yet been ascertained that the thrombosis is restricted to the vessels of the central nervous system. Further study of the different organs of the body is necessary before this point can be settled.

In Series 1 of these experiments in which it has been shown that the toxin of botulism may develop in peas and beans in which the *B. botulinus* has grown, the significance is very evident. Leuchs[10] recorded that Professor Gaffky had told him that he had succeeded in growing the Darmstadt strain of

10. Leuchs: Ztschr. f. Hyg., 1910, lxv, 55.

B. botulinus on a bean medium, and that the toxin had been produced, but I have been unable to find any detailed description of Gaffky's experiments, and it has not been generally understood that such experiments have been performed. The prevailing impression concerning botulism is that the toxin is produced only in the presence of animal protein and in an alkaline medium, and that there is no danger of this particular type of food-poisoning from the ingestion of spoiled vegetables and fruits. The danger of improperly prepared canned meats is so well known that few people attempt to prepare them at home, but the canning of fruits and vegetables is thought to be perfectly safe, and large amounts of fruit and vegetables are canned at home each year. That the methods of sterilization in home canning are inadequate is shown by the fact that it is not at all uncommon for the housewife to find that some of the cans of fruit and vegetables have spoiled. The U. S. Department of Agriculture[11] has issued bulletins in which is emphasized the importance of fractional sterilization of all canned goods which are preserved at home. In canning factories where the danger of contamination with spore-bearing bacteria is understood and where sterilization is done with steam under pressure, there is little danger of contamination, but when the material in the cans is subjected to a single sterilization with live steam, there is very grave danger if the food or the cans happen to contain spores.

That canned goods form an ideal location for the growth of the *B. botulinus* and for the development of the toxin, there can be no doubt. The organism is an obligative anaerobe which forms its toxin best in the dark and at a temperature of from 22 to 28 C. (71.6 to 82.4 F.). The spores resist a temperature of 85 C. (185 F.) for nearly half an hour, and it is extremely doubtful whether in the ordinary method of steaming the cans for an hour, or even more, in a loosely covered wash-boiler, the temperature in the centers of the cans is maintained at a point sufficiently high to kill the spores.

The important facts that have been established in the first series of experiments are two in number; first, that the toxin of botulism may develop in a vegetable medium to which no meat has been added, and second, that the acidity of the ordinary canned vegetables does not prevent its formation. The investigation has thus far been restricted to canned string beans and canned peas; but if we can accept the evidence of the two series of cases in Southern California, there seems to be little doubt that certain fruits as well as certain vegetables may furnish suitable pabulum for the development of the toxin.

The demonstration of the thrombosis in the blood vessels and of the hemorrhages in the meninges and in the brain is of more purely academic interest. Their presence indicates that there must be some specific action on the circulatory system which causes increased permeability of the vessel walls and which promotes thrombosis. Whether there is a primary damage of the endothelial cells, as was suggested by van Ermengem, remains to be proved, but whatever may be the explanation for the changes which occur in the blood vessels, there is little doubt that the changes which are found in the structure of the nerve cells are secondary to diminution of the blood supply. One can much more readily understand the variations in the clinical course of patients affected with botulism on the basis of local disturbances of blood supply than on that of specific damage to certain groups of nerve cells. The fact that, as a rule, the majority of patients recover may depend on the fact that a fatal termination is dependent on the accidental location of the thrombus in vessels which provide the blood supply to those portions of the brain which contain the vital centers. It is significant that in the experimental cases in which the subject succumbed most quickly there was a much more widespread thrombosis than in others in which death followed more slowly. It may well be that in the more virulent epidemics a larger number of the vessels are affected and that there is therefore greater chance of the vital centers becoming involved.

11. Bull. U. S. Dept. Agric., Farmer's, Nos. 262 and 359.

CONCLUSIONS

1. The presence of animal protein is not essential for the development of the toxin of botulism.
2. The toxin may be produced in a medium made from string beans or from peas.
3. An acid reaction of as much as 3.2 per cent. to phenolphthalein does not prevent the formation of the toxin.
4. The toxin produces some disturbance of the circulatory system which leads to hyperemia and hemorrhages in the meninges and in the central nervous system, and to thrombosis in the arteries and veins of the meninges and of the central nervous system.
5. The lesions in the nerve cells are not due to a specific action of the toxin on the cell protoplasm, but they are secondary to disturbances of blood supply.

THE EARLY DIAGNOSIS OF MASTOIDITIS*

JOHN J. KYLE, M.D.
LOS ANGELES

There is no experience in the life of the otologist that is more pathetic than to be called in consultation a few weeks after the onset of an acute purulent inflammation of the middle ear, to find a patient with a history of recurrent chilly sensations, temperature from 100 to 105 degrees, anxious expression, clammy skin, symptoms of a lateral sinus involvement, or to find the patient with a rapid pulse, high temperature, headache, contracted pupils, anxious look, often delirious, and symptoms sometimes of meningitis. In either condition the prognosis is grave, and in the latter more so than in the former. I want to go a little further than the subject implies, and discuss indications for early operation and say a word about who should operate.

It may be stated that the earlier a case of mastoiditis is detected and given operative treatment, the earlier and more complete the recovery, and more positive the preservation of normal hearing during the life of the individual. It is remarkable the number of cases of so-called catarrhal deafness and middle ear sclerosis that apply for treatment, showing scar tissue in the drum membrane, evidence of a discharging ear at some time in life, many times the early occurrence of the disease having been forgotten. There is a class of patients with partial or complete absence of drum

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

membrane and ossicles, the result of suppuration and healed mastoid, and progressive deafness. Many such patients come for relief at the productive years of life and are dependent from an economic sense on good hearing. There is an unusual indifference both among physicians and the laity in regard to the danger of a discharging ear. Advisedly speaking, those with a chronic discharging ear submit to an operation only when pain or one of the severe complex symptoms of a chronic mastoiditis drives them to consult an aurist.

The uniform good results in the hand of the man skilled in surgery of the mastoid are not appreciated except by a few. Otherwise, many who attempt the operation would do so only under exceptional conditions. Among the bad results that not uncommonly follow operation by those not familiar with surgery of the mastoid are deformity, slow healing often extending over a number of years, facial paralysis, and persistent discharge from the auditory canal. Such a series of bad results can be nearly completely pre-

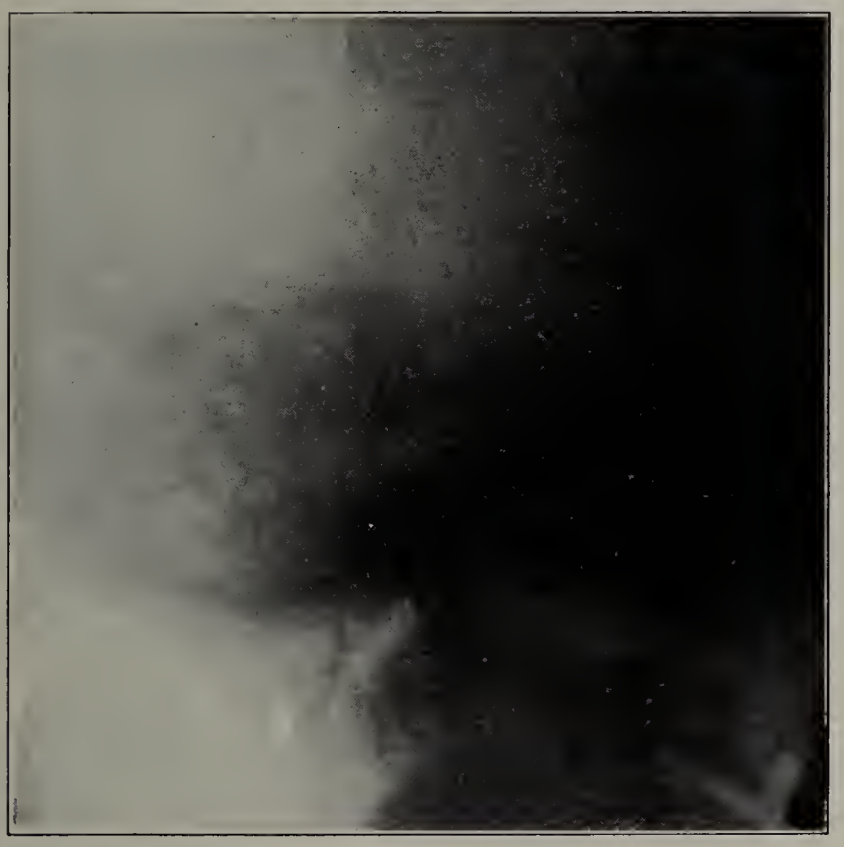


Fig. 1.—Area of light indicates normal cells; irregular areas of dark shadows are cells filled with fibrous exudate. Compare with normal mastoids shown in Figures 3 and 5.

vented by educating the public to a knowledge of the results obtained by the skilled otologist, as compared to the general surgeon who has performed but few such operations.

The surgery of the ear, nose and throat owes its advance to skilled men and specialists in these regions, and no one not prepared for such work by a skilled preceptor should be permitted by public opinion to undertake major operations. It is my custom in lecturing to a senior class to dwell on the symptoms and diagnosis of mastoid disease, ignoring altogether any reference to the surgical technic of mastoidectomy. There is no excuse for the young graduate being imbued with the idea that the day he enters the profession he is prepared to do such operations as a gall-bladder, a thyroidectomy or a mastoidectomy.

During the past winter I have operated in three cases in which the surgeon had failed by lack of special training. One case was an attempted cure of a chronic mastoiditis with cholesteatoma by doing a simple mastoidectomy. Another was a Wilde incision for the relief of an acute purulent mastoiditis.

The foregoing observations have a bearing on the title of the paper, for I want to recall some of the



Fig. 2.—More distinct light areas than in Figure 1; exudation into cells not so profound as in Figure 1, though recovery much slower.

early symptoms of mastoiditis and the good results which attend early surgery by surgeons who are especially trained.

The question has been asked me, "When does a case of mastoiditis become an emergency operation?"



Figure 3.—Normal mastoid cells. Cells and septa white and distinct.

The time to operate in a case of acute mastoiditis is as soon as the diagnosis is established. This does not mean that all patients will submit to operation, or that a case of acute mastoiditis will not recover apparently without operation.

Probably in every case of middle ear abscess with spontaneous rupture of the tympanic membrane, and likewise most cases when paracentesis is delayed, more or less involvement of the mastoid has occurred,



Fig. 4.—Mastoid cells obliterated by a process of eburnization. No white spots or cells visible as in Figure 3, the opposite mastoid.

and in the beginning is a serous or seropurulent exudate and sometimes pus. The cases that recover most rapidly after operation are those in which operation is performed before bacteria have invaded the serous or seropurulent exudate. If an early operation is

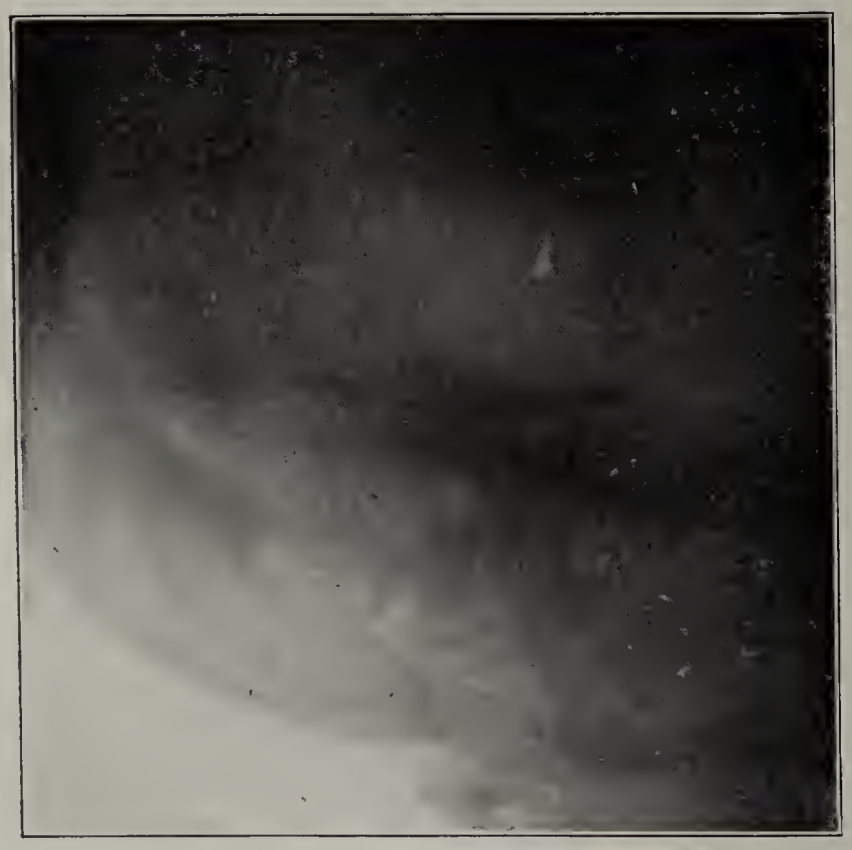


Fig. 5.—Normal mastoid. Septa separating cells distinct.

worth anything, how are we to know when a case will recover without operation, and when operation is indicated?

Many cases of mastoiditis recover without operation, and recovery is hastened by early paracentesis. It may be said that a mastoid with an infection, going to spontaneous recovery, is more liable at some future time to become the focus of a new infection, than a mastoid that has never been involved. This remark is based on the observation that a number of cases in which operation is performed for acute mastoiditis show an unusual amount of cell obliteration, which is not normal or due to the sclerotic changes of age, and must have been due to old inflammation. The amount of bacteria found in the exudation from the middle ear after a paracentesis will aid in forecasting in a measure the final outcome. Absence of bacteria, or very few, in the very beginning of the disease is favorable to early recovery. A mixed infection indicates a probable extension of the disease to the antrum and mastoid cells.

The less tension of the pus in the middle ear and antrum shown by the absence of pulsation in the secretion as it flows from the opening in the drum membrane, the less liability of involvement of the mas-

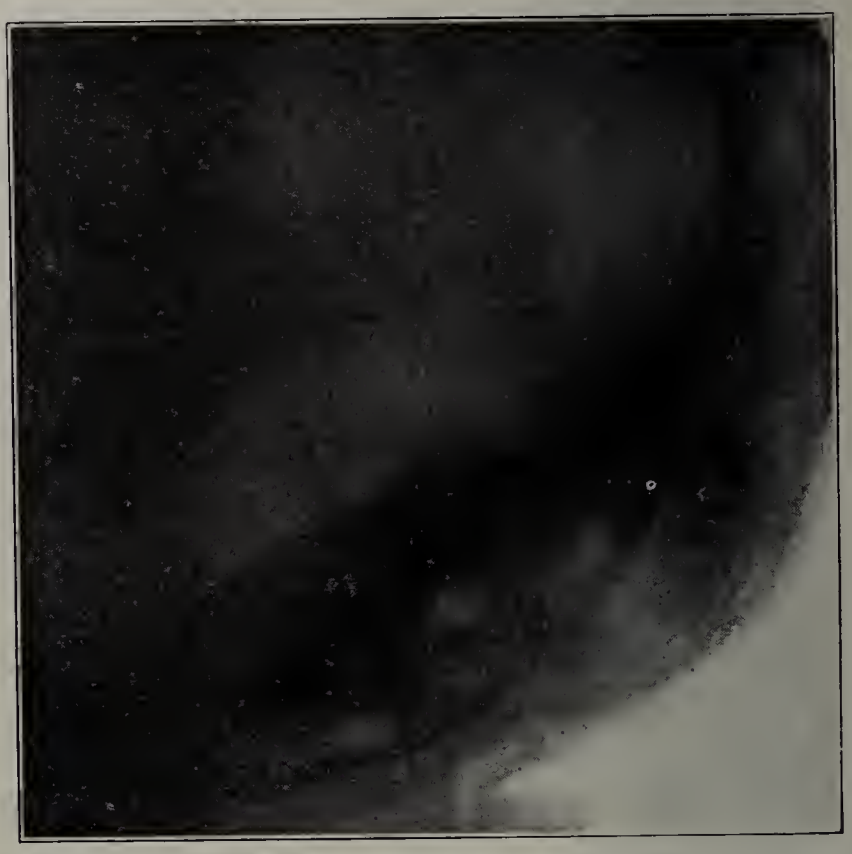


Fig. 6.—Round white spot is the external auditory canal. Posterior bony wall destroyed as described in text. Darkened area to right of canal is mastoid cavity filled with cholesteatomas.

toid cells. The more pronounced the tension as shown by pulsating discharge from the middle ear, the more possible the mastoid involvement, and in consequence the more certain are the indications for early operation. Temperature in simple middle ear infection after paracentesis or spontaneous rupture of the drum should disappear very quickly. If it persists, the mastoid is involved.

Tenderness in some regions of the mastoid is a valuable sign, but may be absent even when the mastoid cells are full of pus. Pain in some region of the head on the affected side is usually present.

The two most valuable signs of mastoiditis are pulsating discharge from the middle ear, and temperature. With these symptoms a case may go to spontaneous recovery in from ten days to two months. Nevertheless, these two symptoms alone should suggest early operation.

The diagnosis of a chronic mastoiditis is often more difficult than the diagnosis of an acute mastoiditis.

Those with chronic discharge in all probability have, if not some active process in the mastoid, some disease of the antrum. The destruction of bone may be all out of proportion to the clinical signs. Continued pain on the side of the head, with or without temperature, and a history of discharging ear at some time on that side, is highly suggestive of a diseased mastoid. Blood examination of either acute or chronic mastoiditis as a diagnostic aid is of some value, but cannot change the clinical or Roentgen-ray signs, and in consequence is unnecessary from a practical standpoint. In those cases in which vaccine therapy may be contemplated, its value is inestimable.

The value of the Roentgen ray in the hand of an experienced roentgenologist, as an aid in determining any involvement of the mastoid cells, is beyond dispute. This method of diagnosis for years has had the indorsement of leading otologists. In spite of their advice, very few men in our specialty are employing this method of diagnosis today. The interpretation of



Fig. 7.—Semicircular canals and cochlea unfortunately do not show distinct in picture. Plate exhibited at meeting of section showed superior and horizontal canals and cochlea clear and distinct. Picture taken anteroposterially.

plates should be by the otologist and not by the roentgenologist. The clinical experience of the roentgenologist is in but few cases sufficient for him to recognize other than that the mastoid is abnormal. The clinician may be able to tell, in comparison with the normal mastoid, whether a mastoid is filled with a hemorrhagic exudation, pus, cholesteatoma or sclerosed bone. A subperiosteal abscess alone or accompanying a mastoiditis may sometimes be diagnosed. The position of the head on the plate will govern the value of the picture. The head should be inclined at an angle of about 25 degrees. For comparison it is necessary to take a picture of both mastoids, and unless this is done, in many cases a diseased mastoid may be passed as a normal mastoid. Many of the cells may look so distinct that cloudiness is detected only by comparison.

The Roentgen ray will show advisedly a condition often observed in a mastoid going to spontaneous recovery and, after the drum membrane has healed, a remaining exudation in the cells, with a beginning sclerosis of the cells or eburnization. This is a pathologic change that subsequently produces a deafness.

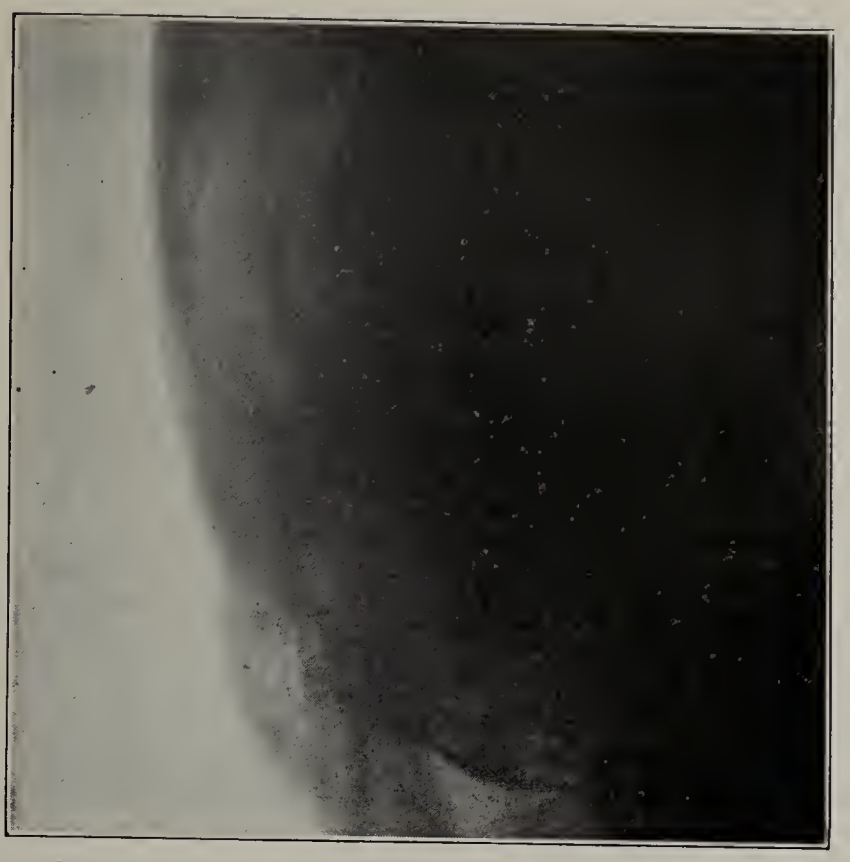


Fig. 8.—Normal mastoid, anteroposterior view.

The deafness may be so slight that the patient makes no complaint, but in after years the deafness becomes perceptible. A careful examination at time of recovery will demonstrate often a loss of both air and bone conduction.

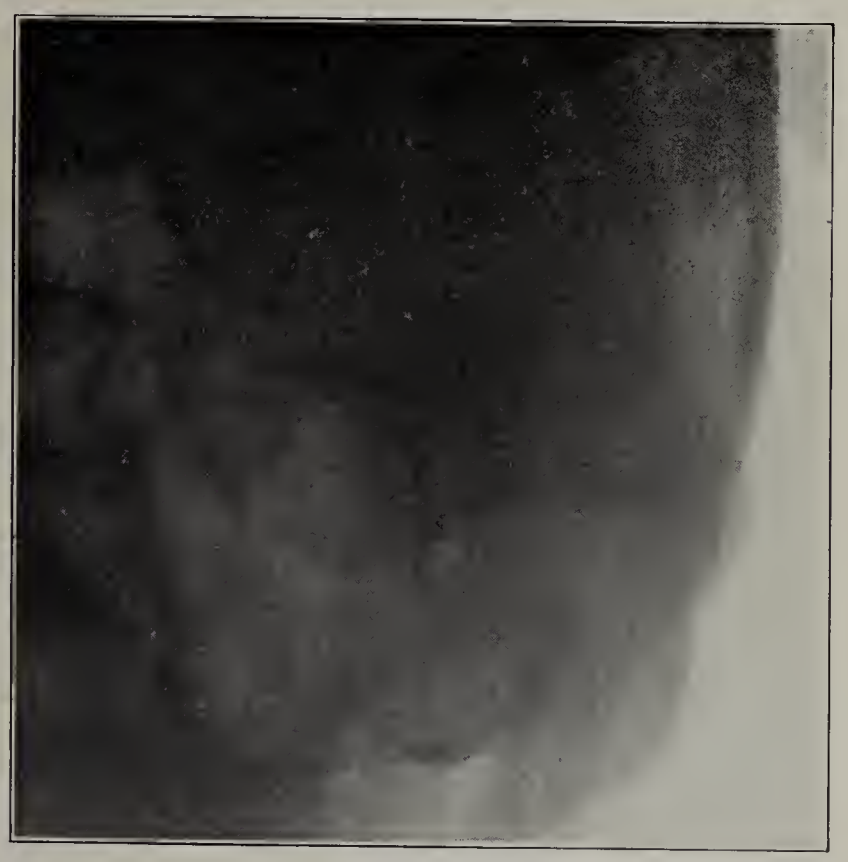


Fig. 9.—Opposite mastoid as shown in Figure 8. Cloudiness of mastoid due to sclerosis from old mastoiditis at time of operation; dura in region of mastoid thick and hyperemic; evidence of old localized meningitis.

Figures 1 and 2 show the right and left mastoid cells of a patient having recovered from an acute double middle ear abscess, the symptoms of double mas-

toiditis. The right healed at the end of fourteen days and the left at the end of the fifth week. That is, the perforations were closed, and active inflammation in both ears had disappeared. These two pictures were

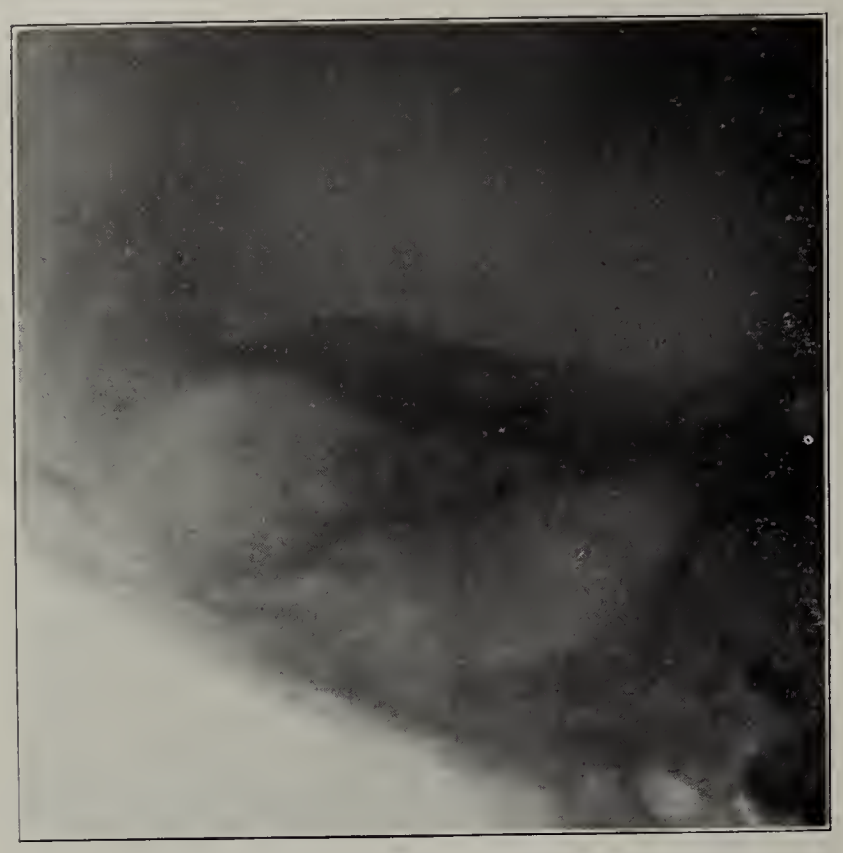


Fig. 10.—Large whitish area to the left is region of excavated mastoid. To the right are three distinct white spots indicating remnants of lateral sinus.

taken at the same time, and at the end of the eighth week.

Examination of the plates shows a cloudiness obscuring most of the cells except those at the tip of



Fig. 11.—Normal mastoid.

the right side. In the left a condition of cloudiness exists, less than half as much as on the right side. In this man there is a slight loss of both air and bone conduction, and more pronounced on the side that first recovered and on the side with the cells most obscured. There will probably be in this case a slow progressive deafness.

In the beginning, every precaution was taken to avoid serious consequences by doing a double paracentesis the day following the onset of the disease. Drainage was as near perfect as possible from the middle ear. The disease had affected the mastoid cells before paracentesis had been performed.

Figures 3 and 4 are the normal and abnormal mastoids of a patient who had suffered from an acute exacerbation of a chronic mastoiditis, and was treated for years as a simple discharging ear. She had had numerous attacks of severe earache, that in time disappeared. The roentgenogram shows all the cells diseased, and operation disclosed a complete sclerosis of the mastoid, a condition that had been in development since the beginning of the first middle ear infection. This patient developed facial erysipelas the fourth day after the operation.

Figures 5 and 6 are the normal and abnormal mastoid process in a patient with a chronic discharging ear,



Fig. 12.—Appearance of opposite mastoid forty-eight hours after onset of an acute otitis media purulenta. Leaflike blur on plate points to obliterated mastoid cells.

temperature and postauricular fistula. The plate of the abnormal side, as compared with the right and normal, shows an abnormally large auditory canal, all out of proportion to the normal. The mastoid process, on operation, was found completely filled with cholesteatoma. The operator had allowed the posterior cartilaginous wall to remain, as well as the annulus tympanicus.

Figure 7 demonstrates the possibilities of the Roentgen ray in examination of young children in supposed involvement of the semicircular canals and cochlea, in congenital or acquired diseases. In the illustration the superior and horizontal canals, as well as the cochlea, are shown.

Figures 8 and 9 show a sclerosed mastoid producing intense pain in the occipital region, history of a discharging ear at one time, drum intact and retracted, color of drum normal, scar in posterior quadrant of drum; heard whisper on contact. External clinical

symptoms not clear as to the mastoiditis. Roentgen examination gives a complete and unquestionable diagnosis of mastoid involvement, and operation disclosed pus in the antrum and a few adjacent cells. This is a case illustrative of many apparently spontaneous cases of a discharging ear that in the beginning of the infection should have had the mastoid drained, and also that we now and then find pus in a mastoid with an intact drum.

Figure 10 is a picture (taken eight weeks after operation) of a boy aged 13, a sufferer when 10 years of age from an acute discharging ear followed by what was pronounced meningitis and abscess of the lung. The ear continued to discharge up to the time of operation. The symptoms at time of operation were those of an acute exacerbation of a chronic mastoiditis. The interesting feature of this case was the complete obliteration of the lateral sinus found at operation. Obliteration of the sinus had probably taken place years before and at the time of the lung abscess. This is among the rare cases that now and then come to the otologist.

Figures 11 and 12 are the normal and abnormal mastoid taken forty-eight hours after the onset of an acute middle ear abscess, and four days after doing a submucous resection of the septum. In Figure 12 the mastoid process is cloudy, but unless compared with the normal mastoid, might pass for normal.

IDIOPATHIC MASTOID ABSCESS*

VIRGINIUS DABNEY, M.D.

Fellow of the American College of Surgeons; Chief of Clinic, Episcopal Eye, Ear and Throat Hospital; Oto-Laryngologist, Washington City Orphan Asylum; Otolaryngologist, Bruen Home for Children

WASHINGTON, D. C.

The term "idiopathic mastoid abscess" I wish to be understood as meaning an abscess in the mastoid process of the temporal bone without any immediately preceding or accompanying inflammatory involvement of the tympanum. It will be observed that the definition is made particularly restrictive in that it specifies merely inflammatory involvement, not abscess, of the middle ear, as there are many cases in which it would be difficult to demonstrate an actual abscess, and yet the mastoid disease would still be plainly an extension of the tympanic inflammation. Similarly, the term "primary mastoiditis" is not used here, save in reference to other observers' reports containing it, where the meaning is the same as meant by me. A primary infection is taken in so many different ways when used in reference to infections elsewhere in the body that it seems an undesirable designation in this connection.

Perhaps the chief reason that many observers have honest and firmly fixed doubts as to the entity of the affection is that they are unable to conceive of an infective agent traveling through the tympanum without creating any inflammatory disturbance there, and yet setting up in the mastoid cells this disturbance only after entrance through the aditus. Such an opinion is to be regarded as reasonable but lacking in that medical imagination without which some of the best creative work in pathology and preventive medicine would have remained undone. The oropharynx and nasal cavities are normally rich in bacteria, yet how seldom, relatively, do they produce any infectious disorder, though few of us would be so radical as to deny the idiopathic feature in ordinary otitis media merely because there was no such process in the pharynx. For practical purposes the connection between the tympanum and the pharyngeal orifice of the Eustachian tube on the one hand and the tympanum and the mastoid cells on the other are quite as intimate and analogous. Moreover, it has been shown microscopically and biologically that the tubercle bacilli in passing through the faucial tonsil to set up a typical tuberculous cervical adenitis leaves rarely, if ever, any tuberculous disease in that tonsil. The analogy is a fair one to offer in support of the theory presented in this paper. According to Lévi,[1] Zaufal of Prague has demonstrated frequently in necropsies that the mastoid cells can undergo necrotic and inflammatory changes without the middle ear being involved. It is my impression that Zuckerkandl also has done this in over a hundred cases.

While the theory of infection through the blood stream is impossible of proof, it seems so reasonable to Chauveau[2] that he reports four cases with that etiology, and de Santalo[3] supports both theories of infection with considerable force. However, while I see nothing to make the hematogenous theory of infection unworthy of acceptance, it is but fair to state that it is generally believed by those who concede an entity to idiopathic mastoiditis that the causative organism begins its journey in the oropharynx, proceeds through the tube to the tympanum without finding conditions favorable for growth or without having been virile up to that time, and finally arrives in the mastoid cells by way of the aditus. Here, the blood supply being poor and the cavity practically a closed one, the conditions are ideal for its suppurative activity. The rapidly ensuing tumefaction of the mucoperiosteal lining of the antrum, whose power of distention can be fairly stated to be enormous, renders the cavity a true closed cavity, as it causes the lining of the aditus to swell, completely closing this sole entrance into the antrum. With a truth more apparent than real, it is asserted that the inflammation of the tympanum may be so slight and transient as to escape notice and lead to the erroneous belief that none existed, but it seems impossible for any inflammation to exist in the middle ear without causing one or more of the following symptoms, which would be noticed by the patient or by those about him. I refer to pain, discomfort, "fulness in the ear," tinnitus, autophony and impaired hearing, slight but perceptible. However, the most convincing argument as to the possibility of the infection of the mastoid by the blood stream is furnished by a study of osteomyelitis, which attacks bone of the same kind as the mastoid apophysis. It is undisputed, I take it, that the cause of osteomyelitis is, as a rule, some infective organism, but, as Adami[4] puts it, "the causal agents reach the affected part either directly or through the blood stream." There can be no evading the issue made by this statement, nor that raised by the additional broad doctrine that "inflammation of bone may be brought about by local or systemic causes." Thus, it would appear that the

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Lévi: Cong. Internat. d'Otol. et de Laryng., 1889, p. 33.
2. Chauveau, C.: Arch. Intern. de Laryng., 1906; de Santalo, ibid., January-February, 1913.
3. De Santalo, A. M.: Bol. d. Laryng., January-March, 1913, p. 45.
4. Adami and Nicholls: Principles of Pathology, 1910, ii, 1020.

hematogenous theory of mastoid disease rests on sound, scientific authority.

Pierce[5] reports a case of true primary mastoiditis, though the hearing tests he uses might well obscure the validity of his claim as to the primary element. However, his feeling that the absence of pus in the middle ear establishes his case cannot be accepted as good ground for his belief in the particular instance cited, either by the definition which guides this paper, or by any other scientific standard of accuracy. The existence of a serous exudate, or of the catarrhal inflammation normally preceding this transudation should act as a bar to the classification of the accompanying mastoid infection as a primary inflammatory process, as either is but the initial stage of the infective condition. It is exceedingly doubtful if any otitis media, or any mastoiditis, is ever purulent from the very beginning, as it is pathologically impossible to conceive of the elimination here of the first stage of catarrhal inflammation. Brief though this be, it must be accepted as occurring; consequently, anything that suggests inflammatory invasion of the tympanum, even so slight as a congestion of the membrani tympani, should be held a good reason to exclude the primary, or idiopathic, element, from any mastoid abscess that may ensue. Such is the principle on which the accompanying table of cases has been prepared, and will account for the exclusion of many reports. Thus, one of Greenstreet's two cases at best could never attain to a better position than the doubtful column (I have rejected it), as there was a marked "sagging of the membranous canal," ten days after a heavy feeling in the head. Apparently there was a tubotympanic infection and attic involvement, even though the drum was normal. The trauma accompanying two efforts to remove a jaw tooth, in the process of which it was broken, and the gum lacerated, would appear to have set free infective material which gained the mastoid in a case reported by Humblet.[6] While the antrum showed no secretion, yet the mastoid cells were soft and friable, though it required three operations to lay bare the true cause of the patient's chief complaints, tinnitus, nausea and vertigo, a serous labyrinthitis. De Stella[7] reports a similar case, in which two teeth were drawn with mastoiditis following. He mentions von Anrooy's case of primary mastoiditis due to a cow's kick. I have not been able to verify it in the literature.

In reviewing the cases he had seen reported, de Santalo[8] feels compelled to cast doubt on the primary nature of the infection in two of the four cases reported by Labarre, in which opinion I concur fully. He reports lucidly a true case of his own, and the paper is in its entirety a valuable, well-written contribution to the literature. He subscribes fully to the belief that the route of infection is by way of the tube and tympanum. An intermittently suppurative middle ear causes the rejection of Constantin's[9] case, and Collinet[10] admits that there was probably an acute infection of the middle ear preceding the development of the mastoid abscess in his patient, while Guimani's[11] history leads to the unavoidable conclusion that there was a low-grade inflammation of the tympanum just before the mastoid complication. Scrutiny of the histories of many of these reports induces the reflection that they are frequently misleading and inadequate, though without any such intention, I feel sure. The omission of so slight a symptom as tinnitus, or slightly impaired hearing, would make all the difference between exclusion and inclusion of the case in the list of idiopathic mastoid abscesses. However, an otologist who reports inaccurately and loosely a disorder in which the minutiae of history constitute an indispensable means of differential diagnosis must suffer the penalty of having the claims of his case rejected in such an investigation as this.

The cases of Toubert,[12] Ayres,[13] Krepuska[14] and those in the North London or University College Medical Reports[15] do not conform to the definition of true idiopathic mastoiditis, as they severally are complicated by tinnitus, deafness, otorrhea of recent origin or suppurative chondritis of the cartilaginous canal. Fulton,[16] in reporting two cases (only one of which is a true one) says all primary cases are not necessarily suppurative. In attempting to substantiate this statement he gives the history of a case which showed no pus at operation. However, accepting the history entirely as given by him, his case was one which we have come to designate as a "hysterical mastoid," inasmuch as the pain was the only symptom and this disappeared, after the operation, which showed not only no pus in the entire process, but absolutely no disease of any sort. The cells were dry, and the antrum also. Snydacker[17] attempts to shed some doubt on the validity of Dunn's[18] claims in the presentation of his case, basing his belief on the presence of an influenza and tonsillitis with a serous discharge in or about the pharyngeal orifice of the tube. However, the case is a good example of this rare condition, none the less. While confessing that he has never seen a patient suffering from a primary infection of the mastoid apophysis, limited to the cells there, Heiman[19] in an able treatise assigns to cold, rheumatism, syphilis and trauma the rôle of causation in what he terms periostitis of the mastoid process.

This leads to the consideration of a series of cases called by the early observers primary periostitis of the mastoid, all of which seem properly to belong to the class of mastoid abscess under discussion here, though the histories do not justify any dogmatic assertion on this point. In 1879 Webster reported three cases of this sort in Agnew's[20] clinic, one of which was bilateral, and thought his report was the first. However, I have found that Pierce[5] in 1875 and Knapp[21] in 1876 each made similar reports. Despite his designation of the disease as a periostitis, it is interesting to note that he gives the cause as some pyogenic organism from the oropharynx which has made its way through the tube into the tympanum and mastoid. Burnett[22] in 1880 was followed by Williams[23] in 1884 in the reporting of a case, but Gruening's[24] case showed a well-marked acute middle-ear involvement, and must be classed not

5. Pierce, F. M.: Lancet, London, 1875, i, 11.
6. Humblet: Le Larynx, May, 1913, p. 136.
7. De Stella, H: Le Larynx, April, 1913, p. 97.
8. De Santalo, A. M.: Arch. internat. de laryng., January-February, 1913, p. 104.
9. Constantin: Quoted by de Santalo, Note 8.
10. Collinet, P.: Bull. de laryng., otol. et rhinol., August, 1905, viii, 211.
11. Guimani: Ann. d. Laryng., November, 1908.
12. Toubert, J.: Arch. internat. de laryng., 1900, xiii, 384.
13. Ayres, S. C.: Arch. Otol., 1890, xix, 95.
14. Krepuska, G.: Orvosi hetil., 1898, xlii, 309.
15. North London or University College Hosp. Rep., 1889, p. 36.
16. Fulton, J. F.: Tr. Ninth Internat. Med. Cong., 1887, iii, 825.
17. Snydacker, E. F.: Arch. Otol., 1902, xxxi, 378.
18. Dunn, J.: Arch. Otol., 1902, xxxi, 178.
19. Heiman, T.: Internat. Otol. Cong., 1899, Lond., 1900, vi, 208.
20. Agnew, C. R., and Webster, D.: Arch. Otol., 1879, p. 68.
21. Knapp, H.: Cong. Internat. Otol. Soc., September, 1876, p. 80.
22. Burnett, S. M.: Arch. Otol., 1880, ix.
23. Williams, C.: Arch. Otol., 1884, xiii, 22.
24. Gruening, E.: Med. Rec., New York, 1881, xix, 634.

primary. These seven cases are especially interesting, not only from the fact that one was reported forty years ago, but also by reason of the notable advance made in the treatment and in the surgery of the mastoid. They were all subjected to the Wilde incision, some lightly curetted, with the fatal preliminary of hot applications. The fact that healing took place, and that deafness is not recorded would seem to exclude the middle ear from participation in the process! The invariable presence of a subperiosteal collection of pus, and the absence of any pus in the tympanum led to the inference in the experience of these investigators that they had to deal with periosteal disease alone. It is interesting to recall that the history of osteomyelitis, in its surgical treatment especially, is much the same, as the operators used to content themselves with cutting down on the abscess under the periosteum and evacuating it, which is another analogy existing between the two diseases.

CASES REPORTED AS OF PRIMARY MASTOIDITIS AND PERIOSTITIS; TRUE CASES AND REASONS FOR REJECTION OF SPURIOUS *

Author	Reference	No. Cases	Spurious	Cause of Rejection	Remarks
Greenstreet, A. G.	Northwest Med., September, 1913.	2	1	Suppur. chondritis	"Sagging of membranous canal," that is, attic infection.
Humblet	Le Larynx., May, 1913, p. 136	1	.....	.....	Hematogenous, probably from broken tooth.
De Santalo, A. M.	Arch. internat. de. laryng., January-February, 1913, p. 104.	1	.....	.....	Tubotympanic infection.
Labarre, E.....	Presse Oto-Laryng., March, 1905.	4	2	Otitis media, chondritic abscess	
Labarre, E.....	Presse Oto-Laryng., September, 1912, p. 401.	2	.....	.....	1. Diabetes, double pneumonia preceding (hematogenous?). 2. Little pus in antrum. Perisinus pus.
Constantin	Quoted by de Santalo, Arch. de Laryng., Jan.-Feb., 1908.	1	1	Otitis media, periosteal abscess	
Collinet, P.	Bull. de laryng., otol. et rhinol., 1905, viii, 211.	.....	.....	Otitis media, periosteal abscess	
Guimani	Ann. de Laryng., Nov., 1908..	1	1	Otitis media, chondritic abscess	
Jacob, E.	Rév. hebd. de laryng., 1909, iii, 46.	1	1	Otitis media, chondritic abscess	
Chauveau, O. ...	Arch. internat. de laryng., 1906, No. 5.	4	.....	.....	Regarded by author as hematogenous.
De Stella, H.....	Le Larynx, April, 1913, p. 97..	2	1	.....	Influenzal otitis; author admits mastoiditis without otorrhea to be better designation.
Halasz, H.	Monatschr. f. Ohrenh., 1904, xxxvii, 354.	1	.....	.....	
Candela, A.	Bol. de Laring., July-December, 1912, p. 216.	2	(Doubtful)	Otitis media, chondritic abscess (?).	No perforation of membrana tympani, but history suggestive of middle-ear infection.
Toubert, J.	Arch. internat. de laryng., 1900, xiii, 384.	2	2	1. Otitis media, chondritic abscess; deafness, tinnitus, chondritis of canal. 2. Otitis media, chondritic abscess.	
Luc, H.	Ann. d. mal de l'Oreille, 1900, xxvi, 375.	2	2	Otitis media, chondritic abscess, influenza.	"Subperiosteal abscess not due to caries of mastoid beneath."
Brieger, O.	Cong. Internat. d'Otol., 1895, p. 73.	1	.....	.....	
Ayres, S. C.....	Arch. Otol., 1890, xix, 95.....	2	2	1. Injection of membrana tympani. 2. Otorrhea recent.	
Schwarcz, E. ...	Orvosi hetilap, 1899, xliii, 407.	1	(Doubtful)	Otitis media, chondritic abscess (?).	
Rickets, J. V....	Lancet-Clinic, 1892, New Series, xxix, 112.	1	.....	.....	
Lubet-Barton.....	Arch. internat. de laryng., 1896, ix, 179.	6	5	1. Deafness. 2. Schrapnell's membrane bulging. 3. Deafness. 4. Deafness, tinnitus. 5. Deafness.	1. Also acute follic. tonsillitis. 2. Influenza. 5. Influenza. 6. True case; "periostitis."
Webster, D.	Arch. Otol., 1879, p. 68.....	3	.....	.....	One bilateral; "periostitis." Author believes in tubotympanic route of infection.
Pierce, F. M....	Lancet, London, 1875, i, 11...	1	.....	.....	Periostitis.
Williams, C.	Arch. Otol., 1880, ix.....	1	.....	.....	Periostitis.
Gruening, E. ...	Med. Rec., 1881, xix, 634.....	1	1	Otitis media, chondritic abscess	Periostitis.
Knapp, H.	Cong. Internat. Otol. Soc., September, 1876, p. 80.	1	.....	.....	Periostitis. Bilateral.
Burnett, S. M...	Arch. Otol., 1880, iv.....	1	.....	.....	Periostitis.
Bonner, H., and Dutrow, H. V.	Laryngoscope, April, 1915, p. 244.	1	1	Redness of drum membrane; fulness and dull pain in ear. Later, noises in ear; sagging of posterior superior wall of external auditory canal.	Involvement of middle ear apparent from the very first. Not the slightest claim to primary origin.
		—			
		Total 47			

* Of the forty-seven cases reported, twenty-four were true, twenty-one spurious and two doubtful.

REPORT OF CASES

CASE 1.—L. G. W. G., aged 9, of good physique, had a family history negative for tuberculosis and syphilis. When first seen, June 27, 1913, the auricle was observed to be prominent, the skin over the mastoid soft, edematous and of a dusky red, painful on pressure only. Temperature 99. While the drum was normal in every way, it was incised and showed that nothing was in the tympanum. There had been no deafness, no tinnitus, nothing abnormal about the ear, except the swelling behind the auricle, for which alone relief was sought. As he was an only son, hardly ever out of his parents' sight and his every whim humored, it is reasonable to suppose that his failure to mention any trouble was due to its lack of existence. On operation, done that night, the entire mastoid was found to be softened and the antrum full of pus, which gushed out on incision into the periosteum. The next morning he got out of bed, four hours after operation, and was highly indignant at being kept in the hospital for several days. His temperature was never higher than 98.8 while there. The middle ear, in spite of being incised, never discharged, and healed in four days, and he never complained of the slightest discomfort, save the soreness over the mastoid attachment of the sternomastoid muscle, severed at operation. The wound healed firmly and the patient was discharged July 26, less than a month afther operation.

These facts are mentioned as showing one of the characteristics of these cases.

Case 2.—J. H. M., aged 4½, of poor physique, anemic, had a family history negative for syphilis and tuberculosis. The patient was first seen May 6, 1914, when he came to secure relief for great pain over the side of the head, which he had had for several days. His temperature was 99. There was no deafness; the drum was normal; when incised, no secretion was found. Pain was the only symptom, except edema over the mastoid, which had been marked for two or three days. Operation, done that afternoon, revealed a subperiosteal abscess, extensive disease of the mastoid cells and frank pus throughout the bone. The wound was healed June 4, again less than a month after operation. At no time was the drum inflamed, nor was there ever any discharge from the middle ear.

The following features are common to all the true cases of idiopathic mastoiditis, and are not consistently present in other forms of the disease: (1) rapidity of convalescence; (2) occurrence of subperiosteal abscess, or exaggerated edema, generally the former; (3) freedom from absorption results, such as malaise, fever (all had less than 99.8), sepsis. This is especially remarkable, as the pus was resting in the soft parts, and not confined exclusively in bony walls.

CONCLUSIONS

It seems, to recapitulate, that the analogies of osteomyelitis and metastatic processes justify the conclusion of hematogenous origin in some cases of idiopathic mastoiditis, and that the passage of pyogenic organisms through one tissue, where they cause no ill effects, into another contiguous structure, where they do cause disease, similarly establishes the claim of entity in opposition to those who cannot grasp the tubotympanic origin of infection; so much for the theoretic considerations of etiology and entity. Again, the stubborn clinical facts I have endeavored to set forth convincingly, as there can be no other reasonable explanation of my two cases, which were peculiarly susceptible of close watch and study of the prodromal signs. In fact, the cases cited of other authors cannot be denied, though it has not been feasible to give all the histories in detail. The accompanying table shows that out of the reports of some 36 observers 47 cases were reported, but only 24 could meet the requirements of my definition, while 2 were doubtful and 21 certainly spurious. My own two cases would make the total of reported cases 26.

1633 Connecticut Avenue.

INDICATIONS FOR MASTOID OPERATIONS AS SHOWN IN ONE HUNDRED CASES *

CULLEN F. WELTY, M.D.
SAN FRANCISCO

The indications on which I rely for operative interference have been based on surgical principles, coupled with laboratory findings.

Bacteriology, a knowledge of the original infection, is undoubtedly of value, but the broad experience of clinical observation demonstrates that dogmatic rules for interpreting the meaning of one or the other bacteriologic factor are bad. There is no attempt to belittle bacteriology, but the best conclusions are drawn with a full knowledge not only of their value, but also of their limitations.

The types of infections are as follows: Streptococci, 50 per cent.; *Staphylococcus aureus* or *albus*, 14 per cent.; pneumococcus, 14 per cent.; *Streptococcus mucosus*, 10 per cent., and the remaining 12 per cent. divided between the proteus group, colon group, diphtheritic bacillus, anaerobic organisms and unidentified bacteria. Twenty per cent. show mixed infections.

Some infections are more prone to produce complications than others. In order of frequency they are the streptococcus, *Streptococcus mucosus* and staphylococcus. The pneumococci very rarely produce complications.

The laboratory findings are of secondary importance in my estimation. Many surgeons of today will depend on one thing or another to turn up, and if present, an operation is imperative.

I was called one night recently to do a mastoid operation. The leukocyte count was 22,000, with an acute otitis of twenty-four hours' duration. The more reliable indications for operative interference were not present, and the following day, everything had subsided.

With an increasing leukocyte count and other symptoms going hand in hand, one is, of course, warranted in going ahead. There are other conditions, however, with associated symptoms; symptoms that will always be present.

Professor Politzer used to say, "Never operate on a single indication; you must have two or more." Many times this has been the deciding factor not to operate.

My ordinary procedure for a mastoiditis of a few days' duration, is the following: free incision of the drum membrane; hot, wet 1:3,000 mercuric chlorid pack, moistened and kept hot for twenty-four hours. The patient must be at least partially relieved of the symptoms (lowered temperature, less pain over, or about, the mastoid region, and above all, less bulging of the posterior, superior wall).

This picture, with an increasing leukocyte count, would not disturb me in the least, but would call for close observation.

If at any time, during the course of this acute mastoiditis, there is an increase in pain, temperature, or tenderness, with an increase in the size of the bulging of the posterior, superior wall and a diminution in the leukocyte count, operation is the safest and most logical procedure.

I am not at all in sympathy with a second incision of the drum membrane. It must be borne in mind that it is not the partially healed incision with retention that accounts for the increase of the symptoms spoken of before, but it is the increased tension put on the individual cells of the mastoid that are overfilled with pus which, from mechanical hindrance, produces the pain, and the increased infection produces the temperature. At times, the temperature will not be increased.

We have, however, a symptom that is more constant and reliable than all others and that is the bulging of the posterior, superior wall, and when this is present, coupled with one or more of the other symptoms, it is proof positive that an operation is indicated, regardless of the laboratory findings.

There are many who do not concur in this and I know full well that in some of the cases the patients

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

will recover without operative interference. At the same time, some will pass beyond control and I ask the question, is it not pitiful to have a child besieging you to do something for him in the midst of an active meningitis? If one has been so unfortunate as to have had such a case, I am sure the picture is very vivid. I mean that it is much safer to operate when there is any question of doubt. This delay of twenty-four hours has cost many lives; not only in ear surgery, but in all kinds of acute conditions, such as appendicitis, etc.

There is an operative indication that is overlooked by many and I wish to lay particular stress on it, and that is a pulsating otitis of three weeks' duration. Such a case will always show bulging of the posterior, superior wall, and may, or may not include pain over the mastoid region. Also, pain on pressure over the mastoid region may not be present.

There is still another very insidious infection, that from the *Streptococcus mucosus*. As a rule, this does not produce a sharp, acute infection. The patients have little or no elevation of temperature; a small amount of pain, or no pain—it seems as though the patient might recover within a few days. But it appears the same at the expiration of the few days. They are the forerunners of the more serious complications and must be watched very carefully.

There is another indication for operative interference that is very important, and as I was the first to speak of it some six years ago, I wish again to emphasize it, and that is, that an acute discharge from the ear should not be allowed to continue for more than six or eight weeks at the utmost, because the hearing will more than likely be impaired. Take it for oneself, or one's children, if there is any danger of a permanent impairment of hearing, would it not be better to operate and secure a good ear?

If one stops to reason, in a given case in which one has done an acute mastoid operation, as to why the hearing was so much impaired, it will undoubtedly be found to have resulted because the operation was delayed under the guise of conservative surgery.

Again, if such cases were attended to, we would not have the chronic, suppurative otitis to deal with. This will come some day; but I am convinced that in this community, the chronic cases are accumulating more rapidly than they are being cured by operation.

My assertions may be very dogmatic, but they are meant to be, because they are based on one hundred or more operations, without mortality.

It is in such a series of cases that we can form some conclusions; first, in regard to indications for operation, outcome of the operated cases and many things that are most important.

UNUSUAL COMPLICATIONS

In three cases of multiple furunculosis, that were operated for acute mastoiditis, I exhausted all the means at my command, with the exception of the Roentgen ray, to make a correct diagnosis.

The last patient had a *Streptococcus mucosus* infection, as well, and was under observation for some six or eight weeks. I have seen the same mistake made in Vienna, Berlin and Halle.

Had I used the Roentgen ray in the diagnosis of these cases, the mistake would not have been made. But I am not in sympathy with this particular form of diagnosis for the following reasons: as soon as the mastoid cells contain pus they will show it by comparison, and many such cases will terminate in recovery. In the cases of furunculosis, the finding would have been negative.

Many ear surgeons will say that the kind of a mastoid one has to deal with, the position of the sinus and the presence or absence of zygomatic cells can be seen from the picture. These latter conditions are of no particular importance to a careful surgeon and should not be considered so.

Ingersoll of Cleveland thinks that in due course of time we shall be able to locate brain abscess by the Roentgen ray and it would aid materially in many a difficult diagnosis.

One patient with hemorrhagic mastoiditis, with facial paralysis from no discoverable reason, made a good recovery. The facial paralysis remained. The patient died of sarcoma of the brain, some months later.

Facial paralysis is unusually rare in acute mastoiditis. I have observed three cases. In one case, it made its appearance the first day of the purulent otitis.

In one case of facial paralysis, induced by operative procedure, the patient had been operated on before by a general surgeon and had a large, pneumatic mastoid with cells extending to the stylomastoid foramen. It was at this place that the nerve was injured with a burr. This is the only case of facial paralysis that I have had in my entire work in mastoid surgery.

One patient, less than a year old, with a fistula of the outer canthus of the eye and purulent discharge from the ear, had facial paralysis and had been operated on three times by others. The antrum had been opened. By opening the antrum and establishing free connection with the tympanic cavity, recovery took place in a short time.

Of repeated acute mastoid operations and radicals, there were five cases.

CASE 1.—A boy, aged 10, had typhoid fever with double pneumonia. An acute mastoid operation was imperative. As time was an important factor, the operation was not so complete as it should have been. In this case, reoperated to the best of my ability, healing would not occur. A radical mastoid was later done, and was followed by a serous labyrinthitis, but the patient made a good recovery.

CASE 2.—S. C., a boy, aged 3, had an acute mastoiditis of a few days duration with early operation. Three months afterward he began to complain of pain on this side of the head. The discharge of pus continued. The acute operation was again done, but the patient did not recover, and had the radical operation, some six months afterward. He made a slow recovery, as regards the discharge. He hears a whisper at 25 feet.

CASE 3.—J. S., a boy, aged 7, had acute otitis and mastoiditis of a few days duration. Operation was early. The patient made a good recovery in the usual course of time. One year after the acute otitis, there was a bulging of the old scar. This subsided for a short time, when it bulged again and was exquisitely sensitive. At operation, I found a cholesteatomatous mass, and completed the work by a radical mastoid. Good hearing has resulted; 25 feet for a whisper.

CASE 4.—Evalyn, aged 2, had double acute otitis and mastoiditis, following scarlet fever. Operation was reasonably early. After treatment for three months, both ears continued to discharge, so both were reoperated. Convalescence was protracted. Her hearing is apparently good. There are no marks on the drum membrane of either ear.

To sum up, there were five reoperations. Of these, three patients had to have the radical operation before they were entirely well.

Nine cases were of fracture of the base of the skull, followed by acute otitis. Of these, three patients had to have the acute mastoid operation; one had a sinus thrombosis.

In this unusual complication, operate at the earliest possible moment, as there is already a direct communication to the skull cavity, with possible injury of the dura mater.

In a chronic, suppurative otitis media, operate at once and without symptoms for operation, for obvious reasons.

In three cases of pneumonia recovery was complicated.

CASE 5.—A boy, aged 12, had typhoid. Reoperation was necessary and finally a radical mastoid operation was done.

CASE 6.—A boy, aged 12, had an ether pneumonia.

CASE 7.—A girl, under 1 year, had double pneumonia, resulting in death. This child had a pint of pus under the periosteum about the ear. The circulation was so disturbed by the neglected mastoid, that the ear was about to drop from the head at the expiration of four or five days, when the child died. This is the only death and the operation had nothing to do with it.

Two cases of erysipelas occurred; they were of no particular interest, except that one was under treatment for some two months before the discharge entirely ceased.

For some three or four years, I have not had to reoperate. I have improved my technic, the improvement lying in a most careful search for every individual cell that will in the least resist a fine, hooked probe. The cavity must be smooth everywhere. Hard bone must be encountered, or the dura, or sinus uncovered, before my operation is complete. This has occurred more than half a dozen times in consultation, when there was only slight pain remaining in the mastoid and a slight elevation of temperature. I cannot urge it too strongly.

I have operated in twelve cases of chronic, suppurative otitis media, by the so-called acute operation. They were all clinical cases, and in children from 7 to 14 years of age. All the patients but one are well and have good hearing. Some of the perforations in the drum membrane healed, others did not.

The only contraindications in the cases have been vertigo, cholesteatoma and destruction of the bony, tympanic wall.

In four of the cases an acute exacerbation of the chronic suppuration occurred, accompanied by the usual symptoms.

The reason for doing this is the following: Schwartze was the first to do this acute operation and remove the cancellous tissue until hard bone was encountered. Many of the patients recovered, some did not. Then Stacke tried to improve this by operation from within the meatus, enlarging from this opening, and Zaufel combined the two, producing the complete, radical mastoid operation.

Schwartze produced cures in the chronic, suppurative otitis media cases by such a procedure, and Jansen did the same operation some fifteen years ago, with a slight modification of cutting down the posterior wall to the annulus tympanicus; this procedure produced cures as well, but they were not entirely satisfactory.

Heath attempted further to modify this procedure by making an incision through the cartilaginous part of the meatus, tamponing this within the mastoid cavity and closing the posterior incision. This latter procedure, to my mind, is not so good as either of the others.

I concluded that I could do a great deal more by the simple Schwartze or the acute mastoid operation, as it is known today. In such cases, the opening into the tympanic cavity must be kept patent, until all discharge has ceased from the ear. I also irrigate with an intratympanic cannula through the perforation, as well as by the antral route. The patients are dressed daily. Irrigations of mercuric chlorid, 1:3,000, are used every second day, and as soon as the discharge from the ear stops the posterior wound is allowed to heal as rapidly as possible. Should a drop of pus come from the depths of the posterior wound, the fistula is irrigated every other day, and dressed daily, until the wound is entirely healed.

My one patient who did not recover has a partial destruction of the tympanic wall; all of these cases are slow in recovery; some of them require two months.

I am beginning to be of the opinion that every case of chronic suppurative otitis media does not need a radical mastoid operation, and that in doing operative work, it should be left to the judgment of the surgeon as to just what operative procedure is the most desirable. That is, the pathology will determine the kind of operation to be done.

BRAIN COMPLICATIONS

Of purulent meningitis, there were no cases.

Of serous meningitis, there were three cases of the lesser grades but nothing of interest to report.

Of brain abscess, there was one case; one caused by gunshot wound by way of the ear through the tegmen tympani. The abscess was evacuated; the bullet removed. The patient made a complete recovery.

Of extradural abscess, there were sixteen cases. Most of these abscesses were small, with but one exception, this being so large that I will go somewhat into detail.

CASE 8.—A man, aged 45, had acute otitis of eight weeks' duration, with more or less pain most of the time, but not enough to demand serious consideration. There was indefinite pain on the whole side of the head; painful to percussion or deep pressure. The meatus was small; there was so much bulging of the posterior superior wall that the membrane could not be seen at all. The organism was the *Streptococcus mucosus.*

Pus was encountered as soon as the mastoid was opened, as nearly as could be judged, about 16 ounces. After this escaped and in taking away more bone, a granulating mass presented, filling the entire mastoid cavity.

For some time, I did not know with what I had to deal, as the mass was soft but not of the consistency of granulation tissue, with a bony foundation. At this place, I enlarged my incision, going upwards well into healthy bone, retracing my steps until I was again in the mastoid cavity, and from here uncovered granulation tissue until I encountered healthy dura.

This procedure was carried out around the entire mastoid cavity until healthy dura was uncovered. All the carious bone in front was removed.

It was found that this protruding mass was none other than the dura mater, with large granulations, in some places necrotic. Further investigation showed entire destruction of the bone of the middle fossa, as well as the sinus, extending to the petrous portion

of the temporal bone. In other words, the dura mater of this entire area, covered with granulations (as spoken of before), filled the large, pneumatic mastoid. After a few days of anxiety, the patient was out of danger.

Of sinus thrombosis, there were six cases.

CASE 9.—A man, aged 65, had acute otitis of three months duration, with a great deal of pain most of the time. The meatus was so swollen that nothing could be seen. There was no history of chills or fever. The large, pneumatic mastoid was filled with granulation tissue and pus. On further curetting away granulations, another pus cavity was encountered, which on careful examination proved to be within the sinus itself. The proximal, or distal clots were not disturbed, for various reasons. The patient made a good recovery. The infecting organism was the pneumococcus.

CASE 10.—A man, aged 25, had an acute otitis of one month's duration and complained of vertigo. There was some pain on pressure. The patient looked septic. There was no history of chills or fever. A large, pneumatic mastoid was found with granulations and pus. A sinus was accidentally uncovered, which showed a spot, the size of a 5-cent piece, that was discolored. The sinus was incised; a clot an inch long was taken from the sinus. It seemed to be regular in outline at all places. No bleeding occurred. The sinus was packed with iodoform gauze. The patient made an uneventful recovery.

CASE 11.—A man, aged 35, fractured the base of the skull three weeks ago; this was followed by a discharge from his ear that soon became purulent. This patient had a temperature of 103 when examined, but said he never had a chill. There was tenderness over this side of the head and especially of the mastoid. There was bulging of the posterior, superior wall. Operation the following day disclosed a large, pneumatic mastoid with pus and granulation tissue. The fracture could be traced across the cavity by a bloodclot. The sinus was not uncovered. The following day, the characteristic symptoms of sinus thrombosis developed, with a thrombus to the knee joint, requiring it to be opened; there was a great quantity of pus. Jugular ligation was done and the clot removed. No apparent route of communication with the sinus was observed. The infective organism was the *Streptococcus mucosus.* Convalescence was slow.

CASE 12.—An incomplete operation for acute mastoiditis, with occurrence of sinus thrombosis of probably ten days' duration. The jugular was ligated and a clot, as long as the little finger, removed. Thrombus occurred to the hip joint; this infection subsided in the course of three weeks. Convalescence was slow.

CASE 13.—A girl, aged 5, had had an acute mastoid operation eight days before, with injury of the sinus. For eight days the patient had the characteristic temperature curve. No chills were noted. The organism was the *Streptococcus mucosus.* The jugular was ligated and a clot, half as long as the little finger, was removed. There was a slow convalescence, in which a choked disk of 5 diopters developed in both eyes; also a squint of the eye on the same side. No other symptoms were present. In the course of six or eight weeks, the eyes were perfectly normal.

CASE 14.—A man, aged 35, had an acute otitis of six weeks' duration. Chills and fever were present for several days. The temperature at the time of examination was 103. The mastoid operation was done the following day. The jugular was ligated and the clot removed. Convalescence was speedy.

These cases of sinus thrombosis are not reported in full, because they have been reported in full before, with the exception of Cases 11 and 12, which will be taken up at some future time.

Of labyrinthitis, there was one case. A woman, aged 20, a nurse at the city and county hospital, had acute otitis of both ears, of ten days' duration. There was great pain, tenderness, vertigo and vomiting, with nystagmus to both sides. The temperature was 103. The meatus was so swollen that the drum membrane could not be seen.

Immediate operation was done on both ears. A large, pneumatic mastoid was disclosed with pus and granulation tissue. Convalescence was slow, the temperature falling and nystagmus diminishing from day to day.

My only reason for saying this patient had a purulent labyrinthitis on one side is that later in her convalescence I discovered that she had no hearing in one ear. The other ear was impaired as well. The drum membrane does not show signs of adhesive inflammation.

The full history of this case will be found, with a series of others, in the California *State Journal of Medicine.*[1]

The hearing has been universally good. In the great majority of cases, they never realize any difference.

The only cases that show impaired hearing are the ones that have been accompanied by more or less serious complications, or in which the mastoid operation has been so delayed that granulations have developed within the middle ear, with the formation of adhesive processes. The reason the complications were spoken of more or less in detail was to show that in the first place, in nearly all, the primary operation has been delayed. The occasional exception goes to prove the rule.

The mortality, as given by various authors, ranges from 8 to 12 per cent.

In my 106 cases, there was not a single death. Besides, these cases were taken from all walks of life, many of them neglected cases.

In conclusion, my convictions are firmer than ever in regard to the indications for operative interference; because, I have had no mortality and because the result as to hearing has been universally good. The improvement in my own technic has resulted in no necessity for reoperation in a long time.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. KYLE, DABNEY AND WELTY

DR. J. HOLINGER, Chicago: The indications for mastoid operation were laid down long ago. I would not undertake, after hearing these papers and reading a great many others, to suggest material changes. We speak here, of course, of uncomplicated mastoid cases without signs of perforation of pus into the deep parts of the neck, or involvement of labyrinth, meninges or the lateral sinus. In the first place, time is an important factor. Schwartze gives ten days as the limit in well-developed mastoid symptoms. It is poor policy to hustle the patient to the operating table at the first signs of mastoid swelling and tenderness. Even in sinus thrombosis we must not forget that we can let several attacks of fever and chills pass in order to ascertain the diagnosis before we come anywhere near a dangerous state. A colleague treated such a patient in whom he had misinterpreted the symptoms a whole winter, with three or four attacks of chills and high fever a week. The diagnosis was verified at the operation. Of course, this is an exceptional occurrence, but it shows that unless the diagnosis is absolutely certain we do not run any risks in waiting. We have to take a different standpoint than the general surgeons. It would be easy for me to mention cases in which they did harm with hasty operations. Nearly every one of our better known

1. Welty, Cullen F.: California State Jour. Med., November, 1913, p. 464.

surgeons in Chicago operates on the ears, and if we want to justify our position as specialists on these organs we have to do more careful and better work than they do. To do the best for our patients and in the easiest way must be our guide.

Much has been said about mastoiditis in general, but comparatively little about the difference in the indications for operation in acute middle ear suppurations and in chronic suppurations. It makes all the difference in the world whether or not the patient had a chronic suppuration before he had his mastoiditis. The condition in chronic suppuration is much more serious if a mastoiditis develops. Dr. Kyle says the time to operate is as soon as the diagnosis is established. This is true in many chronic suppurations, but I do not think I would approve that statement in acute inflammations of the middle ear. If Dr. Kyle has made a great many postmortems he will agree with me that he finds pus and inflammatory conditions in the mastoid in a number of cases without any symptoms during the lifetime, and therefore without any need of an operation. Professor Betzold long ago showed that pus in the mastoid can disappear without leaving any trace whatsoever. That cell obliteration in the mastoid is a regular consequence of mastoid disease is at least very questionable. There is a possibility in old chronic suppurations, but no regularity. Allow me to illustrate a few of the points I brought forth by mentioning some cases: First, a case that gave me a great deal of difficulty, where I had to take a stand against four colleagues. There were many symptoms of mastoiditis, like great pain and swelling, but no signs in the middle ear. I insisted on waiting. Four or five days later the case cleared up as a case of herpes zoster. The herpes pustules appeared around the ear.

The Roentgen ray is all right if you can make use of it. Often it is too cumbersome.

Dr. Frederick E. Franchere, Sioux City, Iowa: What reason is there for handing down a decision before all the available evidence is in? It is my practice to have in every case a bacteriologic examination made of the pus from a discharging ear, also a blood count, and when possible a Roentgen-ray examination of the mastoid. Streptococcus infection seems to be the most virulent, but I have seen severe cases in which the pneumococcus was the infecting agent. My experience with the Roentgen ray to diagnose mastoiditis has not led me to put much reliance on it. As far as the leukocytosis is concerned, the blood count is of no value, as it may result from sources independent of the aural affection. However, a marked increase of the polynuclear leukocytes is of unquestioned value in establishing the diagnosis of pus in bone. We have been taught that the occurrence of mastoiditis as a complication of suppuration of the middle ear depends on two things—the severity of the infection and the powers of resistance of the patient—but I am led to believe that there is another factor influencing the termination of middle ear suppuration, namely, the size of the mastoid cells. Siebenmann shows that large cells have not the resistance to infection shown by small cells, owing to their having relatively less surface than the small cells. I have no confidence in any treatment of mastoid involvement of any degree, except surgical interference. If these cases do terminate in resolution it is because of mild infection and high powers of resistance. True, some cases seem to recover, but do we know they are well? Appendicitis used to be treated medically, but it would be interesting, if not amusing, to have some one get up before the surgical section of this society and even suggest the medical treatment of appendicitis. A man's hearing is worth something, and I firmly believe that the earlier the mastoid operation is performed, once the diagnosis of mastoiditis is established, the more conservative the operator is. If there is any reason for waiting, I have not found it. Furthermore, as in appendicitis, one never can tell what one will find within the mastoid bone until one comes to operate on it.

Dr. George F. Cott, Buffalo: Operations for acute mastoiditis are largely left to the otologist. There are two classes—those operated on by the otologist, and those by the general surgeon. In the last year I have treated three patients with mastoid infection who recovered without operation. One patient was suffering eight days with acute middle ear pain and discharge. One of the eminent men of New York City saw the patient during the state meeting at Buffalo, and advised immediate operation. I saw her the next day, and as I knew the family was neurotic I said wait. She had extreme pain, sagging of the posterior walls, pulsating middle ear. She had to be kept under morphin two nights; temperature, 102.5. I determined to wait, and finally in less than two weeks she was able to walk out without operation. There were three other patients who recovered with operation. But here is a case the other way. An old lady had an acute suppuration of the middle ear for eight days. I saw her five different times in five days. She had extreme pain over the mastoid and had to be kept under morphin. On the fifth day I recommended operation, but her son being a physician, thought they had better change physicians, and I thought afterward, it was wise too, for she recovered without operation. There was a case in which any of you would operate. I do not know what Dr. Kyle meant by the mastoid operation, whether going into the mastoid cells or taking in the antrum. When that discharge is lessened, although you have other symptoms of mastoid disease, clean it out and let the antrum alone and they will recover every time. These patients usually recover within two or three days.

Dr. Hill Hastings, Los Angeles: In talking with a good many of my confreres in southern California, I find there are certainly fewer mastoid cases now than ten years ago. I find that is the opinion of men from the East, so we cannot ascribe it to our good climate. It may be due to the better condition of nose and throat in children. They are growing up now without tonsils and adenoids, they have fewer colds and infections of the ear. Nevertheless it is due also to the fact that we do not operate as quickly as we used to. Also the general practitioner is realizing that an earache is a serious symptom, indicating incision of the drum membrane. Take an acute otitis media with mastoid involvement—and practically every severe otitis media has more or less mastoiditis—what danger is there in the condition? It is compared frequently to appendicitis. I do not think that is a fair comparison. We know these acute cases do not develop into chronic cases nearly so much as we used to believe. Chronic cases come from measles, scarlet fever and tuberculosis, rather than as a result of the usual acute otitis media resulting from an infection of the nose and throat. Then again, what danger is there that acute mastoiditis will carry the patient off before you have time to consider operative indications. They might die of meningitis, sinus thrombosis, or brain abscess. A majority of brain abscess cases and sinus thrombosis cases come from chronic otitis media cases and not from acute cases. I doubt very much whether we save the so-called "fulminating" cases from meningitis by operation. If it is an acute mastoiditis with developing meningitis, I doubt whether a mastoid operation does very much good. I did a mastoid operation on the fifth or sixth day, and the patient died of meningitis some two or three days afterward. I do not think my operation had any bearing on the case at all either for or against, but it would be hard for the people to understand that. We are bound to have some mortality. You cannot prevent this by saying "operate in every case early."

Dr. Edward C. Sewall, San Francisco: I would like to call attention to a statement of Dr. Welty with which I am not entirely in accord — a diagnostic matter. I think he made the statement that any discharge, pulsating in the fundus of the ear, after three weeks' time produced a prolapsus of the upper posterior wall. I simply wish to register my opinion contrary to that statement.

Dr. H. B. Graham, San Francisco: I want to thank Doctor Dabney for the opportunity he has given me to refute his statement that there is a primary mastoiditis. He says there is possible doubt on the part of some people, and I am one who is thoroughly convinced there is no such thing. That we

can get a hematogenous mastoiditis I think is practically impossible. Practically, I say. Theoretically, we can get it there as well as in any other part of the body, but I do not think we do get it; I think these cases are delayed inflammatory disturbances that have not been detected. I had occasion to look up the literature and hunt for a case of primary mastoiditis. In all the ease reports you would find that a primary lesion had taken place. A large number of mastoid cases are delayed lesions after middle ear infection. This may oceur a year and a half after the primary lesion in the middle ear. The *Streptococcus mucosus* may remain dormant for many months and produce symptoms that are very obscure and overlooked by the practitioner. They lead on with definite history to mastoiditis or brain complications and are operated on as primary mastoid cases.

DR. GEORGE W. MACKENZIE, Philadelphia: I would sooner trust my life in the hands of the good diagnostic surgeon than in the hands of the good operative surgeon. The discussion has narrowed itself down to, first, when should we operate in mastoiditis when the diagnosis is established, and second, the question of the presence or absence of mastoiditis. Concerning the last subject we may safely concede a mastoiditis to be present in the so-called typical cases, and probably the majority would operate. There is another class of cases which are atypical. In these the outer table of bone is thieker than the average; also those cases are due to infections from the capsulated cocci, where the progress of the disease is rather insidious for a time and then bursts suddenly, so to speak, as it reaehes the mastoid. There are other atypical cases in which there is practically no pain at all and little swelling over the upper portion of the canal. The only symptoms manifested may be reduction of hearing, vestibular irritation, and headaehe, due to the infection working inward rather than outward. We may find atypical cases with the membrane intact. The cases in which the membrane is intaet are apparently increasing in proportion to what we originally believed them to be. Where the membrane is intact and mastoiditis is present, there are certain typical signs. The membrane will not glisten like the normal, but will show a dull appearance similar to the cornea in cases of glaucoma. The hammer handle will appear narrow, mentioned by Alexander as charaeteristic of serous inflammation of the middle ear. The posterior portion of the hammer handle is obscured by the sceretion. These are atypical eases, and my experience has been that these atypical cases reach tremendous magnitude before we are aware of it unless we are on the lookout for them. It is up to Doctor Kyle and others who are developing the Roentgen-ray method to push it, because if we cannot make a diagnosis in a eertain class of cases in any other way, we must aeeept it. Concerning the time to operate, I believe as soon as we are sure that a mastoiditis is present it is time to operate, granting that there are cases that recover without operation, I doubt if a conservationist can show 100 per cent. of cures by conservatism as compared with Doctor Welty's 100 per cent. cured by surgery.

DR. JAMES A. PATTEE, Pueblo, Colo.: The discussion has trended into the question when to operate. Inasmuch as the laws guiding us in the presenee of a given group of indieations have been well established for a number of years, only the physician in eharge, who observes the ease from day to day, can decide the time of operation. In the discussion some have favored a prompt, radical course, while others advocate conservatism. For my part I am convinced that I operated too frequently ten years ago. With increased observations and experience I reduced the frequeney of operations without impairing results. Whether an operator should be conservative or radical depends on so many conditions that none but the surgeon can determine. For instance, one might operate on the tenth day for a complex of symptoms and be regarded radical for his procedure, though no one would consider it so if he operated for about the same condition on the twenty-fifth day. Early in an attack a certain allowanee should be made for pain, fever, flow, etc., although these symptoms should be rated at their fullest value in the third or fourth week.

DR. NORVAL H. PIERCE, Chicago: As regards the time of operating a sigmoid sinus thrombosis, there are cases that are obvious; the field is clear; there is no reason for believing that there is anything else to cause the symptoms of sepsis, and I would operate as quickly as anyone else under these circumstances. There are other cases, however, the obscure cases, whieh may prove to be a great bother even to the most experienced and most skillful, and these are the cases in whieh we should be conservative and not plunge suddenly in and operate. We should never operate on anybody unless we have a good reason for operating. If we depart from that law we will soon degenerate into quackery. The previous speaker, to my mind, stated the gist of the whole matter of operation in acute mastoiditis. If we are going to operate on every case of mastoiditis we will operate on every case of otitis media. In every case of acute otitis media there is inflammation of the mucous periosteum lining the pneumatic spaee within the mastoid. We know from experience what occurs in acute otitis media with infection of the mastoid. In the vast majority of cases it takes just about three or four weeks for decalcification to occur in the bone that separates one pneumatie space from another, and when that decaleification begins then the probability is all in favor of the case becoming chronic or taking a long time to recover. The ehances are that this decalcification is general within the mastoid process, and then is the time to operate in practically all these cases. Therefore, the indieations for mastoid operation are an inflammation, a purulent discharge coming for three weeks from the external auditory canal, whether or not there is pain or swelling over the mastoid. After the third week, we may know there is destruction of bone by softening within the mastoid. In an experience with some thousands of cases at the Illinois Eye and Ear Infirmary and elsewhere in Chicago, I can recall only one ease that I operated on in the first week, and that was a case of primary thrombosis of the jugular bulb. Of course in the presence of complications one can operate at any time; but I do not believe one should often operate before the beginning of the third week.

DR. PETER A. JORDON, San José, Calif.: Forty per cent. of my small number of mastoid patients, after proper diagnosis and eareful treatment, get well without operation.

DR. WENDELL C. PHILLIPS, New York: A word might be in order arising from my experience in my services at the Manhattan Eye, Ear and Throat Hospital and the Post Graduate Hospital. I have not looked up the statisties recently, but it is my impression that under the modern method of treatment of acute purulent otitis media with mastoid symptoms, the majority of cases we consider serious enough to place in a hospital bed for treatment and care get well without operation.

DR. JOHN J. KYLE, Los Angeles: I think I may claim that my knowledge of the subjeet of mastoid inflammation and the indieations for operation is based on long experience. I am not making the mistakes today that I made ten or fifteen years ago. If I had a mastoiditis and could have the benefit of the knowledge and experienee of a man like Dr. Hastings and he should tell me my ease would go to recovery without operation, or should tell me the indications were for operation, I would immediately accept his conelusions. Now I am of the firm opinion that if you have a poeket of pus and the indications are such that you can operate and remove the pus without endangering the life of your patient, it is your duty to do so. We know that pus will be absorbed. We know that many eases of mastoiditis go on to spontaneous recovery, and as Dr. Hastings has mentioned, we are operating in very few cases. It would be absurd to say that every case of acute otitis media recovers without operation, but I think that a great majority, 75 per eent., do. If you have a ease that shows well marked symptoms of mastoiditis, and the indications are for operation, an operation should be performed at once. The significance and the future effect of an otoselerosis is something that you and I ought to know. Many times I have had cases go to spontaneous recovery, i. e., drums completely healed, and after a month's time have the patient develop another attack of acute otitis media with mastoid abscess. The structural changes found in the mas-

toid at operation must have taken place at the onset of the inflammation. I am a little surprised that the Roentgen ray has been so lightly touched on by the members who have taken part in the discussion, as it is a valuable aid to diagnosis, and it seems to me that as men progressive in our specialty, we ought to take advantage of these opportunities. We have all had many cases of mastoid abscess in which it was impossible to establish a diagnosis without the Roentgen ray. I know I have. That is, in my own mind I knew I had a mastoiditis, but it was impossible for me to convince the consultant, or oftentimes the patient or parents of the patient, that such a condition existed, and the roentgenogram would cinch the diagnosis.

DR. VIRGINIUS DABNEY, Washington, D. C.: Most of our troubles are largely matters of definition, or of opinion. I understood Dr. Graham to say that the *Streptococcus mucosus* can linger dormant for as long as eight months in the tympanum and then set up a disturbance in the mastoid; perhaps; but this would not disprove my theory at all. Moreover, if it were dormant, how would we know it was there?

DR. CULLEN F. WELTY, San Francisco: With a mortality ranging from 8 to 12 per cent. in the acute mastoid operation in hospitals all over the country, does it not attract your attention when more than 100 consecutive patients have been operated on without mortality — cases that were not selected to my own liking, cases with serious complications, all of which were from delayed operative interference? All this must mean something to the one who wishes to see the best; the one who wishes to progress. Doctor Hastings spoke of losing a simple mastoid case from meningitis, saying that the operation did not have anything to do with the death. Of course, the patient would not have died had the operation not been so long delayed. Dr. Cott said he was in the habit of using morphin to quiet the pain. Such medication in acute mastoiditis is, in my opinion, almost malpractice. Dr. MacKenzie spoke of an indication for operative interference that I am very glad to second; in fact, I forgot to speak of it. Some such cases occurred in my series. Dr. Phillips demonstrated beyond question that there were not so many acute mastoid operations at present as formerly. I can verify that, but I will say that the reason lies in a wholly different cause, and that is the early removal of tonsils and adenoids. A given case of acute otitis is not so likely to cause an operative mastoiditis. All cases of acute mastoiditis are less frequent and less severe, or rather much less likely to go on to operative interference, if the tonsils and adenoids are thoroughly removed. I have only had a few cases of acute mastoiditis requiring operation in which the patients have had the tonsils and adenoids thoroughly removed. Dr. Pierce speaks of the three weeks' period. This is the old standard adopted by Professor Politzer some twenty years ago. Every year sees us a little ahead. In my paper I drew definite conclusions from a series of operated cases, and it is these deductions and observations that should be considered, rather than the report of a neglected, or I might say, conservatively treated case. I maintain that a death should not occur from an acute mastoid and its complications, providing the ear surgeon has been in attendance on the case from the early stages of the acute otitis.

Cooperation Needed.—The relationship between the various branches of child welfare work is remarkably intimate but quite often escapes observation and still oftener escapes realization by the very workers themselves. In their enthusiasm for improving conditions they forget such elementary principles as, for instance, that the periods for compulsory attendance at school, for prohibition of child labor and for public relief of children from want must be the same, and if one is extended, the others must be changed to correspond. This applies to other branches of child welfare work with equal force and shows that cooperation is essential to effective reform. Because of the absence of this essential our laws are in confusion and our work is seriously hampered.—Edward N. Clapper, *Secretary National Child Labor Committee.*

VACCINATION AGAINST TYPHOID IN THE UNITED STATES ARMY

WILLIAM LYSTER, M.D.
Major, Medical Corps, U. S. Army
WASHINGTON, D. C.

In view of the interest manifested by physicians, and particularly by health officers, in the prevention of typhoid fever in the United States Army by means of vaccination, the following note is presented; data covering the entire period, including the calendar year 1914, are included:

The officers who foresaw the importance of this measure to the Army and secured favorable reception of the idea in the War Department were Gen. George H. Torney, then Surgeon General, and Col. Jefferson R. Kean, Medical Corps, in charge of the Sanitary Division of the Office of the Surgeon General.

During the summer of 1908, Major Frederick F. Russell, Medical Corps, United States Army, was sent to Europe to make a study of the methods in use in England for the prevention and stamping out of typhoid fever epidemics, both in the army and among the civil population. His report and recommendations were submitted to a board of eight medical officers, of which the Surgeon General was president and Major Russell recorder. The members of the board were:

DR. VICTOR C. VAUGHAN, dean of the Department of Medicine and Surgery, University of Michigan.

DR. WILLIAM T. COUNCILMAN, professor of pathology, Howard University, School of Medicine.

DR. JOHN H. MUSSER, professor of clinical medicine, University of Pennsylvania, School of Medicine.

DR. ALEXANDER LAMBERT, professor of clinical medicine, Cornell University Medical College, New York.

DR. SIMON FLEXNER, director of laboratories, Rockefeller Institute for Medical Research.

DR. WILLIAM S. THAYER, professor of clinical medicine, Johns Hopkins University Medical Department, Baltimore.

The board recommended the immediate introduction of the practical voluntary vaccination against typhoid in the Hospital Corps, Army Nurse Corps, and in any expedition of troops from the Regular Army which is ordered to take the field for active operations; and, further, that an opportunity be given to volunteers from the Army as a whole to be protected by vaccination against typhoid. The recommendations were immediately carried out.

The manufacture of vaccine in large quantities was begun at the Army Medical School, Washington, D. C. This vaccine, as described by Major Eugene R. Whitmore, Medical Corps, now in charge of the Bacteriological Laboratory, Army Medical School, Washington, D. C., is made from a "single strain of the typhoid bacillus. . . . It was chosen because tests have shown that it produces a large amount of antibodies; and it has the advantage that it gives an even emulsion when grown on agar. It seems that virulence alone is not the all important factor in the production of high and lasting immunity." The comparatively few cases of paratyphoid fever occurring annually in the Army have disinclined the makers of the vaccine to include paratyphoid strains in the vaccine, a procedure advocated by Castellani.

The vaccination of volunteers in the city of Washington was begun by March, 1909, and as the immediate results were completely satisfactory, the vaccina-

tion of the Hospital Corps and of all others who volunteered was taken up soon afterward. Considerable progress was made during the year 1909 in the campaign for the protection of the Army by means of vaccination.

VACCINATION AGAINST TYPHOID IN THE U. S. ARMY

Year	Number of Persons Vaccinated	Number Receiving Three Doses	Cases of Typhoid Fever	Army, Mean Strength
1908*.....	0	0	239	74,692
1909*, to September 1.....	830	621	282	84,077
1910*.....	16,093	11,932	198	81,434
1911*, January 1 to June 30..	27,720	25,779	70	82,802
1912†, July 1, 1911, to June 30	40,057	All	27	88,478
1913†, July 1, 1912, to June 30	25,086	All	4	90,752
1914†, July 1, 1913, to June 30	35,902	All	7	92,877

* Voluntary. † Compulsory; fiscal year.

March 6, 1911, orders for the mobilization of a division in Texas were published. The vaccination of the entire command against typhoid fever was directed, and orders were issued by the Secretary of War, March 9, 1911. The mean strength of the command was approximately 12,000. There were practically no skin infections at the site of inoculation, nor were there any alarming general reactions, and in over 90 per cent. of the cases treated the general reaction was absent or mild. The routine vaccination of all recruits was begun in June, 1911, under the authority of General Orders No. 76, War Department, June 9, 1911. Sept. 30, 1911, under General Orders No. 134, War Department, typhoid vaccination was made compulsory for all officers and enlisted men under the age of 45 years, or who had not had an attack of typhoid fever. At the end of 1911 a census of the entire Army showed that over 10,000 persons connected with the military establishment had not, at that time, been vaccinated. But it will be observed that the War Department orders mentioned above resulted in all officers and enlisted men being immunized against typhoid fever shortly after the close of the year.

For the decade 1900 to 1909 there were 3,510 cases of typhoid fever among the American troops, with an average therefore of 351 cases per annum. It will be noted in the accompanying table that there were 282 cases for the year 1909, and that in this year, to September 1, 830 individuals had received one or more doses of the typhoid vaccine, a number which, for all practical purposes, can be disregarded in the effect that it might have on reducing the frequency of typhoid in a body of men, the mean strength of which for the year was 84,077.

In the year 1910, 16,093 persons were vaccinated. One hundred and ninety-eight cases of typhoid are reported for the same year, which, it will be observed, was forty-one less than for the year 1908 before voluntary vaccination was introduced.

In 1911, January 1 to June 30, nearly 28,000 officers and enlisted men were vaccinated; a large portion of these at the maneuver division which was established in camp March 6 of that year. The routine vaccination of all recruits was begun in June, 1911, and the table shows for the years 1912, 1913 and 1914 the number of vaccinations occurring in the fiscal year which ended June 30. Sept. 30, 1911, vaccination being made compulsory as stated above, all those who were not vaccinated received the prophylactic as promptly as practicable. It should be stated that many over 45 years of age voluntarily received the vaccination. It is to be observed, then, that the striking and forceful comparison to be made is not that between the amount of typhoid in the Army in the year 1908 and in the year 1914, although this is an emphatic and convincing illustration; the real comparison is between the years 1910 and 1912. The reduction in the amount of typhoid fever from 198 to twenty-seven cases indicates the introduction of measures causing a radical change. Certainly no one familiar with the sanitary conditions existing in the Army will consider that any marked change was made in them between the end of 1910 and the end of 1912. The marked difference was that in 1910 not 12,000 out of an army of over 81,000 had received the prescribed three doses in the procedure of vaccination against typhoid. At the end of 1911 all but 10,000 of an army of over 82,000 had been vaccinated. Of

ANALYSIS OF SEVEN CASES OF TYPHOID IN THE UNITED STATES ARMY, 1914

Case	Date Enlisted	Date Taken Sick	Date Vaccinated Doses 1st	2nd	3rd	Original Diagnosis	Laboratory Findings	Previous Vaccination or Typhoid	Result of Disease	Age	Remarks
1*	Feb. 19, 1914	Feb. 26, 1914	Feb. 23	None	None	° Vaccinia	None	V—No T—?	Died March 10, 1914	23	Typh. ulcer last 12″ of ileum—hemorrhage
2+	Nov. 13, 1912	March 23, 1914	Nov. 13, 1912	Nov. 23, 1912	Dec. 2, 1912	Fever simple, continued	Feces positive for typhoid, April 4, Agg 1-160	V—No T—No	Duty May 10, 1914	24	
3+	March 21, 1912	June 24, 1914	March 21, 1912	April 1, 1912	Not given	Fever undetermined	Blood positive, June 26 and July 1, 1914	V—No T—?	Duty July 24, 1914	23	Soldier states sick after the 2d dose; does not recall taking 3d dose
4*	June 30, 1914	July 4, 1914	No doses given			Undetermined	None	V—No T—?	Died July 16, 1914	21	Autopsy disclosed perforation and peritonitis
5*	August 27, 1914	Sept. 11, 1914	Aug. 27, 1914	Sept. 8, 1914	Not given	Typhoid	Blood positive for typhoid, Sept. 14 (3 days)	V—No T—?	Duty Nov. 18, 1914	21	
6*	Nov. 21, 1914	Nov. 22, 1914	Nov. 21, 1914	One dose only		Bronchitis, acute catarrhal	Agglutination, 1-5,000	V—No T—?	Died Dec. 22, 1914	26	Colon alone involved
7=	June, 1909 June§, 1912	Dec. 1, 1914	Sept., 1910	Volunteered. Dates unknown		Paratyphoid	Agglutination, 1-400	V—No T—?	Duty April 10, 1915	26	At Atlanta, Ga., 10 days previous to illness—no typhoid at post

Note.—(*) indicates Recruit; (+) Private Hospital Corps: (=) Sergeant, C. A. C.; (§) through error was not revaccinated on 2nd enlistment in 1912. Under "Previous Vaccination or Typhoid," V—Vaccination, T—Typhoid. When followed by (?) it indicates that it is unknown whether patient has had a previous attack of typhoid fever or not.

(°) Vaccination against smallpox is performed at the time the first dose of vaccination against typhoid is given.

the twenty-seven cases of typhoid reported as occurring in the Army during 1912, nineteen of these were in the persons of soldiers who had not been vaccinated against typhoid. Vaccination had not been accomplished because of duty in the field, or for other reasons that made it impracticable to reach these particular individuals. Of the eight remaining patients, who had been vaccinated, all recovered.

In 1913 four cases, and in 1914, seven cases of typhoid fever were reported. Only in two instances out of these eleven cases had the complete course of vaccination been administered. Some were recruits who were enlisted in the prodromal stage of typhoid, and in 1913 at least two of the cases of typhoid fever occurred in the persons of men who had been in the service at least two years, but who had failed, when vaccination became general, to receive it. In explanation of this it must be remembered that about 675,000 doses of the prophylactic have been administered since 1909 to July, 1914. This had been done in all parts of the world where United States troops are stationed, and under all sorts of conditions. It was necessary to evolve gradually some method of keeping the records, and it is not necessarily due to carelessness that a few soldiers have escaped being vaccinated out of the large number concerned. It is to be observed that during the years 1913 and 1914 the mean strength of the Army was between 90,000 and 93,000: this includes 5,000 native troops serving in the Philippines and Porto Rico, and the American troops stationed in these countries, in Panama, Hawaii and Alaska, as well as in the United States proper.

It is apparent, therefore, that the gradual introduction of vaccination against typhoid began to show results as soon as it was done on a scale of any size. This was by the end of 1910. In that year, with 198 cases of typhoid fever, it can hardly be stated that the disease was "practically abolished" by improved sanitation, as the antivaccinationists would have us believe. By the end of 1911, seventy cases of typhoid fever had occurred. By the end of the first quarter of 1912, practically all of the Army was vaccinated, and new men coming into the service were being vaccinated as soon as enlisted. There were twenty-seven cases to the end of that year and, as pointed out above, nineteen of these were in the persons of soldiers who had not been vaccinated against typhoid fever. When vaccination can be said to have become complete, as in 1913 and 1914, we have four and seven cases, respectively, and, as mentioned above, only two of these had had the complete course of vaccination when they were taken with typhoid fever.

The standard of sanitation maintained has not varied noticeably for some years. The only change in recent years has been a system of conservancy in camps that largely prevents flies entering the latrines and becoming conveyors of disease. But this could have affected only a small part of our troops in any year. In 1911 from 10,000 to 12,000 out of a total of 92,802 were in camps; during the last two years (1913-1914), from 12,000 to 15,000 out of a total of 92,580.

Finally, it must be remembered that the soldier comes into quite as intimate contact with civilians as he does with his comrades. He visits the homes of civilians; places of entertainment, both private and public; eats the same food and drinks from the same water and milk supply; is exposed to the same chances of infection from flies, contact, food and drink as the civilians, and, while living on a higher hygienic plane than the civilian in average circumstances in this country because of the intelligent paternal interest of the authorities, yet he contracts diseases (measles, mumps, scarlet fever, influenza and others) just as he did before, with the exception of smallpox and typhoid fever. Why are these diseases practically no longer existent among our soldiers?

Vaccination against smallpox and against typhoid fever are the active agents in banishing these diseases from armies that thoroughly and efficiently use these measures. This measure is now in use in the armies of Great Britain, France, Germany and Austria, and it is probably being used to a certain extent in the armies of Russia and Italy. It may be of interest to add that for the first six months of 1915, only *one* case of typhoid has so far been reported as occurring in the United States Army.

Office of the Surgeon General.

THE OFFICIAL RESPONSIBILITY OF THE STATE IN THE TUBERCULOSIS PROBLEM *

WILLIAM CHARLES WHITE, M.D.
Associate Professor of Medicine, University of Pittsburgh, School of Medicine

PITTSBURGH

The achievement which we all desire to result from our efforts in the tuberculosis campaign is the human control of this disease. Such control must apply to our whole country without demarcation of state, county or municipal lines.

Any given unit of population occupying any given territory, no matter how small the unit, that can demonstrate the accomplished control of this disease will solve the problem for the whole nation. The adaptation of this demonstration, in the ultimate control, would be but the multiplication of the equipment necessary for each additional unit of population.

Unfortunately, such a demonstration has not yet been accomplished for human tuberculosis, and we are still trying unproved methods on larger and smaller scales from many different angles by federal, state and local agencies.

Perhaps the most significant single demonstration of the control of tuberculosis has been accomplished by Bernard Bang, in cattle tuberculosis for the state of Denmark. Bang has shown conclusively two things.

1. The tubercle bacillus is not ubiquitous.

2. By control of housing conditions, removal of infected cattle, and protection of the newly born throughout life, tuberculosis in herds of cattle can be eradicated.

At the time of the federation of the American states, only such powers as concerned the whole people were vested in the federal government. No one who reads of the early struggle of the powerless first assembly in its endeavor to gain a foothold against the opposing greed of "states' rights," and the gradual solution of this mass of opposition by the skill of Hamilton and

* Delivered before the National Association for the Study and Prevention of Tuberculosis, Seattle, June 15, 1915.

the honesty of Washington, and compares this with the Washington of today can close his eyes to the singular development of a central government whose authority transcends that of any other earthly power. A century of evolution has given us a federated system of control of which we grow increasingly proud. Even yet, however, there appears again and again that slippery chute, called "states' rights" on which our ablest agents of government start their downward course to oblivion.

Even as the struggle for central power in the matter of army, navy and taxation took years of evolution, in gathering and dispensing education, to accomplish the present condition, so the struggle for central power in the matter of the uniform health and welfare of the American populace must take years to establish. Owing, however, to greater ease of rapid education, and greater opportunity for study, our progress in this direction is more gratifying. Only last month, however, did the state of New York reach a stage of enlightenment sufficient to see the gain of passing the port of New York over to federal control.

If, in measuring the importance of federal duties, we ask ourselves what most concerns the welfare of the whole people, the uniform answer is naturally the nation's health. Without health there can be no permanent wealth or law or war. While responsibility for securing the health of the nation may be apportioned out to the various governmental agencies, the central government must be at least responsible for the promulgation and application of uniform methods of control.

Applying this conception of federal duty to the tuberculosis problem, we are struck at once with certain phases of the question which are frequently unthought of, but no less necessary to consider, in drafting a general federal scheme. These are:

1. The malady is universal in man and beast, and may possibly be transferred from one to the other.
2. The disease is a hidden one. It is almost impossible to pick out the tuberculous sufferer. In his earlier stage his morning pulmonary toilet removes the marks of his malady for the day, and when the far-advanced consumptives by rest and care take on the appearance of health, it is especially difficult to spot the disease.
3. Tuberculosis is closely associated with all the social problems of housing, food, wages, rest, clothing and insurance, and can in no way be separated from them.
4. So long as intercity, interstate and international modes of travel carry daily in commerce clothing, food, animal and human sources of infection across the borders of cities, states and countries, we are forced in matters of control to higher and higher courts of appeal and centralization of power, till at last the federal and international courts are reached.

What, then, is the duty of the federal government? I would suggest that its first duty is to prove in one of the territories under its wardship what constitutes a proper system of control. As a first test it might determine if the principles of the Bang systems are applicable to the human race.

An intensive experiment of this sort would follow some such lines as this:

1. A tuberculin skin test of all members of the unit.
2. A clinical examination (physical and laboratory) of all reacting cases.
3. The segregation of all open cases.
4. A careful study of housing conditions.
5. A disinfection by paint and scrubbing of all infected quarters.
6. The establishment and maintenance of proper living conditions, including supervision of food, air, clothing worn and rest of all nonreacting cases.
7. Control of all food supply, especially the pasteurization of all food supplies from cattle, hogs and fowls.
8. Periodic tuberculin tests and subsequent segregation of reactors, and so on.

The federal government had no hesitation in establishing a similar precedent for other diseases under Gorgas in Panama, or for many animal diseases offering menace to the whole country. If it were once known positively what to do, the work of state governments and their divisions would be simple, and the present squandering of large appropriations secured by political and sentimental endeavor would be ended.

The federal government is in a modest way gradually accepting its privilege in this as in other problems of public welfare. A recent investigation in California and North Carolina on tuberculosis and in Johnstown on babies' welfare exemplifies its activities.

Many states and their divisions have already gathered a wealth of knowledge as a basis for this work. The Wisconsin studies of rural districts, the Pittsburgh Tuberculosis League work on babies, and the Phipps Institute work on trades are a few of the many tasks undertaken by private agencies; but no voluntary agency can secure anything like the freedom of the federal authority in legal or monetary resources.

Returning to the state's relation to this problem, we find that two fairly definite plans are followed:

Pennsylvania is the most prominent example of the first plan in which the state undertakes to build central sanatoriums and establish local dispensaries throughout the state, bearing the expense of the whole undertaking by state tax. This seems to me wrong in principle, as tuberculosis is essentially a local housing problem, requiring local intensive work, and cannot be handled by institutions of control in distant centers; and further, we are not yet sure enough of our methods to justify wholesale expenditure on this scale for a larger state.

Massachusetts, New York and New Jersey are examples of the second plan, by which the state in more or less mandatory laws places the burden for management on its local agents of legal control, the counties and municipalities, subsidizing its agents on the basis of a proportion of the per capita expense. This plan comes nearer the economic basis for handling such universal problems of public welfare. In both state plans, however, there are several fundamental weaknesses:

1. While controlling the license to practice of the medical and nursing profession, all the states have failed to realize that the control of tuberculosis cannot be handled without the proper education of these two professions in this disease. While teaching hospitals and medical schools have excluded tuberculosis from their practical work, state institutions have been placed in isolated districts and offer no opportunity to replace

this lack of training. An efficient test of the knowledge of this disease should be demanded, and to have a rightful position, it should form at least one seventh of all the knowledge of the doctors and nurses.

2. States have persistently attempted to separate tuberculosis from other social problems, against all the evidence that this can in no sense be accomplished.

3. States have forgotten that any plan for the control of consumption must be a workable plan. No plan that neglects the laws of social and color distinction is a workable plan; and no plan that fails to enforce segregation under proper conditions in jails, orphanages, hospitals, insane asylums and other housing institutions can ever be successful.

Other faults in present state plans might be mentioned, but they are faults of ignorance which cannot be corrected at the present time.

Since none of the present plans are adequate, I would propose a plan which I suggested in 1910 in Philadelphia, and which I am yearly convinced is sound from the standpoint both of efficiency and of economy.

This plan is based on a study of our solution of a similar universal problem presented by our educational system.

Emanating from state law there is in general established in educational work a unit equipment for a unit of population. By this equipment is gained a uniform compulsory and intensive application of the law to all concerned. The money for the expense of this care is provided by state and local taxation determined largely by the density of population and the need of the community. Those who are interested in this phase of the question would do well to read Cubberly's "Problems of State and Municipal Education."

In the educational field there has gradually developed a knowledge of the equipment necessary for a given population, and this equipment has been apportioned so as to be easily accessible by those whom it is to serve. The management of these units is centered in a legally constituted governing body, which also controls the expenditure of the funds collected by taxation.

The same form of control is applicable throughout to tuberculosis and other health problems.

In the first place, our statistical studies have given us fairly accurate knowledge of where to place our equipment and of what the equipment should consist.

I should say that for each hundred thousand population there should be a hospital of 200 beds, a dispensary and an open air school. There should be fifteen nurses, of whom five are visiting social service nurses, and four or five physicians. Such an equipment might easily expand and include all public activities, child welfare, pneumonia, syphilis and other health and public welfare problems.

The expense should be borne as the educational expense is borne, and the demand made mandatory by state law.

Large centers of population would be looked on as but the multiplication of units of 100,000, and the equipment would be multiplied accordingly, just as we now multiply our school equipment. Each unit would be self-governing, but centralized in some central governing board which would establish the uniformity of the work, and the prevention of overlapping.

Dr. Goldwater, the remarkable health commissioner of New York City, acting on this suggestion, has attempted such a plan in that city, and he reports to me that it not only seems to be the solution of the health problem, but also is applicable as a solution of many of the difficulties of large city government.

There is apparently a unit of population which can be efficiently managed. When, however, we grow beyond this in number of population, we cannot accomplish our care of the population in any paternal way by increasing our equipment at some central place without working a hardship on the peripheral members of the community. This has been the system of government most followed in the past. In the future, it seems to me, the dissociation of units of equipment and the association of the heads of units will be the plan adopted in all paternal work.

The state that sees fit to establish such a principle will, it seems to me, soonest reach the land of heart's desire, and will have a machinery as elastic as the problems to be dealt with, a machinery that can grow as knowledge grows and retract or reconstruct as necessity decreases, a machinery that can be used as a teaching center for doctors, nurses and social agents; and the sooner it comes, the sooner will we see spelled on the wall the doom of our present boarding houses for sick and well consumptives, and waste of effort.

We must first know, however, the right methods, and I would suggest that federal and state authorities meet and apportion different phases of the work to each other and yearly correlate their results that we may know the sooner the efficient economic and right ways of work. This, I think, may best be done, as I suggested above, on the wards of the federal government.

May I close with the prayer of Grotius in the conclusion of his great book, "War and Peace": "May God write," he said, "these lessons—He who alone can—on the hearts of all those who have the affairs of Christendom in their hands. And may He give to those persons a mind fitted to understand and to respect rights, human and divine, and lead them to recollect always that the ministration committed to them is no less than this, that they are the Governors of Man, a creature most dear to God."

Responsibility of Physicians.—Nor has the physician been without responsibility in the distribution of the nostrum. It was he that originally ordered the "psychic antiseptics" such as alklol, borol and glyco-thymoline. It was he that introduced mucol, runatrol, papayans Bell, resinol ointment, unguentine, antikamnia and many other such nostra. It was he that became sponsor for Buffalo, Londonderry and other Lithia waters which contain so little lithium that it would require the consumption of many gallons to get a single dose of that element and for Valentine's meat juice, which contains only 0.19 per cent. of coagulable protein, so little that it is not coagulated by heat, while real meat juice cold pressed from round or beef contains 8.56 per cent. of coagulable protein. Indeed, addressing the patent medicine advertiser, Barnum in the advertising sheet, *Printers' Ink,* said: "I opine that some physicians are of more use to draw money into the pockets of the patent medicine men than they are to help save the lives and health of their patients." The physician has listened too readily to the glib detail man, of whom Sir William Osler felt compelled to say, "he is ready to express the most emphatic opinions on questions about which the greatest masters of our art are doubtful."—W. A. Bastedo, Ph.G., M.D., in the *Druggists' Circular,* February, 1915.

BACTERIOTHERAPY IN TYPHOID FEVER*

JAMES W. JOBLING, M.D.
AND
WILLIAM PETERSEN, M.D.
NASHVILLE, TENN.

During the past few months there have been published a number of interesting observations dealing with the bacteriotherapy of typhoid fever, largely the result of experience gained by army sanitarians in the eastern front of the European war. (Biedl, Eggerth and Paltauf,[1] von Korányi,[2] Ditthorn and Schulz,[3] Goldschneider and Aust,[4] Csernel and Márton,[5] Rhein,[6] and others.)

That typhoid organisms used therapeutically would shorten the course of the disease was demonstrated more than twenty years ago by Fränkel, and later Petrushky reported favorable results. Reasoning from a theoretical point of view, immunologists received the proposal with considerable skepticism, the argument being made that there could be no possible stimulation of antibodies in a patient who already had typhoid organisms circulating in his blood and infecting the body as a whole; a view that received considerable support by the work of Rumpf at the time of Fränkel's publication. The latter showed that identical results could be obtained therapeutically by means of injections of pyocyaneus vaccines, thus eliminating any possible idea of specificity.

Gradually, however, the recognition that the so-called antibodies, as estimated by the bacteriolytic and agglutinin titers, were not the all-important factors in the recovery from the infection has gained ground, largely because of the demonstration that high antibody concentrations may exist at a time when the disease process is in a very active state. Even Wright has stated that vaccine therapy at times produced favorable results in a quite nonspecific manner.

After the early experiments of Fränkel attention was directed rather toward preventive immunization as introduced through the efforts of Wright; since that time the elaboration of various vaccines such as those of Pfeiffer and Kolle, Vincent, Pescarole and Quadrone, Besredka, Ichakawa, and of Gay, have represented successive stages in the refinement of technic.

The undoubted success of the preventive efforts have so far quite overshadowed the occasional reports of the successful use of the vaccines in the actual therapy of the disease. Of these the greater number have been published in French journals. The method of injection has usually been subcutaneous. During this time, however, several Argentine clinicians, following the leadership of R. Kraus,[7] had carefully undertaken the intravenous method of injection of sensitized vaccines, with good results. Kraus noted, however, that the effect was not specific in that he obtained defervescence as well with colon bacilli, while the treatment of several cases of puerperal sepsis resulted in a temperature fall that was quite striking.

Ichakawa[8] has also reported a series of eighty-seven cases, with intravenous injection of a sensitized vaccine, resulting in an immediate and permanent recovery in fully half of the cases and considerable improvement in others. He consideres the mortality reduced by one half. Ichakawa noted that the pulse rate frequently increased after the injection and warns against the use of the vaccines in cases of cardiac collapse or in pregnancy.

The dosage used has varied considerably, from the minimum of about 50 million to a maximum of 800 million. Ditthorn and Schulz consider a dosage of from 70 to 300 million most satisfactory, corresponding to about the usual dose for the Besredka vaccine (0.5 c.c. equals 250 million).

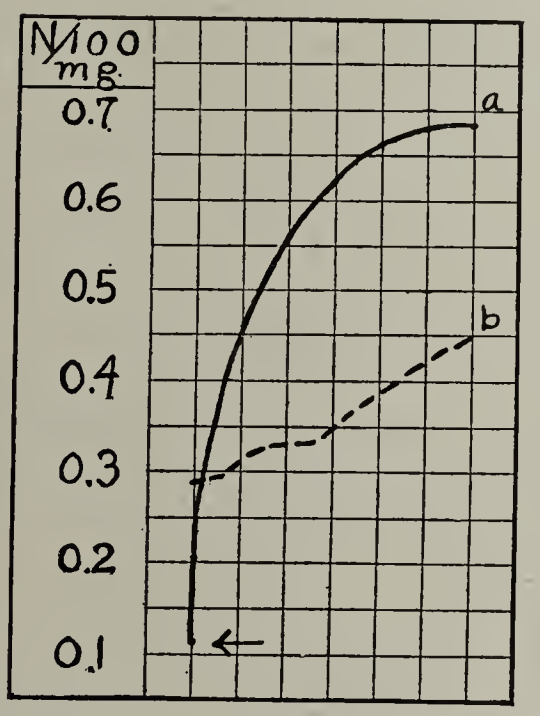


Chart 1.—Mobilization of serum proteose following intravenous injection of dried typhoid bacilli: *a*, proteose curve; *b*, curve of noncoagulable nitrogen in the serum. Arrow indicates injection of 10 mg. typhoid bacteria.

Practically all the case reports recently published have shown a result similar to that of Ichakawa, certainly justifying a most optimistic point of view as to the further development of this method of therapeutic application. There have, however, been isolated cases in which the injection of the vaccine was followed by alarming collapse symptoms, such as described by Sladek and Kotlowski.[9] They emphasize more especially the increase in peristalsis with consequent danger of hemorrhage and perforation and the cardiac collapse that may result. Even subcutaneous inoculations of immunizing doses are known to stimulate the intestinal tract, as Boyd[10] has recently pointed out.

In the endeavor to understand the mechanism which underlies the practical abortion of the disease the fact should be kept in mind that the effect is not specific, and that there have been found no immediate changes in the antibody concentration of the patient after the injection of the vaccine. There remains the possibility that the nonspecific ferments of the body are stimulated and in some way bring about the destruction of the invading organism and a detoxication. An increase in protease might produce a more rapid splitting of the toxic protein fragments to lower nontoxic forms, while an increase in the lipolytic ferments may have some influence in destroying the infecting organism itself. Whether we may ascribe primary importance to ferment changes in the serum during the course of infectious diseases is still problematic. At the time of the crisis in pneumonia a definite increase in serum protease is demonstrable, which

* From the Department of Pathology, Vanderbilt University Medical Department.

1. Biedl, Eggerth and Paltauf: Wien. klin. Wchnschr., 1915, xxviii, 125.
2. Korányi, A. von: Wien. klin. Wchnschr., 1915, xxviii, 85.
3. Ditthorn, F., and Schulz, W.: Med. Klin., 1915, xi, 100.
4. Goldschneider and Aust: Deutsch. med. Wchnschr., 1915, No. 13.
5. Csernel, E., and Márton, A.: Wien. klin. Wchnschr., 1915, xxviii, 229.
6. Rhein, M.: München. med. Wchnschr., 1915, lxii, No. 13.
7. Kraus, R.: Wien. klin. Wchnschr., 1915, xxviii, 29. Kraus, R., and Mazza S.: Deutsch. med. Wchnschr., 1914, No. 31. Mazza, S.: Wien. klin. Wchnschr., 1915, xxviii, 64.
8. Ichakawa, S.: Ztschr. f. Immunitätsforsch., Orig., 1914, xxiii, 32.
9. Sladek, J., and Kotlowski: Wien. klin. Wchnschr., 1915, xxviii, 389.
10. Boyd, W.: Jour. Canadian Med. Assn., 1915, v, No. 5.

we are inclined to believe represents a mobilization of cellular ferments rather than an overflow from the diseased organs. Falls[11] has recently noted this by means of the usual Abderhalden technic and has extended his observations to malaria, articular rheumatism, typhoid, etc.

In experimental animals we have found that the intravenous injection of killed bacteria is followed by a mobilization of nonspecific ferments. Such an experiment is the following:

Dog 76, weight 5.5 kg., 10 mg. dried typhoid bacilli injected intravenously at 9 a. m. The animal died at 4 p. m. It will be observed from the chart that the serum protease increased from 0.11 mg. to 0.6 mg. per cubic centimeter; while the lipase titer increased from 1 c.c. hundredth normal sodium hydroxid to 7 c.c. per cubic centimeter of serum (Chart 2). There was an increase in noncoagulable nitrogen from 0.27 mg. to 0.45 mg. at 3 p. m.

Such results are of course not specific for typhoid organisms but are produced by a variety, depending to a considerable extent on the relative toxicity, bacteria which by virtue of their great resistance to proteolysis even when dried, such as the tubercle bacillus and the diphtheria bacillus, have much less effect on the serum ferments.

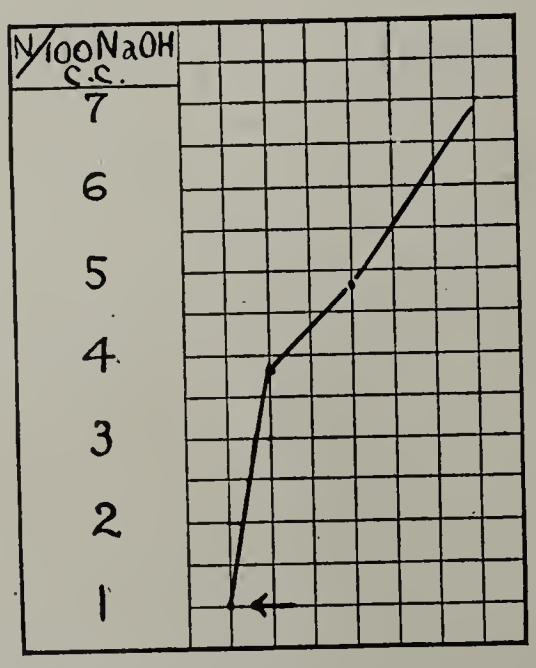


Chart 2.—Mobilization of serum lipase following injection of dried typhoid bacilli; arrow indicates injection of typhoid bacilli.

In view of certain definite objections to the vaccine treatment with typhoid bacteria, such as the increase in peristalsis and the deleterious effect on the heart, it would seem rational to endeavor to obtain the stimulation of the ferments by some means other than one involving the danger of further injury to the patient. Such a method might be found by using the various split products of the bacterium or other proteins and avoiding those which are known to be the most toxic. As Zunz, and Jobling and Strause have shown, the protoalbumose fraction of the protein split products is usually very toxic, while the secondary proteoses are practically nonpoisonous. Lüdke[12] has already made some applications of such treatment and has reported very favorable results. A series of cases which we have under treatment at present, while not sufficiently large to permit definite conclusions, seems to afford a very favorable confirmation of Lüdke's results. We shall report more fully on the series later.

We believe that the conclusion is warranted at present that intravenous bacteriotherapy offers a reasonably safe method of treatment in select cases of typhoid fever, but that further efforts should be made to overcome the definite toxic effects which of necessity accompany the injections. In the mechanism of the reaction we believe that the nonspecific ferments are of considerable importance.

11. Falls, F.: Jour. Infect. Dis., xvi, 466.
12. Lüdke, H.: Muenchen. med. Wchnschr., 1915, lxii, 321.

Education and Heart.—I am an enthusiast about education, but with all my enthusiasm, if I had to choose between the mind and the heart, I would take the heart. A good heart can take a dog's brain and make it useful.—W. J. Bryan.

PATHOLOGIC PHYSIOLOGY OF LEAD COLIC

ITS RELATION TO EXPERIMENTAL THERAPEUTICS *

ARTHUR D. HIRSCHFELDER
MINNEAPOLIS

The clinical studies of James Mackenzie and of Arthur Hertz have led us to the conclusion that intestinal cramps and colics occur when a wave of peristalsis passes down on a segment of intestine which is already in a state of tonic or spastic constriction. Such zones of spastic constriction are very often present, obliterating the lumen of the intestine and causing a stasis of intestinal contents above them. If this rule holds, it is most likely true also for the condition which gives rise to the colic in lead poisoning, and perhaps also that which causes the gastric crises of tabes dorsalis and of angina abdominis; and it would be natural to expect that any drug which relieves these conditions would also produce inhibition of intestinal peristalsis and spasm. As early as 1874, Riegel and Frank noted that lead colic was associated with increased hardness of the pulse and with changes in the pulse tracing which were characteristic of increased blood pressure. They found, moreover, that the height of the blood pressure ran parallel to the pain of the colic; and still further, that temporary relief from this could be secured by the administration of amyl nitrite. All these statements both as to blood pressure and therapy have been confirmed and reiterated by Pal of Vienna, who further adds the gastric crises of tabes and angina abdominis of arteriosclerosis to the group of cases relieved by the administration of amyl nitrite.

Although cited by Kobert in his toxicology, the recommendations of these observers seem to have been lost sight of in American literature, and received a passing mention only by Cushny. All of these observers regard lead colic as due to the rise of blood pressure, and none consider the possibility that the nitrites may act directly on the muscles or nerves of the intestines in inhibiting the peristalsis and spasm by a more direct action.

The experiments about to be described were performed on rabbits and cats. The intestinal movements were brought into view by making an incision in the midline, inserting a 10 cm. crystallizing dish and fastening the abdominal walls around this with a purse-string suture, leaving the bottom of the dish as a window through which the form and movements of the intestines could be plainly seen.[1] An intravenous injection of from 5 to 8 mg. lead acetate per kilogram of weight of the animal gave rise to intense peristalsis within five minutes, usually associated with the incidence of nodes of constriction of the bowel,

* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. This method has been successfully used in England by Cushny and Dixon for observation of intestinal movements. The sides of the dish were coated with beeswax to prevent slipping.

McCord C.P. (MD)

'15 The Pincal Gland in Relation to somatic, Sexual and Mental Development
(Second Paper)

Jour A.M.A. LXV: 517-520
Aug. 7 1915

almost obliterating the lumen; and with considerable decrease in size of the intestinal vessels and blanching of the intestinal walls. That this peristalsis could hardly be due primarily to a vascular condition was shown by the fact that the painting of the mesentery or a loop of intestine with nicotin or with atropin[2] caused paralysis of the bowel in the corresponding area, while extirpation of the thoracic spinal cord and section of both vagi failed to affect it. The peristalsis and spasm were also stopped by nicotin and atropin intravenously. These facts indicate that the lead acts primarily on the preganglionic endings of the autonomic nerves.

When amyl nitrite was inhaled or 2 drops of nitroglycerin were placed on the tongue of the animal after the lead contractions had been set up, inhibition promptly set in, lasting from one and a half to five minutes in the case of amyl nitrite; five to twenty-five minutes after nitroglycerin, and twenty-five to thirty-five minutes after sodium nitrite. The effect was most marked with amyl nitrite, slightly less with nitroglycerin and least with sodium nitrite, in exact proportion to the suddenness and duration of their effects on the circulation. Sodium nitrite reduced the intestinal movements to normal but never caused them to entirely disappear.

The relaxation of the intestinal walls is usually accompanied by a general dilatation of the large and small intestinal vessels and by the onset of a roseate hue of the intestinal walls, though, in spite of the great effect on peristalsis, the fall of blood pressure from nitroglycerin and from sodium nitrite did not exceed 12 mm. of mercury. The vasodilatation itself cannot be the responsible mechanism for the cessation of peristalsis, for if the same dilatation is brought about by placing hot water in the crystallizing dish that serves as an abdominal window, increased peristalsis sets up at once, and this also can be set at rest by administration of amyl nitrite, nitroglycerin or sodium nitrite. If the solar plexus be stimulated by a faradic current, the corresponding areas of intestines are thrown into movement as spasm, but here again, as in the previous cases, the nitrites act as inhibitors of intestinal movements.

Reviewing all these facts of intestinal inhibition, local and general, and recalling the law laid down by MacKenzie on the basis of clinical observations, that the symptom of colic is associated with intestinal peristalsis and spasm, it seems most likely that the actions ascribed to the nitrites by various writers on the relief of lead colic, tabetic crises, and angina abdominis are due not merely to the effects on the blood vessels and blood pressure, but to a different mechanism — to the rôle played by the nitrites as inhibitors of the intestines.

It is to be hoped that this experimental basis for clinical observation may lead to a wider use of these drugs, particularly in the treatment of tabetic crises and angina abdominis, and that the clinical results may bear out the hopes of the laboratory.

University of Minnesota.

2. Inhibition of experimental lead peristalsis by atropin had been demonstrated by Harnack in 1878.

Consistency is for the Dead.—Truth is progressively revealed and one must readjust himself in thought and action to the greater knowledge of truth that we ought continually to gain. The man who at 50 thinks as he thought at 30 has mentally ceased to grow.—W. C. Redfield, *Science*, July 9, 1915.

THE PINEAL GLAND IN RELATION TO SOMATIC, SEXUAL AND MENTAL DEVELOPMENT

SECOND PAPER

CAREY PRATT McCORD, M.D.
DETROIT

Current descriptions of the pineal gland attribute to this organ the function of producing a secretion which inhibits growth of body and restrains mental and sexual development from exceeding the rate looked on as normal for preadult life. This inference arises from the occasional distinctive precocity of development following invasion of the pineal gland by neoplasms. It is assumed that such neoplasms destroy the gland, and that any resulting metabolic disturbances occur from the deprivation of the body of the pineal's elaborated substances.

From a reactionary point of view, the groundwork for such a theory is both meager and unstable. From sixty-five to seventy authentic cases of pineal tumors have come under observation. These have been distributed over more than a century. Copies of the original descriptions are rarely readily accessible. By reason of faulty translations and inaccuracies in quotations, some descriptions of pineal gland syndromes have come to resemble classical myths. Of the sixty-five to seventy cases, only about 10 per cent. present those striking effects characterized as the "precocious macrogenitosomatic pineal syndrome." The instances of greatest metabolic disturbances have occurred in persons below 14 years of age. Of the total number of cases, sixteen were recognized before the age of 14 was attained — twelve boys and four girls. The syndrome has appeared in more striking form in boys than in girls, but the ironclad statement that the syndrome is confined to males is probably unwarranted. Marburg's case in a girl of 9 presents metabolic alterations equally as striking as those in boys cited as types of the pineal syndrome. It is noteworthy that the pineal syndrome has occurred only in such cases of pineal tumors as have led to an obstructive hydrocephalus and thus, of necessity, to secondary hypophysial disturbances (Cushing).

In the remaining of the total sixty-five to seventy pineal cases, there appear various departures from the established syndrome. The greater number, whether adults or children of either sex, manifest no metabolic disturbances attributable to pineal functional perversion. The nicety of the theory that only in childhood and only in boys does this syndrome appear, is apparently jeopardized by the occurrence of pineal tumors with adiposity in adults of both sexes, with adiposity and infantilism in both sexes, and with cachexia. In part, these deviations from anticipated findings are due to secondary involvement of others of the endocrinous system, notably the hypophysis. The interrelation with others of the glandular system has been emphasized by Marburg, Fränkl, Hochwart and others, but in some instances, the necropsy demonstration of a pineal tumor led to the crediting of all prior changes to pineal dysfunction.

The available histories frequently do not permit a restudying in the light of later developments in our knowledge of the interrelation of the several glands. When this is possible, many of the apparent discrepancies and conflicts are rendered more nearly harmonious through evidence of involvement of other glands,

especially the hypophysis, and secondary to it the sex organs. When, however, a delineation is made of the extent of these secondary influences and these are hypothetically set apart, there still remain alterations probably attributable only to primary pineal dysfunction. The complete syndrome is characterized by (1) overdevelopment of the sex organs, both anatomic and functional; (2) precocity of mental development; (3) general overgrowth of body with or without adiposity — the whole picture being one of early maturity. The syndrome is rarely complete. The most nearly complete cases have occurred in boys below or near 7 years of age. It is at this age rather than at puberty that the gland presents its greatest histologic evidence of a beginning involution.

A second pineal syndrome whose essential feature is cachexia has been described. This is much less definitely connected with pineal dysfunction, and has been more especially associated with the occurrence of tumors in adult life. It is described as representing apinealism.

The nature of the pineal syndrome, whether it be the outgrowth of hyperpinealism or hypopinealism, or whether a clinical condition corresponds to each of these deviations from normal, is not established. On the recognition of a specific pineal syndrome (or syndromes), efforts were made to establish its cause by reproducing the condition in animals through the experimental removal of the gland. The gland's extirpation is difficult, but has been successfully performed in both young and adult animals. The results are rendered less authoritative by the vitiating effects of the trauma necessary in the gland's removal. Pinealectomy determined no changes that might be associated with pineal functions as observed by the majority of investigators. Foa and Sarteschi, respectively, report that, of the animals which survived the operative procedures, some young males evinced certain features of the pineal syndromes. The similarity on comparison with clinical cases is remote.

The precocious macrogenitosomatic syndrome is usually ascribed to hypopinealism. The theory suggested above as current assumes that pineal lesions are destructive, and that concomitant metabolic disturbances arise from the lack of pineal secretion. To the contrary, running through the publication of a number of observers are to be noted suggestions that pineal neoplasms retain some of the functional characteristics of normal pineal cells, and that the pineal syndrome is due to increased rather than decreased function of the gland. The similarity of pineal tumor cells to normal pineal cells has been pointed out by Howell.[1] The retention of function in neoplasms in other glands is not infrequent; tumors in the hypophysis have in a number of cases occasioned acromegaly, a hyperpituitarism; tumors of the thyroid and metastases from thyroid tumors may secrete typical thyroid colloid; suprarenal gland neoplasms yield the active principle of the normal suprarenal; bile is secreted by certain liver tumors, whether they be located in the liver or metastasized to other portions of the body. The inference from such instances is that the cells of the neoplasm originating in an organ may, under certain conditions, retain some of the functional attributes of the normal cells of that organ. That pineal tumors may lead to an active constructive stimulating influence (hyperpinealism) is suggested in publications by Marburg,[2] Polavani,[3] Oestreich and Slawyk[4] and Askanazy.[5] However, the evidence used by Marburg may readily be turned to support the idea of hypophysial involvement in his case. Oestreich and Slawyk regard the early sexual maturity as hyperpinealism analogous to acromegaly from hyperpituitarism. Askanazy suggests that teratomas may be regarded as "false conceptions," in which one might expect, primarily at least, an increase in the pineal secreting functions (compare Bailey and Jelliffe). It is noteworthy that the best-defined cases of pineal syndromes regularly occur from pathologic conditions invading the actual tissue of the gland, rather than from simple cysts and from adjacent tumors involving the pineal only by compression.

In this rather uncertain situation, it is held that, in case uniform and consistent manifestations followed the experimental administration of pineal gland tissue, and these manifestations stood in some qualitative relation to evidence as to function derived from other sources, such experiments, rigidly controlled, would be acceptable as bearing on the functions of the gland. Accordingly, such experiments have been performed. The results have been indicated in part in a preliminary report.[6] A report of results from a continuation of this earlier work constitutes the remainder of this paper.

EXPERIMENTAL DATA

Feeding experiments with small animals, in which the results were measured in such terms as weight differences and body disproportions, are so vitiated by trivial differences in the living conditions of the experimental and control animals that any deductions should be made most guardedly. The findings from a single series of feeding experiments might easily be misinterpreted because of some deleterious influence of obscure origin. When, however, the investigation includes a number of series of animals, and the different series are maintained under varied experimental conditions, no accidental influence would constantly be exerted on a single phase of the experimentation. Any deviations from the normal, regularly appearing in the several experimental groups, may be attributed to the influence of the substances employed in feeding.

Because of this facility with which abstruse errors enter into feeding experiments, the preliminary work, which included results from feeding chicks, guinea-pigs and puppies, has been extended to include results from 393 animals. Variations have been introduced, in dosage, in method of administration, in source of material used (species and age of animals supplying glandular material) and in age of test animals. Except for one series of experiments on the influence of the pineal on embryonic development, guinea-pigs have been exclusively employed as test animals.

THE INFLUENCE OF PINEAL GLAND ADMINISTRATION AS SEEN IN WEIGHT DIFFERENCES

(a) Effect of feeding the pineal substance from old adult cattle to young animals.

Series A (forty-eight young pigs, aged 2 weeks, an equal number of males and females, sexes maintained apart) was equally divided into control and experimental lots. To the experimental lot, 10 mg. of pineal tissue from adult cattle

1. Howell, Hinds: Proc. Roy. Soc. Med. (Neurolog. Sec.), 1910, iii, 65.

2. Marburg: Wien. med. Wchnschr., 1908, lviii, 2617.
3. Polavani: Folia Neuro-Biologica, 1913, vii, 655.
4. Oestreich and Slawyk: Virchows Arch. f. path. Anat., 1899, clvii, 475.
5. Askanazy: Verhandl. d. deutsch. path. Gesellsch., 1906, p. 58.
6. McCord, C. P.: The Pineal Gland in Relation to Somatic, Sexual and Mental Development, The Journal A. M. A., July 18, 1914, p. 232.

was daily administered by mouth. The controls were similarly given a corresponding amount of inert material. This was continued ten weeks with weekly weighings. Since to the pineal are attributed functions confined to preadult life, it might be anticipated that feeding with mature glandular material would cause no change. On the other hand, the histologic picture of the adult pineal indicates the persistence of some glandular elements throughout life. The two lots of animals under observation as to this point ran essentially parallel weights. At the end of the ten weeks, the experimental animals had gained on an average of 130.5 per cent., while the controls gained 136.5 per cent.

As a check on Series A, Series G was similarly carried out with results as indicated in Table 1.

TABLE 1.—RESULTS OF FEEDING ADULT PINEAL GLAND TO YOUNG MALE GUINEA-PIGS (Series G)

Control, 12 Pigs Average Initial Weight, 197.6 gm. Age, 2 weeks			Pineal, 12 Pigs Average Initial Weight, 199.8 gm. Age, 2 weeks		
Weeks	Aver. Wt., Gm.	Gain, Gm.	Weeks	Aver. Wt., Gm.	Gain, Gm.
1	233.4	35.8	1	228.1	28.3
2	264.4	31.0	2	255.1	27.0
3	294.7	30.3	3	277.0	21.9
4	323.0	28.3	4	307.1	30.1
5*	349.1	26.1	5*	334.3	27.2
6	385.2	36.1	6	365.5	31.2
7	431.6	46.4	7	403.6	38.1
8	444.0	12.4	8	425.3	21.7
Average weight at end of eighth week..... 444.0 gm.			Average weight at end of eighth week..... 425.3 gm.		
Average initial weight.... 197.6 gm.			Average initial weight.... 199.8 gm.		
Average gain..... 246.4 gm.			Average gain..... 225.5 gm.		
Gain per cent. 124.7			Gain, per cent. 112.7		

* Feeding discontinued.

(b) The effect of administering veal pineal glands to old experimental animals.

The counterpart of the foregoing experiments was also undertaken. All earlier experiments in which the work was begun with young animals, but continued to the time of adult life, contribute data to this present phase of inquiry. Wherever it has been possible to induce a rapid body growth in immature animals, it has never been possible to continue this excessive growth above normal adult size. As the animals approach adult size, the pineal feeding is less effective, and after full maturity is reached, is without effect. There has, at no time, been a tendency toward gigantism.

Male guinea-pigs are sexually active before 4 months, and at 6 months are considered mature adults. However, these bucks subsequently slowly increase in size for several months before attaining their maximum weight. Series F (all males) was directed toward this period of growth. The animals were picked at 6 months of age, fed veal pineal tissue, and controlled as in other reported series. The feeding was maintained for four weeks, but weighings were continued for eight weeks. In this period the average experimental buck gained 167.6 gm., while the average control gained 121.4 gm.

(c) The effect of administering pineal glands from young animals to young experimental animals.

The greater portion of the data of the original paper is directed toward this phase. Of the more recent work, Series C, D, E and E_2 (hereinafter described, Table 3) contribute data.

Hypodermic Injections of Pineal Extracts: Several glandular principles are not sufficiently stable to survive the deleterious action of the digestive juices and the liver, and thus are not efficacious when administered orally. Whatever principles there may be in the pineal gland seem to pass through the digestive processes sufficiently intact to induce metabolic changes. To determine the comparative effects of pineal extracts administered orally and hypodermically, Series D (forty-eight young pigs, both sexes) was aseptically injected triweekly with 20 mg. of veal pineal tissue in 1 c.c. of water. The controls were injected with an equal quantity of brain tissue similarly prepared. A comparison of results from D with those obtained from the oral administration to animals of the same age is shown in Table 2.

TABLE 2. — COMPARISON OF RESULTS OBTAINED FROM ORAL ADMINISTRATION OF VEAL PINEAL GLAND WITH THOSE FROM HYPODERMIC ADMINISTRATION

Oral				Hypodermic			
Weeks	Gain Per Cent., Control	Gain Per Cent., Pineal	Per Cent. Difference	Weeks	Gain Per Cent., Control	Gain Per Cent., Pineal	Per Cent. Difference
2	9.3	10.9	1.6	2	17.2	36	18.8
4	24.7	32.5	7.8	4	30.4	45	14.6
6	32.	49.3	17.3	6	36.2	56	19.8

In Series E and E_2, another variation was introduced by the substitution of lamb pineal tissue for that of veal and cattle. The gland in lambs is of different shape from that found in cattle. The lamb gland is round instead of oval, the melano pigment is (when present) localized in the distal portion. The lamb glands weigh, on an average, 100 mg. The method of preparation of this tissue was the same as that earlier described. Such material was administered to the animals of Series E in 10 mg. amounts daily. The results are indicated in the general tabular summary. To E_2, 100 mg. of the same tissue was administered. This larger dose was evidently not well borne by the alimentary tract, for, during the eleven weeks of feeding, there were irregular periods of distinct loss of weight. Ultimately, however, an excess of 40.9 per cent. was determined as the gain of pineal fed over control animals.

(d) Difference in effect of pineal administration on animals of different sex.

The pineal clinical syndrome has been best established in males. In extirpation experiments, only in males have metabolic disturbances been described. Because of this apparent predilection for males, the results of feeding have been analyzed for data as to the relative responsiveness of the two sexes. Series E and a part of B have been analyzed. Early it was obvious that both males and females responded to pineal stimulation. It was anticipated that the males would make greater gains than females in both the control and experimental lots. Computations have been based on gains of experimental males over control males in comparison with gains of experimental females over control females. On such a basis, two thirds of the excess gains are made by male animals. This was observed in Series E, in which the total period determined a general excess of 19.3 per cent. in favor of experimental animals. Analysis of this gain by sex indicates a 25.8 per cent. gain for the males, and for the females, 12.7 per cent. Details of the analysis of Series B are given in Table 4.

TABLE 3.—PERCENTAL GAINS OF VARIOUS SERIES DURING SIX WEEKS' GROWTH

Series	Second Week		Fourth Week		Sixth Week	
	Control	Pineal	Control	Pineal	Control	Pineal
B	9.3	10.9	24.7	32.5	32.0	49.3
C	26.3	26.6	45.3	47.6	71.5	83.1
D	17.2	36.0	30.4	45.0	36.2	56.0
E	21.2	24.6	45.9	50.6	59.3	78.4
E_2	27.7	22.6	47.0	53.3	68.7	82.4

(e) Summary and comment on weight differences.

The data accruing from two years of feeding experiments with pineal substance are sufficiently extensive to free the results of accidental vitiating factors. Averages of a number of experimental series aggregating nearly 400 animals would indicate that young animals to which had been administered pineal tissue developed at a rate in excess of normal controls.

The most pronounced results arose from the feeding of young animals with material derived from young animals.

Although some histologic evidence exists indicating the glandular nature of the pineal in mature adult life, such material, when fed to young animals, did not bring about the changes observed in feeding with younger pineal material.

At no time has gigantism been produced. As adult life is approached, pineal feeding is less effective.

The excess growth of young animals under pineal feeding is grossly symmetrical. No disproportion has been observed except a possible hypertrophy of the testes noted in some animals. In microscopic sections, such testes are seen to be made up of larger and more mature tubules than in controls of the same age, but with no increase in the interstitial tissue.

Both males and females are affected by pineal administration, but the gains (in relation to respective controls) have been greater for the males than for females.

TABLE 4.—ANALYSIS OF GAINS BY SEX (Series B)

Weeks	Control, 2 Weeks Old				Pineal, 2 Weeks Old			
	Males		Females		Males		Females	
	Aver., Gm.	Gain, Gm.	Aver., Gm.	Gain, Gm.	Aver., Gm.	Gain, Gm.	Aver., Gm.	Gain, Gm.
	200.9	....	205.9	....	204.5	....	208.4	....
1	200.0	—0.9	192.0	—13.9	203.2	—1.3	211.9	3.5
2	219.9	19.9	219.8	27.8	249.0	45.8	224.9	13.0
3	251.5	31.6	224.4	4.6	284.1	35.1	242.3	17.4
4	277.7	26.2	250.1	25.7	309.9	25.8	259.1	16.8
5	295.5	17.8	266.2	16.1	331.8	21.9	277.4	18.3
6	296.7	1.2	262.7	—3.5	342.1	10.3	282.8	5.4
7	326.2	29.5	288.6	25.9	373.3	31.2	305.2	22.4
8	345.3	19.1	305.5	16.9	401.5	28.2	325.2	20.0
9	360.9	15.6	314.0	8.5	409.8	8.3	326.1	0.9
10	402.2	41.3	349.4	35.4	452.2	42.4	371.4	45.3
11	417.5	15.3	367.8	18.4	479.0	26.8	387.4	16.0
12	427.4	9.9	379.7	11.9	482.8	3.8	402.5	15.1
13	433.3	5.9	383.4	3.7	488.5	5.7	421.6	19.1
14	458.1	24.8	413.9	30.5	522.4	33.9	444.3	22.7

	Males	Females	Males	Females
Last weight....	458.1 gm.	417.9 gm.	522.4 gm.	444.3 gm.
Initial weight..	200.9 gm.	205.9 gm.	204.5 gm.	208.4 gm.
Average gain...	257.2 gm.	212.0 gm.	317.9 gm.	235.9 gm.
Gain per cent...	128.0	103.0	155.4	113.2

Excess pineal males over control males..... 27.4 per cent.
Excess pineal females over control females..... 10.2 per cent.

THE INFLUENCE OF PINEAL FEEDING ON SEXUAL MATURITY

Of any several groups of premature guinea-pigs maintained under normal conditions, it is assumed that individuals will attain to sexual maturity near the same time and will give birth to young at about the same subsequent time. In case of a regularly recurring marked difference in time of birth of first young in one phase of an experimental lot of animals, it is rational to associate this phenomenon with different times of attaining to maturity. On such a basis it has been noted in all groups of animals which were allowed to breed that the pineal-fed mothers gave birth to young earlier than the controls. One series including forty-five animals was carefully conducted with a view to any data bearing on the matter in question. The two sexes were kept together from birth. The feeding with veal pineal tissue was continued for fourteen weeks. During this time the pineal-fed attained to a size 32 per cent. larger than their controls of the same ages. The female farthest advanced in pregnancy among the pineal-fed animals aborted, so that the date of birth of first young was not determined. The first normal birth occurred July 3 in the experimental group. Others of the same group followed until over half the females had given birth to young. Then three weeks and two days later, July 26, the first control pig was born. The progeny in all instances were like any other pigs. After all pigs were born in both groups and after an interval of several weeks, the same females were placed with normal bucks to detect a possible difference in the second pregnancy. No such difference was detectable.

GENERAL SUMMARY

From the foregoing experiments, evidence of the precocity of development usually attributed to pineal deficiency (hypopinealism) has been obtained in animals by supplying an increased amount of pineal substance by feeding or injecting pineal preparations. Such administration of pineal substances led to a more rapid growth of body than normal, and determined an early sexual maturity. The excess in rate of growth was most pronounced (40.9 per cent. excess in eleven weeks) in *young* animals fed with pineal tissue obtained from *young* animals. No tendency to gigantism has followed pineal administration. After maximum size was attained, pineal administration appeared to be ineffective. Both males and females respond to the influence of pineal substances in rate of growth, but the response has been more definitely manifested in males.

472 Pennsylvania Avenue.

DUODENAL ALIMENTATION

M. H. GROSS, M.D.
AND
I. W. HELD, M.D.
NEW YORK

The internal treatment of gastric and duodenal ulcer is rightly receiving widespread attention.

Most modifications of the old established methods are founded on the same principle, namely, to rest the stomach as much as possible until the acute symptoms disappear, to reduce secretions, and to bind the existing secretions. Such procedure, if effectively carried out, is favorable to the healing of the ulcer. It is essential, of course, to observe the treatment most minutely and persistently. Boas and others are right when they state that the reason so many uncomplicated ulcers are receiving surgical treatment is that general practitioners, and to some extent even specialists, do not sufficiently await results from the internal treatment. One often hears that a decision as to whether a gastric or duodenal ulcer should receive medical or surgical treatment depends on the circumstances of the patient. It is sometimes asserted that in the case of persons who must earn their daily bread and have not the time to undergo a regular ulcus treatment, it is best to operate.

That this argument is not logical is self evident. First, surgical treatment involves a longer time than the medical for a complete cure. Secondly, the final results of surgical treatment of uncomplicated ulcer are no more favorable than those of medical treatment. Finally, the direct mortality danger involved in operative procedure, even if only a gastroenterostomy is done, is still from 2 to 4 per cent. It is a great advantage, therefore, to find a therapeutic agent which promises to be an additional aid in the internal treatment of gastric and duodenal ulcer. Duodenal alimentation may prove to have the desired effect.

DUODENAL FEEDING

Max Einhorn[1] advised feeding by means of the duodenal tube, and indicated such feeding in all cases in which it is desired to rest the stomach and in which, for some reason, the food is not retained or well

1. Einhorn, Max: Med. Rec., New York, July 16, 1910.

borne by the stomach. Indications include ulcus ventriculi or duodeni, marked cases of ptosis and atony, cirrhosis of the liver, nervous vomiting and persistent vomiting of pregnancy, and inoperable cancer of the stomach. Lately Einhorn observed that the duodenal tube has no injurious effect even in acute bleeding of the stomach or duodenum.

Einhorn and Rosenbloom[2] found that duodenal feeding maintains the nitrogenous equilibrium.

The length of time during which such feeding was carried on was from eight to fifteen days. The food used consists of from 240 to 300 c.c. of milk at body temperature, one raw egg, and 15 grains of lactose. This quantity is introduced every two hours. In order to increase the quantity of fluid Einhorn administers a saline solution by rectum, by means of the Murphy drop method, or water is given by the duodenal tube drop by drop. If the lactose causes diarrhea, it is discontinued. If the milk is not borne well, strained barley, or strained pea soup is sometimes given. Feeding should be administered very slowly, each feeding lasting for twenty minutes.

The first two or three days there is apt to be some nausea or retching, a sensation of distention, and even the vomiting up of the tube. Einhorn prefers the use of a thin tube because it is tolerated better by the patient. He states, however, that the food is not so easily introduced through a narrow as through a wide tube.

This method of feeding seems to be a happy idea, as it gives us a chance, if possible, to replace rectal feeding in the great majority of cases in which the stomach is to be put to rest, and at the same time to introduce sufficient food directly into the small intestine, where it can well be digested and absorbed. It is essential, however, to have an exact understanding of the physiology of digestion and absorption in that part of the small intestine with which the food is brought into contact. With this in mind we are enabled to judge the kind of food, the quantity, and how it should be given.

THE INTESTINAL SECRETIONS

It will be remembered that the intestinal juices contain a number of ferments; erepsin breaks up the products of protein digestion by pepsin and trypsin, into the end-products of amino-acids, and acts directly on the casein. Lipase, the fat-splitting ferment, exercises its action on the finely emulsified fats. Of the carbohydrate ferments, the intestinal juices contain lactase, maltase and invertin. There is also present a nuclease. We therefore see that ferments do exist in the small intestine, to act on a number of important foodstuffs essential to life.

It is likewise known through the studies of Pawlow and his pupils, as well as those of Cohnheim and his co-workers, that the intestinal juices are stimulated by local irritation, but that the ferments are not increased with the quantity of secretions.[3] If, however, food is directly introduced into the intestine, secretions with corresponding ferments are stimulated. This in itself would justify duodenal feeding. But the ferments in the intestine are primarily not so extensive in their action as those of the pancreatic juice, and for predigestion the ferments of the pancreatic juice are undoubtedly essential, even if the food is directly introduced into the small intestine. Drawing our conclusions from the experimental evidence furnished by the studies of Hamburger, Heckman, Babkin and others (who found that absorption of intestinal juices in one part of the small intestine stimulates secretion of active intestinal juices in another part reflexly by way of the nervous system, or by way of the blood), it is reasonable to assume that when food is directly introduced to the small intestine, pancreatic secretion is stimulated and aids in digestion.

That stimulation—even of the rectum—by food causes secretion in the stomach is an established fact, and would tend to substantiate our assertion. If gastric secretions are likewise stimulated by duodenal feeding, the rest intended for the stomach is not a complete one. But the disturbing element of these secretions is to a great extent removed, first, because the local irritant, the tube in the stomach, causes an abundant mucus secretion which neutralizes the acid; this is proved by the fact that after the tube is removed, thick layers of mucus surround the tube; secondly, the secretions in the stomach in the absence of any food gradually diminish in acidity, and lastly, through the open pylorus, bile and pancreatic juice regurgitate and so lower the acidity. Such factors in the stomach tend to diminish peristalsis or completely do away with it, thereby establishing complete rest.

The rhythmic contractions in the small intestine have, according to Cannon, the object of making the digestive juices more accessible to the food. Experiments demonstrate that if food reaches the intestine not predigested by stomach and pancreatic juices, these rhythmic contractions are slower, thereby allowing the intestinal juice to adapt itself to its unaccustomed task.

Considering the foregoing facts — the existence of the ferments in the small intestine, their increase as a response to the local introduction of food, and the accommodation of the rhythmic contractibility of the small intestine to the contents — it is easily conceived that direct feeding by means of the duodenal tube is a very plausible means of supplying enough calories to maintain body weight. However, as the food introduced directly into the small intestine is primarily foreign to that part of the viscus, our aim must be to give the viscus the opportunity to adapt itself. This is accomplished by administering such food at the beginning of the feeding as is most easily digested and most completely absorbed. It may consist of the following:

Of the proteins, it is the casein of the milk that is completely digested by the erepsin; the lactose is acted on by the lactase; the finely emulsified fat of the milk is acted on by the lipase of the small intestine. The water and the salts of the milk are also readily absorbed there. Of the carbohydrates, the monosaccharids are absorbed in solution of from 6 to 8 per cent. A difference exists in the absorbability of the various kinds of monosaccharids. Glucose and galactose are more quickly absorbed than levulose and mannose. Maltose and glucose completely disappear within an hour, while of the lactose in equal quantity, only 26 per cent. is absorbed.

During the first period of feeding, milk as well as from 6 to 8 per cent. of glucose solution is the most rational form of feeding. After three days we increase the caloric value by increasing the fat, in the form of yolks of egg, which at the same time carries to the

2. Einhorn and Rosenbloom: Am. Jour. Med. Sc., 1913, cxlii, 7.
3. Savage: Dissert., St. Petersburg, 1904, p. 6.

system lecithin and phosphorus. Pure cream is best given in small quantities, and even then if not borne well (as manifested by diarrhea) it is best to add pankreon to the cream in a formula given below. After the sixth day the whole egg is usually borne well. The feeding is administered by means of the Einhorn or Gross duodenal tube.

THE APPARATUS

As the use of the duodenal tube is not occupying the position it deserves, it will not be out of place here to mention briefly the difference which exists between the Einhorn and the Gross tube and the mode of introduction of the Gross tube, which we use exclusively.

The Einhorn tube is narrower and the ball is much lighter in weight, 2.5 gm., while the Gross tube has a diameter of 7 mm. and the ball is much heavier, from 10 to 11 gm. in weight. The Einhorn tube is introduced with the patient sitting, and the propulsion of the little ball into the duodenum is dependent on the propulsive action of the stomach.

The Gross weighted tube works its entire way by gravity; hence the position of the patient is varied, while the tube is being introduced, in order to favor gravitation of the ball. Originally Gross advised the following mode of introduction:

The patient assumes a comfortable position in an armchair, with the head slightly inclined backward, so as to let the ball fall back toward the posterior pharyngeal wall.

The patient, having well moistened the ball with his saliva, is told to swallow it as he would a pill. As soon as the ball has arrived at the posterior faucial wall, the patient is requested to swallow energetically a few times. At the same time we rapidly push the tube in, in order to facilitate the ball gliding down. It is important that the patient's act of swallowing and the act of pushing in the tube be executed simultaneously, as otherwise the ball will be returned again and again by retching.

With this manipulation there is no need for the patient to wash the ball down with a drink of water. We have always been able to dispense with water. Slight cyanosis, due to spasm at the entrance to the larynx, is quickly overcome. Once the narrow place is passed, there is no further obstacle to the advance of the tube. When the tube has been swallowed down to mark 45 cm., we convince ourselves of the unimpeded passage by lightly blowing into the tube. Should there be an obstruction, caused by kinking, it is rapidly overcome by slightly withdrawing the tube.

As soon as the patient has assumed the right decubitus, the tube is gently pushed forward, rather following the traction of the ball. The tube is allowed to glide in to mark 70 cm. (about 10 cm. beyond the pyloric ring), in order to have a sufficient length of tube hang in the gastric cavity, enabling the ball to work its way onward.

At this juncture the patient is instructed to hold the tube in position by slightly biting on it for from one half to three quarters of an hour, in fact, long enough to allow the ball to enter the duodenum. Pushing the tube still farther in before this time has elapsed would simply cause it to roll up in the stomach, frustrating the entire procedure.

During this time the patient usually falls asleep, while the physician may attend to other duties. When the one half or three quarters of an hour has expired, the contents are aspirated from time to time until characteristic duodenal juice appears in the receptacle, which is usually the case after from half an hour to an hour.

This, our method of introducing the apparatus, entirely circumvents the fundus action of the stomach, as it brings the little ball at once to that part of the stomach — the pars pylorica — which alone is concerned in the propulsion of its contents.

Holzknecht of Vienna[4] and Lippman of San Francisco[5] modified the mode of introducing the Gross duodenal tube as follows: The tube is swallowed up to 45 cm. with the patient in a sitting position; the patient then climbs on the table on all fours and turns immediately on his right side with head and chest elevated. In this position the tube is introduced to 70 cm. After five minutes he is placed on his back with elevated pelvis. After another five minutes the tube is pushed down further to 80 cm. In five minutes more, the duodenal contents can as a rule be obtained. According to the authors mentioned, it takes from fifteen to twenty minutes for the tube to reach the duodenum.

For the Einhorn tube to reach the duodenum, the minimum time is from three to four hours; the maximum from ten to twelve hours, because the tube relies entirely on the propulsive action of the stomach. The narrower tube is considered an advantage by Einhorn because it causes less irritation; on this theory Palewski devised a duodenal tube which Holzknecht and Lippman rightfully term a combination of the Einhorn tube and the Gross ball. We have never observed any irritation caused by the larger tube, and, for convenience in feeding, Einhorn himself states that a larger sized tube facilitates the introduction of food. In spite of the best method, it sometimes happens that the ball halts before a closed spastic pylorus. In such cases it is found practical to introduce through the tube a few tablespoonfuls of olive oil, which neutralizes the hydrochloric acid and facilitates the opening of the pylorus. It is essential to introduce the tube as far as from 120 to 125 cm. in order that it may not slip back during the entire time the tube is in the small intestine.

MODE OF FEEDING

Before food is introduced, we ascertain by blowing that the lumen is patent, and that the tube is in the intestine, by aspirating the intestinal contents. The food is introduced through a glass funnel attached to the outer end of the tube. It is essential, as already stated by Einhorn, that the food be given very slowly. With the Gross tube, each feeding can be accomplished in about ten minutes or less.

The quantity of food from day to day is given as follows: the first three days, 250 c.c. of warm milk, to which 15 gm. (one tablespoonful) of glucose is added, every two hours. This yields in feedings 1,528 calories.

On the fourth day, yolk of egg is added to the milk three times a day, an additional 174 calories — total in twenty-four hours, 1,702 calories.

If this is tolerated well, we can on the fifth and sixth days add one yolk of egg to each feeding, which supplies another 232 calories and makes a total of 1,934 calories.

4. Holzknecht: München med. Wchnschr., Sept. 29, 1914.
5. Lippman, C. W.: Simplification of the Duodenal Tube Examination, The Journal A. M. A., March 21, 1914, p. 911.

On the seventh day we add to three feedings the entire egg, the other feedings remaining the same — a total in twenty-four hours of 1,955 calories. If this is borne well, we give the patient an egg to each feeding on the eighth day — a total of 2,053 calories.

On the ninth day one tablespoonful of sweet cream is added to each feeding — a total of 2,350 calories in twenty-four hours. This quantity is kept up until duodenal alimentation is completed — until the end of the fourteenth day.

In some patients Einhorn encountered nausea, retching, even vomiting and diarrhea if cream or lactose was given in the beginning of the feeding. The reason for this is obvious. As the intestine is not accustomed to this kind of feeding, the cream necessarily causes irritation; lactose, besides being a mild laxative, is but slowly and not completely absorbed, and also causes irritation. It is best, therefore, to give the cream in the last days of feeding, and substitute glucose for the lactose. Should the cream even then cause diarrhea, it can be overcome by adding 0.5 gm. pankreon to each tablespoonful of cream. The deeper the tube is inserted, at least to 125 cm., the fewer chances are there for any of the unpleasant effects mentioned by Einhorn. This is achieved with the heavier weighted tube. Walking facilitates and hastens the desired progress of the tube.

Einhorn mentions that if the patient complains of excessive thirst, water can be introduced by the drop method through the duodenal tube, or normal saline by rectum. We find as a rule that the patient does not complain of any thirst, because he gets sufficient fluids with his milk. Besides this, 50 c.c. of water is used by us before each feeding to clean the tube, which gives the patient additional fluid of 350 c.c. in twenty-four hours. The sensation of thirst is due to the dryness of the mouth, which is easily overcome by having the patient rinse his mouth several times a day. The frequent cleansing of teeth and mouth is essential in order to prevent parotitis and its consequences. Other unpleasant sensations of the patient during feeding, like distention, peristaltic unrest, and even light cramps, have not been observed by us, owing to the fact that the feeding is not forced down by a syringe, which is absolutely necessary in a narrow tube, but is allowed to flow down through a glass funnel through the wider tube.

INDICATIONS FOR DUODENAL FEEDING

The indications made by Einhorn are mentioned above. We have thus far confined ourselves exclusively to the duodenal feeding of absolutely diagnosed cases of gastric or duodenal ulcer which have not yielded to the older methods of treatment. Let it be distinctly understood that the duodenal feeding has, in our opinion, by no means replaced the old reliable and well-established methods of internal treatment of gastric and duodenal ulcer. All methods—from the most conservative method of von Leube, through the manifold intermediary modifications to the most radical Lenharz method — have their special value and indications in individual cases. If, however, an ulcus treatment conscientiously carried out for one week does not relieve the symptoms at all, be it on account of atony, persistent acidity and secretions, or even because of the existence of adhesions, we institute the duodenal feeding.

After the tube is removed, the patient must not at once be allowed a liberal diet, even though he has no symptoms. We must bear in mind that the stomach, having received no food for such a length of time, must be educated gradually to nourishment. Again, while the secretions are at low ebb when the patient begins to eat, the tendency to hypersecretion and hyperacidity may still exist. Furthermore, one cannot absolutely foretell to what extent a florid ulcer has healed in the course of that time.

The first two days after the tube is removed, the patient receives milk with sweet cream and six eggs daily. On the third day, toast and butter and fine cereals are allowed. On the sixth day, the diet corresponding to the third week of the von Leube ulcer treatment is begun, and continued with the von Leube treatment until the end of the sixth week. Five days after removal of the tube, the patient is allowed to attend to his business. Should it happen that the symptoms recur when the patient goes on a more liberal diet, we go back to the fluid diet for a few days, and if that is ineffective another course of duodenal feeding can be tried for one week.

SUMMARY

We have in duodenal alimentation a very substantial addition to the old established methods of internal treatment of gastric and duodenal ulcer. The method is simple, and with the wider tube and the heavier weighted ball (Gross duodenal tube), introduction is hastened. Furthermore, the tube remains low down in the desired position, and feeding is readily accomplished. This mode of treatment is easily learned, and it can even be carried out in the house of the patient.

40 East Forty-First Street—3 East Eighty-Fourth Street.

QUININ AFTER OPERATION

EDMOND BONNOT, A.M., M.S., M.D.
AND
A. H. CLEVELAND, M.D.
ST. LOUIS

Since the preliminary report on "Quinin Salts in Postoperative Cases,"[1] we have used this method exclusively at St. Anthony's Hospital in 600 cases, comprising all operations requiring an ether anesthesia.

The technic has been slightly modified: Quinin muriate, 10 grains, dissolved in 2 ounces of water at 100 F., is given by rectum immediately after operation, followed by saline proctoclysis or (in septic cases) by 6 ounces of olive oil. The quinin is repeated every six hours for from four to six doses. In large or stout individuals, the first two doses are given four hours apart. In case saline proctoclysis is used, it should follow the quinin in about thirty minutes for best results.

The sulphate of quinin, by many repeated trials, has not proved so efficient as the muriate. The difference is probable due to solubility.

The postoperative backache is practically eliminated, and only about 2 per cent. suffer any gas pain to speak of. If such is present, one enema produces an efficient result when it is desired to move the bowels freely or to favor the passage of flatus. Gas is expelled spon-

1. Bonnot, Edmond: Quinin Salts in Postoperative Cases, THE JOURNAL A. M. A., Jan. 9, 1915, p. 146.

taneously by rectum in 75 per cent. of the cases within from eighteen to twenty-four hours after operation.

The frequency and duration of the period of postoperative nausea and vomiting are very much lessened. Vomiting is present, however. Frequently a single stomach wash ends all nausea and vomiting permanently.

After gastro-enterostomies, patients have been made comfortable with only two stomach washings, as compared with a washing from every four to six hours formerly.

The postoperative thirst is much retarded, and in over 60 per cent. absent.

The treatment is particularly efficient in children, the quinin being given in proportionate dose.

The patient usually has a free bowel action within twenty-four hours when morphin has not been given.

This treatment is of special advantage in operations in which there is much trauma. For instance, two stout women were operated on for umbilical hernia (Mayo's method), and another weighing 235 pounds was operated on for a 40-pound pelvic tumor associated with many adhesions to the parietal wall and abdominal viscera. These patients had absolutely no pain or discomfort after the operation—not even pain in the wound.

A pregnant woman (before two months) was operated on for appendicitis, and the quinin was administered in the usual way. She was troubled with nausea and vomiting, but suffered none of the other postoperative discomforts. The quinin did not interfere with the pregnancy.

A doctor had a hysterectomy performed. She did not complain of any pain or discomfort; neither did she require or ask for morphin, notwithstanding the fact that doctors are more apt to complain of pain than any other class of people.

We have used the quinin in only two instances following chloroform. One did nicely, but the other patient became very cyanotic immediately following the quinin administration, which had to be discontinued, and the patient recovered. It would be advisable, therefore, if given following chloroform, to wait until the patient has regained consciousness.

The only complications following the treatment were three of cinchonism, deafness particularly, and one of drug eruption which lasted three days; but the patient did not suffer at all.

Patients feel comfortable after operation, and on this account sleep without morphin. Ninety per cent. of the patients recover comfortably and without any complications on this after-treatment. Morphin is seldom, if ever, required.

Sodium bromid, 20 grains, was associated with each dose of quinin in fifteen laparotomies, with the result that the patients slept well the first night and following day. They were not in the least nervous. The nausea and vomiting seem still less than when the quinin is given alone. The number of patients observed is too small, however, to justify any definite deduction.

The beneficial action of bromid so administered was especially marked in eight goiter cases. The nervousness that usually follows operation in this class of patients was entirely absent, and the patient rested comfortably the first night and following day. This is due evidently to the sedative action of quinin bromid on exophthalmic goiter patients.

3329 Park Avenue—St. Anthony's Hospital.

PROTEOLYTIC FERMENTS IN PORTAL BLOOD *

FREDERICK HOWARD FALLS, S.B., M.D.
CHICAGO

Since the publication by Emil Abderhalden of his results with the serodiagnosis of pregnancy and of various pathologic conditions, some doubt has been cast on certain of the fundamental principles of the test as described by him.

In his description of the technic, he[1] stipulates that the blood must not be taken at the height of digestion. He attempts to explain the positive reactions that occur when the blood is obtained at this time on the supposition that the amino-acid content of the blood is raised to such an extent that they dialyze out and cause a positive reaction without ferment activity occurring in the experiment.

The more I worked with the test, the more skeptical I became regarding the validity of this explanation. To settle this point, blood was obtained from men and dogs at the height of digestion. One c.c. of the clear serum was placed with 1 gm. of placental protein; an equal amount of the same serum was inactivated at 60 C. (140 F.) for one hour, with an equal amount of placental protein. They were then allowed to dialyze twenty-one hours at 37 C. (98.6 F.). The dialysate from the active serum gave uniformly positive reactions, while those from the inactivated serum were uniformly negative. Had the reaction been due to the amino-acid content of the blood, then an equal amount of amino-acid would have dialyzed out of the inactivated serum and out of the active serum. Therefore, it would seem that at the height of digestion, the proteolytic ferment of the blood is increased to an appreciable extent, and that this is the reason the Abderhalden test cannot be relied on when the blood is taken at this time.

In seeking a possible source of this ferment increase, let us consider some fundamental facts of digestion and absorption. After the ingestion of a meal, there is poured out along the alimentary tract from the stomach to the cecum a mass of digestive fluid, rich in active proteolytic ferments. These mingle with the food, and rapidly split it into proteoses and peptones, and the end-products of tryptic digestion. During the process, this fluid, rich in active ferments, is bathing the surface of a rapidly absorbing mucous membrane. It seems highly probable that the ferments themselves are absorbed into the blood together with the products of tryptic digestion.

Regarding our knowledge of the absorption of digestive ferments Hammersten[2] says:

> The soluble constituents of the digestive secretions may, like other dissolved bodies, be absorbed, as is demonstrated by the passage of pepsin into the urine. The enzymes also may be absorbed.

Von Leyden and Bergell,[3] in their work on the trypsin treatment of carcinoma, came to the conclusion that large doses of trypsin by mouth cause an increase in the tryptic content of the urine, and so must have been absorbed from the alimentary tract.

---

* From the Departments of Experimental Medicine and of Obstetrics, University of Illinois, College of Medicine.

* Read before the Chicago Pathological Society, April, 1915.

1. Abderhalden, Emil: Beitr. z. Klin. d. Infectionskr. u. Immunitätsforsch., 1913, i, 243.
2. Hammersten: Physiologic Chemistry, New York, John Wiley and Sons, 1904, p. 356.
3. Von Leyden and Bergell: Ztschr. f. klin. Med., 1907, lxi, 361.

Glaessner[4] has shown that the blood serum is richest in antitrypsin during the height of digestion. This supports my results, for in many conditions in which I have demonstrated an increase in the tryptic power of the serum, Jobling, Eggstein and Petersen[5] and others have demonstrated a corresponding increase in the antitryptic power of the blood. This also is exactly what we should expect to find when we remember how quickly the body responds to the injection of any ferment by the prompt production of an antiferment.

Julius Pohl[6] has pointed out that the portal blood contains more leukocytes than the peripheral blood during the height of protein digestion. It may be that this is associated in an etiologic respect with the increase in the ferment content, or it may be merely a concomitant phenomenon. Some work which I[7] have recently done in the infectious diseases tends to show that the leukocytes may be reduced in cases that give very strong reactions, while cases that have a high leukocytosis often give a weak reaction.

It was thought advisable, therefore, to undertake to demonstrate whether or not these ferments were present in appreciable amounts in the portal blood.

A dog was anesthetized with ether, and the femoral vein was dissected out. Ten c.c. of blood were withdrawn, and allowed to clot in a sterile centrifuge tube. Laparotomy was next performed. After a loop of jejunum had been brought outside the abdomen, a large mesenteric vein was selected, and 10 c.c. of blood were withdrawn with a sterile Luer syringe and allowed to clot in a centrifuge tube. The clear serum from these samples was submitted to typical Abderhalden tests. Human placenta was used as a substrate. The technic followed was that of Abderhalden, the details of which I have described in a previous paper.[8]

The results are given in the accompanying table. They show that the portal blood and the peripheral blood both contain ferments in demonstrable quantities at the height of digestion. Also the portal blood is much richer in such ferment than the femoral blood. This is true not only of the blood at the height of digestion, but also in the fasting state. However, the degree of difference between the portal blood and the femoral blood ferment content is much less, as a rule, in the fasting state than in the state of active digestion.

It is interesting to note that the controls in these cases were uniformly negative, except for faint traces in the portal blood controls. This speaks against the view that the proteins are absorbed into the blood as amino-acids. However, the amount present in 1 c.c. of blood serum might be too small to give a positive reaction with ninhydrin, under the condition of the test.

RESULTS OF EXPERIMENTS *

Dog	Digestion Period	Portal Blood	Femoral Blood	Portal Control	Femoral Control	Remarks
1	Active	+ + + + +	+ +	±	—	
2	Active	+ + + +	+ + +	±	—	
3	Fasting	+ +	±	—	—	
4	Fasting	+	—	—	—	
5	Active	+ + +	+	—	—	
6	Active	+ +	+ + +	±	—	Slight excess of ninhydrin used in femoral dialysate
7	Active	+ + + +	+ +	—	—	

* Human placenta was used as substrate. Dialyzation period was twenty-one hours at 37 C. Inactivated serum (60 C. for one hour) plus placenta were used as controls. Positive is indicated by the sign +, negative by —, and faint by ±.

COMMENT AND THEORETICAL CONSIDERATIONS

The presence of a positive reaction, though less intense in the fasting dogs, was somewhat of a surprise to me, and essentially altered my preconceived ideas of what might be expected from the test under these conditions. However, a very plausible explanation is adduced by the work of Boldireff,[9] who showed that in the fasting dog there was an intermittent pouring out of ferments into the gastro-intestinal tract, at intervals of about every two hours. The absorption of this fluid into the blood could account for the positive reaction obtained in the fasting condition.

A possible explanation of the stronger positive reaction in the portal blood may be found in the experimental work of Jobling and Petersen,[10] who showed that soaps, fatty acids and lipoidal substances inhibited the action of trypsin and leukoprotease. It is a well-known fact that the greater portion of the fat is absorbed from the intestine into the lacteals and is poured into the peripheral blood by way of the thoracic duct. Hence the peripheral blood ought to be richer in antiferment than the portal blood, which receives practically none of this antiferment.

To my mind, the problems suggested by this work centers round the idea of the conservation of ferment. It would appear that the ferments that are poured out at each digestion period are not used up completely, and thus lost to the body economy, but are absorbed into the blood, where they in all probability continue their activity until destroyed. Possibly they are also taken up by the various cells of the body to aid in the intracellular metabolic activity. Indeed, it might be assumed that the pancreas and intestines produce the greater part of the ferments that are found in the body, and that this is the source of the so-called diffusible proteolytic ferments.

4. Glaessner: Beitr. z. chem. Physiol. u. Path. (Hofmeister's), 1903, iv, 79.
5. Jobling, Eggstein and Petersen: Jour. Exper. Med., xxi, 239.
6. Pohl, Julius: Arch. f. exper. Path. u. Pharmakol., 1888, xxv, 31.
7. Falls, F. H.: Jour. Infect. Dis., 1915, xvi, No. 3, 466.
8. Falls, F. H.: A Study of the Ferment Activity of the Blood Serum, THE JOURNAL A. M. A., Oct. 3, 1914, p. 1172.
9. Boldireff: Arch. d. sc. biol., 1905, xi, No. 1.
10. Joblin, J. W., and Petersen, W.: Jour. Exper. Med., March 1, 1914, p. 239.

Further, it is possible that the great mass of the ferment absorbed from the intestine is taken out by, or rendered inert in, the liver. It has long been known that the liver cells are particularly rich in proteolytic ferments, and this work may serve in part, at least, as an explanation of this fact. It would seem possible or even probable that the protein molecule is broken down to the higher split products in the intestine, and absorbed as such, together with the major portion of the ferments in the intestinal tract. These are then carried to the liver, where the proteases and the peptones are still further disintegrated by the combined action of the ferment absorbed, and that present in the liver cells. The lower split products, the amino-acids, are then thrown into the peripheral blood, together with a certain amount of ferment, both of which are absorbed into the cells of the body and used in their intracellular economy. Most of the ferment may be used up in the liver, or absorbed into its constituent cells to replace the loss occasioned by their digestive activity.

The foregoing discussion, of course, is purely theoretical, and is merely suggested by the results of these experiments. Further work is in progress which may shed more light on these points.

CONCLUSIONS

1. The portal and peripheral blood of the dog contain a demonstrable increased amount of proteolytic ferment at the height of digestion.
2. This is also true of the portal blood in the dog in the fasting state.
3. Under both the foregoing conditions, the portal blood is relatively richer in ferment than the peripheral blood.
4. The probable source of this ferment is the ferment-rich intestinal contents at the height of digestion.

RECENT EXPERIENCES IN THE ORIENT WITH CHENOPODIUM AS A REMEDY AGAINST HOOKWORM AND OTHER INTESTINAL PARASITES

VICTOR G. HEISER, M.D.
WASHINGTON, D. C.

Owing to the disturbances caused by the war, thymol, which was the most generally used remedy against hookworm, became scarce, expensive and difficult to obtain. Many physicians began to use oil of chenopodium, against which there had been much objection heretofore, owing to its alleged frequent tendency to produce untoward effects and even death. Severe nephritis was reported by some observers and paralysis of the central nervous system by others. Soon after the use of the oil was begun during the autumn of 1914, cases of death ascribed to chenopodium were again reported. Whether these deaths were rightly or wrongly due to chenopodium has probably not been definitely settled. In the Orient the oil of chenopodium has been very extensively employed against hookworm and other intestinal parasites, and it may therefore be of interest to make a brief report of the experience in that part of the world.

Dr. R. D. Keith, dean of the Singapore Medical School and visiting physician to the General and Tan Tock Seng hospitals of Singapore, states that he has treated over 1,000 cases of hookworm with oil of chenopodium without a single bad result. He considers the drug far superior to thymol, eucalyptus or beta-naphthol, and states that the hookworms are more completely eliminated; it is only rarely that any ova can be found in three microscopic slides, taken three days after the treatment is completed, and most carefully examined. He allows the patient only a very light supper, no breakfast and then 10 minims of oleum chenopodii, preferably in a capsule. This treatment is given each morning for three days. The last dose is followed two hours later with a tablespoonful of castor oil.

A number of other physicians in Singapore have had a similar experience with a smaller number of cases.

At the General Hospital, Kuala Lumpur, the oil of chenopodium has been administered under the general direction of Dr. Sansom, principal medical officer, in more than 500 cases of hookworm disease, without any untoward effects and with the same efficiency as at Singapore.

Dr. W. Schüffner states that in the hospitals of Sumatra Dr. Baermann and himself have treated over 40,000 cases of hookworm with oil of chenopodium without after-effects and with results superior to those obtained with thymol. On a method based on the number of worms expelled the chenopodium showed an efficiency of 91 as against 83 for thymol. Schüffner recommends that the patient be given liquid diet for the evening meal, no breakfast, and then that 16 minims of oleum chenopodii be placed on sugar, divided into three parts, the portions being taken at hour intervals. Two hours after the last dose is administered, he gives 17 grams of castor oil and 3 grams of chloroform. He states, however, that if there is any objection to taking castor oil, it may be omitted and only a slight decrease in the efficiency will result. Schüffner is also of the opinion that oil of chenopodium is one of the most effective vermifuges for roundworms, *Oxyuris vermicularis* and tapeworms, and that the method of giving it on sugar makes it easy, pleasant and agreeable to take.

On account of the fact that one treatment for hookworm results in a "negative" case much more frequently than with other drugs, he is hopeful that the use of chenopodium will be of considerable aid in reducing the sources of infection, and will thus materially advance matters from a public health standpoint.

Dr. Jonge of Medan, Sumatra, who has had a large experience with chenopodium, states that he has seen one case of nephritis which might have been due to chenopodium, but that it soon cleared up.

Dr. Weiss, the physician in charge of the 700-bed hospital of the Holland-American Company at Kisaran, Sumatra, has treated over 5,000 cases of hookworm with chenopodium with the same satisfactory results mentioned above. In one instance he had a case of nephritis which he thought might have been due to chenopodium.

The oil of chenopodium used in Malaya was obtained from well-known pharmaceutic houses in England, that used by Dr. Weiss at Detroit, and the balance used in Sumatra, in Leipzig, Germany.

SUMMARY

Physicians of the Orient have recently treated with oil of chenopodium over 100,000 cases of hookworm

of both the Old and New World type, with greater success than with remedies heretofore employed, and with practically no untoward effects. In Sumatra, where the most cases were treated, the physicians state that the oil of chenopodium is also one of the best drugs against roundworms, tapeworms and whipworms.

Infestation with roundworm is almost universal in the tropics, so that the psychic effect on the patient, produced by expelled roundworms which he may readily see, as against the negative effect produced by hookworms which he usually does not see, is a most important administrative asset in conducting hookworm campaigns on a large scale.

725 Southern Building.

LIGATION OF THE SPLENIC AND GASTRO-EPIPLOICA SINISTRA ARTERIES IN THE SURGERY OF THE SPLEEN

JOHN C. A. GERSTER, M.D.

NEW YORK

Nothing may be more difficult than the exposure and control of the vessels in the pedicle of an enlarged or adherent spleen; the application of clamps or ligatures is often very uncertain; if hemorrhage does occur, it may be impossible to check it completely until after the spleen has been removed.

I believe that ligation (either temporary or permanent) of the arterial supply of the spleen at certain points which are more accessible than the deeply situated splenic pedicle will greatly facilitate matters in difficult splenectomies. These points are (1) the splenic artery close to the celiac axis, and (2) the gastro-epiploica sinistra where it reaches the stomach wall from the splenic artery.

The celiac axis is readily exposed through an opening in the lesser omentum just above the lesser curvature of the stomach; (it may be made to come within an inch or so of the anterior abdominal wall by hyperextending the patient's spinal column by means of the elevator of the operating table commonly used for flexing the trunk in kidney and gallbladder operations). Fully 2 inches of the splenic artery lie just beneath the posterior parietal peritoneum; ligation here certainly offers no difficulties. This, however, does not shut off the entire arterial supply of the spleen because of the free anastomosis of the gastro-epiploica sinistra (branch of the splenic) with the gastro-epiploica dextra (as shown in the accompanying illustration). It is proposed, therefore, that the gastro-epiploica sinistra be ligated where it reaches the stomach wall and just before it begins to send off branches to the anterior and posterior surfaces. Although this point is not so accessible as that just described in the course of the splenic, it is nevertheless readily brought into view by drawing the stomach and left margin of the great omentum over to the right. Theoretically the vasa brevia should also be ligated, but their anastomotic communications on the stomach wall with the gastro-epiploica sinistra (proximal to the point of ligation) will rarely be of sufficient magnitude to demand this. While cessation of the arterial stream does not afford absolute hemostasis, the hemorrhage from the torn veins alone is easier of control and is certainly less than if it came from both arteries and veins.

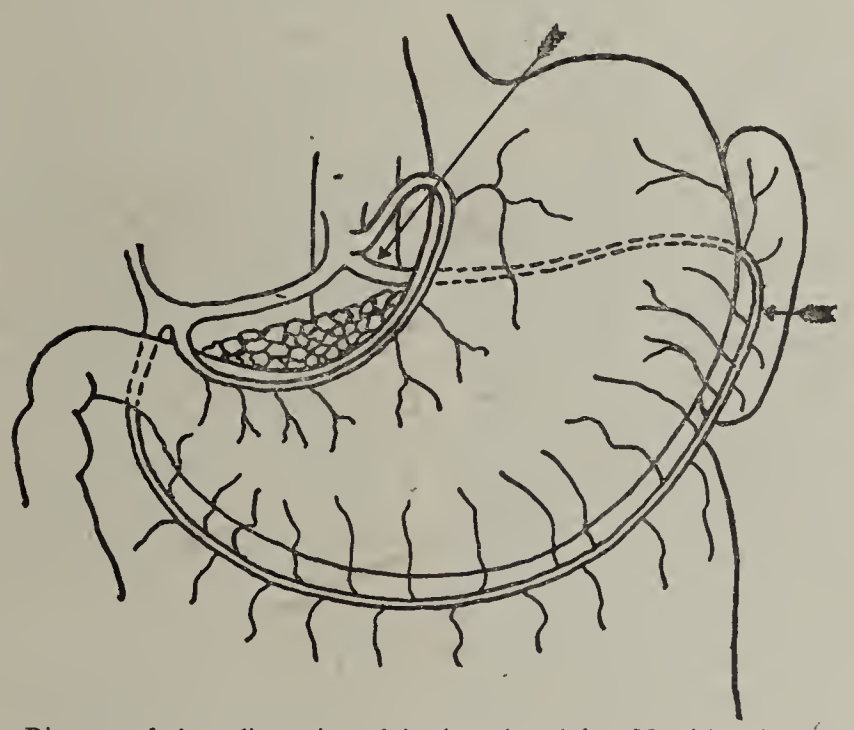


Diagram of the celiac axis and its branches (after Morris). Arrows point to sites for ligation of the splenic artery close to the celiac axis and the gastro-epiploica sinistra where it joins the stomach wall after leaving the splenic artery.

After the spleen has been removed, the bleeding points in the stump of the pedicle can easily be recognized and ligated. If the ligatures on the splenic and gastro-epiploica sinistra are merely temporary, they are now gradually released in succession so that if any arterial branches in the pedicle have been overlooked, they can be caught and tied. On the other hand, if the two ligatures just referred to are left in place, the pancreatic and vasa brevia branches of the splenic will be permanently put out of commission. This should not lead to serious consequences, because the pancreas will still have a good arterial supply through the pancreaticoduodenales superior and inferior, while the vasa brevia anastomose with branches of the gastro-epiploica sinistra (which, in turn, freely anastomoses with the gastro-epiploica dextra).

LIGATURE OF THE SPLENIC ARTERIAL SUPPLY AS A SUBSTITUTE FOR SPLENECTOMY

Lanz[1] of Amsterdam cites the case of a man of 24 having a wandering spleen, the size of a man's fist, firmly fixed in the true pelvis to the left of the promontory by dense adhesions. It gave rise to severe pain both on urination and on defecation. On account of the extensive adhesions, ligation of the vessels was considered. Rather than ligate all of these (for fear of necrosis of the organ), it was determined simply to ligate the splenic artery. Six months later, bimanual examination of the pelvis failed to reveal any trace of the tumor.

Lanz suggested that ligation of the splenic artery might suffice in cases in which splenectomy was indicated, but mechanical considerations rendered this difficult. I believe that ligation of the spleen's arterial supply, as described above, is simpler, less shocking, and much more certain than an attempt to ligate the vessels in the pedicle when this is deeply situated and difficult of access.

34 East Seventy-Fifth Street.

1. Lanz: Zentralbl. f. Chir., 1914, p. 228.

REFLEX OF THE UPPER EXTREMITY

AN UNDESCRIBED SIGN *

ROSS MOORE, A.B., M.D.
Assistant Professor of Nervous and Mental Diseases, Los Angeles Department of Medicine, University of California
LOS ANGELES

The lack of a sign or reflex in the upper extremity in any way comparable to the knee jerk has always seemed to me to be a real neurologic tragedy. Consequently the search for such a sign has held my interest strongly.

During a poliomyelitis epidemic in Los Angeles five years ago the first idea of the sign which is the subject of this paper was secured. Since then enough material has been studied to warrant this preliminary report.

There is little to be found in the literature bearing on the subject. A German and two French students have studied the tonus in the flexors of the fingers under pathologic conditions. The methods described do not seem to me to be delicate enough to give very much real information. The method now to be described has at least the merit of extreme delicacy to commend it. The estimate of tonus in the flexor muscles of the fingers gained by this method is more precise than that given by any other method of clinical examination known to me. In my experience it makes more possible than heretofore the very early discovery of evidence pointing toward unilateral lesions, either central or peripheral, as for instance a decreased tonus in an oncoming poliomyelitis, or an increased tonus in an arm affected by a developing brain tumor.

TECHNIC FOR STUDYING THE SIGN

First, it will be noted that the position of the normal human hand when at rest includes slight flexion of all the joints of all the fingers; the hand is one third or one half clenched. The sign I am describing consists in a study of the muscular tonus responsible for this flexion in the normal hand, together with a comparison of the tonus in pathologic conditions.

The sign is elicited by a sudden extension of the semiflexed fingers, producing an excitation in the muscles. This seems to be quite analogous to that produced by tapping the patellar tendon. Foreign observers have attempted to do this by taking hold of the fingers and giving them a sudden twitch. This method will elicit the more severe hypertonic conditions, such as are found in old hemiplegias, for instance. But it will not give the finer differences observable by my method. The knee jerk is primarily an ocular demonstration, while this sign is to be felt rather than seen.

1. Extend hand to be examined on the forearm enough to take up the "slack" in the finger flexors. Do this by laying your hand flat against the patient's palm and pushing it back to as great an angle as possible with the forearm. If you have placed your hand so that it lies crosswise of your patient's hand you will find that his fingers are curling down over your hand.

2. While still retaining the tension on the flexors in the above-described manner, move the examining hand very sharply along the palm toward and against the curling fingers. Do this several times in quick succession. In this way a very accurate concept of the tonus in the flexors is obtained. Compare the two sides.

A trial of this method on a small number of normal hands will serve as a basis for estimating pathologic tonus. Carrying it out very rapidly time after time will usually overcome the self-consciousness of the patient and his efforts to help in the examination.

Tonus of the flexors of the fingers when tested by this method is found to be decreased uniformly in poliomyelitis involving the upper extremity. This is also true of polyneuritis. In a long series of cases of tabes dorsalis examined in the National Hospital in London last summer and in other places this reaction or reflex was found to be absent or much diminished in the majority of cases. A very frequent combination found in this series was absent knee jerks, elbow and wrist jerks present, and flexor tonus diminished.

In central lesions, on the other hand, this sign is uniformly positive. Wherever organic hemiplegias, for instance, show positive reflexes, this reaction is positive. The probable value of the sign lies in the fact that at times it can be demonstrated unusually early in the symptomatology of central lesions; that is, an increased tonus develops. Thus it has been noted in brain tumor when no other localizing signs could be found except diminished abdominals and epigastrics. A true finger flexor clonus has also been found occasionally in upper lesions.

A study of the physiologic questions involved in this sign leads me to conclude that the stimulus given to the flexor muscles by this method of sharp and sudden straightening of the fingers is of the same order and quite comparable to the stimulus caused by tapping the patellar tendon. Certainly it has reacted at all times quite parallel to the knee jerk in my experience. If it can be interpreted as showing in the upper extremity what the knee jerk tells us in the lower, its value will be fairly established. One thing is sure: a little practice with this sign will persuade the careful observer that infinitely more delicate differences in muscular tonus can be detected by this technic than by any of our ordinary methods.

In perfecting this technic it has been the custom to examine for the sign in every case seen. In this way it has been determined that relative strength in the two hands of a normal subject has no influence on the sign. It is also found that the normal tonus is different in different individuals. Relative training of the hands, as pronounced right or left handedness, is without effect on the sign.

718 Brockman Building.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

FLUOROSCOPIC BRONCHOSCOPY

WITH CASE REPORTS AND ONE BY DR. STANTON A. FRIEDBERG *

E. FLETCHER INGALS, M.D.
CHICAGO

This operation is indicated in all cases in which a foreign body that casts a shadow cannot be extracted by the ordinary methods, but especially in the following classes: first, those in which the mucus, pus or blood is so abundant that the foreign body cannot be seen; second, those in which granulation tissue prevents inspection; third, those in which the body is hidden in an abscess cavity; fourth, those in which a stricture prevents inspection, and fifth, difficult cases

* A detailed description of operation will be published in the Transactions of the American Laryngological Association for June, 1915.

in which the foreign body is lodged in a bronchus where it cannot be exposed by ordinary methods.

CASE 1.—A man supposed to have been suffering from stomach trouble for nearly two years was finally sent to the Silver City Sanitarium for tuberculosis, where Dr. Bullock with the Roentgen ray found a nail that was lodged in an abscess cavity in the lung between the fifth and ninth ribs. Great irritability of the throat prevented ordinary bronchoscopy. The depth of the foreign body in the lung, the abscess cavity and the large amount of purulent secretion rendered fluoroscopic bronchoscopy necessary. Assisted by Dr. Friedberg with the aid of the fluoroscope, I introduced first the bronchoscope to locate the bronchus from which the pus was escaping, and through this passed narrow strong tube forceps, guiding them down to the foreign body by the shadows. The end of the forceps was moved back and forth laterally until I had determined that it was in the same cavity with the foreign body. The latter was then grasped firmly and brought out at the same time as the bronchoscope.

CASE 2.—A boy, aged 5, who had inhaled a part of a rivet about eight months previously, had afterward suffered from stomach symptoms until shortly before he was brought to me, when he developed a pleurisy. Dr. Goodkind demonstrated the presence of a foreign body with the fluoroscope. Aided by Dr. Friedberg, I did a bronchoscopy by which I located a stricture above the foreign body. By means of the fluoroscopic shadows, I passed the forceps and soon succeeded in catching the metal, which was drawn out with the bronchoscope. Both patients did very well afterward. In neither could the body have been removed by the ordinary methods.

CASE 3.—Dr. Stanton A. Friedberg's patient, in whose case I aided in a fluoroscopic bronchoscopy, was a girl, aged 12, who had aspirated a brass-headed upholstery tack seven weeks previously. Tracheotomy had been done, and two attempts at removal had been made before Dr. Friedberg saw the patient. He had made an additional trial before the patient was brought to Chicago. May 11, bronchoscopy was performed with the aid of the fluoroscope. The tack was found in a cavity below a stricture of a secondary bronchus on the right side. It was removed without especial difficulty. No ill effects were experienced from the operation, which was done without anesthesia.

104 South Michigan Avenue.

A CASE OF PRIMARY DIPHTHERIA OF THE SKIN*

LUDWIG A. EMGE, M.D.
CHICAGO

L. B. V., an intern in this hospital, Oct. 4, 1914, while intubating a small child, was bitten in the knuckle of the left index finger. October 6, the wound became sore and red. The following day a small ulcer was present and there was considerable hyperemia and infiltration about the knuckle. Hot, moist dressings were applied, which gave relief, but the wound continued to discharge a little. October 11, a thin layer of grayish pus was present. On the morning of this day, the throat became sore and there was considerable fever; the infiltration of the finger also became more active. The patient was isolated, but the throat cultures, October 11, 12 and 13, showed streptococci only. During these days inflammation of the wound was very active in spite of vigorous local treatment. October 14, pus from the wound was found to contain diphtheria bacilli in culture, but at the same time the throat was free from these bacilli. This was true also, October 15. The epidermis separated from the underlying tissue over an area of about 1 cm. in diameter, and red granulations beneath discharged a small amount of thin, grayish pus; there was never a complete covering of fibrinous exudate. October 15, the patient was given 5,500 units of antitoxin, and on the next day cultures from the throat showed a few diphtheria organisms. The patient was immediately given 10,000 units more. The temperature returned to normal within two days, except for an evening rise which persisted during the entire course of the disease and which was explained by the presence of foci of tuberculosis in the lungs. Cultures from the finger, October 28, were negative for diphtheria bacilli, which persisted in the throat to November 11.

The finger was treated by the application of 5 per cent. phenol (carbolic acid) after freshening the edges of the wound, thorough washing with 50 per cent. alcohol, and a weak alcohol dressing. A 1 per cent. ointment of yellow mercuric oxid was applied when the wound began to heal.

Reports of cases of diphtheria of the skin in various forms have appeared now and then in the literature. Two very complete reviews of the subject have been published recently by Bertelli[1] and by Knowles and Frescoln.[2] In all there are about a hundred cases reported. Many are not actually primary diphtheria of the skin, but developed after throat infection.

No doubt the case reported here is one of primary diphtheria of the skin, since the cultures from the throat were negative for several days, while those of the finger gave typical diphtheria bacilli. There are very few cases on record in which the history of contagion gives the source of infection so clearly as in this case. It shows that skin abrasions in persons coming in close contact with cases of diphtheria should receive immediate attention.

* From the Durand Hospital of the Memorial Institute for Infectious Diseases.

REPORT OF A CASE OF INTUSSUSCEPTION

W. C. GATES, M.D., BUCYRUS, OHIO

Mrs. C. H., aged 66, May 11, 1914, was taken with severe pain in the abdomen. Morphin was used freely, but no diagnosis made. Her condition became steadily worse until the 19th. By persistent use of high enemas in the knee-chest position, a large movement was secured, with relief of many of the symptoms. Just after this a hard lump was noticed in the right hypochondriac region which had been diagnosed as a floating kidney. The patient did not improve. I was called in consultation, and saw her first, June 6. There was a hard, freely movable tumor in the region of the pylorus which I did not think was a kidney. I urged operation and was dismissed. She did not improve, and drifted from one physician to another.

She was brought into my hospital, August 3, nearly three months after she was taken sick, in an apparently dying condition. Nothing could be felt in the right abdomen, but low down on the left side there was a large, firmly fixed, sausage-shaped tumor. On opening the abdomen, I found the lower portion of the ileum, the cecum, and the ascending and transverse colons invaginated into the descending colon, and the entire mass gangrenous and sloughing. I amputated the lower portion of the ileum, and the ascending, transverse and descending colons as quickly as possible, making an end-to-end anastomosis between the ileum and the upper portion of the sigmoid, because it was the quickest procedure in this particular case.

The woman made an uninterrupted recovery, and was dismissed from the hospital four weeks later. She gained rapidly in weight until she exceeded her former weight. At the present writing, nearly one year later, she is having a normal bowel movement every day and is feeling better than she has for several years past. I report the case because, although intussusception is common in children, I have never met or read of one in a person of this age; again, I have never known one to exist for such a long period of time, nearly three months, or a patient with one to recover when in such an apparently hopeless and desperate condition.

1. Bertelli, G.: Sulla difterite cutanea, Gaz. d. osp., 1914, xxxv, 3035.
2. Knowles, F. C., and Frescoln, L. D.: Diphtheria of the Skin of Unusual Types, THE JOURNAL A. M. A., Aug. 1, 1914, p. 398.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, AUGUST 7, 1915

PRESENT-DAY METHODS OF PASTEURIZING MILK

Few features of our industrial activities have experienced more progressive changes in recent years than those associated with the food industries. A few years ago, to cite a specific illustration, all of the milk sold to the public was "dipped." Then came the bottling of milk, the clarifying of this product, along with numerous now familiar procedures in handling it. The improvements in general sanitation surrounding the production and distribution had reached a point in 1900 at which the value of sanitary precautions for the keeping qualities of milk forced attention. Three American dairy farms exhibited raw milk at the Paris Exposition of that year, one of them sending weekly shipments throughout the summer, each of which was kept on exhibition without spoilage until the next shipment arrived. It was difficult, according to Sherman's account,[1] to convince the jury of European experts of the fact that cleanliness and cold were the only preservatives needed to accomplish the keeping of raw milk in a fresh sweet condition for two or four weeks in midsummer.

These possibilities are embodied in the certified raw milk of the present decade, although less than 1 per cent. of the market milk of commerce is of this grade. Under the prevailing conditions, which are too familiar to require detailed discussion, pasteurization of milk is making an increasing appeal to those who are interested in the dangers of deterioration whereby milk becomes unwholesome, and of the possibility of spreading specific infectious disease thereby. Various aspects of the problems of pasteurization have already been discussed in THE JOURNAL.[2] The latest innovation, following the growing tendency of public health authorities to urge the pasteurization of all market milk which is not obtained under good sanitary conditions, is pasteurization in sealed bottles. The principles applied are similar to those obtaining in the pasteurization of bottled beer. Inasmuch as it introduces an added item of expense which is not inconsiderable, unless the pasteurization in bottles is carried out on a very large scale so as to permit the use of commercially feasible apparatus, the problem of utility has been raised.[3]

The sterilization or partial sterilization of milk in bottles is not a new procedure, as those who are familiar with the early work of Soxhlet will recall.[4] Pasteurization, however, in the sense of heating milk to a temperature of from 60 to 63 C. (140 to 145.4 F.), and holding it at this temperature for from twenty to thirty minutes, is ordinarily carried out on milk in bulk. The product is rapidly cooled by passing over chilled surfaces, and then bottled in steamed bottles. The newer process of pasteurization in bottles is already in use in a number of milk plants throughout the country. The assumed advantages of this process, from the bacteriologic standpoint, lie in the fact that reinfection after pasteurization is prevented when no further transfer into containers is to be carried out.

The proper handling of milk in the ordinary method of pasteurization in bulk reduces and may prevent subsequent reinfection; but amid the imperfection of human performances, the possibility still remains. The experts maintain that the process of pasteurization in bottles effects a great saving in milk by doing away with loss in evaporation over the coolers, and with other losses connected with pasteurizing apparatus. Ayers and Johnson,[3] of the Bureau of Animal Industry, have added a further presumably satisfactory procedure to the methods now available. It consists in pasteurizing milk in bulk in the usual way, but in bottling it hot in special oversized milk bottles of the ordinary type and capped with ordinary sterile caps.

Extensive bacteriologic investigations made in the government laboratories[3] show that the process of bottling milk while hot in hot steamed bottles causes equally as good bacterial reductions as does pasteurization in bottles. It seems probable to Ayers and Johnson that if milk thus bottled is cooled from the pasteurization temperature to 50 F. within five hours, no more bacterial increase will take place during the slow cooling than would take place if the milk were cooled immediately to 50 F. Inexpensive air cooling thus becomes applicable. The coming year will perhaps witness a comparison of the two newer processes, namely, pasteurizing milk in bottles and bottling hot milk pasteurized in bulk.

1. Sherman, H. C.: Food Products, 1914, p. 53.
2. Efficient Pasteurization and the Bacteria Which May Survive It, editorial, THE JOURNAL A. M. A., May 10, 1913, p. 1462; Chemical Changes Produced in Cow's Milk by Pasteurization, Current Comment, Aug. 23, 1913, p. 605; The Prevention of Infantile Scurvy, editorial, March 6, 1915, p. 835; Pasteurization of Milk and the Colon Bacillus, May 22, 1915, p. 1767.
3. This question has been investigated extensively by the Dairy Division of the Bureau of Animal Industry in Washington. See Ayers, S. H., and Johnson, W. T., Jr.: Pasteurizing Milk in Bottles and Bottling Hot Milk Pasteurized in Bulk, U. S. Dept. Agric. Bull. 240, Professional Paper, July 13, 1915.
4. Soxhlet, F.: Ein verbessertes Verfahren der Milch-Sterilisirung, München. med. Wchnschr., 1891, xxxviii, 335.

TESTS IN THE DIAGNOSIS OF CANCER

There seems to exist at the present time a singular readiness on the part of the medical profession to take up every new diagnostic test as soon as it is proposed. This enthusiasm and the uncritical attitude which accompanies it may perhaps be due to the fact that a number of chemical and biologic reactions introduced into medical diagnosis in the past decade have performed singular and successful service. The search for helpful tests in the diagnosis of cancer has been particularly active, because of the large number of scientific workers interested in the problems of this disease, and of the splendid resources that have been put at the command of the investigators in almost every civilized country. Many times a few seemingly positive data have paved the way for very favorable reports as to the efficiency of some new test, only to be followed by most discouraging condemnation when the field of application was more carefully scrutinized or the statistics were enlarged by a suitable number of observations.

Among the urinary tests that have been suggested of late for the early diagnosis of cancer, two have been made the subject of a critical study at the biochemical laboratories of Columbia University and the Beth Israel Hospital in New York City by Goodridge and Kahn.[1] One of the proposed tests, the colloidal nitrogen reaction, has been carried out differently by the various investigators who have applied it. Some have precipitated the "colloidal" substance from the urine with alcohol, others with zinc sulphate. The product obtained in this way is frequently unusually large in amount in certain individuals. Although this increase frequently applies to the urine of carcinomatous patients, a high colloidal nitrogen index has been reported by competent analysts in connection with such heterogeneous diseases as myocarditis, diabetes, leukemia and anemia.[2]

Equally divergent are the results recorded with the neutral sulphur test proposed by Salomon and Saxl.[3] This consists in estimating the fraction of the urinary sulphur compounds that are not present as preformed sulphates, but can be liberated by means of hydrogen dioxid and then determined. The value of the newer comparisons by Goodridge and Kahn lies in the large number of cases drawn into consideration: twenty-two normal, fifty-nine cancerous, and forty-seven individuals otherwise diseased. Earlier investigators[4] have made the statement that "it is a precarious undertaking to diagnose a malignant tumor on the basis of the absolute or relative amount of neutral sulphur in the urine." To this may be added the latest verdict that positive results with either the colloidal nitrogen test or the neutral sulphur test, alone, are not indicative of carcinoma. Goodridge and Kahn suggest, however, that positive results with both methods, performed conjointly on urine of the same case, are strongly indicative of malignancy.

1. Goodridge, F. G., and Kahn, M.: The Neutral Sulphur and Colloidal Nitrogen Tests in the Diagnosis of Cancer, Biochem. Bull., 1915, iv, 118.
2. Einhorn, Kahn and Rosenbloom: Arch. f. Verdauungskr., 1911, xvii, 557.
3. Salomon and Saxl: Deutsch. med. Wchnschr., 1912, xxxviii, 58.
4. Stadtmüller, Norbert, and Rosenbloom, Jacob: Studies on Sulphur Metabolism, I, The Urinary Sulphur Partition in Various Diseases, Arch. Int. Med., September, 1913, p. 276.

THE LOSSES OF WEIGHT IN THE NEWLY BORN

Familiar statistics show that newly born infants almost invariably experience a decline in body weight during the first few days of their extra-uterine existence. The recovery from this loss, to which scientific attention appears to have been directed first by Chaussier nearly a century ago, usually begins at about the third or fourth day of life. The actual extent of loss of weight varies within rather wide ranges and may be placed, in round numbers, at from one fifteenth to one seventeenth of the original body weight.

The cause of this phenomenon has been the subject of considerable speculation. The interpretation has an aspect which is not confined to the theoretical interests alone. If the characteristic loss of weight is something normal and inevitable, our attitude toward it in a practical way may be tolerant and satisfied; but if it represents an abnormality of function, the possibility of corrective measures at once suggests itself to the ambitious scientist and the practical pediatrist.

At the outset it may be noted that the loss of weight in the newly born, though not observed in all individuals, is by no means confined to the human species. Long ago Edlefsen recorded an average decline of 4 per cent. of the initial body weight in the early existence of guinea-pigs, which are commonly born well developed in form. Doubtless the same incidents might be observed in other newly born animals, if observations were made promptly and repeated at frequent intervals during the earliest period of postnatal existence.

There is substantial agreement as to the nature of these early losses sustained by the human infant. They consist for the most part of water, represented by insensible perspiration and respiratory products in addition to the very considerable content of water in the meconium and scanty urine of the first day or two of life. The actual extent of the decline appears to be modified by a number of factors, of which the most prominent may be summarized as follows:[1] (1) the degree of development or maturity of the infant; (2) the actual weight at birth; (3) the milk supply of the mother. If, as has often been maintained, the initial fall in body weight is the expression of a lack of suitable nutriment from the mother at the very beginning

1. Benestad, G.: Wo liegt die Ursache zur "physiologischen" Gewichtsabnahme neugeborener Kinder? Jahrb. f. Kinderh., 1914, lxxx, 21.

of the period of lactation, it would be rational to afford an extra supply of breast milk, where possible, so as to avert a nutritive decline until the secretory performance of the maternal organism has become adjusted to its new functions. There is evidence,[1] however, that the loss of weight cannot be averted by such a procedure any more than by furnishing artificial food mixtures supposed to be suitable to the exigencies of the occasion. It might be supposed that the infants of multiparas would fare better than those of primiparas, because of the better adjustment of milk supply to infantile demands. This has not been demonstrated in practice, nor has an inability of the newly born child to secure nutriment been conclusively proved. Children fed abundantly with artificial mixtures sometimes experience the extremest losses of weight.

There are, of course, cases in which pathologic incidents, such as local affections of the mammary gland, obviously interfere with adequate nutrition. Aside from such undeniable abnormal causes of loss of weight, the explanation of so-called "physiologic" decline must presumably be sought in some factor other than mere lack of food. At any rate, part of the controversy hinges around this aspect of the question. One is thus led to inquire as to what other causal phenomena might be brought into play in the first few days of life. It has accordingly been suggested that the newly born are, to some degree, damaged by the very act of birth. The compression of the skull and brain, and other attendant consequences have been regarded as provocative of an abnormally somnolent condition leading to indifference to food. In reply to this, it is remarked that even those infants which experience the least detriment, as the result of an easy birth, are subject to the "physiologic" loss of weight.

Another view, though by no means a new one, attributes the weight changes to the unpreparedness of the newly born organism to digest and metabolize its nutriment adequately. Not long ago it was widely taught that some of the normal equipment of the alimentary tract for the work of digestion was only gradually acquired. This was maintained, for example, to be true of the amylolytic functions; and for this reason the use of starch in the food of young infants was regarded as theoretically objectionable. The more recent investigations of the gastro-intestinal canal and its secretions in the very young, by the more refined technic of the chemical physiology of today, with its abundance of methods for the demonstration of diverse enzymes, have made some of the older statements untenable.

Dr. Benestad[1] of Christiania is among those who maintain that the presence of a variety of enzymes in the alimentary apparatus of the newly born is no guarantee that they are produced from the start in quantities sufficient to accomplish the work of digestion. He points to the alleged escape of incompletely disintegrated fragments of the protein molecule in the urine of early life as an evidence of inadequate gastro-intestinal performance. We are further reminded that it is the infant most mature at birth which appears to withstand the tendency to loss of weight most promptly. A small loss is accordingly prognostic of favorable progress. From a practical point of view, if the foregoing conclusion as to the cause of the early transitory loss of weight in infants is valid, the effort to force nutrients on an unprepared organism has no advantage. The policy of watchful waiting for development finds its justification.

THE COMPLICATIONS OF VACCINATION

The efforts of health authorities to promulgate vaccination are often opposed by the argument that the complications of vaccination may be of more moment than an attack of smallpox. The low mortality rate of the type of smallpox which now prevails, as a rule, in this country, is cited, and attempts are made to magnify — unduly it would seem — those infections which sometimes occur in the vaccinated at or about the time of vaccination.

Among the most frequently mentioned complications is tetanus occurring within two to three weeks after vaccination. Another infection which has been attributed by the antivaccinationists to contamination of the vaccine virus is poliomyelitis; in a certain state, the opponents of vaccination have claimed that in a number of cases the poliomyelitis infection was received through vaccine virus. To any one conversant with the nature of the virus of poliomyelitis, such an assertion is not credible for certain very evident reasons, the chief of which is that all attempts to produce poliomyelitis in the bovine species (as well as in animals other than monkeys and perhaps rabbits) have been unsuccessful. Therefore, no way appears in which the vaccine virus now prepared from calves could receive the infection of poliomyelitis, as has been shown possible with the infection of foot and mouth disease. Even if this were not so, moreover, the slight scarification of a vaccination wound would offer but little chance for the entrance of the infection into the human body.

It has not been so easy to explain the absence of any relation between the vaccine virus and the occasional case of tetanus occurring two or three weeks subsequent to vaccination. This subject has recently been considered in a paper read by Anderson[1] before the Association of American Physicians in Washington. The data presented were grouped under several headings. First was the experimental evidence of Francis,[2] in which he showed that when monkeys (which are susceptible to both vaccinia and tetanus)

1. Anderson, John F.: Studies on the Relation Between Vaccine Virus and Postvaccination Tetanus, Pub. Health Rep., July 16, 1915.
2. Francis, Edward: Laboratory Studies on Tetanus, Bull. 95, Hyg. Lab., U. S. P. H. S.

are vaccinated by multiple insertions with virus heavily contaminated for the experiment with tetanus spores, those animals failed to develop tetanus. Also that guinea-pigs vaccinated with virus purposely contaminated with tetanus did not develop tetanus. From these laboratory experiments the conclusion was drawn that it is difficult, if not impossible, to produce tetanus in susceptible animals by vaccination with virus containing large numbers of tetanus organisms which had been intentionally placed therein.

The other data presented were largely of a statistical nature, but convincing. During the past thirteen years, Anderson states, there have been examined in the Hygienic Laboratory, specifically for tetanus, vaccine virus sufficient for the vaccination of over 2,000,000 persons, and in no instance was it possible to demonstrate the presence of the tetanus organism or its toxin in any of the virus examined. This is of special significance in view of the fact that the methods in use have been so refined that it is possible, in practically all instances, to detect these organisms in virus when known to be present.

Inquiry of the makers of vaccine virus showed that during the last eleven years there have been used in the United States over 31,000,000 vaccines; yet Anderson was able to obtain information of only forty-one authenticated cases of tetanus developing after vaccination during that time. If the virus had been at fault, it certainly would seem reasonable to conclude that among so large a number of vaccinated persons more cases of tetanus should have occurred.

According to the records of the medical department of the United States Army and Navy, there were 585,000 soldiers and sailors vaccinated from 1904 to 1913, inclusive. During this time there were but six cases of tetanus in the army and two in the navy, in none of which was there the least reason to believe that vaccination had any relation to the tetanus. As the virus used in the army and the navy is the same as that used throughout the United States, these figures have a special significance as supporting the view that the occasional case of tetanus developing after vaccination is not due to infection received through the virus. Forty-one cases of tetanus occurring after vaccination were investigated, and it was found that the average incubation period, if counted from the time of vaccination to the onset of tetanus, was twenty-two days. Twenty-nine of the cases resulted fatally, thus giving a case mortality of 70.7 per cent. The case mortality of Willson's fifty-two cases was 78.8 per cent., while the average incubation period of his cases was 19.4 days.[3]

These figures, as to the incubation period and case mortality, when compared with similar data for tetanus from other causes, point strongly to the probability of a true incubation of ten days or less, and hence to the belief that the infection of tetanus was not received at the time of vaccination (therefore not in the virus), but in some other way ten days or more after the operation.

Anderson's conclusion was that cases of tetanus occurring fifteen or twenty days after vaccination do not receive their infection through the vaccine virus, but that in all probability the infection is received after vaccination by a contamination of the vaccination wound such as may occur in the infection of any other surgical wound not properly cared for.

References have been made repeatedly to the importance of the proper care of vaccination wounds and to the failure of many physicians to give this minor surgical operation the care it deserves. The complications of vaccination can be greatly reduced, if not entirely avoided, by the use of proper technic in vaccination and in seeing that the wound and "take" are properly looked after. Every physician who does a vaccination should see the patient at least once after the development of the vesicle to satisfy himself that the wound is properly cared for.

Vaccination is a surgical procedure, and is worthy, not only of the painstaking asepsis of a skilled physician at the time of operation, but of his intelligent after-care as well.

3. Willson, Robert N.: An Analysis of Fifty-Two Cases of Tetanus Following Vaccinia, with Reference to the Source of Infection, 1839-1902, THE JOURNAL A. M. A., May 3, 1902, p. 1147, and May 10, 1902, p. 1222.

CAUSES OF DEFECTIVE PRENATAL DEVELOPMENT

The results obtained by Stockard[1] from breeding, in various combinations, animals whose ancestors were exposed to long periods of intoxication from inhalation of alcohol fumes have again aroused interest in certain problems of parental pathology. Stockard found that the results of matings of apparently normal animals of alcoholic parentage deteriorate in a marked degree with each successive generation. There is a relative increase in the stillborn litters, an increase in the death rate of the living young and an increase of animals with congenital defects of the eyes in the third generation as against the second.

What is the explanation of monstrous or defective development, of which experimental illustrations have just been cited? Mall's studies of pathologic human embryos[2] has led him to assume that the defective development is due to a condition of "faulty implantation" of the ovum in the wall of the uterus. This defective process may perhaps be occasioned by a diseased condition of that organ so as to make the

1. Stockard, C. R.: Arch. f. Entwcklngsmechn. d. Organ., 1912, xxxv; An Experimental Study of Racial Degeneration in Mammals Treated with Alcohol, Arch. Int. Med., October, 1912, p. 369; Am. Naturalist, 1913, xlviii; Proc. Soc. Exper. Biol. and Med., 1914, xi, 136. Inherited Defects Attributable to Alcohol, Current Comment, THE JOURNAL A. M. A., Oct. 17, 1914, p. 1400.

2. Mall, F. P.: A Study of the Causes Underlying the Origin of Human Monsters, Jour. Morphol., 1908, xix.

adequate nutrition of an improperly implanted ovum impossible and eventually lead to death or to monstrosities. A healthy ovum may thus be conceived to give rise to a monster when discharged into a diseased uterus in which it fails to become properly implanted.

Hertwig had suggested earlier that the formation of monsters in human beings may possibly be due to the presence of certain poisons, such as alcohol or toxins, in the blood of the mother. This is, of course, in harmony with the findings that the developing egg of lower forms of animal life, when subjected to changes in its chemical environment, results in an ovum which deviates from the normal. Werber[3] was led to approach the question more closely by selecting, as his injurious substances, compounds known to arise in the faulty metabolism of man, and therefore thought to be more likely to cause pathologic development of the embryo in the uterus of a mother whose metabolic functions have been seriously impaired. From this standpoint, butyric acid and acetone have already given definite results in trials on the fertilized eggs of the marine teleost fish *Fundulus heteroclitus*. Deformities of the most varied type, such as cyclopia, defects of the ear vesicles, hydrocephalus and defects of the circulatory apparatus, have been produced.

It is surely a long step from such experiments, highly interesting as they are in themselves, to the related possibilities in man. It is permissible, however, to wonder whether or not variations in the quantity of toxic metabolic products in gravid females may account for the variations in the degree of injury exhibited by defective embryos aborted at different periods of gestation, or even for some defects found after full-term births in individuals which have an otherwise normal appearance. The imagination of the scientist may properly wander in the realms between fact and fancy; but generalizations of medical significance regarding the possible relation of defective development to intrauterine or preuterine poisoning by metabolic products cannot be warranted until crucial tests have been conducted on a mammalian organism.

3. Werber, E. I.: Is Pathologic Metabolism in the Parental Organism Responsible for Defective and Monstrous Development of the Offspring? Bull. Johns Hopkins Hosp., 1915, xxvi, 226.

The Ten Commandments for the Wounded.—Professor Lusena has got up a "decalogue" for the Italian soldiers which is being distributed to all the Italian soldiers, some of the daily papers having printed it in card form. The instructions emphasize the importance of never touching a wound with the fingers or any object except the contents of a first-aid packet or its equivalent. No attempt should be made to wash the wound, but if tincture of iodin is at hand it should be applied inside the wound. The wound should be covered immediately with gauze from the first-aid packet. Bleeding should be arrested by a tourniquet but stress is laid on the importance of hastening to obtain medical care as soon as possible, and that if constriction is applied for more than two hours at most, gangrene is liable to follow. The decalogue is given in full in the *Policlinico*.

Current Comment

PUBLICITY IN LEGISLATION

Last week THE JOURNAL commented on the action of the *Ohio State Medical Journal* in giving publicity to the way the members of the Ohio legislature at its recent session voted on bills relating to health matters. Our attention has been called to the fact that we should have mentioned similar action on the part of the *Journal of the Missouri State Medical Association* on the "optometry" and "chiropractic" bills, the Missouri journal printing the vote on these bills in the April and May issues. Both journals are to be commended for their enterprise, which might be profitably imitated by lay as well as medical journals. Publicity puts a wholesome curb on wrong or careless action of legislators, and is especially desirable in matters of such vital import to the people as legislation concerning health.

LABORATORY INFECTIONS WITH THE TYPHOID BACILLUS

The fact that typhoid fever is a disease which cannot be successfully communicated to the ordinary laboratory animals makes peculiarly valuable the record of human infections with pure cultures of the typhoid bacillus. No summary of such cases seems to have been made, however, until Kisskalt[1] recently undertook to gather the available data. In reply to a questionnaire sent out to many German laboratories, information was secured regarding thirty-six cases of laboratory infection with pure cultures and about a dozen more of possible infection with typhoid stools or urine. In ten instances, the accidental taking of typhoid bacilli into the mouth was not followed by infection; immediate and vigorous methods of mouth disinfection were practiced in all these instances. While it is plain that data collected in the manner mentioned are not above criticism, there are several interesting points which come to light in Kisskalt's compilation. The degree of severity and the mortality rate seem to be no different in the laboratory infections with pure cultures than in typhoid cases contracted in more ordinary ways. The number of bacilli necessary to cause infection could hardly be determined with precision, but it is apparently not large, as in several instances infection occurred even after thorough mouth disinfection. No definite relation could be shown to exist between the virulence of the individual cultures for animals and the severity of the infection in man; a slightly virulent strain could produce a fatal infection, while the taking into the mouth of strains highly virulent for animals did not lead to any illness. Such an outcome might be expected perhaps from the specialized nature of the typhoid bacillus, and it must be remembered also that the question of virulence in such cases is complicated by the entire lack of knowledge as to the number of bacilli actually swallowed. Kisskalt appears to have received the impression from the data which he

1. Kisskalt: Ztschr. f. Hyg., 1915, lxxx, 145.

examined that certain strains of the typhoid bacilli are especially pathogenic for man. The cases are not numerous enough to determine whether the strains cultivated from the blood and spleen are any more virulent than those from the stool. It is interesting to note that there is apparently no relation whatever between the age of the typhoid culture and its virulence for man. Cultures which have been grown for years on artificial mediums evince just as high infectivity and virulence as those recently isolated.

INABILITY OF THE PANCREATIC JUICE TO DIGEST DISACCHARID SUGARS

The growing realization that the foodstuffs are disrupted into much smaller chemical fragments prior to their absorption from the alimentary tract has brought with it a natural desire to learn what forces are at work to bring about this essential complete digestion of the nutrients. The proteins are hydrolyzed to amino-acids by the aid of a number of alimentary enzymes; the fats are split up by lipase into component radicals; the complex food carbohydrates are converted into sugar. Even the relatively simple disaccharids like maltose, lactose and sucrose are transformed into six-carbon sugars in the gastro-enteric tract. The relative participation of the different digestive secretions in this work of alimentary disintegration of the foodstuffs is now almost established. A few gaps or uncertainties in the knowledge of the subject remain to be filled or dismissed. One of these concerns the possible relation of the pancreatic juice to the common food sugars lactose (milk sugar) and sucrose (cane sugar). The hydrolytic cleavage of these carbohydrates is known to be effected easily by the intestinal secretion. Mellanby and Woolley,[1] of the physiologic laboratory of St. Thomas' Hospital in London, have failed in all attempts to demonstrate a similar function of the pancreatic secretion. Despite its relative richness in the variety of enzymes which the pancreas furnishes to the alimentary tract, the digestion of these sugars is now placed outside the province of the pancreatic secretion.

A QUACK'S IMPUDENCE

The impudence of the quack is notorious; monumental assurance is his chief asset. S. R. Chamley — or as he sometimes spells his name, "Chamlee" — is a quack of the "cancer cure" variety. With heartless cupidity he has defrauded the sick for more than a quarter of a century. Declared a fraud by the government and denied the use of the United States mails[2] in St. Louis, where he conducted one branch of his nefarious business, Chamley calmly moved his offices to Chicago. From this city and from Los Angeles he has, apparently, without let or hindrance, continued to defraud the public with impunity. At different times Chamley has been exposed in THE JOURNAL, in *Collier's*, in *Harper's*, in the Chicago *Tribune* and in numerous other publications; he has been prosecuted both by federal and state officials; nevertheless, he has continued to exploit his heartless fraud and today is using, as part of his advertising paraphernalia, a picture of a fifty-thousand-dollar residence, built of blood-money wrung from the hopelessly sick. Now comes Chamley in a letter to physicians with this offer:

> "I will take an oath and do hereby affirm that I have made nearly one-half million dollars with my cancer remedy. I am now an old man (63) and will sell it to you for only $20 and teach you by my book and typewritten correspondence to cure cancers on any part of the face and body. It is a most wonderful, strange but fortunate combination of several medicines, easily obtained at any large drug store. I often get $1,000 for curing a cancer and $300 to $500 is very common. . . . Price only $20 for a treatment that I have been making from 20,000 to 30,000 dollars every year for many years. . . ."

As might be expected the theme sustained throughout Chamley's letter is that of low, crafty cupidity. The man's character stands out in the closing sentence of the letter.

> "I have just taken a $2,000 case and a $1,000 case all in advance."

Possibly the human animal can descend to greater depths of depravity than that reached by the cancer quack — possibly, but not probably. Of all tainted gold none is quite so dirty as that filched from the hopeless sufferers from civilization's most dreaded scourge.

THE EFFECT OF WORK ON THE BLOOD

Recently, attention was called to evidence that muscular exertion, incident to such performances as running, walking, bicycle riding, swimming and other sports, almost invariably causes an immediate increase in the number of red corpuscles in a unit volume of blood.[1] The removal of water by the sweating and respiration that accompany vigorous exercise doubtless induces concentration of the blood and thus brings about an apparent increment in its cellular elements. It has been noted, however, by Schneider and Havens,[2] that the increment in the number of corpuscles found after muscular activity is so prompt in its appearance as to make it probable, to them at least, that the primary factor in this phenomenon is not the loss of water from the body but the discharge of a large mass of sidetracked corpuscles into the general circulation. Still more recently, Boothby and Berry,[3] at the clinic of Professor Cushing in Boston, have made observations on the effect of work on the composition of the blood, the exercise in these cases consisting in performance on a stationary bicycle. Experimental data are given showing that the percentage of hemoglobin and the number of red blood corpuscles, and therefore

1. Mellanby, J., and Woolley, V. J.: The Ferments of the Pancreas, Part V, The Carbohydrate Ferments of Pancreatic Juice, Jour. Physiol., 1915, xlix, 246.
2. See pamphlet "Cancer Cure Frauds" (price 6 cents), published by the American Medical Association.

1. Exercise and the Blood, editorial, THE JOURNAL A. M. A., May 1, 1915, p. 1501.
2. Schneider, E. C., and Havens, L. C.: Changes in the Blood After Muscular Activity and During Training, Am. Jour. Physiol., 1915, xxxvi, 239.
3. Boothby, W. M., and Berry, F. B.: The Effect of Work on the Percentage of Haemoglobin and Number of Red Corpuscles in the Blood, Am. Jour. Physiol., 1915, xxxvii, 378.

the oxygen-carrying capacity of a unit volume of blood, are increased under conditions of work causing an appreciable amount of perspiration. If no perspiration occurs, there is no such increase. The Boston investigators correlate the increase in blood cells with an alteration in the density of the blood induced by sweating. They regard the results as another interesting example of the intercompensatory mechanism of the human body; for, as they say, it is evident that, in the main, the object of perspiration is to keep the body temperature down under conditions of work; yet its formation and elimination, by increasing the proportion of hemoglobin, increases the carrying capacity of a unit volume of blood, thereby throwing less strain on the circulatory system.

THE SUSPICIONS OF ANTIVIVISECTIONISTS

A sample of the way in which tightly cornered antivivisectionists will manufacture opinion by slyly throwing out suggestive slurs and innuendos is well illustrated in a recent article in the *Open Door*,[1] entitled "Can Vaccination Without Sanitation Prevent Typhoid?" After citing the statistics presented by the United States Army, the author says:

> We accept these figures as correct, because we have no other way of obtaining same than by taking the figures given us by the Surgeon-General of the Army. *We have authoritative reason to believe that if one had the time and money to spend on going personally to the different army posts and camps and interviewing wholly disinterested parties on the question of typhoid fever among the soldiers, the above figures would be greatly augmented.* The army is naturally interested that health reports should be favorable, since to show a preponderance of disease therein would make recruiting unpopular.

This ridiculous imputation that the statistics published by the War Department are false shows the facile unscrupulousness of the antivivisectionist's mind. As a matter of fact, every case of suspected typhoid in an army post is carefully diagnosed both clinically and by laboratory methods. It follows, therefore, that the diagnoses are made with as much care and accuracy as in any city in the United States. Since reliable statistics are based on careful and accurate observation, there is no reason to question the accuracy of the figures showing the remarkable reduction of typhoid fever in the United States Army since the introduction of antityphoid vaccination.

UNUSUAL COUGH AMONG COTTON CLOTH WEAVERS

Among the various pathologic conditions to which those engaged in the cotton products industry are particularly predisposed is an unusual cough, recently described by Collis,[2] which appeared among weavers, during 1910 and 1911, in a Lancashire cotton mill. In 1911 similar symptoms occurred in a mill at Colne, and, after subsiding, they recurred in 1912. Similar cases were again observed in 1912, 1913 and 1914 in mills at various points in England. In each case those afflicted worked in a dry shed, in which cloth is woven for bleaching, printing and dyeing. Such cloth differs in process of manufacture from other cotton cloth in the small quantity of size applied to the warp threads, and in the omission of antiseptics from the size. These antiseptics are added to prevent the appearance of mildew on the cloth before it reaches the market. The size is composed of various ingredients, of which the most important are flour, tallow, China clay and water. If not thoroughly dried, cotton thread, passed through such a preparation, forms an excellent soil, in the absence of any antiseptic, for the growth of molds. Conditions favorable to the development of mildew apparently existed wherever the illness occurred. Such conditions were the prevalence of exceedingly damp weather and, on other occasions, the necessity for wetting the thread. The symptoms described by Collis are the feeling of constriction of the chest, rapid and rather shallow breathing, and a persistent and rather irritating cough. This cough is accompanied by expectoration of a thick yellow sputum, and a sweetish taste in the mouth. The difficulty in breathing seems to progress until it resembles asthma, and there may be a general malaise. In a few cases herpetic eruptions on the face, smarting and running of the eyes, and loss of the sense of smell have occurred. The condition is an interesting one and certainly worthy of further study.

1. Bradshaw: Open Door, May, 1915, iv, p. 1.
2. Collis, E. L.: The Occurrence of an Unusual Cough Among Weavers of Cotton Cloth, Proc. Roy. Soc. Med., 1915, viii, 108.

THE SIXTY-SEVENTH ANNUAL SESSION

The Sixty-Seventh Annual Session of the American Medical Association will be held at Detroit, June 12 to 16, 1916. The House of Delegates will convene on June 12, and the Scientific Assembly — the Sections — on June 13.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Sister Superior Dies.—Sister Regina Kenny, for ten years sister superior at the Mobile Hospital, died July 15. Sister Regina had been in executive charge of hospitals for nearly forty years.

Health Surveys.—Surgeon Rudolph H. von Ezdorf, U. S. P. H. S., is conducting a malarial survey at Kaulton and Holt. The blood of each resident of these towns will be examined for the malarial parasite.

Personal.—Dr. Russell M. Cunningham, health officer of Birmingham, has resigned.——Dr. George T. McWhorter, Riverton, suffered a cerebral hemorrhage recently and is reported to be in a critical condition.

Infirmary at Talladega.—Local physicians have combined to incorporate the Talladega Infirmary with a capital stock of $10,000. Dr. Samuel W. Welch has been elected president and Dr. Edward B. Wren, secretary-treasurer, of the corporation.

Madison County to Have Whole-Time Health Officer.—The commissioners of Huntsville and Madison County, at a meeting held July 13, decided to employ a county health officer who will devote his entire time to the work, and who will be paid a salary of from $2,000 to $3,000.

Attempt to Exploit Pellagrins.—The Morgan County Board of Health at New Decatur has sent a vigorous protest to the grand jury against its action in recommending that a number of pellagrins at the county poor farm be turned over to some physician said to be from southern Alabama who wants to treat them for pellagra with a secret remedy. This physician stipulates that the patients shall be allowed to furnish testimonials as to the curative powers of the medicine. The board of health in their protest correctly stated that "scientific articles from our research centers [show] that no "patent" or proprietary medicine now on the market will be of any benefit to a patient suffering from pellagra."

ILLINOIS

Personal.—Dr. Harry A. Pattison has succeeded Dr. Horace B. Dunn, Rockford, as physician of Winnebago County.——Dr. Egbert K. Dimmitt, Farmington, has returned convalescent from the Hospital in Peoria where he was under treatment for five weeks and will spend the balance of the summer at Green Mount Falls, Colo.

Typhoid Traced to Farm Employee.—The twenty-nine cases of typhoid fever in Harvey are said to have been traced to an afflicted employee on the dairy farm of E. N. Wright, near Manteno, from which a large portion of the milk supply in Harvey is received. The employee is said to have gone to Oshkosh, Wis., and the health authorities in that city have been notified and have taken all necessary precautions to prevent the spread of the disease.

INDIANA

Chiropractor Arrested.—William H. Marks, a chiropractor of Rushville, is said to have been arrested on three charges, filed by the Indiana Board of Medical Examiners, of practicing medicine without a license.

New Dispensaries for Children.—The City Board of Health of Indianapolis has announced plans for the opening at an early date of six infant welfare dispensaries at which mothers will receive instructions as to the proper method of caring for their babies and at which pure milk will be distributed by the Children's Aid Association.

Asks Permission to Park Automobiles.—Many physicians of Indianapolis have signed a petition to the city council asking permission to park their automobiles in front of their offices. The petition sets forth that physicians are subject to be called at any moment to serve the general public and that any delay may be fatal to the patient.

Personal.—Dr. Clint C. Sourwine, Brazil, underwent a sixth operation, July 15, on account of an infected wound of the hand.——Dr. Jehu Z. Powell, Logansport, was operated on at St. Vincent's Hospital, July 10, for the removal of gallstones, and is said to be doing well.——Dr. Cassell Tucker, Greencastle, had a very narrow escape from drowning while fording a flooded creek when making a professional call on the Cloverdale Road, July 8.

IOWA

Personal.—Dr. Charles H. Cogswell, Cedar Rapids, has been appointed surgeon of a French war hospital at Neuilly-sur-Seine.——Dr. Fred W. Sallander, Fort Madison, is expecting to go to England to take up special lines of study.

Free Treatment for Children.—A law passed by the last general assembly, which provides for the free medical and surgical treatment and hospital care of poor and unfortunate children at the hospital of the Medical College of the State University, Iowa City, became operative July 4. The law provides that the district court judge may of his own motion or on complaint filed that a child under 16 years of age is suffering from some deformity or malady that may be remedied, or that the parent or guardian are unable to provide means for this treatment, may appoint a physician to examine the child with reference to this malady or deformity. The physician is to make a written report to the court or judge in detail, stating whether or not, in his opinion, such deformity or malady can probably be remedied. On the filing of the report, a day is to be fixed for hearing and the parent or guardian of the child served with notice. If the court or judge finds the child to be suffering from a deformity or malady which can probably be cured, he may enter an order that said child be taken or sent to the University Hospital for free medical or surgical treatment. He may also appoint some person to accompany the child to the hospital, the expenses being paid by the state; the medical staff of the hospital are to prepare all necessary blanks to be used in proceeding under this law and supply them to the clerks of the district courts, and furthermore, no child under the conditions of this law, shall be treated for any ailment except that described by the order of the court, unless permission for such treatment is granted by the parent or guardian, and it is expressly forbidden that any child shall be used for purposes of experimentation.

KANSAS

Baby Clinic.—A free clinic for babies has been established by the Visiting Nurses' Association in Armourdale, with Dr. Gerald L. McGonigle, Kansas City, in charge.

Physician Exonerated.—In a suit for damages for alleged malpractice, brought by T. J. Reed against Dr. John T. Blank, Elk City, the case was dismissed after the plaintiff had introduced his evidence in court.

The Health of Topeka.—Dr. Harold B. Wood arrived in Topeka, July 13, and took over the charge of the food inspection, milk inspection and other bureaus of the health department. Dr. Wood has recently been in charge of the medical inspection of schoolchildren in Chicago.

Personal.—As the result of a mandamus suit, Dr. Chilton W. McLaughlin has been reinstated as health commissioner of Kansas City.——Dr. Walter M. Reitzel, Kanopolis, is reported to be seriously ill with septicemia at Ellsworth Hospital.——Dr. Walter S. Sutton, Kansas City, has returned from war service abroad.

State Board Elections.—Dr. Harry L. Aldrich, Caney, has been elected president of the Kansas State Board of Health, succeeding Dr. James S. Cummings, Bronson, and Dr. Jessie T. Orr, Olathe, was elected vice president.——At the annual meeting of the State Board of Medical Examiners of Kansas, Dr. Arthur J. Anderson, Lawrence, was elected president, and Dr. Henry A. Dykes, Lebanon, secretary (reelected).

MARYLAND

Infantile Paralysis Epidemic.—A series of infantile paralysis cases, amounting almost to the proportions of an epidemic, has been entered at Johns Hopkins Hospital in the last month. Nearly thirty cases have been received. One death occurred three weeks ago. Apparently the disease is confined to eastern and northeastern sections of Baltimore, for an inquiry at all the other hospitals revealed the fact that they have no cases in their charge. The cases at the Johns Hopkins are of children of that section and it is believed that the cases may be traced back to only two, perhaps one source of infection.

Personal.—Dr. Hoagland C. Davis, who has been critically ill at the Union Protestant Infirmary, has recovered sufficiently to be taken home. He will leave later for Blue Ridge Summit for August and September.——Dr. James A. O'Donnell, Baltimore, was thrown from his buggy in a collision with a wagon, July 23, and injured his back.——Dr. J. Thomas Nelson of Baltimore was operated on for appendicitis by Dr. W. A. Fisher, at the Union Protestant Infirmary, and is reported to be much improved.——Dr. Nathan R. Gorter, commissioner of health of Baltimore, has gone to Cape May, N. J., for his vacation and during his absence, Dr. C. Hampson Jones will be the acting commissioner.

Expansion Needs of Johns Hopkins Hospital.—Expansion at the Johns Hopkins Hospital is necessary, according to the latest report of the superintendent, Dr. Winford H. Smith, in spite of the large and elaborate plant of the hospital. Additional ward facilities are needed, especially for white women in need of surgical attention and also for children requiring surgical treatment. Many patients of this class have to be turned away for lack of accommodations. Dr. Smith also urges the establishment of a convalescent home in the country, which will relieve the present congestion of the wards and shorten the period of convalescence. Seven thousand and thirty-three patients were treated during the year compared with 6,818 for last year. More than 25,000 were treated in the dispensary.

MASSACHUSETTS

Tuberculosis Hospital for Malden.—Work will soon begin on the new tuberculosis hospital for Malden on Salem Street, which is to be built at a cost of $30,000 and will accommodate twenty-eight patients.

Personal.—Dr. Francis X. Mahoney has been appointed health commissioner of Boston. The mayor took this action after consultation with Surg. Richard H. Creel, U. S. P. H. S.,

who informed the mayor that it would be impossible for him to accept the position.——Dr. William J. Gallivan has resigned as a member of the Board of Health of Boston and as head of the division of child hygiene.——Richard Norton, Cambridge, founder of the American Volunteer Ambulance Corps, has been awarded the "Croix de Guerre" by the French government for heroic work among the wounded on the battlefield. Dr. Norton formed the ambulance corps, which now consists of about eighty motors, and which has been keeping up a regular line of communication between the front and the hospitals in the rear.——Dr. John J. Dowling has been appointed camp physician of the Harvard Engineering Camp, Squam Lake, N. H.

MINNESOTA

Laboratory to Open.—The Minneapolis laboratory of the State Health Department, which has been closed since May 15, through lack of funds, was opened, August 1, when the next fiscal year's appropriation became available.

Personal.—Dr. Charles S. Sutton has been appointed alternate surgeon for the Great Northern System at St. Cloud.——Dr. D. T. Abernathy, Rochester, who was recently operated on at St. Mary's Hospital, is making satisfactory progress toward recovery.

Minnesota to Furnish War Unit.—The University of Minnesota Medical College has been asked to make up a unit for war service to take its turn at the American Relief Station, Paris. It is expected that the Minnesota contingent will be needed in March or April next.

Approves Action of Sanatorium.—The Upper Mississippi Medical Association, at its meeting held in Akely, July 13, adopted resolutions approving "the present method of the Minnesota State Sanatorium for Consumptives in admitting patients regardless of the stage of the disease."

State Board Items.—At a meeting of the State Board of Health, July 21, Dr. Christopher Graham, Rochester, was elected vice president, and L. P. Wolf, St. Paul, was appointed a member of the executive committee, succeeding Dr. Charles Lyman Greene, St. Paul. The resignation of Dr. Henry M. Bracken, St. Paul, secretary of the board, was not accepted.

Hospital Notes.—The county commissioners of Yellow Medicine County have voted an appropriation of $1,000 to the Canby Hospital. The Canby Hospital board agrees, in consideration of this appropriation, to accept and care for four patients from the county.——Ground was turned, July 10, for the new Franciscan Hospital, Little Falls. The new building will cost about $65,000, will be three stories and basement in height and fireproof and brick structure.——Dr. Thorvald Petersen, Gaylord, proprietor of the Gaylord Hospital, has disposed of his interest in the institution to Dr. William Black, Tyndall, S. D.——The new St. John's Hospital, St. Paul, erected at a cost of $125,000, will be ready for occupancy by the middle of September.

Sanatorium Notes.—Contracts have been let for the construction of the Tri-County (Beltrami, Koochiching and Hubbard) Tuberculosis Sanatorium, to be built under the state aid plan. A main building will be erected at a cost of $29,615. The sanatorium will provide for thirty patients. ——Up to the present time, thirty-one counties of Minnesota have taken advantage of the county tuberculosis sanatorium law passed by the legislature of 1913.——The Joint Tuberculosis Sanatorium Commission for Crow Wing and Aitkin counties met at Brainerd, July 13, and organized by electing Dr. John A. Thabes, Brainerd, president, and Peter Larsen, secretary; and authorized these officers to advertise for offers of 40 or 80 acres of land as a site for the sanatorium which is to be located between Cedar Lake and Deerwood, not more than 2 miles from the Northern Pacific Railroad. ——It is reported that the Goodhue County Sanatorium will be ready for occupancy in September.——Todd and Wadena counties have decided to combine in the erection of a tuberculosis sanatorium to cost $25,000.

MISSOURI

Personal.—Dr. William C. Bradley, St. Louis, has been appointed assistant surgeon to the United Railways Company.——Dr. Richard H. McBaine, St. Louis, is seriously ill with septicemia in Barnes Hospital.

Leper in Kansas City.—Pedro Petrisia, a Mexican, was taken to the old City Hospital, Kansas City, July 20, suffering from leprosy. He has been placed in a vacant isolation ward until his deportation can be arranged.

Last Honors to Dr. Dorsett.—At the funeral of Dr. Walter B. Dorsett, July 29, Drs. Jacob Friedman, Francis K. Fry, Paul Y. Tupper, Frank A. Glasgow, W. A. McCandless and Arthur F. Kleykamp were active pallbearers, and former presidents of the St. Louis Medical Society, Missouri State Medical Association and members of the faculty of St. Louis University, were appointed honorary pallbearers. The members of the St. Louis Medical Society attended the funeral in a body.

NEBRASKA

New Building for Hospital.—Plans are being prepared for the proposed second building of St. Katherins Hospital, Omaha, at Ninth and Forest Avenues. It is said that a building to cost $40,000 will be erected this year.

Reorganization of Omaha Medical Staff.—The Union Pacific System has reorganized its medical staff. Dr. August F. Jonas, Omaha, continues as chief surgeon, with the following assistants: hospital surgeon, Dr. Elmer J. Updegraff; local surgeons, Drs. Seymour H. Smith, Robert R. Hollister and Oscar S. Hoffman; surgeons at the shops, Drs. George R. Gilbert and James S. Loney; and oculists and aurists, Drs. Frank S. Owen and William P. Wherry.

Personal.—Dr. E. E. Vander Slice, superintendent of the State Sanatorium, Kearney, has been elected a director of the National Association for the Study and Prevention of Tuberculosis.——Dr. Oscar S. Gray, Ayr, was operated on at the Nebraska Sanatorium, Hastings, on account of a disease of the hip, July 22.——Dr. Fred E. Calkins has succeeded Dr. Anders P. Overgaard as local surgeon for the Union Pacific System at Fremont.——Dr. Chauncey F. Chapman has succeeded Dr. John F. Spealman as health officer of Lincoln.——Dr. Frank A. Packard, Kearney, has been reelected grand medical examiner of the Nebraska Ancient Order of United Workmen.

NEW JERSEY

Campaign for Hospital.—In an effort to raise $100,000 for the erection of a new building for All Souls Hospital, Morristown, the directors have decided to hold a public campaign from October 13 to October 30.

Antituberculosis Association Incorporated.—The Somerset Antituberculosis Association has filed articles of incorporation, and the trustees include Drs. Mary E. Gaston, Lancelot Ely and Aaron L. Stillwell, all of Somerville.

Personal.—Dr. Jacob Cole Price, Branchville, formerly state senator, has been appointed director of the State Department of Health.——Dr. George E. Harhen, Verona, has been appointed chief resident physician of the Verona Sanatorium.——Dr. Samuel Freeman, Trenton, who has been ill since January, has gone to White Haven, where he will spend about three months taking a rest cure.

Sanitation for Pennsgrove.—On July 20, a conference was held at Trenton, between the State Board of Health and officers of the Pennsgrove Borough, Upper Pennsneck Township, and representatives of the DuPont Powder Company. An arrangement was made whereby the officers of Pennsgrove Borough were ordered to draft an ordinance to clean up the town. Under the terms of the ordinance, the Pennsgrove Borough government is to name A. M. Greer, new chief engineer of the sanitation for the powder company, and his assistant, Paul Scott, and these two officers are to lay out a complete system of night soil and garbage collection, the charges for doing so to be borne by the house renters. To start the work and see that proper sanitation inspection is maintained, the DuPont officials offered $1,000 and the town is to appropriate a similar sum.

Bamberger Seashore Home Opened.—Five years after the death of its founder, the Max and Sarah Bamberger Seashore Home for Invalid Jewish Children, was officially opened on August 1. The home was actually opened on July 1 and has about 100 patients at the present time. The purpose of the philanthropy is to give invalid Jewish girls under 15 years and boys under 12 years a seashore home. In the founder's will was the following clause: "It is my desire that the sum of $400,000 be used to erect and maintain at Atlantic City, N. J., or at some point in the vicinity thereof, a home similar to the Children's Seashore Home, for the accommodation and medical treatment of invalid Jewish women and children, to be known as the Max and Sarah Bamberger Home." The home is built of brick and concrete, fitted

throughout with every convenience. The administration building and dormitories are connected by wide porches in such a way that additional wings can be added. The home is fitted with lockers, showers, laundry, operating room, dispensary and reception rooms, beside the accommodation provided for the staff and patients.

NEW MEXICO

Personal.—Dr. Le Roy S. Peters of the staff of the Albuquerque Sanatorium for Tuberculosis, has been elected a director of the National Association for the Study and Prevention of Tuberculosis.——Dr. Ernest A. Duncan, Silver City, has been elected medical director of the new National Methodist Sanatorium, Silver City, and Dr. M. O. Stockland has been made resident manager of the institution.

NEW YORK

Personal.—Pliny T. Sexton of Palmyra has been elected chancellor of the University of New York by the State Board of Regents, to succeed the late St. Clair McKelway, and Dr. Albert Vander Veer of Albany has been elected vice chancellor.——Dr. Lyman G. Barton, Jr., Willsboro, has returned from the war zone and resumed practice.

Four-County Medical Society Launched.—The first meeting of the Four-County Medical Society was held at Letchworth Park, July 22, with an attendance of 244. Addresses were made by Dr. L. Faugeres Bishop of New York City on "Cardiovascular-Renal Disease," and by Dr. William Seaman Bainbridge, New York City, on "Intestinal Stasis." The establishment of the society on a permanent basis was approved, and Dr. William R. Thomson, Warsaw, was elected president and Dr. George K. Collier Sonyea, secretary, pending the formal organization of the association.

New York City

New Hospital Opened.—The St. Lawrence Hospital, on One Hundred and Sixty-Third Street, near Edgecombe Avenue, was opened, July 24, for city cases. When completed, the plant will have cost $1,000,000. It covers the territory of the Washington Heights Hospital from One Hundred and Forty-Fifth to One Hundred and Sixty-Fourth Streets and from the Hudson to the Harlem rivers. The hospital is administered by the sisters of the community of Mount St. Vincent.

Prosecute Ice-Cream Cone Makers.—The Bureau of Food Hygiene of the Department of Health has ordered the criminal prosecution of four manufacturers of ice-cream cones. This move is the result of an investigation during which twenty-one violators of the sanitary law were discovered. Twelve of these decided to comply with the laws, five chose to retire from business and four refused either to retire from business or to make the required changes. It is stated that the activity of the department will be extended to the sellers of the cones.

Health Department Temperance Crusade.—The most recent move of the Health Department in its campaign against alcoholic beverages was the publication on July 31 of the results obtained from a study of the effects of alcohol on human life. Forty-three leading life insurance companies have furnished their records on about 2,000,000 lives covering twenty-five years. The report in summarizing states that nothing has been more conclusively proved than that the steady free use of alcoholic beverages or occasional excess is detrimental to the individual. Among men who admitted that they had taken alcohol occasionally to excess in the past, but whose habits were considered satisfactory when they were insured, the extra mortality was equivalent to a reduction of more than four years in the average life of these men. The report further states that statistics have been gathered that justify the statement that total abstainers have a mortality during the working years of life of about one half of that among those who take two glasses of whisky a day.

Health Department and Child Labor.—According to law no child under the age of 16 years may be employed in any factory or mercantile establishment without having first secured a permit issued by the Department of Health. In order to obtain such a permit the child is required to present a certificate stating that he has reached at least Grade 7a in school. In addition to this, the child must pass a physical examination conducted by the Department of Health. During the quarter ended June 30, 1915, 10,606 permits were issued and 438 children were refused. The total number of physical examinations made was 11,468. In the course of these examinations the following defects were found: defective vision, 1,128; defective hearing, 142; defective nasal breathing, 291; hypertrophied tonsils, 908; defective nutrition, 277; cardiac disease, 129; pulmonary disease, 23; orthopedic defects, 73; nervous diseases, 37; defective teeth, 3,760; goiter, 75; skin diseases, 26; hernia, 14; enlarged glands in neck, 2,230; acute eye diseases, 192; pediculosis capitis, 39, and defective palate, 16.

NORTH CAROLINA

Sanitary Expert for High Point.—It is announced that a sanitary expert of the United States Public Health Service will be sent to High Point early this month to assist the state and municipal authorities in the crusade for municipal sanitation.

Hospital Soon to Be Commenced.—The executors of the will of the late Caesar Cone, Greensboro, announce that in the near future they will begin the construction of the Caesar Cone Memorial Hospital, Greensboro, and the Recuperation Hospital at Blowing Rock, for which a provision of $2,000,000 was made in the will of Mr. Cone.

Personal.—Dr. John M. Newbern, Jarvisburg, superintendent of schools at Currituck County for the last eight years, has retired.——Dr. William H. Kibler, Rocky Mount, whole-time health officer of Nash County, has resigned, to accept a position in South America with the Rockefeller Commission in the work against hookworm.

Registry for Tuberculosis Nurses.—The North Carolina State Sanatorium for Tuberculosis, which recently established a training school for nurses, has inaugurated a registry for those nurses in the state who have had special experience in tuberculosis work and desire to be so registered. Full information regarding this registry will be furnished by the superintendent of the sanatorium.

OHIO

Hospitals Near Completion.—The new buildings of St. John's and the surgical wing of Charity hospitals, Cleveland, are nearing completion and are soon to be ready for occupation.

Bi-County Tuberculosis Hospital.—The county commissioners have adopted resolutions providing for a bond issue of $50,000 for the purchase of a site for a new bi-county tuberculosis hospital for the joint use of Preble and Montgomery counties.

New Alumni Officers.—The following officers of the Alumni Association of the Western Reserve Medical School have been elected: president, Dr. Frederick C. Herrick, Cleveland; vice presidents, Drs. Hiram B. Ormsby, Cleveland, and Lewis A. Buchman, Canton; recording secretary, Dr. Joseph C. Placak, Cleveland; corresponding secretary, Dr. John C. Fox, Cleveland; and treasurer, Dr. Ellis B. Rhodes, East Cleveland.

Faculty Appointments.—The following new appointments have been made at the Medical School of Western Reserve University, Cleveland: Dr. William Evans Bruner, clinical professor of ophthalmology, to be professor of ophthalmology, with seat and vote in the faculty.——H. H. McGregor, A.M., Ph.D., to be instructor in biochemistry.——Dr. Chester D. Christie, demonstrator of medicine and medical resident of Western Reserve University and Lakeside Hospital, to be director of the clinical research laboratory at Lakeside Hospital.——Dr. Russell J. Collins to be demonstrator of pharmacology.——Mr. H. A. Hitchcock, A.M., formerly trustee of the University and Adelbert College, has been appointed registrar of the medical school.

Personal.—Dr. Joseph W. Kirgan, Cincinnati, has been appointed a member of the State Board of Agriculture.——Dr. Walter G. Stern, Cleveland, has been appointed consulting orthopedic surgeon to the recently opened Gates Hospital for Crippled and Deformed Children, Elyria.——Dr. Philip D. Wilson, Columbus, has returned after three months on the staff of the Harvard unit in Paris.——Dr. George D. Nicholas, Elyria, is reported to be seriously ill in the Memorial Hospital, Elyria, with septicemia, due to an operation wound.——Dr. Wilhelm H. Vorbau of the Athens State Hospital has been transferred to a similar position in the new Lima State Hospital.——Dr. Albert H. Herr, Lima, is reported to be seriously ill in the Lima City Hospital.——Dr. James G. Blower, Glouster, has been elected a trustee of the People's Hospital, Akron, suc-

ceeding Dr. Mark D. Stevenson, deceased.——Dr. William M. Goff, Marysville, sustained a slight cerebral hemorrhage, July 8.——Dr. Alfred Irving Ludlow, formerly associate in surgery in Western Reserve University, Cleveland, now professor of surgery and surgical pathology in the Severance Union Medical College, Seoul, Korea, has been granted a leave of absence and is now sojourning in Cleveland.——Dr. Rolla E. Hoffman, demonstrator of pathology, Western Reserve University, and resident pathologist in Lakeside Hospital, has started for Persia as a medical missionary.

PENNSYLVANIA

Ambulance for Doylestown.—In memory of Dr. O. P. James, one of the most prominent physicians of Bucks County, his daughters, Mrs. George H. Lorah, Philadelphia, and Miss Sarah H. James, have presented Doylestown with an automobile ambulance.

Memorial Laboratory.—The children of William H. Singer, Pittsburgh, will erect a laboratory for investigations into the origin of disease, which will be operated in connection with the Allegheny General Hospital. The cost of construction, equipment and endowment will amount to $400,000.

Personal.—Dr. Guy C. Milnor, Williamsport, for the past year an intern in the Queen's Hospital, Honolulu, is now physician on a sugar plantation of 20,000 acres at Puunene, Maui, T. H., with 7,000 people to look after. There is a well-equipped hospital with eighty beds and three dispensaries, with 200 patients a week. In addition there are twenty-one camps to be inspected. The position pays a comfortable salary, with expenses, and is an example of the opportunities open to young medical graduates in the possessions of the United States.——Dr. Raymond J. Cary, Pittsburgh, has accepted the position as superintendent of Mountain View, the Pierce County, Wash., Tuberculosis Sanatorium.——Dr. Edward W. Ryan, Scranton, chief of the American Red Cross in Belgrade, has been decorated by both the Serbian and French governments for his work in the hospitals where typhus fever has been raging. France has made him chevalier of the Legion of Honor, the official order of the French Republic.

Philadelphia

Supposed Typhus Cases Prove Typhoid.—The two supposed cases of typhus fever taken from the Danish steamship *London,* which arrived in Philadelphia July 28, and held in quarantine, proved to be ordinary typhoid by laboratory tests.

Alleged Swindlers of Physicians.—Physicians from all sections of Philadelphia were in attendance at the Germantown Police Station July 24, to attend the hearing of Robert Colliday and Robert Wilkinson, charged with obtaining money under false pretenses by the sale of books to physicians. Eleven physicians appeared against the accused men and testified that books ordered and paid for had never been delivered. The accused were each held under $300 bail for further hearing.

Personal.—Dr. E. E. Montgomery has entirely recovered from his operation for hernia.——Dr. James K. Young has resigned the clinical professorship of orthopedic surgery at the Woman's Medical College.——Dr. William H. E. Wehner has been appointed medical director of the Fidelity Mutual Life Insurance Company in place of Dr. William H. King, resigned.——Dr. Benjamin De Vecchis has been recalled by the Italian government for war service and sails from New York, August 14.——Dr. Carlton N. Russell sailed from New York, July 24, on the steamer *La Touraine,* to join the Philadelphia contingent.——Drs. Ignazio Cortese, Ottavio Monticelli, and Vincent de Virgiliis, reservists of the Italian army, sail for Europe this month.

Postgraduate Teaching Association Organized.—The Cooperative Association for Postgraduate Teaching of Medicine in Philadelphia has recently been organized by more than one hundred practitioners of Philadelphia with Dr. David Riesman as chairman and Dr. George P. Muller as temporary secretary. The objects of the association are stated to be to investigate and ascertain the resources for postgraduate teaching that exist in Philadelphia; so to arrange the courses offered by each hospital and college as to enable the students to spend each day in solid study or laboratory work, and the establishment of a central office in charge of the permanent secretary, where rosters of courses may be made and where all information will be listed.

WASHINGTON

Inspection in Seattle.—During the last year, 75,839 Seattle schoolchildren were examined; nurses visited 5,984 homes, and 3,803 children were treated for minor injuries, according to a report made by Dr. Ira C. Brown, medical director of the Seattle school district. Dr. Brown recommends the appointment of three additional nurses.

State Society Meeting.—At the annual meeting of the Washington State Medical Association held in Tacoma, July 21 to 23, the following officers were elected: president, Dr. John R. Brown, Tacoma; president-elect, Dr. John M. Semple, Spokane; vice presidents, Drs. Arthur E. Burns, Seattle, and C. Stuart Wilson, Tacoma; secretary-treasurer, Dr. Curtis H. Thomson, Seattle; assistant secretary, Dr. John H. O'Shea, Spokane; delegate to the American Medical Association, Dr. Don H. Palmer, Seattle; and alternate, Dr. Charles F. Eigenbary, Spokane. Seattle was selected as the place of meeting for 1916. The office of assistant secretary was created in order to give official representation to Eastern Washington.

WISCONSIN

Chiropractic Bill Lost.—It is reported that the senate committee turned down the bill which proposed to license chiropractors. The committee declared, after a careful consideration, that in their belief this new school of practice was not entitled to recognition under the laws of the state.

Dispensary for Milwaukee.—Following out the provisions of the late Mrs. Keenan, who left $300,000 to establish and maintain a free medical dispensary in Milwaukee, a meeting is soon to be held between the trustees of the fund and the City Health Department to work out the arrangements as contemplated in the will.

Health Service in the State.—A campaign for the establishment throughout the state of a generalized nursing service, each unit of which should cover a special district, has been commenced by the Wisconsin Association of Graduate Nurses. An experimental health unit is being established in order to test the practicability of the generalized nursing service idea.

Personal.—Dr. Reuben J. Elliott, National Home, has been appointed first assistant surgeon at the Soldiers' Home, Milwaukee, succeeding Dr. Edward B. Frisbee, resigned.——Dr. Joseph D. Sullivan, Menasha, suffered a severe laceration of the hand while attempting to crank his automobile, July 14.——Dr. Joseph P. Donovan, health officer of Madison, suffered a severe sprain of his shoulder by the overturning of his automobile near La Valle, July 11.——Dr. Henry J. Connor, Superior, is reported to be seriously ill at his home.

Law Fixes Higher Standard.—A new medical practice act recently secured fixes the minimum standard of preliminary education for all applicants after Jan. 1, 1919, to two years of collegiate work, the equivalent of a two years' premedical course at the University of Wisconsin. It is specified that the work shall include college courses in physics, chemistry, biology and either French or German. This is the tenth state to adopt this higher requirement, the other nine being Alabama, Colorado, Indiana, Iowa, Minnesota, New Hampshire, New Jersey, North Dakota and South Dakota.

Hospital News.—A new $35,000 hospital was opened in Sparta last month by the Franciscan Sisters, to take the place of a smaller hospital now discontinued. The new hospital is a brick and stone structure, three stories and basement in height and with modern equipment.——A meeting was held in Stanley to discuss the question of bonding the city to provide for the construction and equipment of a municipal hospital.——Plans are under way for the enlargement and development of St. Agnes' Hospital, Fond du Lac. The plans proposed include hospital standardization, staff organization, establishment of pathologic, bacteriologic and Roentgen-ray laboratories, the inauguration of an outpatient department, the making of necropsies, the starting of a medical library, the establishment of a school for nurses and a nurses' home and the employment of an intern.

CANADA

Queen's Hospital for the Dardanelles.—Dean Connell of Queen's Medical College, Kingston, Ont., received a cable from the war office, July 27, that they desired to send the Queen's stationary hospital to the Dardanelles. All preparations had been made for the hospital corps to go to France,

but it has given such excellent satisfaction at Folkstone and its organization has been so well perfected that the war office wishes to make special use of it in a place where the work is anything but easy.

The Insane in Ontario.—The population of the province of Ontario was set at the last census in 1911 at 2,500,000. At the close of 1914 there were 6,000 residents in the hospitals for the insane throughout the province—about one in 420 of the population. There were admitted in the last hospital year, 1,337 new cases. The physicians of Ontario thus had to pass on that number of insane and possibly as many more suffering from mental disease who could be kept at home. Four of the hospitals in 1913 discharged 10 per cent. of their daily average population.

Feebleminded in Ontario.—The institution for the feebleminded for Ontario is at Orilla, on the shore of Lake Simcoe. The normal capacity of that institution is 740 patients. In 1912 the daily average population was 814; for 1913, 815; 1914, 815. The discharges in 1913 numbered just three. The vacancies depend largely on the number of deaths. The accommodation of the institution is overtaxed. There are, however, two cottages in course of erection which when completed will provide accommodation for an additional 300 inmates. The institution is a training school and custodial institution for children who are not normal and never will be normal.

Winnipeg Municipal Hospitals.—In the annual reports of the municipal hospitals of Winnipeg, Man., the expenditure for the year is set down at $133,910.80. The number of patients admitted during the past hospital year was 1,104 and 199 were carried over from the previous year. The net cost was $2.31 per patient per day. The King George has accommodation for 190 patients but has never had more than 140 in any single day, and the average for the entire year was only seventy-eight. After four years' experience with the commission form of government to keep the hospitals free from municipal or political influence, the plan has proved satisfactory.

Third Annual Announcement—Medical Council of Canada.—The report records the transactions of the Dominion Medical Council for 1914 and announces the examinations for 1915 to be held in Montreal and Halifax on October 12. The June examinations were held in Toronto and Winnipeg. The report of the registrar, Dr. Robert W. Powell, Ottawa, gives the receipts at $36,871.62, and the expenditure is put down at $23,295.17. In 1914, 86 candidates wrote on the examinations, of whom 49 were successful, 22 rejected and 15 referred in one or two subjects. As showing the residence of the 86 candidates; 39 were from Ontario; 22 from Quebec; 4 from Saskatchewan; 2, Alberta; 3, Nova Scotia; 6, New Brunswick; 4, British Columbia; 5, United States; 1, West Indies. As showing the source of the candidates' degrees: 44 were from McGill; 19 from Queen's; 8 from Western (London); 7 from Toronto; 6 from Laval; 1 from Chicago; 1 from a Philadelphia college.

Personal.—Lieut.-Col. Herbert A. Bruce, Toronto, has gone to England.——Lieut.-Col. Robert D. Rudolph, Toronto, who was home on sick leave, has fully recuperated and returned to his command of No. 2 Canadian Hospital at Boulogne. ——Dr. Rowland W. Young, Oshawa, Ont., sailed on the *Corsican* for England to offer his services to the R. A. M. C. ——Dr. R. E. McConnell, Montreal, when the War broke out, a year ago, was engaged in medical work for the British government in Uganda, British East Africa. He was appointed to command the commissariat with the rank of captain. Subsequently he was appointed officer in command of the medical western section; in charge of the field ambulance detachment, clearing hospital and all medical matters in western section of British East Africa, the appointment ranking him second in command of the Uganda staff. He expected to return to Montreal the present summer but will not return until after the war.——Dr. Howard D. Harrison, F.R.C.S., Milton, Ont., who was taking a postgraduate course in England when war was declared, has been promoted to the rank of major in the R. A. M. C. Dr. Harrison is chief surgeon in the Welsh Metropolitan War Hospital in London, a hospital of 900 beds.——Major E. B. Hardy, Toronto, is in charge of No. 2 Field Hospital in Belgium. He writes that the hospital is doing splendid work for the wounded Canadians and British.——Capt. Duncan Graham, who went abroad with the University of Toronto base hospital, is doing special duty at the Duchess of Connaught Hospital at Cliveden. Major John A. Amyot, with the same unit, is sanitary officer at the camp. Major C. S. MacVicar is registrar.——Dr. George S. Strathy, Toronto, is at Moore Barracks, Shorncliffe.

GENERAL

Missouri Valley Physicians to Meet.—The twenty-eighth annual meeting of the Medical Society of the Missouri Valley will be held in Des Moines, Iowa, September 23 and 24, under the presidency of Dr. Granville N. Ryan, Des Moines.

New Medical Fellowship.—A fund donated by Mr. Douglas Flattery of Boston, which will bear an annual income of about $800 has been presented to Harvard Medical School for the encouragement of the scientific study of the cause, cure and prevention of disease.

The China Medical Board.—Dr. Wallace Butterick, who is to direct the work; Dr. William H. Welch, Baltimore, and Dr. Simon Flexner, New York City, director of the laboratories of the Rockefeller Institute, sail for China this month to establish the work of the China Medical Board, and take over the Union Medical College, Peking, which has been purchased with funds furnished by the Rockefeller Foundation. The Rockefeller Foundation has also appropriated $16,000 each for five years to the Yale Medical College in China and the Harvard Medical College in China. All of the modern equipment of laboratories and clinics will be introduced and the resident director will be Roger S. Green, former American Consul General at Hancow.

Bequests and Donations.—The following bequests and donations have recently been announced:

Women's Medical College of Philadelphia, Pa., $5,000, by the will of Mrs. Anna Yarnall, Philadelphia.

Sanatorium Association of Philadelphia, $5,000; St. Mary's Hospital, New York City, $10,000; Children's Seashore Home, Atlantic City, and Women's Seashore Home, each $3,000, by the will of Mrs. Sarah E. Farnum Batterson, of Philadelphia.

Home for Incurables, Philadelphia, one third of the estate of $2,500, left by Sarah E. Williamson.

For the purpose of establishing, carrying on, providing and maintaining one or more free dispensaries in the city of Milwaukee, where medicines, medical supplies, medical advice and relief shall be furnished free of charge, to such indigent or sick persons residing in the city of Milwaukee as the trustees shall select, $300,000, by the will of Mrs. Antoinette E. Keenan.

American Red Cross, $1,000, receipts of the pageant at Lexington, Mass.

Harrisburg Hospital, a donation of $6,000 from Mrs. Lyman D. Gilbert, the income of which is to be devoted to the maintenance of a free bed to be known as the Henry and Harriet Gilbert Memorial.

University of Pennsylvania, $50,000, the income of which is to be used for the maintenance of the William Pepper Clinical Laboratories of Medicine, by the will of Samuel Dickson.

German Hospital, Philadelphia, $4,300 by the will of the late Elizabeth M. D. Prince, as a memorial to her father, Henry W. Internach.

Prizes to Red Cross.—A grand prize has been awarded the American Red Cross by the supreme court of the Panama Pacific Exposition for a collective exhibit of activities in life saving, nursing and hygiene. A second grand prize was for a combined exhibit of medical and surgical instruments, materials, etc.; a gold medal was awarded for "Protection Against Floods," and a silver medal for "First Aid Equipment." In addition to the foregoing, the jury awarded a silver medal to each of the following collaborators in the Red Cross service: Mr. Ernest P. Bicknell, national director; Mr. Lewis E. Stein, who was responsible for much of the constructive work in connection with the installation of the Red Cross exhibit; Maj. Robert U. Patterson, M. C., U. S. Army, chief of the Medical Bureau; Miss Jane A. Delano, chairman of the General Nursing Service; Miss Fannie F. Clement, superintendent of the Town and Country Nursing Service; Mr. Charles D. Jameson, the American civil engineer who made the pioneer flood prevention study in the Huai River district of China for the American Red Cross, and Lieut.-Col. William L. Sibert, Engineer Corps, U. S. Army, who served as chairman of the American Red Cross-Chinese Conservancy Board, and directed the final investigation which resulted in the formulation of a definite plan of flood prevention work in the Huai River region.

Arrest of Promoter of Index Association.—In THE JOURNAL last week announcement was made of the arrest, in Detroit, of one C. A. Beck, who was connected with the so-called American Medical Index Association. Some time ago THE JOURNAL announced that Beck had operated in New Orleans and had duped a number of physicians. Dr. Rudolph Matas was one of the physicians of New Orleans who suffered financial loss through the activities of this particular individual. Dr. Matas says that on receipt of information that Beck was in Detroit, "I at once submitted the whole matter to the U. S. district attorney. He had already accumulated sufficient evidence against Beck to have him arrested on the charge of using the mails for fraudulent purposes.

. . . It would be well that a notice of this man's arrest be published as early as possible, and that as much publicity be given to the notice in order that his numerous victims may have an opportunity to assist the government officials in obtaining his conviction and punishment. I have recently received communications from prominent physicians in Pittsburgh, Fort Wayne and Vincennes, Ind., and lately from Michigan, which show that Beck's depredations have covered a wide range of territory since March 20, when you first warned the profession of this man's nefarious practices in The Journal. Before that time he had already traveled in Louisiana, Texas, Kentucky, Ohio and Pennsylvania. While sufficient testimony to convict Beck a dozen times is already in our hands, it is desirable that the hands of justice be strengthened by the testimony of the numerous physicians who have suffered through his rascally schemes."

FOREIGN

Body of Hildebrandt Recovered.—In 1912 Professor Hildebrandt, instructor in pharmacology at the University of Halle, lost his life while on a mountain-climbing trip. His body was recently found in a crevice by soldiers crossing the Bozen district.

Deaths in the Profession Abroad.—E. Rhode, instructor in the physiology and pharmacology of the heart at the University of Heidelberg succumbed to pneumonia contracted in the Red Cross service, aged 34.——A. Schliz of Heilbronn, noted for his studies in prehistoric anthropology for which he was awarded the Wurttemberg "gold medal for art and science" a few years ago.——T. C. Egeberg of Christiania, family physician to the king of Norway, a leading surgeon, aged 68.

Conditions in Mexico.—Reports to the American Red Cross of date of July 31 state that in and around Hermosillo, Sonora, Mexico, conditions are getting worse every day and that the government is taking all the wheat from farmers and all flour. Many families have had only one meal a day and that a very poor one.——It is also reported that chaos exists in Mexico City and that the condition of the people there is desperate and the people are actually dying from starvation.——The American Red Cross has ample funds, but is unable to purchase food and the condition of the people has been rendered almost hopeless, owing to the frequent changes in revolutionary control.

WAR NOTES

German Island Health Resorts Closed.—The authorities have ordered all visitors away from the German health resorts on six islands in the North Sea, in the interests of public safety, while the war lasts.

Honor Memory of Typhus Hero.—A monumental cross bearing the inscription "James F. Donnelly, Staff Physician, New York City, U. S. A.," has been erected over the grave of Dr. Donnelly who died while working to conquer the scourge of typhus fever in Serbia.

Second Harvard Unit at Work.—The second Harvard unit, which sailed for England the last week in June, is thoroughly organized and is in charge of a thousand-bed hospital. Dr. Edward H. Nichols will be relieved as surgeon in charge by Dr. Franklin G. Balch, Boston, who sailed from New York, July 31. With Dr. Balch sailed Drs. Edward P. Richardson, Channing C. Simmons and Donald B. Steenberg.

Deaths in the Profession on the Firing Line.—Our Italian exchanges have now joined the sad procession of medical journals that have to devote a few lines each week to a list of members of the profession, including medical students, who have fallen "on the field of glory" or been wounded or captured. The French and British also give a list occasionally of the sons of well-known physicians, not physicians themselves, who have fallen or been captured.

Red Cross Must Recall Physicians and Nurses.—On account of lack of funds it is announced that the American Red Cross will be obliged to withdraw its various physicians and nurses from European battlefields on October 1, as the general fund which aggregates $1,565,000 will at that time have been exhausted.——The Red Cross has sent to the war zone, 367 persons engaged in humanitarian enterprise. Of that number, 71 were surgeons and 253 nurses, while 43 were members of the Serbian sanitary commission.

Aid for Blinded Soldiers.—Professor v. Grosz of Budapest has offered a prize of 200 kronen, about $50, for the best work received before August 15 on the subject of the best measures that can be applied to ameliorate the condition of the men blinded in the war. The Hungarian army has between seventy and eighty soldiers who have been thus blinded. The Vienna daily, the *Neue Freie Presse*, has collected a fund for Austrian blinded soldiers which had reached 400,000 kronen early in July.

First Harvard Unit Returns.—Drs. Robert B. Greenough, Robert B. Osgood, Orville F. Rogers, Jr., and Lyman G. Barton, Jr., of Harvard Medical School; Drs. Elliott C. Cutler and M. N. Smith-Peterson of the house staff of the Peter Bent Brigham Hospital, and two nurses have returned from Paris and reached New York, July 13.——Drs. Beth Vincent and Philip D. Wilson of the Massachusetts General Hospital are returning by way of England.——Dr. Frederick A. Coller of the Massachusetts General Hospital has joined the English unit for service and Dr. George Benet has taken service in the Anglo-French Red Cross front line hospital north of Compiegne.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ended July 31, 1915, lists the following contributions:

Washington County (Ark.) Med. Society, Fayetteville, Ark.	$ 14.00
Dr. J. F. Pressley, San Francisco, Calif.	5.00
Receipt for the week ending July 31	$ 19.00
Previously reported receipts	7,750.84
Total receipts	$7,769.84
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
353 standard boxes of food at 2.28	804.84
Total disbursements	7,310.04
Balance	$ 459.80

F. F. Simpson, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

LONDON LETTER

London, July 15, 1915.

The War

GREAT IMPROVEMENT IN THE HYGIENIC CONDITION OF SERBIA

British and other foreign physicians have done a great work in Serbia. At the outbreak of the war there were fewer than 400 Serbian doctors, and the mortality among them has been so great that there are now believed to be only 230. Nothing could exceed their devotion, but there were not enough for the army alone, so that the civil population was practically left without advice. Trained nurses do not exist in the country. When the epidemics of typhus and typhoid broke out, no attempt could be made to stop them. It is believed that the deaths from typhus alone amounted to over 200,000. When the foreign physicians arrived, the conditions were appalling. Six British physicians without nurses, water or appliances struggled to look after 2,000 wounded and sick scattered through three buildings, from which the new patients taken in each night numbered as many as the dead which were carried out in the morning. Soldiers lay two or three in a bed or packed on the floors, and patients with wounds, frost-bite, smallpox, diphtheria, typhus and typhoid were crowded together. Foreign physicians and nurses poured into the country and effected a transformation. There are now 420 British physicians and nurses in Serbia, and their complaint is lack of work. For about five months there have been no new wounded, and typhoid and typhus have declined till they are no longer a menace. However, fighting may start at any moment and give the hospitals as much as they can do. The work done by other nations than the British is also worthy of praise. Americans have been arriving in such numbers that their work already challenges comparison with the British and may become even greater. An international sanitary commission has been established at Nish, and has apportioned the work to the different nations. France has charge of the northern half of the country, and the United States of the southern. Nish and its immediate neighborhood are under the Russians. The British have had the care of the army and most of the hospital work. The work done by the Americans under Dr. Strong continually increases. He has behind him the great financial resources of the Rockefeller Foundation, and the United States is the only country which can spare a limitless supply of physicians. Twenty-five more American physi-

cians are expected soon, and they are only the advance guard of a contingent of 150.

Congenital Syphilis Among the New-Born

The government has recently instituted an inquiry into the prevalence of congenital syphilis among the new-born in the East End of London which has been conducted by Dr. Paul Fildes, assistant bacteriologist to the London Hospital. His report shows that the incidence of the disease is not so great as has been supposed. The Wassermann test was performed on 1,015 infants in the service of the maternity department of the hospital. Only fourteen gave positive reactions. Only one of the children showed manifest symptoms of syphilis at the time of birth. Six hundred and sixty of the infants came up for a second examination between the second and fourth months, and of these only three gave a positive reaction, and only one showed symptoms of the disease. All the mothers of syphilitic infants showed a positive reaction, but only four out of twenty-seven syphilitic women had syphilitic children. Of the thirty-one healthy infants with positive reaction at birth, seven were subsequently brought up between the second and fourth month for further examination. They were still found to be healthy, and gave negative Wassermann reactions. On the other hand, all the mothers of these infants gave positive reactions. It thus appears that a positive reaction at birth does not necessarily imply the presence of syphilis in the infant, but may simply indicate the passage of substances from the maternal blood to the circulation of the child which are capable of producing a positive reaction.

Notification of Births Bill

The second reading of the notification of births bill has been carried in the House of Commons. In moving it, Mr. Long, president of the Local Government Board, said that he proposes to extend the powers of the notification of births act and make it universal throughout the country. It proposes also to deal with the health of expectant mothers and of the young children themselves. Experience shows that where notification is in force and is followed up by wise action on the part either of local authorities or voluntary agencies, the most satisfactory consequences follow in regard to the health of both mothers and children. Such a measure, Mr. Long submits, is eminently justified at the present time. All the evidence shows that infant mortality is due far more to unsuitable and unsatisfactory feeding than to the insufficiency of food.

LONDON, July 23, 1915.

The War

SIR WILLIAM OSLER ON WOUNDS AND DISEASE IN WAR

Sir William Osler has contributed to the *Quarterly Review* an interesting survey of wounds and disease in the war. He states that for the first ten months of the war the killed number 50,432, the equivalent of the annual toll taken in England alone by one bacillus, that of tuberculosis. Of the 153,980 wounded, up to date 60 per cent. have returned to duty. The returns for disease are not yet available, but when the analysis is completed, he thinks that we shall find that coughs and colds, pneumonia, rheumatic fever, bronchitis and muscular rheumatism, particularly what is known as "trench rheumatism," have been responsible for a large proportion of the sickness. More suppurating wounds have been seen by British surgeons in ten months than in forty years since Lister's methods became general. The nature of the commoner wounds due to shell and shrapnel favor infection, and in spite of early first-aid dressings, the germs are carried far into the tissues, and suppuration is inevitable. Trench warfare can never be aseptic. The uniforms of the men are caked with mud, which in highly cultivated districts always contains dangerous micro-organisms, so that any wound, however slight, unless treated immediately, becomes infected. The one bright feature has been the frequency with which the high-velocity bullet sterilizes its course so that from many of the perforating wounds of the chest, abdomen and limbs there is recovery without suppuration. In the early days of the war, no feature was more distressing than the number of cases of tetanus; but medical science provided a remedy. Orders were received that at first-aid stations all wounded were to receive a protective antitetanic vaccination. No single feature of the campaign has been more gratifying in its results. Since every wounded man has received at the first dressing station a protective inoculation, the disease has been checked.

HIGH DEATH RATE AMONG THE WOUNDED

A painful impression has been created by the statement of Mr. Asquith in Parliament that the death rate among the wounded was 24 per cent., a percentage higher than that of the Crimean War, which was 22, although the sanitary conditions were then appalling. In the Franco-German War of 1870, the introduction of antiseptics enabled the Germans to treat their wounded with a loss of only 17.5 per cent. The explanation of the present high mortality is that the struggle on the West has entirely taken the form of trench fighting, in which most of the injuries are due to shells and shrapnel. Wounds from rifle bullets are comparatively rare, and when they do occur the body is so sheltered by the trenches that it is generally the head which is hit, and the probability of fatal results is consequently much greater. The most terrible feature of the present war is the fact that in many cases it is impossible to give timely help to the wounded. The trenches face each other at very short distances. An attack is delivered, and the mass of the wounded fall on the unsheltered space between the trenches. When the struggle is over, this space is carefully watched and the slightest movement brings a volley. At night only, when favored by darkness, some of the wounded may be able to crawl back to their trenches. The fact that aid reaches the wounded very late, if at all, accounts for the high death rate.

THE WOUNDED ALLIES' RELIEF COMMITTEE

Among the many benevolent organizations for the relief of the suffering created by the war, the Wounded Allies' Relief Committee stands in the front rank. It was formed in London soon after the outbreak of war, with the approval of the war office and admiralty and of representatives of the allied powers. Its earliest act was the escorting to England of the first batch of Belgian wounded, for 1,600 of whom it found hospital accommodation. A register of the men's names, addresses and regimental details was compiled, an inquiry bureau was established to assist the reunion of scattered families, and a military postoffice working in connection with the Bureau de Correspondance Belge at Havre, was set up. The register, which records over 100,000 names, has been continued at the request of the British registrar-general, and is partly subsidized by the local government board. It is consulted by the Belgian government for all military purposes, such as the tracing of soldiers destined to return to the front, the granting of pensions, etc. For those Belgian soldiers who are permanently disabled, the committee has provided three homes. To numerous crippled soldiers it has supplied artificial limbs and surgical appliances. It has in process of equipment a home for men who, through exposure in the trenches, have contracted tuberculosis. In Belgium itself the committee supports a fleet of motor ambulances and a number of caravans equipped with hot baths, soup kitchens and disinfectors. In France it maintains and manages two hospitals—at Dieppe and Limoges—which have a total accommodation of between 200 and 300 beds. At a time when the Serbian Red Cross organization was in great straits, the committee dispatched $2,500 by telegraph, and later, at the request of the Serbian government, equipped and sent out a typhoid hospital, with the result that at the end of March, doctors, nurses, a hundred beds and full equipment left for Kragujevatz, the headquarters of the Serbian army. Owing to the disappearance of the epidemic, the unit is now adapted for the reception of the wounded. The committee dispatched a sanitary commission to Montenegro, and on its advice two units of 100 beds each were sent, June 2, to combat typhus in Podgoritza and Nikshich. These units, owing to the state of Montenegro, had to take with them over $12,500 worth of stores and food.

Effect of Celibacy and Marriage on Cancer Among Women

At the annual meeting of the Imperial Cancer Research Fund, an important report was made on this interesting question. From time to time attempts have been made to discover whether the incidence of cancer of the ovary, breast and uterus is different in married and in single women. These attempts have been based on an analysis of the hospital and operation statistics, and have not led to a clear result. The registrar-general's report for 1913 deals with the question on the basis of the national mortality figures. This is the only satisfactory method, because the number of lives at risk in the two groups is known sufficiently accurately to permit of actual death rates being calculated. The tables show a curious result. Cancer of the ovary and breast are more frequent in the single while cancer of the uterus is more frequent in the married.

BERLIN LETTER

Berlin, June 29, 1915.

The War

LOSSES IN THE PROFESSION FROM THE WAR

According to the official lists, Nos. 1 to 250, 154 physicians haven fallen, 72 succumbed to illness and one to gas poisoning; 261 have been slightly wounded and 82 severely; 70 have been captured by the enemy, and 93 are missing (probably mostly captured). A comparison with the losses in the profession among the other belligerents cannot be made, as the Russians and French do not publish any official casualty lists, and in the English official lists that have come to our knowledge in Germany, no special mention has been made in regard to medical officials.

FEEDING THE PRISONERS OF WAR

The war department recently organized a course of instruction for the officials in charge of the concentration camps of war prisoners. The chief aim of the course was to instruct the officials in the essential principles of the physiology of nutrition and the art of cooking. The officials came from 129 different concentration camps, from all over Germany, and leading specialists delivered lectures on the scientific bases for and the practical features of the feeding of the prisoners. Dr. Neumann, director of the institute at Berlin for research on the utilization of grains, spoke on the essentials of bread as food. This is a particularly difficult subject as the bread ration has had to be reduced for the prisoners as well as for the civilian populace. As the French and Russians are accustomed to make much use of bread, the minister of war had large amounts of second grade rye and wheat, which were not suitable alone for making bread, mixed with other kinds of flour. This mixed flour was used to bake a supplementary bread supply for the concentration camps where it was sold to the prisoners through the canteens for 50 pfennigs per kilogram or, as rolls or cakes, by weight, 75 gm. for 5 pfennigs. It can also be supplied gratuitously, on a physician's order, to certain undernourished persons and certain others engaged in manual labor. The standard dietary suggested by the minister of war is, for every prisoner of war, military or civilian, 85 gm. albumin, 40 gm. fat and 475 gm. carbohydrates, a total of 2,700 calories. Those who have to do manual labor, particularly the inmates of the work camps, are to receive 10 per cent. more. This ration is to be given in three nourishing and palatable meals: in the morning, coffee with 30 gm. of sugar, or a soup containing 100 gm. of solids. A soup has proved particularly satisfactory that is made of 30 gm. soy beans, 60 gm. flour (*Stärkemehl*) and 10 gm. fat. The dinner is to consist of 750 gm. potatoes and 300 gm. fresh or canned vegetables or 40 gm. dried vegetables. Every third day meat is to be given with the above. It was recommended to give fresh meat twice to corned meat once. The amount is prescribed as 120 gm. meat with bones or 100 gm. without bones. On the two intervening days, 200 gm. fish is recommended or 150 gm. pod vegetables, with the addition of bacon, fat or pickled meat. Soy beans in the form of flour were particularly recommended. Salt, spices and fat are not to be spared. For supper, baked potatoes with herring or sausage or cheese have proved satisfactory; the potatoes can be given in the form of a salad. Thick soups made from beans or flour have also proved useful for supper. Rice with baked or stewed fruit may also be used. Opportunity for tea drinking is given the Russians. Where skim-milk is obtainable, it shall be supplied abundantly to the prisoners. It was emphasized that the tastes of the prisoners should be considered as much as possible in the selection and preparation of the dishes.

Other speakers discussed the keeping of foodstuffs, adulteration and testing, management of the canteens, the importance of sugar, and other matters which showed the efforts of the military authorities to promote the welfare of the prisoners. Each noon there was a demonstration of cooking for the camp. In the afternoon there were discussions or visits to camps in the vicinity. In this way the camps at Buch and at Frankfurt a. O. were visited. There was also an interesting exposition of charts of the camps, and articles made by prisoners, wood, woven and metal articles and drawings. The French in their drawings, which sometimes show much humor, have not spared their allies, the English and Russians.

AID FOR DISCHARGED ARMY PHYSICIANS

Appeals have been made to collect funds to retrieve the pecuniary losses of physicians who have gone to the front. It has been hoped to collect 500,000 marks ($125,000), and one-half of this amount is already pledged by the Medical Chambers for Berlin and the province of Brandenburg and the majority of the social insurance companies. The other half is to be raised by subscriptions from physicians and scientific associations. The indemnities are to be paid after the end of the war. The plan is to give each physician enough to support him for three months at least when he returns home after the war. The minimum has been placed at 1,000 to 1,500 marks ($250 to $375) for each physician. It is impossible to estimate at present how many will have to be aided in this way. The appeal for subscriptions to the fund has met with a gratifying response. Several physicians have contributed each from 500 to 1,000 marks ($125 to $250).

Berlin, July 7, 1915.

Vaccination Against Typhoid and Cholera

The larger part of the entire German army, if not the whole, has now been vaccinated against typhoid and cholera. With improved technic the reaction to the typhoid inoculations has grown less and less, especially to the second inoculation. Even when certain clinical manifestations occurred, they had all subsided by the third day. The inoculations only rarely interfered with the men's military duties and then only transiently. In a few cases there was transient diarrhea. It is interesting that in those suspected of tuberculosis or with bronchitis, the reaction was more pronounced and expectoration increased. It is a question whether this is a general reaction, like those in infectious diseases when diphtheria antitoxin is given, or whether it is a special reaction to the typhoid toxin, as we know that typhoid regularly affects the organs of respiration. It is impossible to say as yet what influence the vaccination has on those already affected with typhoid. One fact is certain, however, that there is very little typhoid in the army, and it is growing less. It must be taken into account, however, that the curve of incidence of typhoid had already shown a spontaneous decline before the inoculations. The danger of the so-called negative phase is proving less than was at first supposed on theoretical bases. Vaccination against cholera has proceeded more easily than the antityphoid inoculations. With this, also, diarrhea occurred in a few instances.

EXCELLENT HEALTH OF THE ARMY

On the whole, the health of the army is excellent. The progress realized in this respect by modern hygiene, and especially by bacteriology, compared with conditions in former wars, must be regarded as an enormous advance. This extraordinarily gratifying state of affairs is certainly due in part to the ample supply of the army with medical men. There is not only no lack of physicians with the army but at times and at certain places there is an actual superfluity of medical men, as is evidenced by the letters from physicians at the front. At the same time we in the home zone can scarcely estimate the justification for such assertions. We must not forget that at any time there may be an unexpected influx of wounded requiring adequate medical care. These questions will have to be left for solution till the end of the war. So many physicians are serving in the field that there is no doubt that many points in the home zone are feeling the lack of medical men, yet nowhere has there been any serious trouble and where inconvenience has been experienced it has been only temporary. At the same time the inconveniences complained of have brought it about that a number of physicians have been stationed in various places in the home zone instead of at the front.

As in all matters in these war times, the women have helped out also in the medical service. Medical women have been employed in hospitals and some (although in isolated cases) are serving in field hospitals. The news item is not correct that the wife of Professor Helbing, who is an orthopedist like her husband, has been serving as a military woman medical officer. Frau Dr. Schüler-Helbing merely served as assistant to her husband, who is in charge of a large military hospital here, and even this service soon came to an end. Perhaps her dismissal was influenced by the erroneous notice in the press of her appointment, for the authorities here, and especially the military authorities, are very sensitive about communications of that kind which might be interpreted as advertising.

Antituberculosis Measures

Notwithstanding the war conditions, the German Central Committee for the Campaign Against Tuberculosis held its general meeting in June, here. It was stated that the number of sanatoriums for adults is now 161, with 16,083 beds, so

that, with an average three months' course of treatment, 64,332 patients can be given treatment during the year. In addition there are 161 sanatoriums for children, 139 forest day sanatoriums and 15 forest schools. There are also 5 agricultural colonies for adults and children, 37 convalescent homes, 77 observation stations and 14 passage stations, 314 hospitals for tuberculosis or tuberculosis wards in general hospitals, convalescent homes and sanatoriums. The number of dispensaries for imparting information and giving aid is now 1,145, not including the 604 Baden institutions, the 154 in Thuringia, the 83 in Bavaria and the numerous ones in Saxony. A large number of the sanatoriums and forest stations are at present given over to military purposes for the care of soldiers with pulmonary disease. In 1914 the government contributed to the Central Committee 110,000 marks ($27,500). The subsidy had never been over 60,000 marks ($15,000) in the preceding years. The lottery held in 1914, the third organized by the Central Committee, was a success in spite of the war, bringing in the full receipts, namely, 125.000 marks ($31,250). About 96,300 marks ($24,075) were paid out during the year for erecting sanatoriums or other tuberculosis institutions, and contracts have been signed for others to the total of 83,750 marks ($20,937.50).

Dogs for Field Work

Dogs are used now for seeking the wounded to a greater extent than in any previous campaign. The newspapers have reported that there are 1,700 "sanitary dogs" "serving" at the front. They are mostly German shepherd dogs.

BUDAPEST LETTER

BUDAPEST, June 10, 1915.

The Treatment of Tetanus

At the Gesellschaft der Aerzte Vienna, Dr. Wiesel, lecturer of the university, discussed the question of the treatment of tetanus. This method of treatment is that practiced in the clinic of Professor Eiselsberg. Lately he treated thirteen patients, of whom ten died, one recovered, and two are still under treatment. All the cases have set in after severe injuries, mostly after shrapnel shots. The incubation period varied between four and thirteen days. In every instance he immediately gave a prophylactic injection of from 100 to 200 units of serum, and this dose was repeated the next day; the injection is mostly made intraspinally, in one instance intravenously, in four instances intraspinally and endoneurally. The patient who recovered was treated by the last-named method, and besides this, with morphin, chloral hydrate (8 gm. a day) and magnesium sulphate several times daily, to a total of 80.3 c.c. subcutaneously, in a 25 per cent. solution. In two instances he made experiments with salvarsan, and in a few instances the wound was strewn with chlorinated lime, on advice of Riehl. Wiesel does not highly esteem the action of the serum as a result of his and Eiselsberg's experiences, but he said that the antitoxin ought to be used on a much larger scale as a prophylactic.

Riehl had excellent results with chlorinated lime in cases of snake bites, and recommends chlorinated lime mixed with kaolin in the ratio of 1:10.

Paltauf has a high opinion of the prophylactic use of the serum, though he doubts its curative effect. The same opinion is held by Schnitzler. Professor Ortner recommended the Baccelli method: the subcutaneous injection of 5 or 6 c.c. of a 3 per cent. phenol (carbolic acid) solution.

A Hungarian Professor on American Medical Science

Dr. Kornel de Korossy, who recently returned from a visit to America to study the state of medical sciences there, describes his experiences in the *Orvosi Hetilap*, a summary of which follows: In America the experimental medical sciences and biology have reached in a relatively short time a very high level. We often hear, even in America itself, that the attained results are not in proportion to the number and greatness of the institutions. This statement can be based only on a total misunderstanding of conditions. In the first place, we must not measure by the number of so-called scientific discoveries alone, because whether or not a scientific experiment research ends in discovery, and whether or not it is of great practical importance, sometimes depends merely on extraneous circumstances. The question involves the attitude toward science, and we find that Americans are cultivating science with no less earnestness and love than are Europeans. In the second place, we must not forget that American medical science has had only a short past. Western Europe has learned that the mutual interchange of American and European scientific thought can be of great profit to both parties, and therefore the exchange professorships were established. It is to be desired that similar scientific interchange may take place between Hungary and the United States.

Europe can follow America's example by cultivating the great will power with which Americans endeavor to develop scientific research and instruction, by correcting existing faults, by persevering with unselfish diligence in cultivating science, and finally by a rational organization of scientific life.

PARIS LETTER

PARIS, July 15, 1915.

The War

SIMULTANEOUS EXCHANGE OF FRENCH AND GERMAN INVALID PRISONERS OF WAR

After long and difficult negotiations, the French and German governments have come to an agreement with regard to the simultaneous return to their homes of war invalids. According to the terms of the arrangement just concluded, the following classes are to be freed:

A. Soldiers of the rank and file affected with one of the lesions, infirmities or diseases specified: (1) total or partial loss of one or more members (at least the foot or the hand); (2) loss of use of a member by ankylosis, paralysis, atrophy or muscular retraction, pseudoarthrosis or lesions of the spinal column greatly interfering with movement; (3) paralysis which is important by its location or its extent; (4) cerebral lesions with serious consequences (hemiplegia or alteration of the cerebral functions); (5) medullary lesions with serious consequences (paraplegia or various paralyses); (6) loss of the sight of both eyes; (7) important mutilations of the face and serious lesions of the buccal cavity; (8) permanent cachectic condition due to wounds; (9) advanced pulmonary tuberculosis; (10) cachectic condition produced by other internal affections; (11) incurable mental diseases.

B. Officers, commissioned or noncommissioned, affected with 1, 4, 5, 6, 7, 8, 9, 10 or 11 of the conditions mentioned above.

The wounded and sick to be sent home are to be assembled at Constance and at Lyons. The first groups have just been started from both sides toward their respective homes, July 10 and 11.

LIBERATION AND RETURN HOME OF THE FRENCH AND GERMAN MEDICAL PRISONERS OF WAR

The members of the French medical service captured by German troops having been, as a general thing, retained in captivity, the government of the republic likewise decided to keep in France the members of the German medical service who have fallen into the hands of our army. Negotiations which have been carried on fruitlessly for a long time have at last resulted in an agreement for the simultaneous liberation of physicians, chaplains, pharmacists, administrative officers of the medical corps, nurses and orderlies of the two belligerent armies except those who are provisionally retained to care for the sick and wounded prisoners of their own nationality. A certain number of physicians and nurses traveled with the seriously wounded prisoners who began to leave Constance July 10 and Lyons July 11. The others will be returned home in special convoys interspersed between convoys of war invalids.

MEASURES AGAINST MALINGERERS IN THE ARMY

The minister of war has just sent to the regional directors of the medical service a circular calling attention to the fact that some men, in order to go to the hospital, take picric acid and thus appear to be affected with jaundice. It is easy to detect this simulation by means of one of the following reactions for picric acid in the urine:

1. The addition to the urine (which has previously been rendered alkaline by sodium hydroxid) of a few drops of a 20 per cent. solution of potassium cyanid gives an intense reddish-purple color on warming.

2. If 100 c.c. of urine be shaken with 10 c.c. of ether, the solvent becomes colored yellow. A scrap of white wool wet for an hour in the decanted ether takes on a yellow color which resists washing in water. The wool becomes colored red when treated with ammonium sulphid.

The attention of the minister of war has also been called to the rather large number of wounds of the fingers and toes, principally of the thumb and index finger, which are of such nature as to arouse suspicion that they have been produced by the subjects themselves, desirous of escaping their

military duty at the cost of a slight wound. The minister requests the medical staff to report all wounds of this character, and requires that investigations be instituted where possible, so that, if culpability be established, the severe punishment authorized in such cases may be inflicted.

WOUNDS OF THE SKULL BY FRAGMENTS OF SHELL

Many wounds of the head caused by fragments of shell look like insignificant wounds of the scalp, while since the skull bones are involved, the prognosis is much more serious than might be thought at first. Professor Oui of Lille has recently reported a remarkable example to the Académie de médecine. A soldier was wounded in the head by a very small fragment of a shell; the wound was for a long time considered trifling. In reality, the scalp wound hid a small fragment of shell which had fractured the parietal bone, so embedding itself as to make the interior of the skull bulge in contact with the dura mater. This wound caused an infection first of the meninges, then of the brain, with formation of an abscess compressing the motor centers of the upper and lower limbs; it was not recognized because the scalp was not laid open at first. Consequently, Dr. Oui, who ultimately had to trephine in this case, believes that it is always prudent to open up the wound in cases of wounds of the scalp by fragments of shell. This little operation has no disadvantages and its advantages are considerable, since it permits the discovery and early treatment of a deep wound of the head.

AID FOR TUBERCULOUS SOLDIERS

In a previous letter (The Journal, May 29, 1915, p. 1861) I mentioned the report of Professor Landouzy, dean of the Faculté de médecine de Paris, with regard to tuberculous soldiers. The Chamber of Deputies has just passed a bill making a special appropriation of 2,000,000 francs ($400,000) for soldiers discharged or about to be discharged for tuberculosis. This is intended for the care of tuberculous soldiers before they are sent home to their families and for their sanitary education, as well as for the improvement of their condition.

FOUNDATION OF A MUSSULMAN HOSPITAL

The society Les Amitiés musulmanes has founded, on the avenue de Neuilly near Bois de Boulogne, a hospital for African soldiers where Mohammedans will find not only devoted care, but something in their surroundings which will remind them of their native country. This hospital, which has just been opened by the president of the republic, contains 100 beds with a surgical service, a prothesis service and a research laboratory.

A New Prize of the Academy of Medicine

The Académie de médecine has just been authorized to accept the bequest of 8,000 francs ($1,600) left to it by M. Sigaut. The interest is to be used for a prize which will be called "the prize of Dr. Max Sigaut," and will be awarded every two years for the best paper on the early diagnosis and the best treatment of cancer of the alimentary canal.

Marriages

Robert Carnahan Kirkwood, M.D., Chicago, to Miss Elna Rasmussen of Lakeview, Wash., at Seattle, June 29.

John Harlan Bridenbaugh, M.D., Sioux City, Iowa, to Miss Jennie F. Nelson, at Sioux City, Iowa, July 14.

Jeremiah Joseph Boyle, M.D., Cambridge, Mass., to Miss Julia Theresa Shean of Arlington, Mass., July 21.

Merrill Worth Grubb, M.D., Galva, Iowa, to Miss Lelah Helen Baldwin of St. Thomas, N. D., July 16.

William Frederick Meyer, M.D., Eagle River, Wis., to Miss Elizabeth Blong of Phelps, Wis., July 12.

Frank Goldenberg, M.D., to Miss Esther Jacobs, both of Cincinnati, at Avondale, Cincinnati, July 19.

Thomas Reese Foster, M.D., Watseka, Ill., to Miss Edna May Gray, at San Francisco, June 30.

Bernard Ford Lowry, M.D., Cleveland, to Miss Jean M. Shafer of Akron, Ohio, July 30.

Edward Sutphen Pope, M.D., to Miss Margaret Muir, both of New York City, July 20.

Paul F. Kistner, M.D., to Miss Lillian Marie Linton, both of St. Louis, July 17.

Deaths

Charles Parker Hooker, M.D. Harvard Medical School, 1879; aged 60; a Fellow of the American Medical Association; of Springfield, Mass.; one of the first members of the staff of the Springfield Hospital and later of the House of Mercy Hospital; for thirty years county physician of Hampden County; one of the organizers and a director of the Springfield Medical Club and for several terms president of the Springfield Academy of Medicine; died at Fortune Rock, Biddeford, Me., July 21, from heart disease following pneumonia.

John Wesley Gresham, M.D. Kentucky School of Medicine, 1895; aged 42; a fellow of the American Medical Association and vice president of the Madison County, Tenn. Medical Association; local surgeon for the Mobile and Ohio Railroad and Brotherhood of Locomotive Engineers and Brotherhood of Locomotive Firemen at Jackson, Tenn.; fell downstairs at his office July 15, as the result of a sunstroke, and died from cerebral hemorrhage in the Crook Sanitarium, Jackson, eight hours later.

Gaylord Eugene Pitts, M.D. Northwestern University Medical School, 1911; aged 34; of Mt. Horeb, Wis.; formerly a Fellow of the American Medical Association; a member of the State Medical Society of Wisconsin; while driving across the Northwestern tracks, about 1 mile west of Mt. Horeb, to make a professional call July 27, was struck by a passenger train, and sustained a fracture of the base of the skull, as a result of which he died in the Madison General Hospital, a few hours later.

Howard Wells, M.D. Jefferson Medical College, 1870; aged 66; captain and medical director, U. S. Navy, retired; a Fellow of the American Medical Association and a member of the Association of Military Surgeons of the United States; formerly assistant demonstrator of anatomy in his alma mater, and assistant at the clinic of Dr. J. M. Da Costa; an expert in hospital organization; died in a private hospital in Oak Lane, Philadelphia, July 16.

Benjamin Gleeson, M.D. Rush Medical College, 1902; aged 38; a Fellow of the American Medical Association and a member of the American Academy of Ophthalmology and Oto-Laryngology and Aesculapian Society of the Wabash Valley; oculist and aurist to St. Elizabeth's Hospital, Danville, Ill.; oculist to the Chicago and Eastern Illinois Railway and the Illinois Traction System; at one time a pharmacist; died at his home in Danville, July 18.

John B. Bond, M.D. Washington University, St. Louis, 1866; aged 77; of Little Rock, Ark.; surgeon in the Confederate service throughout the Civil War; for many years a practitioner and druggist of Little Rock; one of the organizers of the Arkansas Association of Pharmacists; for twenty years a member of the State Board of Pharmacy and for the last fifteen years its president; died at the home of his daughter in Warren, Ariz., July 16.

Frederick A. Conradi, M.D. Baltimore University School of Medicine, 1892; aged 68; formerly a member of the American Medical Association; a member of the Medical Society of the Faculty of Maryland; for more than twenty years pastor of the first German Evangelical Lutheran Church, Baltimore; died in Mercy Hospital, Baltimore, July 17, from carcinoma of the stomach.

Albert Merrell, M.D. American Medical College, Eclectic, St. Louis, 1875; aged 72; for many years a practitioner of St. Louis where he served for twelve years as a member of the State Board of Health and the St. Louis Board of Health; a veteran of the Civil War; organizer of the Pure Milk Association of St. Louis; died at his home in Wilmington, Del., July 21.

Alexander Morrow Speer, M.D. Jefferson Medical College, 1853; aged 84; a member of the Medical Society of the State of Pennsylvania; surgeon of the Seventh Pennsylvania Volunteer Infantry and afterward brigade surgeon throughout the Civil War; a specialist on diseases of the eye, ear, nose and throat; died at his home in Pittsburgh, July 19.

Thomas M. Bridges, M.D. Louisville Medical College, 1878; aged 62; assistant division surgeon for the Oregon Short Line Railway; for many years physician at the Ross Fork, Ida. Indian Agency; died in his office in Idaho Falls, Ida., July 22, from the effects of a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent.

Alexander Bradson Peters, M.D. University Medical College of Kansas City, Mo., 1883; formerly mayor of Mankato, Kan.; for many years local surgeon of the Rock Island System at that place and state grand medical examiner for the Ancient Order of United Workmen; died in his office in Mankato, July 20, from heart disease.

Charles Carroll O'Brion, M.D. Medical School of Maine, Brunswick, 1881; aged 66; formerly a member of the Maine Medical Association, New Hampshire Medical Society and New York Academy of Medicine; chairman of the Board of Health of Groveton, N. H.; for nearly thirty-five years a practitioner of Groveton; died at his home, July 16.

John Marcus Cargill, M.D. Howard University, Washington, D. C., 1891; aged 69; prior to his medical course a minister of the African Methodist Episcopal Church; a member of the City Council of Baltimore in 1895 and 1896; one of the founders of Provident Hospital; died at his home in Baltimore, July 13.

William H. Stennett, M.D. Homeopathic Medical College, St. Louis, 1869; aged 82; for forty-three years an official of the Chicago and Northwestern System where he had been successively general passenger agent, assistant to the general manager and auditor of expenditures; died at his home in Oak Park, Ill., July 22.

L. M. Bickmore, M.D. Medical College of Ohio, Cincinnati, 1860; aged 77; a veteran of the Civil War; at one time professor of obstetrics and gynecology and later dean of the American Eclectic Medical College of Ohio, Cincinnati; died at his home in San José, Calif., July 13, from valvular heart disease.

Archibald Duncan McEachran, M.D. University of Toronto, Ont., 1902; aged 41; a Fellow of the American Medical Association; for thirteen years chief surgeon and superintendent of the Detroit Sanitarium and local surgeon to the Pere Marquette Railroad; died at Pearl Beach, Mich., July 10.

Milton M. Butler (license, Nebraska, 1891), aged 70; a Fellow of the American Medical Association; mayor of the city of Weeping Water, Neb., and president of the Weeping Water Academy; for forty-two years a practitioner of Weeping Water; died at his home, July 21, from heart disease.

William Mitchell Bell, M.D. Missouri Medical College, St. Louis, 1873; aged 64; a Fellow of the American Medical Association; died at his home in Phoenix, Ariz., about July 13. At his funeral on July 15, the pallbearers were selected from members of the Maricopa County Medical Society.

Merrill Ellsworth Dawson, M.D. Cleveland College of Physicans and Surgeons, 1895; aged 51; for many years a practitioner of Xenia and Newark, Ohio, but recently retired and a resident of Loranger, La.; was accidentally drowned while fording the Tangipahoa River, July 18.

Royal Jerome Eddy, M.D. University of Vermont, Burlington, 1868; aged 72; a member of the Medical Society of the State of New York; founder and a member of the medical staff of the Glens Falls, N. Y. Hospital; died at his home in Glens Falls, May 6.

Jacob Henry Frankenberg, M.D. College of Physicians and Surgeons in the City of New York, 1883; aged 54; of New York City; a member of the Medical Society of the State of New York; died at his summer home in Cedarhurst, L. I., July 27, from heart disease.

Greene M. Smith, M. D. American Medical College, Eclectic, St. Louis, 1878; aged 61; for many years a practitioner of Lincoln, Neb., where he was supreme medical director of the Sons and Daughters of Protection; died at his home in that city, July 14.

Albert Joseph Lacier, M.D. College of Physicians and Surgeons, Baltimore, 1889; aged 52; for more than a quarter of a century a practitioner of northwest Baltimore and a member of the staff of the Hebrew Hospital; died at his home July 22, from pneumonia.

Oliver C. Edwards, M.D. McGill University, Montreal, 1873; aged 63; originally a resident of Ottawa, Ont., but Indian physician for thirty years; died at his home at the Indian Blood Reserve, near Macleod, Alta., April 4, from disease of the intestines.

Bascom Benson Smith, M.D. Bellevue Hospital Medical College, 1869; aged 75; a veteran of the Civil War; for nearly forty-five years a practitioner of North Side, Pittsburgh; died at his home in that city, July 21.

John H. Mahan, M.D. Memphis, Tenn. Hospital Medical College, 1890; aged 54; for thirty years a practitioner of Memphis, and one of the founders of the new City Hospital; died in St. Joseph's Hospital, Memphis, July 19, after a surgical operation.

Francis Waters Gallagher, M.D. University of Buffalo, 1877; aged 62; a Fellow of the American Medical Association; a practitioner of El Paso, Tex. until two years ago when he moved to Los Angeles; died at his home in the latter city, July 20.

George Aloysius Hofstetter, M.D. University of Michigan, Ann Arbor, 1897; aged 44; a Fellow of the American Medical Asociation; a practitioner of Corsicana, Tex., since his graduation; died at his home, July 16.

George Harvey Searcy, M.D. Medical College of Ohio, Cincinnati, 1891; aged 50; of Muncie, Ind.; who was operated on for the removal of gallstones, July 10; died in a hospital in Muncie, July 23.

Mathew McVickers, M.D. Queens University, Dublin, Ireland, 1880; aged 56; formerly of Wilkes-Barre, Pa., but for five months a practitioner of Pottsville, Pa.; died in the Pottsville Hospital, July 20.

Henry E. Hale, M.D. Hospital Medical College of Evansville, Ind., 1883; of McLeansboro, Ill.; a member of the Illinois State Medical Society; died July 6, after an operation for intestinal obstruction.

Orren Littleberry Ellis, M.D. Tulane University, New Orleans, 1855; aged 80; a Confederate veteran; died at his home in Louisburg, N. C., from an accidental overdose of medicine.

Henry Caroll Conley, M.D. University of Maryland, Baltimore, 1885; formerly a practitioner of Boone, Iowa; died in Tunnelton, W. Va., April 7, from chronic bronchitis.

Ziba Darlington Walter, M.D. Homeopathic Medical College of Pennsylvania, Philadelphia, 1866; aged 72; of Marietta, Ohio; died in a hospital in Philadelphia, July 19.

Margaret E. Hennessy, M.D. Hahnemann Medical College, Chicago, 1888; aged 58; of Utica, N. Y.; died in LaSalle, Ill., April 23, from carcinoma of the uterus.

Edward Ragsdale, M.D. Jefferson Medical College, 1868; for fifty-five years a resident of Lone Jack, Mo.; died at the home of his son in Lee's Summit, Mo., July 23.

Harvey Clements Keator, M.D. Long Island College Hospital, Brooklyn, 1891; aged 54; of Kingston, N. Y.; died in Rosendale, N. Y., May 25, from arteriosclerosis.

William Allison Slaugenhaupt, M.D. College of Physicians and Surgeons, Baltimore, 1885; aged 57; of Kane, Pa.; died in the Summit Hospital, Kane, July 21.

Clive Major, M.D. Medico-Chirurgical College of Kansas City, Mo., 1900; aged 54; died at his home in Seattle, July 16, from carcinoma of the stomach.

William R. Ruble, M.D. Eclectic Medical Institute, Cincinnati, 1887; aged 59; died at his home in Smith's Grove, Ky., July 21, from heart disease.

John Dowling Groves, M.D. Jefferson Medical College, 1884; of Philadelphia; died at his summer home in Westville, N. J., July 13, from laryngeal tuberculosis.

J. H. McCrory, M.D. University of Tennessee, Nashville, 1877; for many years a practitioner of Mayfield, Ky.; died at his home in that city, about July 10.

John H. Molloy (license, Arkansas, 1903), aged 69; one of the oldest practitioners of Carroll County, Ark.; died at his home in Berryville, Ark., July 17.

George W. Stephens, M.D. St. Louis College of Physicians and Surgeons, 1883; aged 66; of Montgomery City, Mo.; died in St. Louis, recently.

John P. Casey (license, Mississippi, 1883), for thirty years a practitioner of Wilkinson County Miss.; died at his home near Woodville, July 12.

Alvin Schellack, M.D. Kansas City (Mo.) Medical College, 1877; aged 76; died at his home in Eudora, Kan., July 13, from diabetes.

Sylvanus W. Tanner, M.D. Iowa Eclectic Medical College, Des Moines, 1892; aged 64; of Buffalo, Okla.; died in Watson, Mo., April 23.

Isidor Zippert, M.D. New York University, New York City, 1898; died at his home in New York City, July 14.

Sidney G. Pratt, M.D. St. Louis University, 1906; aged 36; of Kewanee, Ill.; died about July 9.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

ALFATONE

Report of the Council on Pharmacy and Chemistry

The Council has found Alfatone ineligible for New and Nonofficial Remedies and has authorized publication of the following report. W. A. Puckner, Secretary.

Alfalfa is good cattle feed but only nostrum exploiters have suggested its use as a medicine for human beings. While it may seem a waste of time to discuss the medicinal value of alfalfa its recent exploitation by the Norwich Pharmacal Company, Norwich, N. Y., as "a reconstructive tonic and nutrient" in the form of a mixture called "Alfatone," calls for comment. According to the label on the preparation:

"Each fluidounce represents:

Alcohol	15 per cent.
Medicago sativa (Alfalfa)	120 grains
Taraxacum	2½ grains
Gentian	1 grain
Berberine Hydrochloride	1/40 grain

Glycerin and Aromatics."

"Dose.—One to three fluidrams (4 to 12 c.c.) 4 times daily."

Each maximum dose, therefore, should represent 45 grains of alfalfa, 1 grain of taraxacum (dandelion), 3/8 grain of gentian, 1/100 grain of berberin hydrochlorid, and 27 minims of alcohol. Since the bitter drugs are present in such small amounts that the preparation is almost devoid of bitterness, and as the medicinal value of alfalfa is practically nil, it is evident that whatever action Alfatone may have is due to the stimulant effects of the alcohol.

Some of the claims made for Alfatone, are:

"A reconstructive nutritive tonic indicated in general debility, neurasthenia, convalescence, etc."

". . . a Galactagogue of merit as well."

". . . improves the appetite, aids the processes of digestion and assimilation, facilitates elimination and effects gradual but decided gains in strength, vitality and weight."

It is suggested that:

". . . in case of idiosyncrasy the addition of Tr. Nux Vomica 5 to 10 minims to the dose, unless contra-indicated, will secure excellent results."

The Norwich Pharmacal Company naively remarks:

"The dearth of medical literature on Alfalfa has lead us to present below a few of the findings of the Bureau of Plant Industry of the Department of Agriculture . . . as well as those from several state experiment stations . . ."

Here are the "findings":

". . . Digestible nutrients in 100 pounds of Alfalfa, . . . Protein, 11.0 pounds; Carbohydrates, 39.6 pounds; Ether Extract, 1.2 pounds."

". . . The high value of Alfalfa is due to the amount of protein that it contains; to the large percentage of protein that is digestible and to the palatability of Alfalfa."

". . . Table showing pounds of elements removed from the soil by one ton of crop.

	Alfalfa	Wheat
Potash	49.79	12.52
Phosphoric Acid	8.27	9.08
Lime	43.51	2.95
Nitrogen	44.01	22.30"

". . . The abundance of muscle and bone producing material in Alfalfa makes this crop especially good."

Thus estimates of the value of a farm crop and cattle fodder are made to do service as testimonials to its therapeutic merit for human beings! Has the "patent medicine" promoter ever dared to insult the intelligence of his patrons by a cruder absurdity? Yet it is not to the non-technical and unscientific public, but to a profession presumably scientifically trained in pharmacology and therapeutics that this concern presumes to offer its fodder tincture on the basis of testimony to the agricultural value of the fodder plant.

Alfatone is a worthless alcoholic cordial. The audacity of the attempt to promote its sale by a discourse on the merits of a well-known fodder plant is the sole reason for devoting any attention to it. It is recommended that Alfatone be held ineligible for New and Nonofficial Remedies, and that this report be published.

[Editorial Note.—What a comment on American medicine that a concern can even contemplate the possibility of making a commercial success of the sale of such a silly nostrum as Alfatone! And, yet, when one remembers that a proprietary in which oats constitutes one ingredient ("Pas-Avena") for years has been advertised to physicians and presumably prescribed by them, it is not altogether inexplicable that business men should get the impression that the medical profession is "easy" enough to "fall for" anything in the line of proprietary mixtures. Perhaps we may look forward to being offered proprietaries based on other cheap and well-known fodder plants. Tincture of Timothy Hay, Blue Grass Tonic, Cornhusk Wine! Why not? The enterprising companies that may put them out can easily publish tables to show the digestible nutrients in each and indubitable testimony can be furnished to prove the excellence of any of them as stock feed. If a pitchforkful of timothy hay makes a good fattening ration for a growing steer why should not a teaspoonful of tincture of timothy hay make a "reconstructive tonic and nutrient" dose for a man? If an arm load of thistles (carduus) makes a luscious food for *Equus asinus* why should not a pinch of thistle in alcohol and water be a good "tonic"? Great are the possibilities! They are limited only by the gullibility of the medical profession and the public. Certain it is that some proprietary manufacturers are firmly convinced that no combination can be too preposterous to be worth trying on the medical profession.]

THE HATTIE BIEL OBESITY CURE

Hattie Biel and Hattie Biel & Company were two names under which Mrs. Conrad E. Biel operated a fraudulent obesity cure. Mr. Conrad E. Biel seems to have been faking it in other lines. In addition to being the alleged manager of, and a stockholder in, the Modern Vacuum Cap Company, which was supposed to grow hair on bald heads, Biel also operated a complexion-beautifying and wrinkle-eradicating concern under the name of Verlie Gatlin. The Verlie Gatlin Company was declared a fraud by the federal officials, Dec. 29, 1914. Further, the Biel concern put on the market a "weak men" tablet as well as a preparation, "Plumpine," for making thin people fat. The idea of marketing both a fat reducer and a fat producer is a stroke of commercial genius. It should not only offer an opportunity to get the credulous "coming and going," but it should also cut down the "overhead expense" by making it possible to use the same "Before and After Taking" illustrations with a simple reversal of the labels.

Briefly, the Hattie Biel obesity cure, said to be an "Improved French Method," was an imitation of the Marjorie Hamilton fraud.[1] The price first asked was $10, which, to the reluctant, was reduced by easy stages to 25 cents! The postal authorities investigated the swindle and a fraud order was issued against Hattie Biel and Hattie Biel and Company, Oct. 12, 1914. To quote from the memorandum prepared by the solicitor of the Post Office Department for the Postmaster-General:

"Hattie Biel and Hattie Biel & Company advertise in newspapers and magazines of general circulation throughout the United States, representing in substance that Hattie Biel has discovered a wonderful remedy for obesity; that by means of this remedy she reduced herself in a short time from a woman of ungainly proportions to one of normal size; that this remedy is different from all others on the market, simple,

1. See pamphlet "Obesity Cure Fakes" (price 10 cents), published by the American Medical Association. The original article appeared in The Journal A. M. A., Dec. 13, 1913.

harmless, drugless and comprising no harmful exercises, sweat-baths or starvation diet; that by means of it one can 'weigh just what one wants to weigh' and eat 'all one wants to do'; and that to anyone who will send to them his or her name and address they will mail free a booklet disclosing the secret and enabling such person 'to reduce yourself and be just as happy as I am.'

"Instead of a revelation of this secret remedy, those who respond to the advertisement are sent a booklet consisting entirely of matter further advertising the treatment. . . ."

"With this booklet is a letter printed in imitation of typewriting in which representations similar to those quoted above are made, and it is further represented that 'with my treatment you at once become the master of your own body. You CONTROL your weight ever after. You can weigh just what you want to weigh—what you rightfully should weigh, you can have a shapely form. You can reduce the size of your Abdomen, Arms, Bust, Shoulders or other parts to their proper size';—and that 'age makes no difference, as it will reduce anyone between the age of 15 to 75 years of age or even older.'

"By subsequent letters the price of the treatment is reduced gradually until it is finally offered for a remittance of 25 cents.

"A copy of the 'Improved French Method for Reducing Superfluous Flesh' sold under the above representations is in evidence in the case. It consists of a loosely bound pamphlet of about 24 pages of matter printed in imitation of typewriting setting forth general statements as to the causes of fat and methods of removal. Exercise, bathing, the drinking of lemon juice and of Vichy and Kissingen waters, dieting and the use of enemas are recommended.

"Substantially the same system of treatment for obesity was sold by Walter C. Cunningham of Denver, Colo., under the name Marjorie Hamilton and the Marjorie Hamilton Company, against which names a fraud order was issued on Jan. 12, 1914. . . ."

Much stress was laid by the Hattie Biel concern on the claim that should the obesity cure not bring about the reduction desired the money that had been paid for it would be refunded. Federal officials refer to this "refund guaranty" thus:

"The evidence shows that, contrary to the representations made with reference to a refund of money to dissatisfied purchasers, the respondents, when a request for a refund is received, write the correspondent expressing great surprise that the treatment has been a failure and strive in every way to avoid making a refund, finally endeavoring to have the patron accept a supply of 'Slenderine,' a treatment for obesity manufactured by Hattie Biel's husband, in lieu of a refund."

The Post Office inspectors corresponded with a number of persons who had taken the Hattie Biel treatment and found that practically three out of every four of the individuals who had used the "cure" were dissatisfied with the results. It was brought out at the hearing that the Hattie Biel concern received on an average 283 pieces of mail daily.

After a thorough investigation, the solicitor for the Post Office Department recommended the issuance of a fraud order against the concern, and on Oct. 12, 1914, the use of the United States mails was denied Hattie Biel and Hattie Biel & Company.

Rural Waste Disposal.—From records of surveys already made, we know in general of two points of attack, namely, the crass ignorance which obtains as to necessity for sanitary disposal of waste, and the almost universal habit of taking "dope" medicine. That there are hundreds of homes in the rural districts without a closet, sanitary or otherwise, is a fact. If we knew the why of this condition, we could prescribe the remedy. Once I asked an old gentleman, who had a good home and a large and profitable farm, why he had not built a closet. After an embarrassed silence he answered, "We don't have them things." He looked as if I had touched a subject beyond the bounds of respectability. I have often wondered since if this isn't the attitude of mind of many people who have never known of the sanitary conveniences required by just common decency.—Oscar Dowling, *American Journal of Public Health,* May, 1915.

Correspondence

Metabolic Conjugation of Phenol and Sulphates

To the Editor:—In your excellent series on "Practical Pharmacology" (THE JOURNAL, March 27, 1915, p. 1071) it was stated that:

> Sodium sulphate was long supposed to be an effective antidote to phenol, with which it was said to form a sulphocarbolate. This reaction does not occur in the body, and one should avoid being misled by this popular fallacy.

In evident contradiction with this, THE JOURNAL (July 10, 1915, p. 174) stated editorially:

> Phenol is known to conjugate with sulphuric acid arising in metabolism and leave the organism in the form of an ethereal sulphate or sulphonate which appears to be comparatively harmless.

Should the editorial staff of THE JOURNAL not be asked to "brush up" on questions of practical pharmacology? Please omit my name if you publish this. P. A. W.

[COMMENT.—The editorial says, after referring to the supposed evidence for a metabolic conjugation of this sort, "It is questionable, however, whether the latter (phenol) combines with sulphates as such in the body." A careful reading of the two statements shows that, instead of being contradictory, they are confirmatory of each other so far as they refer to the same phenomenon. Ethereal sulphates may be formed in metabolism and excreted as phenylsulphates quite independently of any antidotal reaction such as that referred to.—ED.]

Syphilis of the Brain and Cord

To the Editor:—Referring to the paper by Dr. Joseph Collins and that by Dr. Swift I desire to offer the following observations from my own experience (THE JOURNAL, July 10, 1915, p. 139): In cases of nonsyphilitic tumor of the brain, the laboratory examination of blood and spinal fluid may indicate syphilis. Given a case with clear, positive history of syphilis, but with negative laboratory tests, the individual may suffer from tumor of the spinal cord or brain which is nonsyphilitic in character.

An individual who has had syphilis and whose blood and spinal fluid show positive tests for syphilis may suffer from a psychosis or various nervous affections which are not wholly due to syphilis. In other words, in the presence of mental and nervous disease, either organic or apparently functional in character, positive laboratory findings indicative of syphilis do not *necessarily* indicate that the disease from which the individual suffers is syphilitic in character.

At the present time it would appear that one very important treatment of syphilis is receiving less attention or less emphasis than its merits demand. I refer to the treatment by rest—rest of body and rest of mind. In the old days before Wassermann and salvarsan, I often saw tabetic patients greatly improved by a short rest in bed—even of a week or two. The general hygienic treatment of patients suffering from syphilis of the nervous system is of the greatest importance; and in these days of salvarsan, I fear there is some danger that it may be overlooked.

THEODORE DILLER, M.D., Pittsburgh.

An Improved Hemorrhoid Operation

To the Editor:—I notice in THE JOURNAL, July 17, 1915, p. 246, the description of an improved hemorrhoid operation by Dr. William Lee Secor. I have been doing this shoemaker stitch operation for the last ten years, as a number of Shreveport doctors can testify. I did not give it to THE JOURNAL in view of the fact that practically all stitch operations for hemorrhoids had been done and, although having never heard of this one, I did not claim originality.

A. P. CRAIN, M.D., Shreveport, La.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

WHITNEY'S REAGENT

To the Editor:—Please publish the formula for making Whitney's reagent for quantitative testing of the sugar in urine.

CLARENCE A. HOFER, M.D., Metuchen, N. J.

ANSWER.—The formula of the standard solution (parts by weight) is:

	gm.
Ammonium sulphate (C. P.)	1.2738
Copper sulphate (C. P.)	2.5587
Potassium hydroxid (C. P.)	19.1620
Ammonia water (sp. gr. 8.80)	312.2222
Glycerin (C. P.)	60.
Distilled water	q. s.

One cubic centimeter of the reagent is the equiivalent of:

	gm.
Cupro-diammonium sulphate	0.03832
Cupric hydroxid	0.41062
Grape sugar anhydrous	0.00526

The following table gives the amounts of sugar in analytic testing:

If reduced by	It contains to the ounce:	Percentage
1 minim	16. grains or more	3.33
2 minims	8. grains or more	1.67
3 minims	5.33 grains or more	1.11
4 minims	4. grains or more	0.83
5 minims	3.20 grains or more	0.67
6 minims	2.67 grains or more	0.56
7 minims	2.29 grains or more	0.48
8 minims	2. grains or more	0.42
9 minims	1.78 grains or more	0.37
10 minims	1.60 grains or more	0.33

The method of procedure is the following: Heat 1 dram of the reagent in a test tube to boiling; add the urine slowly, drop by drop, until the blue color begins to fade, then more slowly, boiling from three to five seconds after each drop, until the reagent is perfectly colorless, like water, or until 10 drops only are added. On cooling, the reagent resumes the blue color, the change being due to the absorption of oxygen from the atmosphere. When the urine contains a large amount of albumin, the reduction takes place without interference by the albumin present, but leaves the reagent more or less of a yellow tint. A large amount of coloring matter has a similar effect. If the urine contains a considerable amount of sugar, it is best to dilute it from one to ten times.

Approximate estimations of this character are likely to give exceedingly irregular results.

DEFINITION OF "PARESIS"

To the Editor:—Please give me the generally accepted definition of the word "paresis." It seems that different doctors have different conceptions of the meaning of this word. Has the meaning of the word changed since it first came into existence? Does it mean "softening of the brain," or does it mean, as Dunglison says, "paralyses of different parts of the body"? A. D. C.

ANSWER.—There is no doubt some confusion regarding the exact meaning of the word "paresis." Owing to the prevailing tendency among the laity to abbreviate medical terms, the term "general paresis" was shortened into plain "paresis." At the present time the following may be considered synonyms: general paresis, dementia paralytica, general paralysis of the insane, "softening of the brain," paresis. Neurologists, however, indicate the slighter degrees of paralysis of muscles—a mere weakness, or diminution of muscular power—by the statement, "The patient suffers from paresis of certain muscles," or "His muscles are paretic." When referring to a patient suffering from general paresis, even neurologists speak of a "paretic." To summarize the accepted usage of the word in medical literature: When paresis stands alone, the disease general paresis (softening of the brain) is meant. The word "paresis" followed by the possessive "of the" means a slight degree of muscular paralysis. Instances: He suffers from paresis (softening of the brain). The patient suffers from paresis of the peroneal group of muscles (slight or incomplete paralysis of these muscles, no matter from what cause).

Medical Education and State Boards of Registration

COMING EXAMINATION

NEW HAMPSHIRE: Concord, September 15-16. Sec., Dr. Walter T. Crosby, Pembroke Building, Manchester.

"Unprofessional Conduct" in Ohio

The amendment which becomes effective July 26 modifies the Medical Practice Act of Ohio to include the following offenses which may be construed as instances of "grossly unprofessional or dishonest conduct," punishable by revocation or suspension of certificate:

1. The employing of any capper, solicitor or drummer for the purpose of securing patients, or subsidizing any hotel or boarding house with like purpose, or the obtaining of any fee on the assurance that an incurable disease can be cured.

2. The wilful betrayal of a professional secret. But a physician, knowing that one of the parties to a contemplated marriage has a venereal disease, and so informing the other party to such contemplated marriage, or the parent, brother or guardian of such other party, shall not be held to answer for betrayal of a professional secret nor shall such physician be liable in damages for truthfully giving such information to such other party, or the parent, brother or guardian of such other party.

3. All advertising of medical practice in which extravagantly worded statements intended, or having a tendency to deceive and defraud the public are made, or where specific mention is made in such advertisements of tuberculosis, consumption, cancer, Bright's disease, kidney disease, diabetes or of venereal disease or disease of the genito-urinary organs.

4. Having professional connection with, or lending one's name to an illegal practitioner of medicine.

5. Any division of fees or charges, or any agreement or arrangement to share fees or charges made by any physician or surgeon with any other physician or surgeon, or with any other person.

Before the enactment of this amendment the term "unprofessional conduct" was undefined, except by court interpretation. The only offenses previously mentioned were fraud in examination, commitment of felony or addiction to drug or liquor habits "to such a degree as to render the physician unfit to practice medicine or surgery."

Medical Cults Under Control of Medical Board

Another amendment to the medical practice law in Ohio, passed recently, imposes on the State Medical Board the duty of providing for the licensure of practitioners of the various medical cults. The law specifically mentions under this heading: chiropractic, naprapathy, spondylotherapy, mechanotherapy, neuropathy, electrotherapy, hydrotherapy, suggestive therapy, psychotherapy, magnetic healing, chiropody, Swedish movements, massage and "such other branches of medicine and surgery as the same are defined in Section 1286 of the General Code that may now or hereafter exist, except midwifery and osteopathy." Under the provisions of the law, the board is directed to call to its aid "person or persons of established reputation or known ability in the particular limited branch in which the examination is to be given." These limited practitioners will act as examining committees for the board. For example, to examine applicants for licenses to practice chiropractic, the board will appoint a committee of probably three chiropractors to be known as the Chiropractic Examining Committee. The law provides that if there is in existence a state association or society of practitioners in any limited branch, such association shall recommend the persons to be designated for this service by this board. The board in its discretion, however, may reject these recommendations.

Additional Fellowships at the University of Minnesota

It has been announced that with the opening of the fall session in September additional teaching fellowships in surgery, internal medicine, pediatrics and obstetrics will be offered in the Graduate Medical School of the University of Minnesota. These fellowships are said to be under stipends of $500, $750 and $1,000 for the respective three years of study they require.

The announcement states that candidates will be expected to devote eleven months in each year exclusively to work in a chosen specialty and will give a certain measure of teaching assistance in the subject. The relations established between the Graduate Medical School and the Mayo Foundation for Medical Education and Research enlarge the clinical opportunities of these fellowships. The course leads to the degree of Doctor of Science qualified by the specialty pursued.

Michigan May Report

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the written examination held at Detroit, May 27-29, 1915. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 48, of whom 46 passed and 2 failed. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
University of Illinois	(1914)	80.9
Detroit College of Medicine and Surgery	(1915)	78, 78.7, 79.5, 79.7, 79.7, 81.9, 82.2, 82.3, 82.3, 82.5, 83, 83.3, 84.1, 84.2, 84.2, 84.3, 84.4, 84.4, 84.9, 85, 85, 85.1, 85.1, 85.4, 85.5, 85.7, 85.7, 85.8, 85.8, 85.8, 85.9, 86.1, 86.4, 86.6, 87, 87.6, 87.6, 87.9, 88, 88, 88.1, 89, 89.1.
University of Toronto	(1913)	87.5
Western University, London, Ont.	(1913)	80.6

FAILED		
Detroit College of Medicine and Surgery	(1915)	*, †

* Grade not given.
† Conditioned in one subject.

Rhode Island July Report

Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the written examination held at Providence, July 1-2, 1915. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 80. The total number of candidates examined was 5, of whom 3 passed and 2 failed. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
University of Maryland	(1915)	87
Boston University	(1915)	80
Hahnemann Med. Coll. and Hosp., Philadelphia	(1915)	80.3

FAILED		
Atlanta Medical College	(1915)	77.3
Tufts College Medical School	(1908)	75.2

Utah July Report

Dr. G. F. Harding, secretary of the Utah State Board of Medical Examiners, reports the written examination held at Salt Lake City, July 7, 1915. The total number of subjects examined in was 20; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 7, all of whom passed. Three candidates were licensed through reciprocity. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
Rush Medical College	(1915) 81.3, 82.8, 83.4,	85.8
College of Physicians and Surgeons, Baltimore	(1915) 82.7,	82.8
Jefferson Medical College	(1914)	78.6

LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado	(1912)	Colorado
Rush Medical College	(1914)	Illinois
Long Island College Hospital	(1899)	New York

Book Notices

OVERCROWDING AND DEFECTIVE HOUSING IN THE RURAL DISTRICTS. By Dr. Harvey B. Bashore, Inspector for Pennsylvania Department of Health. Cloth. Price, $1 net. Pp. 92, with 15 illustrations. New York: John Wiley Sons, 1915.

This pamphlet is the outcome of a study made by Bashore under the authority of the Pennsylvania Department of Health. It deals principally with rural communities. The author believes that too much blame has been thrown on the factory and place of employment, and not sufficient attention paid to the homes of employees in preventing disease. The book is divided into five chapters which discuss land crowding, house crowding, defective building, defective schools and the results of these evils. In the rural districts Bashore finds that although there is no tuberculous section, there are many tuberculous homes. The cure for the housing evil, he believes, lies in education through an efficient visiting nurse service. The book is well illustrated, practically every other page being a plate showing the conditions studied.

A MANUAL OF PRACTICAL HYGIENE. Proper Living on a Physiologic Basis. By American Authors. Edited by Walter L. Pyle, A.M., M.D., Assistant Surgeon to the Wills Eye Hospital, Philadelphia. Sixth Edition. Cloth. Price, $1.50 net. Pp. 543, with 138 illustrations. Philadelphia: W. B. Saunders Company, 1915.

The sixth edition of the well-known manual is marked by two sections: one a chapter on food deterioration, by Wiley, and another on the hygiene of infancy, for which the author's name is not given. A footnote to the chapter by Wiley states that the contents are abstracts of his published works which have been edited and revised by Wiley himself. They contain much valuable information. The material seems, however, rather unorganized, and gives the impression of being rather hastily prepared. Many simple tests are given for the use of the housewife in determining the application of common articles of diet. The chapter on the hygiene of infancy contains within a few pages many simple and practical suggestions. This chapter is well illustrated, practically all the illustrations being taken from a book on this subject by Griffith. Several suggestions, it is to be feared, will not receive the approval of most pediatricians; for example: "If the baby is delicate, an alcohol, warm whisky, or olive oil rub is advisable." "The mouth should be washed daily, after the bath and after each feeding, by the mother's finger wrapped in absorbent cotton." Besides the chapters contained in previous editions, the book is supplemented by an appendix which states in simple language many basic facts and directions in physical therapy and first aid.

A PRACTICAL HANDBOOK OF SURGICAL AFTER-TREATMENT. By Alan H. Todd, B.Sc., M.S., F.R.C.S., Surgical Registrar, Guy's Hospital. Cloth. Price, $1.25 net. Pp. 256, with 37 illustrations. New York: Longmans, Green & Co., 1915.

In his preface, the author states that the contents of his book are based on his own experience as a dresser, house surgeon and registrar. As a handy reference book for students and hospital or dispensary dressers it can, in the main, be recommended. The subject matter is well classified, the illustrations sufficient and the "working tips" in many instances meritorious. One can heartily commend his warning (page 56) that "in hemorrhage from a tumor, vasoconstrictors are useless, for the vessels of a new growth have no vasoconstrictor in their walls." He also lays great emphasis on the all-importance of breathing exercises after adenectomies. The daily carrying out of nursing procedures and of feeding under anesthesia in severe cases of tetanus is also worthy of consideration. He advocates the open air treatment of burns, using a wire netting "bridge" as protection. The chapters on hemorrhage, bandaging, plaster splints and surgical massage are excellent. One must, however, criticize his evident fondness for proprietary drugs. Purgen, laxoni, glycothymoline, listerine and a host of other remedies of unknown or doubtful composition are equally

recommended with orthodox drugs of the pharmacopeia. On page 11 he recommends, as a preliminary to cystoscopy, that indigocarmin be injected into the subcutaneous tissues of the thigh "on the side opposite to that of the suspected lesion." We fail to recognize any anatomic or physiologic basis for such a statement. He also advises morphin or "nepenthe" rectal suppositories after operations on the bowel or pelvis, although the central action of all opiates has been a matter of common knowledge for several years. In spite of these minor drawbacks, the volume is well worth reading.

The Elements of Military Hygiene. Especially Arranged for Officers and Men of the Line. By P. M. Ashburn, Major Medical Corps, U. S. Army. Cloth. Price, $1.50 net. Pp. 351. Boston: Houghton Mifflin Company, 1915.

In these stirring times, in the midst of continued agitation for preparedness in military affairs, physicians should inform themselves concerning the essential elements of military hygiene. The increased interest in these subjects has demanded a new edition of Ashburn's excellent book. The revision has been thorough, and includes explicit statements of newer advances in our knowledge of the etiology and transmission of those infections to which troops seem particularly susceptible. A new chapter on the prevention of nervous and mental diseases in soldiers is of special interest. The author considers alcohol and syphilis the two chief factors in the production of psychoses and nervous disturbances in soldiers.

Fragments and Addresses. By Norman Bridge, A.M., M.D. Cloth. Price, $1.75. Pp. 332. Los Angeles: Bireley & Elson, 1915.

This collection of addresses and poems on various occasions is a revelation of the many-sidedness of Dr. Bridge. The fragments—and some of them seem worthy of a better name — include commencement and inaugural addresses, reprinted articles from several popular periodicals, some short stories written for children, and several poems. The articles are practically all distinctive in style—simple, direct and full of a wealth of humor and human kindliness. The author looks back on a life of varied activity and draws on a fund of anecdotes to embellish the lessons he would teach. The book is neatly printed. It contains an excellent photograph of the author which will be much appreciated by all who know him.

Soziale Pathologie. Versuch einer Lehre von den sozialen Beziehungen der menschlichen Krankheiten als Grundlage der sozialen Medizin und der sozialen Hygiene. Von Prof. Dr. med. Alfred Grotjahn. Second Edition. Paper. Price, 15 marks. Pp. 532. Berlin: August Hirschwald, 1915.

This book, the first edition of which was published in 1912, gives an excellent presentation of the social relations and importance of the human diseases, with special reference to German conditions. It should interest all who are working and thinking in the direction of the social aspects of medicine.

Miscellany

Decline in Stamina of American Workers

E. E. Rittenhouse, of the Life Extension Institute, in a recent address says that mortality records indicate a marked decline in the power of American workers to withstand modern life. This is manifested in the extraordinary increase in the death rate from the breaking down of the heart, arteries, kidneys and the nervous and digestive systems, which diseases, he says, are reaching down into middle life and increasing there and apparently at all ages. Among 410,000 lives annually destroyed by these old age diseases, 60,000 occur under the age of 40; 105,000 between the ages of 40 and 60, and 245,000 above the age of 60. It is believed that virtually all of these deaths belong in the group above 60, and fully 80 per cent. of the deaths could be postponed for varying periods up to several years if these diseases were discovered in their incipiency and properly cared for. Rittenhouse says that these slowly developing afflictions are not only reducing the working, productive period of life, but also lower the capacity of the individual. They are responsible for accidents, damaged machines, spoiled goods and other costly errors. They are the concealed enemies of accuracy and efficiency. The records show that in thirty years the mortality from these diseases has nearly doubled. In a group of over 5,000,000 men and boy workers, increases in the death rate were noted as follows: apoplexy and nervous system, 19 per cent.; heart, 29 per cent.; kidney and urinary system, 43 per cent.; liver and digestive system, 34 per cent. It is said that the same story of the declining power of the American people to resist diseases of the vital organs is told by the statistics of the general population. Mortality from the important communicable diseases such as typhoid and tuberculosis has declined.

Housing and Labor Camps in California

The California Commission on Housing and Immigration, in its first annual report on the labor camps of that state, says that it soon found that a state-wide cleanup was necessary, and an inspection of the camps was instituted. In order that its efforts at cleaning up might not be entirely theoretical, it took over one of the camps, and under the direction of its sanitary engineer installed the necessary sanitary improvements. A set of rules and regulations based on this work was formulated and published with the approval of the State Board of Health and circulated among the employers of the state. Inspection of 876 camps showed 297, housing 21,577 persons, as "good," 316 camps with 22,382 occupants as "fairly good," and 263 camps housing 16,854 persons as "bad." The gravest evils lay in the absence or inadequacy of bathing facilities, toilets and garbage disposal. These inspections were made in 1914, and up to Jan. 1, 1915, 228 camps had been reinspected. These showed improvement in 72.3 per cent. up to the minimum standard established by the commission. Persuasion is now the only method of inducing employers to comply with the regulations, but the commission recommends that the legislature grant power to compel the establishment of sanitary standards. The commission also made inspections in the tenement districts, particularly in San Francisco, but also in other cities of the state, and found much room for improvement, with very little being done by local authorities in this direction, Los Angeles and San Diego being exceptions in this respect. The work of the commission stirred things up in many towns, and measures for improvement are pending in a number of places.

Tuberculosis and Its Prevention

Tuberculosis was responsible for 143,000 deaths in the United States during 1913, indicating the presence of 1,430,000 cases, as set forth in the address of Dr. George M. Kober, president of the National Association for the Study and Prevention of Tuberculosis, at the Seattle meeting. This large number of deaths occurred notwithstanding that the death rate has fallen from 326 per hundred thousand of population in 1880 to 147.6 in 1913. In the way of prevention, Kober recommends that inasmuch as 6 or 7 per cent. of average market milk contains tubercle bacilli, all milk unless derived from tuberculin-tested animals should be pasteurized or scalded. The renting of houses unfit for human habitation should be prohibited. As nearly half the deaths from tuberculosis occur among industrial workers, who constitute about one third of the population, dust and fumes, the foes of industrial life, should be banished, and proper environment in childhood should be provided. Among the special measures recommended are compulsory notification, enforcement of antispitting laws, prohibition of common drinking cups, proper sanitation of hotels, lodging houses, theaters, churches, schools, ambulances and trains, the prohibition of the marriage of tuberculous persons and isolation of tuberculous patients.

Founding of the American Hospital at Neuilly

In the London *Times'* history of the war, Part 41, June 1, 1915, is an interesting account of the founding of the American Hospital in the Lycée Pasteur at Neuilly, France, through the leadership of then American Ambassador Herrick, assisted by many American men and women, which the *Times* characterizes as one of the romances of hospital work. An uncompleted school building was placed by the French government in the charge of the Americans, who lost no time in transforming it into a perfectly equipped hospital. It is said: "The American committee took the Lycée Pasteur in hand without a moment's delay. Windows were fitted to empty frames, doors adjusted, the dust-covered floors were swept clean and the walls whitewashed; electric light and baths were installed, and immense class rooms partitioned off to form snug wards; a beautifully equipped operating theater, an anesthetic room, a sterilizing room, an x-ray department and a dental clinic were provided." It is further said that the organization of the hospital was remarkable, and was taken as the plan on which all the great war hospitals were afterward conducted, and that "the Americans led the way in the great new movement toward the perfect military hospital which the war initiated." After the hospital was opened, the need of better transportation between the battlefields and the hospital than that afforded by the railways, which were overcrowded and congested with traffic of all sorts, was seen, and a motor ambulance service was inaugurated. The battlefields at that time were not far from Paris, and with the aid of a dozen Ford cars which had been presented to the hospital, ambulances were rigged up from the packing cases in which the cars came and pressed into service. They accommodated two men lying and four sitting, and were able to climb steep grades, fulfilling the requirements of ambulance service away from main roads. The effect of baths and clean clothes and good attention were at once apparent on the self-confidence of the men brought in. The wards of the hospital were bright and cheerful, and the application of the best methods and equipment, including dental work for men needing it, and plastic surgery in severe wounds of the face, produced remarkable results. All manner of patients and all the nationalities engaged in the war were found in the hospital.

A Test of Clean Milk Production

Under the direction of North (*Am. Jour. Pub. Health*, June, 1915), a comparative test of clean milk production was made under the following conditions: Ten dairymen known by their low bacteria records to be expert clean milk producers were placed on ten dairy farms in the neighborhood of Philadelphia which were ordinarily equipped and which had only fair records under the owning dairymen. The experts were given sterile cans and sterile covered buckets with 5-inch openings. Under the conditions of the test they were to milk the cows on the respective farms once, and handle the milk until it was placed either in ordinary tanks of cold water or in ice water for cooling purposes; then, when the milk was transported to the milk stations, bacterial counts were to be made. The result of the best was that, whereas the owning dairymen of the ten dairies had bacterial counts on April 5 of 60,000 as a minimum to 4,830,000, the visiting experts April 6 produced milk which had counts ranging from 800 to 7,000, with a maximum in one instance of 61,000, in which the expert complained that the barn had been swept just before he milked, raising much dust. North concludes that the fundamentals of clean milk production, which were present in this test, are: milking with dry hands into covered milk pails; proper washing and sterilization of milking pails and milk cans; cooling milk by placing cans in tanks of cold water or ice water, and regular laboratory tests of milk for bacteria and payment based on laboratory tests. The last is the essential stimulus to clean milk production. North says he has revised his opinion in regard to the relative values of equipment and dairyman, so that the dairyman should count for at least 90 per cent. and equipment for the other 10 per cent. in clean milk production.

Medicolegal

Requirements in Investigations as to Insanity

(*People vs. Hall* (*Mich.*), *151 N. W. R. 687*)

The Supreme Court of Michigan finds error in the proceedings in this case under Section 19 of Act 238 of the Public Acts of 1905. This provides, among other things, that, if any person in confinement under indictment for the crime of murder, etc., shall appear to be insane, the judge of the Circuit Court shall call two or more reputable physicians and other credible witnesses, and the prosecuting attorney to aid in the examination. The court says that the physicians called to aid in the investigation in this case did not appear by the record to have been sworn. Moreover, nowhere in the statute does it appear that a report or certificate of the physicians must be filed. But it seems clear to the court that it was the intent of the statute to compel the physicians called by the court to be sworn, and that their examination should be made a part of the record in the case on which the court should or might base a conclusion as to the fact of the sanity or insanity of the accused. While that portion of Section 19 referring to this subject does not in terms require the physicians to be sworn, the court is of the opinion that such must have been the intention of the legislature. The court is empowered to call two or more reputable physicians and other credible witnesses. This indicates that the legislature intended that the physicians as well as the other credible witnesses should be sworn. Furthermore, the court holds without force the argument that neither the evidence nor the report showed the accused to be insane, dangerous or criminal. By the terms of the statute, the inquiry is had for the purpose of ascertaining "whether his insanity in any degree continues." It seems to the court clear that such insanity might continue in some degree and in such a degree as to warrant the restraint of the accused for the time being and until secured, even though he was not violent or apparently dangerous. The report itself, however, recited "that at this time he has not sufficient self-control to resist violent impulses." If this statement were properly in evidence, it would be adequate, under the statute, to warrant the action of the court.

No Malpractice Shown in Treatment of Fracture and Occurrence of Infection

(*Lorenz vs. Booth* (*Wash.*), *147 Pac. R. 31*)

The Supreme Court of Washington affirms a judgment rendered for the defendant after a motion, at the close of the evidence introduced on behalf of the plaintiff, to withdraw the case from the jury and render judgment in favor of the defendant, on the ground that the evidence introduced in the plaintiff's behalf was insufficient to call for the submission of the case to the jury. The court says that the plaintiff had sustained a simple fracture of the tibia about 4 inches above the ankle. The defendant advised, and used, what was called the Lane method of treatment, consisting of opening the flesh and inserting and attaching to the broken portions of the bone a plate so as to hold them rigidly in apposition and alignment. The operation was performed at a hospital, where the plaintiff remained six days, after which he was taken home, when the defendant cut a hole in the cast so as to render the flesh wound accessible for treatment, and then it was first discovered that the injured parts had become seriously infected. Counsel for the plaintiff proceeded on the theory that the defendant was negligent in treating the broken bone by the adoption of the so-called Lane method, which required the opening of the flesh to the bone in order to attach the plate thereto, and that he was thereafter negligent in using unsterilized water and the vessel in which it was used to cleanse the injured parts when treating them. But the most that could be said of the testimony in support of the contention that the defendant was negligent in adopting the Lane method was that such method did not have, at that

time, the unanimous approval of the medical profession. However, according to the only evidence presented in the plaintiff's behalf, that method did have the approval of at least a respectable minority of the medical profession, who recognized it as a proper method of treatment. This was enough to absolve the defendant from negligence so far as his mere use of that method was concerned, there being no showing that he exercised other than his best judgment in choosing that method. This court has heretofore recognized the rule that if there be more than one recognized method applicable to a particular case, the attending physician is not liable for an honest mistake of judgment in his selection of the method of treatment. Nor was there the slightest evidence but that every precaution known to medical science was exercised at the hospital looking to the prevention of infection. Yet the infection was discovered and had become serious at the end of that period. Up to that time there was nothing whatever pointing to negligence on the part of the defendant, unless the mere fact that infection had taken place was to be regarded as proof of his negligence, in other words, a bad result. But a mere "bad result" is not of itself ordinarily sufficient to render an attending physician liable for negligence; that is, it is not ordinarily of itself proof of such physician's negligence. Subsequent operations performed solely for the purpose of treating the infection were no evidence of improper treatment in the beginning. Neither was the defendant shown to have been negligent in the use, after the infection was discovered, of water and basin claimed to have been improperly used for want of sterilization. The vessel was a common wash basin, which was cleansed with warm water and soap by the plaintiff's wife before use, and when the water was put into it the defendant would put into the water some kind of antiseptic tablets, the exact nature of which was not shown, and which method of sterilization was not shown to be insufficient or such as a prudent physician would not use. To have allowed this cause to be submitted to the jury would have been merely to permit it to speculate on the question of the defendant's negligence.

Senile Dementia Is Insanity

(Andrus et al. vs. Andrus (La.), 67 So. R. 895)

The Supreme Court of Louisiana says that it was urged with great earnestness in this case that senile dementia is not insanity. But the various authorities on medical jurisprudence define "senile dementia" as one of the forms of insanity. It is characterized by a mental weakness and inability to reason, a state of enfeeblement of the brain, which comes to those whose other vital organs have served them to a very old age. It may be regarded as a venerable form of insanity, but it is insanity, nevertheless.

Unjustified Requests for Examinations by Physicians

(Wheeler vs. Chicago & W. I. R. Co. et al. (Ill.), 108 N. E. R. 330)

The Supreme Court of Illinois, in affirming a judgment in favor of the plaintiff for personal injuries, says that it was insisted that the trial court erred in refusing to allow the defendants' physicians to examine the plaintiff's leg in the presence of the jury. The argument was that, since the plaintiff exhibited the injured member to the jury, the defendants' physicians had a right to make a physical examination of the leg then, the same as they would have to examine any other exhibit in the case. But it did not appear from the record that any examination of the plaintiff's leg was made in the presence of the jury, other than the mere exhibiting of it to the jury. The Supreme Court does not think that the mere showing of the injured member to the jury gave the defendants the right to invade the privacy of the plaintiff's person and make him submit to an extended scientific examination in the presence of the jury. Again, when the defendants requested the right to have the plaintiff examined by their experts, the plaintiff offered to submit to an examination by the same physician of defendants who had previously examined and treated him for his injury. It appeared from the evidence that the first physician he consulted after the injury was the defendants' physician, and that he was treated by him and one of his assistants for some time after the injury, and that the injury was diagnosed by this physician as a transverse fracture of the knee cap, and the injured member was treated by the physician and his assistants for such injury. The Supreme Court thinks that the offer made was fair, and that the trial court did not err in refusing to require the plaintiff to submit to a further examination by other physicians to be selected by the defendants.

Society Proceedings

COMING MEETINGS

Amer. Assn. of Obstetricians and Gynecologists, Pittsburgh, Sept. 14-16.
American Electro-Therapeutic Association, Atlantic City, Sept. 14-16.
American Public Health Association, Rochester, N. Y., Sept. 7-10.
Association of Military Surgeons of the U. S., Washington, Sept. 13-15.
Indiana State Medical Association, Indianapolis, Sept. 23-24.
Kentucky State Medical Association, Louisville, Sept. 21-23.
Michigan State Medical Society, Grand Rapids, Sept. 1-2.
Missouri Valley Medical Society, Des Moines, Sept. 23-24.
New Mexico Medical Society, E. Las Vegas, Sept. 6-8.
Oregon State Medical Association, Portland, Sept. 9-10.
Pennsylvania State Medical Society, Philadelphia, Sept. 20-23.
Utah State Medical Association, Salt Lake City, Sept. 28-29.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Ophthalmology, New Rochelle, N. Y.

July, XLIV, No. 4, pp. 369-479

1 Study of Bitemporal Hemianopsia with New Instruments and Methods for Detecting Slight Changes. C. B. Walker, Boston.
2 Keratitis Caused by Infection with Bacillus Coli. A. C. Macleish, Los Angeles.
3 Double Chancre of Eyelid. C. E. Finlay, Havana, Cuba.
4 Form and Color Test Object for Perimetric Work. L. C. Peter, Philadelphia.
5 Congenital Division of Optic Nerve at Base of Skull. C. M. Snead, Jefferson City, Miss.
6 Pathology and Treatment of Certain Diseases of Internal Secretion. S. J. A. Schoenborn, Heidelberg.
7 Clinical and Experimental Investigations on Etiology of Heterochromia. J. Bistis, Athens, Greece.
8 Conservation of Vision. G. S. Derby and H. C. Greene, Boston.

Archives of Pediatrics, New York

June, XXXII, No. 6, pp. 401-486

9 Boston as Pediatric Center. J. L. Morse, Boston.
10 *Homogenized Olive Oil and Fat-Free Milk Mixtures in Case of Difficult Feeding. M. Ladd, Boston.
11 Pyloric Stenosis and Pyloric Spasm; Report of Three Cases. C. H. Dunn and W. W. Howell, Boston.
12 *Clinical and Pathologic Study of One Hundred Infants. R. M. Smith and S. Cobb, Boston.
13 Energy Metabolism of Infant with Congenital Absence of Cerebral Hemispheres. F. B. Talbot, Boston.
14 *Relation of Gas Bacillus to Infectious Diarrhea and Other Digestive Disturbances in Childhood. P. H. Sylvester and F. H. Hibben, Boston.
15 Some Measurements of Normal Children, Especially of Leg and Arm. J. I. Grover, Boston.

10. **Homogenized Olive Oil and Fat-Free Milk.**—In general, the results obtained by Ladd in the use of homogenized olive oil as a substitute for cow's fat in cases of difficult feeding have been such as to warrant the hope that it will prove a safe and valuable means of administering fat in the so-called cases of "fat intolerance." Ladd states that its use will not, however, relieve the physician of the necessity of intelligent application of the principles of modification and adaptation of the food to the individual requirements of the infant.

12. **Clinical and Pathologic Study of Infants.**—The skin tuberculin test was applied by Smith and Cobb to 23 patients coming to necropsy. The result of the test was as follows: Negative, 21; positive, 2. One of the positive cases gave a negative test ten days later, the other gave only a slight reaction, and at necropsy there was lobar pneumonia without any tuberculosis. Nine cases in the series of 100 showed tuberculous lesions at necropsy; 4 of these were extensive miliary processes, 2 were tuberculous peritonitis, 1 was tuberculous peritonitis and tuberculosis of the lungs, 1 was tuberculosis of the lungs and 1 was tuberculosis of the peribronchial lymph nodes. A clinical diagnosis of tuberculosis was made in 6 of these cases, indigestion in 2 and bronchopneumonia in 1. The von Pirquet test was applied in 8 of these cases and was negative in all except 1, which showed a positive reaction on the first test and a negative reaction ten days later. Only 1 of the 9 patients gave a history of exposure to tuberculous infection. The duration of the acute symptoms did not exceed two weeks in any instance.

Examination of the lymph nodes was made in 93 cases and comparison made with the clinical histories. It was found that over one half, or 54 per cent., of the cases showing acute gastro-intestinal disease showed an enlargement of the mesentery lymph nodes. This raises the question whether or not in many children who have difficulty in the digestion of fat during convalescence from these diseases, the problem may be physical as well as physiologic because of an obstruction to the lacteals in the mesentery by the enlarged glands. Forty patients in the whole series had enlarged glands and 27 of these, or 67.5 per cent., were in acute diseases, 5 in tuberculosis, 6 in chronic diseases, 2 unclassified. Fifty-three patients showed no enlargement; 20 were in acute and 33 in chronic diseases. Microscopic examination of lymph nodes from 32 cases showed that there is atrophy of the germinal centers with increase in size of the nodes and that this atrophy occurs in acute diseases more often than in chronic; 84 per cent. of the acute cases had atrophy of the germinal centers, and only 50 per cent. of the chronic. It was found that 80 per cent. of the nodes measuring over 6 mm. in diameter, but only 25 per cent. of those measuring 5 mm. or less, showed atrophy; probably, therefore, any mesenteric node measuring more than half a centimeter in diameter is, to some extent, pathologic.

14. **Relation of Gas Bacillus to Diarrhea.**—From experience in the study and treatment of these cases Sylvester and Hibben have come to observe the following routine: (1) To give unpasteurized lactic-acid milk exclusively until the stools are gas bacillus-free for 3 successive plants at two or three-day intervals. (2) When gas bacillus-free, (*a*) continue a small amount of lactic-acid milk daily; (*b*) gradually increase the amount of food to normal caloric requirements by adding skim milk and, cautiously, small amounts of carbohydrates, preferably in the form of maltose and very well-cooked starches, testing for gas from time to time. (3) Add fat to the diet after weeks or months, in very small amounts, watching stools frequently for undigested fat. (4) When there is a recurrence of the gas bacillus, treatment should be repeated.

This treatment was used in cases in which the gas bacillus was present, as follows: Infectious diarrhea, 31 cases, in which 2 patients died (were moribund on admission); 29 were clinically well within five days. Of the 9 not so treated none got well within weeks, and 3, after weeks of "old routine" treatment, were given the foregoing treatment and got well in four days. In the 4 cases of mixed infections none of the patients really improved. In cases of fat intolerance 20 patients were so treated and rapidly became free from symptoms of disturbed metabolism; 9 not so treated showed persistent evidence of disturbed metabolism. In the cases of carbohydrate intolerance all patients showed marked improvement in stools. There were none who did not receive the above treatment. In the 15 cases of chronic intestinal indigestion 11 patients were so treated and immediately improved, although recurrence took place in most of them, to be immediately relieved by the return to the fat-free lactic-acid milk. Of the 4 not so treated the conditions in all persisted for months.

Fat-free diet has been adhered to in all of these cases, because, as has been shown so many times hitherto, the digestion of fat is disturbed for considerable periods following all cases of infectious diarrhea. In the cases in which the patients were doing well on unpasteurized fat-free lactic-acid milk, 5 patients received, for a short time, pasteurized fat-free lactic-acid milk. In each of these cases improvement immediately abated, although none of the patients had an actual recurrence. On returning to the unpasteurized lactic-acid milk improvement was again rapid.

Boston Medical and Surgical Journal

July 22, CLXXIII, No. 4, pp. 113-150

16 Alcoholism. E. B. Emerson, Bridgewater.
17 Cerebrospinal Fluid in Diagnosis and Treatment. W. H. Watters, Boston.
18 Results of Treatment of Pyorrhea Alveolaris and Allied Conditions with Emetin Hydrochlorid at Danvers State Hospital. H. I. Gosline, Danvers.

Colorado Medicine, Denver

July, XII, No. 7, pp. 171-212

19 Medical Aspects of Cancer. C. N. Meader, Denver.
20 Cancer Prophylaxis. C. F. Hegner, Denver.
21 Cancer in Women. H. G. Wetherill, Denver.
22 Cancer of Skin. A. J. Markley, Denver.
23 Diagnosis and Treatment of Papillary or Villous Tumors of Bladder. W. M. Spitzer, Denver.
24 Use of Pituitary Extract in Obstetrics. C. B. Ingraham and P. M. Chase, Denver.
25 *Blood Pressure Control of Exercise in Tuberculous. L. S. Peters, Albuquerque, N. M.
26 Case of Typhoid Spine. H. W. Wilcox, Denver.
27 Tendon Transplantation Following Infantile Paraiysis. C. G. McEachern, Denver.
28 Symptoms of Dyspepsia Associated with Surgical Lesions. C. E. Tennant, Denver.
29 Social Service Work in Relation to Dispensary. M. R. Stratton, Denver.

25. **Blood Pressure Control of Exercise in Tuberculous.**—A class of six men was selected by Peters three being excellent cases both pulmonarily and physically; two fairly arrested far advanced cases; and one rather new recruit with normal temperature but physically inferior. All were started with a fifteen-minute walk each day. The pressures on starting of the three able-bodied men were 138, 132 and 148. On their return the pressures were 138, 144 and 152. After an hour's rest the readings were 138, 142 and 158, showing apparently no ill effects from the exercise. In the two fairly well-arrested far-advanced cases the men started with pressures of 164 and 124, returning with 146 and 130, and after resting, 164 and 118. The first man was not used to exercise in any form, as is shown by a drop of 18 mm. of mercury with a return to the original after an hour's rest. The overexertion in the second man is evident, for we find after resting that there is a drop of 6 mm. from the original reading recorded, and of 12 mm. from the reading recorded on the return. The new recruit started with 146, returned with 138, and after rest his reading was 127. The overexertion in this instance is well illustrated from the pressure findings, and was further substantiated by marked fatigue, breathlessness and rapid heart action. Whenever a patient shows a drop of 6 or more mm. after rest or a marked drop on returning, even though this disappears after rest, Peters decreases the exercise. If there is a slight drop after returning he repeats the exercise the following day or until an even standard is maintained, when the exercise is again increased. It is interesting to note that in many of the better class of patients, from a physical standpoint, the pressures remain practically the same even up to walks of four hours a day or longer.

Florida Medical Association Journal, St. Augustine

July, II, No. 1, pp. 1-32

30 Cancer of Prostate. R. C. Turck, Jacksonville.
31 Cancer Problem. J. K. Simpson, Jacksonville.
32 Organization of National and Local Forces in Campaign Against Cancer. C. E. Lakeman, New York.

33 Cancer of Stomach; Its Diagnosis. J. E. Boyd, Jacksonville.
34 What Dentist Can Do to Lessen Occurrence of Cancer of Face, Lips, Tongue and Oral Cavity. J. L. Kirby-Smith, Jacksonville.
35 Cancer Problem. C. Hutchinson, Pensacola.
36 Carcinoma of Uterus. T. S. Field, Jacksonville.

Georgia Medical Association Journal, Augusta

July, V, No. 3, pp. 49-80

37 Surgical Treatment of Goiter. E. G. Jones, Atlanta.
38 Pre-Pellagrous Digestive and Nervous Disorders. R. Blosser, Atlanta.

Journal of Biological Chemistry, Baltimore

July, XXI, No. 3, pp. 511-677

39 *Study of Amino-Acid Content of Blood. P. György and E. Zunz, Brussels.
40 *Some New Constituents of Milk; Phosphatides. T. B. Osborne and A. J. Wakeman, New Haven, Conn.
41 *Rapid Method for Determining Calcium in Urine and Feces. H. Lyman, Boston.
42 *Function of Liver in Urea Formation from Amino-Acids. B. C. P. Jansen, Amsterdam.
43 Preparation of Sarcosin. L. Baumann, Iowa City, Ia.
44 Quantitative Determination of Creatin in Muscle and Other Organs. N. W. Janney and N. R. Blatherwick, New York.
45 Metabolism of Creatin and Creatinin. Relationship Between Creatin and Creatinin in Autolyzing Tissue. V. C. Myers and M. S. Fine, New York.
46 Distribution of Cyanogen in Grasses, Especially in Genera Panicularia or Glyceria and Tridens or Sieglingia. C. L. Alsberg and O. F. Black, Washington, D. C.
47 *Amino-Acid Content of Certain Commercial Feedingstuffs and Other Sources of Protein. E. H. Nollau, Lexington, Ky.
48 Influence of Composition and Amount of Mineral Content of Ration on Growth and Reproduction. E. V. McCollum and M. Davis, Madison, Wis.
49 Blackening of Leaves of Wild Indigo (Baptisia Tinctoria) and Isolation of New Phenol, Baptisol. E. D. Clark, New York.
50 Presence of Cholin in Shoots of Aralia Cordata. K. Miyake, Japan.
51 *Creatinuria. A. E. Taylor, Philadelphia.

39. **Amino-Acid Content of Blood.**—György and Zunz found that copious bleeding brings on an increase in the amino-nitrogen content of the blood. If, at the same time as the bleeding, an intravenous injection of Ringer's solution is given, the amino-nitrogen content of the blood tends, on the contrary, in the majority of cases to diminish. The amino-nitrogen content of the blood does not change during the process of digestion of a meal poor in proteins (purée of potatoes). During the digestion of a meal rich in proteins (raw beef), we observe, in agreement with the authors mentioned above, a marked increase in the amino-acid content of the blood. This increase is more marked in the corpuscles than in the plasma. During digestion of a meal rich in proteins, the content of venous blood in amino-nitrogen is lower than that of arterial blood.

40. **Some New Constituents of Milk.**—Osborne and Wakeman suggest that it is probable that these phosphatids are not combined with the lactalbumin which is the chief constituent of the coagulum, but with another protein, for the authors have found that when the filtrate from the casein is neutralized with milk of lime the acidified filtrate from the precipitate yields a coagulum which is free from phosphorus. Since the precipitate produced by this neutralization contains protein it is probable that the phosphatids are also contained therein as a lecithalbumin containing a relatively large proportion of phosphatid similar to ovovitellin of the egg yolk.

41. **Calcium in Urine and Feces.**—There are three main steps in Lyman's method: (1) isolation of the calcium as calcium oxalate; (2) solution of the calcium oxalate in dilute acid; (3) precipitation of the calcium as soap, and comparison of the cloud so formed with the cloud of a standard solution by the Duboscq colorimeter. The method of procedure is described in detail.

42. **Function of the Liver in Urea Formation.**—It appears from Jansen's experiments that the liver can play an important part in the formation of urea from amino-acids.

47. **Amino-Acid Content of Feedingstuffs.**—An examination of the results given by Nollau shows many marked individual peculiarities of the different mixed proteins. Among such peculiarities may be mentioned the absence of histidin in distillers' dried grains and in the cowpea; the absence of nonamino-nitrogen, representing prolin and oxyprolin, in wheat bran and the maize kernel. The relatively large amount of lysin present in the soy bean, distillers' dried grains, wheat bran, dried blood, maize kernel, hemp seed and sunflower seed is especially noteworthy. In contrast to this is an absence of lysin in rice, oat grain, rolled oats and barley grain. The mono-amino-acids constitute, in most cases, about one half of the amino-acids present. The high ammonia content and the low lysin content of gluten (wheat) and gluten flour is marked. Similar results have been obtained in the analysis of gliadin by Van Slyke. The high arginin content of the peanut, black walnut and hickory nut as compared with the relatively small amount of arginin in the pecan is noteworthy. The reverse of this is found in the histidin content of these nuts.

51. **Creatinuria.**—The data given Taylor indicate that the presence of creatin in the urine of children cannot be regarded as related to deficiency of carbohydrate in the diet, as has been suggested; they also indicate that the finding of creatin in the urine cannot be ascribed to a methodic error, as has been suggested, due to the interference in the color reaction of the Folin method by acetone or acetonetic acid. The subjects of Taylor's report were two little girls of 10 and 4 years of age. They were not normal children, but this fact does not invalidate the conclusions to be drawn from the data. The elder child was the subject of hypopituitarism, the result of a tumor of unknown nature in the hypophysis. The younger child suffered from recurrent vomiting. The observations to be described were obtained in the period between attacks, when the child appeared entirely well. Both children were under strict observation of trained nurses, and there was every reason to believe that the instructions for feeding and collection of excrements were carried out substantially as ordered. Both children were under metabolic tests, and the figures for creatin and creatinin are parts of the metabolic data.

The figures for the urinary ketones in the first child are entirely normal; in the second child they are very low, due apparently to high carbohydrate and low fat intake. In each instance the intake of carbohydrate must be termed generous, even high, in relation to the total caloric intake. The constant creatinuria observed could not have been due to deficiency in carbohydrate intake. The amounts of ketones found in the urine were normal in the one child, very low in the second child. About half of the ketone was present as beta-oxybutyric acid. The highest relative findings for creatin were in the urine of the second child, which contained ketones in such mere traces that half the urine had to be distilled to make the estimations.

Journal of Cutaneous Diseases, New York

July, XXXIII, No. 7, pp. 509-554

52 Histopathology of Some of Secondary Skin Eruptions of Syphilis. C. C. Dennie, Boston.
53 Benign Forms of Tuberculosis of Skin. G. M. Olson, Minneapolis.
54 Tertiary Luetic Keratoderma. P. H. Ealer, Philadelphia.
55 Résumé of Two Hundred Cases of Hypertrichosis Treated with Roentgen Ray. A. C. Geyser, New York.
56 Physical Diagnosis in Dermatology. D. L. Satenstein, New York.

Journal of Medical Research, Boston

July, XXXII, No. 3, pp. 309-537

57 Studies in Diphtheroids. Nature and Clinical Importance of Pseudodiphtheria Bacilli. H. Fox, Philadelphia.
58 Id. Source of Pseudodiphtheria Forms in Body. Experiments on Mutation. H. Fox, Philadelphia.
59 *Tumors of Japanese Waltzing Mouse and of Its Hybrids. E. E. Tyzzer, Boston.
60 *Tumors of Parathyroids. F. Harbitz, Christiana, Norway.
61 Splitting of Elastic Fibers in Arteries. J. W. McMeans, Pittsburgh.
62 Preservation of Reagents Used in Wassermann Reaction. P. G. Weston, Warren, Pa.
63 Isolation, Identification and Serum Reactions of Typhoid and Paratyphoid Bacilli. G. H. Robinson, Providence, R. I.
64 *Spontaneous Rupture of Kidneys, with Secondary Perirenal Hemorrhage, in Acute Toxic Nephritis. H. W. Wade, Tulane, La.
65 *Pyrogenic Action of Bacillus Typhosus. D. H. Bergey, Philadelphia.

66 *Study of Effect of Anaphylaxis and Leech Extract on Coagulation of Blood. R. I. Lee and B. Vincent, Boston.
67 *Anatomic and Histologic Expression of Increased Resistance Toward Tuberculosis in Cattle Following Intravenous Injection of Human and Attenuated Bovine Tubercle Bacilli. T. Smith, Boston.
68 Comparative Pathology of Tracheal and Bronchial Lesions Produced in Man by B. Pertussis (Whooping Cough) and Those Produced in Dogs by B. Bronchisepticus (Canine Distemper). L. J. Rhea, Montreal, Canada.
69 *Cell Enzymes and Energesis in Relation to Cancer. L. D. Bristol, University, N. D.
70 Neurocytology of Surgical Shock. D. W. B. Kurtz, Jr., St. Louis.
71 Thyroid and Circulatory Changes Following Experimental Ligation of Thyroid Vessels. H. Neuhof, New York.
72 Cutaneous Infection Caused by Few Fungus, Phialophora Verrucosa, with Study of Fungus. E. M. Medlar, Boston.
73 Vaccination of Cattle Against Tuberculosis. Occasional Persistence of Human Type of Tubercle Bacillus in Cattle. T. Smith and M. Fabyan, Boston.

59. **Tumors of Japanese Waltzing Mouse.**—A carcinoma J. w. A has been propagated by Tyzzer through forty-seven transfers during a period of eight years. The analysis of the results in the first forty-three transfers shows, in 753 Japanese waltzing mice inoculated, only 16 failures, or approximately 2 per cent. This tumor has invariably failed to grow in common mice. Tumors have developed in 83 of the 89 hybrids of the first filial generation inoculated and reinoculation of three of the failures produced a tumor in one, so that approximately 5 per cent. are to be regarded as nonsusceptible. Since reporting the negative results in 62 hybrids of the second and 16 hybrids of the third filial generation, 6 additional F hybrids have been inoculated with negative result. The inoculation of a heterogeneous group of 33 hybrid mice obtained by the promiscuous breeding of the second filial and subsequent generations resulted in the growth of the tumor in a single mouse recorded as belonging to the second filial generation. This tumor grew on transplantation in Japanese waltzing mice in 2 out of 4 F hybrids, failed to grow in 8 F hybrids and on transplanting again also failed in 3 F hybrids. This result is suggestive in that it indicates that an occasional mouse may be found susceptible in other than the first generation, if sufficient numbers of animals are tested. In its further growth on transplantation in other F hybrids, the factor of adaptation through previous growth in such a hybrid should be taken into account.

Apart from the appearance of a mixed tumor in the first transfer, Tumor J. w. A has maintained throughout propagation a uniform histologic character. Variations in rate and mode of growth have been noted, however. This tumor (J. w. A) shows a high incidence of metastases, these having occurred in 28.9 per cent. of all mice which have lived more than thirty days after inoculation. The earliest visible metastases were observed thirty days after inoculation. Filtration, centrifugalization, and drying of this tumor have each failed to indicate the presence of a causative agent apart from the living tumor cell. A second tumor (J. w. B), originating subcutaneously in the Japanese waltzing mouse and apparently of the nature of a sarcoma, has been propagated for nine transfers, during which it has grown in each of the 160 mice inoculated. No metastasis has occurred until recently, when secondary nodules have been found in the axillary lymph node and in the lung of a single animal. The intravenous injection of tumor J. w. B and its resulting growth in the lung has not served to immunize the animal against the same tumor subsequently implanted beneath the skin. Neither does the growth of this tumor interfere with the success of subsequent implants of Tumor J. w. A. The blood or serum of a rabbit immunized to this tumor is without curative action even when repeatedly injected into the tumor.

60. **Tumors of Parathyroids.**—Harbitz cites a case of paralysis agitans, when there happened to be present symmetrical tumors (adenomas) of the parathyroids, which, clinically, had caused no local disturbance. The question arises whether or not the tumors had any etiologic relation to the disease from which this man had suffered for many years.

64. **Spontaneous Rupture of Kidneys.**—Wade claims that spontaneous rupture of the kidney may occur in severe acute parenchymatous nephritis, due solely to the extent and rapidity of the swelling of the organ. It is a condition of extreme rarity and the case presented is, so far as can be determined, the second to be recorded in which bilateral rupture of this type was found. Such rupture apparently may occur with or without perirenal hemorrhage of sufficient degree to present symptoms. When due solely to the rapid swelling of the parenchyma and edema of the interstitial tissue, compression of the cortical capillaries may prevent extensive hemorrhage. The fatal acute nephritis in the case presented by Wade was probably due to the combined circumstances of antisyphilitic treatment given a patient with active syphilis, chronic malaria and an acute parenchymatous nephritis. Microscopically many of the parenchymal cells present an unusual extensive accumulation of "colloid" globules the nature of which is not thoroughly understood, though they probably are degeneration products and related to bodies found in other degenerative conditions.

65. **Pyrogenic Action of Bacillus Typhosus.**—It was claimed by Bergey that a large part of the pyrogenic action of *Bacillus typhosus* is due to an intracellular poison, and only a slight effect, if any, is due to a soluble toxin. The serum of animals immunized against culture filtrates of *B. typhosus* and against dead bacilli exerts a slight antipyrogenic action. There is not sufficient evidence, in the results obtained by the protective use of the serum of immunized animals, to suggest that similar serums would have much influence as therapeutic agents.

66. **Study of Effect of Anaphylaxis.**—Certain experimental evidence is introduced by Lee and Vincent tending to show the importance of the blood platelets in the coagulation of blood and also to show that, in two experimental conditions in which incoagulable bloods were obtained, the incoagulability depended, in a large part at least, on the disturbance of the function of the blood platelets.

67. **Resistance Toward Tuberculosis in Cattle.**—Smith found that the intravenous injection of tubercle bacilli of bovine type into calves, following preliminary injections of bacilli of human or attenuated bovine type, causes a heightened resistance which manifests itself by a shifting of the lesions from parenchyma of the lungs, namely, the alveolar walls, to the bronchioles serving lobules of portions thereof. The affected lobules are subpleural. The disease is chronic and progressive to a certain degree at least. It develops as a peribronchial inflammation in which lymphoid or round cells predominate. This may break through the wall of the bronchus, fill the lumen, cause collapse, aspiration of ingrowing cell masses with tubercle bacilli, and subsequent caseation of the collapsed territory. Veins and arteries in the immediate neighborhood of affected bronchioles are not invaded. The beginning of tuberculous changes in the wall of the minute bronchi is not in itself proof that the bacilli are air borne, nor does it prove that inhaled bacilli have penetrated directly the mucosa of the minute bronchi. Localization depends very materially on states of resistance of the host, or, what is equivalent, on the degree of virulence of the tubercle bacilli. The type of cell reaction is the same in the udder as in the lungs. Endothelioid and giant cells seem to be much more numerous in those cases whose acquired resistance is lowest. The development of tuberculosis in the apical lobes in man is best accounted for by the less active aeration and less active lymph current. Rib pressure may contribute toward fixing the bacilli. Bacilli, deposited either from the air or the blood in other lobes, are either destroyed or promptly carried by the lymph current to the lymph nodes in which they are gradually destroyed. The phenomenon of phthisis in man, in Smith's opinion, is strong evidence that the human being possesses a relatively high degree of resistance to the tubercle bacillus. This inference from comparative pathology has been abundantly proved in the past by necropsy records.

69. **Cell Enzymes and Energesis.**—From his study of the cancer problem Bristol has reached the conclusion that cancer

is the result of localized, unchecked overcombustion, or hyperoxidation, in epithelial cells.

Journal of Nervous and Mental Disease, Lancaster, Pa.

July, XLII, No. 7, pp. 465-528

74 Case of Pemphigus in Paretic. M. A. Bahr and F. C. Potter, Indianapolis.
75 *Experimental Subarachnoid Injections of Trypan Blue. W. C. Woolsey, New York.
76 Mental Disease and Language. W. McDonald, Jr., Providence, R.I.

75. **Subarachnoid Injections of Trypan Blue.**—Experimental observations by Woolsey seem to indicate that salvarsan administered subarachnoidally does reach the central nerve tissues more certainly and with greater intensity than when given intravascularly or subcutaneously. That when administered intraspinally its diffusion to the cranial cavity is less intense than in the cord and that perhaps for intracranial lesions direct injection into the cranial subarachnoid space through a trephine opening would be less dangerous and more effectual.

Journal of Parasitology, Urbana, Ill.

June, I, No. 4, pp. 159-207

77 Parasite of Oral Endamebiasis, Endameba Gingivalis (Gros). A. J. Smith and M. T. Barrett, Philadelphia.
78 Acanthocephala in North American Amphibia. H. J. Van Cleave, Chicago.
79 *Protection of Parasites in Digestive Tract Against Action of Digestive Enzymes. W. E. Burge and E. L. Burge, Chicago.
80 Parasites of American Muskrat (Fiber Zibethicus). F. D. Barker, Omaha.
81 Gordius Larvae Parasitic in Trematode. W. W. Cort, St. Paul.

79. **Protection of Parasites.**—The Burges assumed that the oxidative processes going on in the cells of the parasite exposed to the action of the trypsin oxidize the enzyme. Thus the parasite, like the mucosa of the tract itself, is protected from digestion. Experiments and observations made to determine if any evidence could be brought forward in support of this assumption showed that tapeworms and roundworms from the intestine of the dog are not digested when introduced into activated pancreatic juice so long as they remain alive, but are digested when dead. If any part of them be killed this part is digested. A dead roundworm which is ordinarily digested when introduced into activated pancreatic juice, can be prevented from being digested by keeping the dead body wall constantly permeated with nascent oxygen. The oxidative processes of the living parasites enable them to withstand the action of the digestive juices by oxidizing the enzyme solution immediately in contact with them.

Journal-Lancet, Minneapolis

July 1, XXXV, No. 13, pp. 339-364

82 Cancer Problem. W. J. Mayo, Rochester.
83 Cancer of Uterus, and Its Early Recognition. E. A. Weiss, Pittsburgh.
84 Treatment by Heat of Advanced Cancer of Cervix (Percy's Method). D. C. Balfour, Rochester.
85 Roentgen Rays in Diagnosis of Focal Infections. F. S. Bissell, Minneapolis.
86 Brief Résumé of Recent Advances in Therapy of Lues. H. E. Michelson, Virginia.
87 Splenic Pathology of Pernicious Anemia and Allied Conditions; Duodenal Method of Estimating Hemolysis. J. P. Schneider, Minneapolis.

July 15, No. 14, pp. 365-397

88 Surgical Pathology of Prostate. E. S. Judd, Rochester.

Medical Record, New York

July 24, LXXXVIII, No. 4, pp. 131-172

89 Angina Pectoris. R. Stein, New York.
90 Study in Internal Therapeutics of Radium. S. Delano, Boston.
91 Operative Orthopedics as Illustrated by Hospital Service. R. Whitman, New York.
92 Public Health of Other Ages. H. D. King, New Orleans.
93 *Diagnostic Sign in Inflammatory Conditions and Traumatisms in and About Liver. M. R. Bookman, New York.
94 *Cases of Hypnotic Drug Poisoning. A. S. Tepper, Far Rockaway.
95 Arch Supporters for Fallen Arches. M. Strunsky, New York.

93. **Diagnostic Sign in Inflammatory Conditions In and About Liver.**—The round ligament of the liver is a natural tractor as evinced by an operation in the upper abdomen, and traction on this ligament causes some motion and displacement of the liver bulk, so that in the presence of any inflammatory or traumatic conditions in this region this will cause pain at the affected site. To elicit this sign Bookman says, the patient's shoulders should be elevated on pillows to relax the recti muscles, the examiner stands on the patient's right and facing him, the right index finger is hooked in the umbilicus, and with gentle traction forces the umbilicus downward in the direction of the pubis. Should the umbilicus be too shallow the finger may be reinforced by a damp cloth or a strip of adhesive plaster with the adhesive surface outward. The mechanism involved in this maneuver is to put the round ligament on the stretch, causing some traction on the liver and slightly rotating it downward and forward. This sign has proved positive in some cases of acute cholecystitis, cholelithiasis, abscesses of the liver associated with suppurative pylephlebitis, and in a case of traumatic laceration of the right coronary ligament. This sign is not claimed to be pathognomonic of any condition or conditions.

94. **Hypnotic Drug Poisoning.**—The first case cited by Tepper that of a child, 40 grains of veronal were taken at one dose, while in the second case, that of an adult, approximately 100 grains of monobromated camphor, in the course of twenty-four hours were taken. Both patients recovered.

Michigan State Medical Society Journal, Grand Rapids

July, XIV, No. 7, pp. 351-390

96 Prevention Methods. C. H. Johnson, Grand Rapids.
97 Early Diagnosis of Pulmonary Tuberculosis from Standpoint of General Practitioners. V. C. Vaughan, Jr., Detroit.
98 Why Tuberculosis in Childhood is Important. H. M. Rich, Detroit.
99 Tuberculosis of Kidneys. R. C. Stone, Battle Creek.
100 Workshop and Stores in Spread of Tuberculosis. J. T. Cooper, Muskegon.
101 Hygienic Treatment of Tuberculosis. J. D. Dunlop, Alpena.
102 Cancers of Skin. U. J. Wile, Ann Arbor.
103 Clinical Side of Carcinoma of Breast. C. B. G. de Nancrede, Ann Arbor.
104 How the State Can Help in Solving Cancer Problem. C. G. Darling, Ann Arbor.
105 Contribution of Roentgen Ray to Diagnosis of Abdominal Carcinoma. J. G. Van Zwaluwenburg, Ann Arbor.
106 Treatment of Cancer of Uterus. R. Peterson, Ann Arbor.
107 Cancer of Nose. R. B. Canfield, Ann Arbor.

Military Surgeon, Chicago

July, XXXVII, No. 1, pp. 1-106

108 Medical Corps in Peace and War. R. W. Wilcox, U. S. Army.
109 Model Field Hospital. R. C. Turck, Fla. N. G.
110 Relationship of Variola and Vaccinia. P. M. Ashburn, E. B. Vedder and E. R. Gentry, U. S. Army.
111 Paper Utensils in War Surgery. J. Frank, Ill. N. G.

New York Medical Journal

July 24, CII, No. 4, pp. 169-220

112 *Blood Pressure in General Practice. E. H. Goodman, Philadelphia.
113 Psychotherapy. (To be continued.) O. Lerch, New Orleans.
114 Treatment of Ethmoiditis. S. McCullagh, New York.
115 *Diastolic Blood Pressure. J. S. Ferguson, New York.
116 Michael Servetus' Book on Syrups. C. G. Cumston, Geneva, Switzerland.
117 Differential Diagnosis of Flatfoot. H. Finkelstein, New York.
118 Painful Heels Due to Exostosis of Os Calcis; Report of Cases. A. L. Waechter and H. D. Sonnenschein, New York.
119 Differentiation Between Functional and Organic Cardiac Disease in Children. M. H. Bass, New York.
120 Typhoid. C. P. Bolles, Wilmington, N. C.
121 State's Efforts to Protect Life in Infancy and Youth. L. A. De Vilbiss, New York.

112. **Blood Pressure in General Practice.**—Goodman urges that no physician should attempt the reduction of blood pressure without controlling at every step his medication by the sphygmomanometer. In the treatment of hypertension, an important fact must not be lost sight of, namely, that high blood pressure is often a necessary accompaniment of altered function and structure, and were it not for this raised blood pressure, life could not be carried on with these functional or organic changes. Cardiac strength and peripheral resistance are necessary for the maintenance of blood pressure at a certain level. This is true in health, and is true in disease, with this added feature, that hypertension, if permanent,

creates a new physiologic limit, not 130 and not 180, but perhaps 200. One can never say what this physiologic limit is for any given individual, but it must be determined, and below it blood pressure cannot be reduced with safety any more than can blood pressure in health be reduced below the normal physiologic limit. To reduce pressure below the new physiologic limit is not only not indicated, but is bad therapy, hence, when using cardiac depressor drugs or vasodilator methods, blood pressure must be constantly watched and repeated estimations made.

115. **Diastolic Blood Pressure.**—Ferguson urges the use of a method of reading the diastolic pressure as accurately as the systolic pressure. The proposed method essentially consists in recognizing as the proper diastolic reading the point at which the first sound is heard on returning from a point just below the fourth phase to that greater height of mercury at which the sounds reappear. Ferguson recommends the general use of the method, because of its simplicity, the relative ease with which facility in its practice is acquired, the relative accuracy of its diastolic readings, the clear demarcation of the point to be read, the close proximity of its readings to the accepted indication of the true diastolic pressure, and the fact that with its routine use, low diastolic pressures and especially the signs of aortic disease can scarcely be overlooked, even by the novice in blood pressure work.

New York State Journal of Medicine

July, XV, No. 7, pp. 251-288

122 Prophylactic Treatment and Early Diagnosis of Cancer of Uterus. J. A. McGlinn, Philadelphia.
123 Technic of Applying Heat in Treatment of Inoperable Uterine Carcinoma. J. F. Percy, Galesburg, Ill.
124 Diagnosis of Colon Cancer. J. Burke, Buffalo.
125 Suggestion for Preserving Sphincter Control in Operating for Cancer of Rectum. E. R. McGuire, Buffalo.
126 Operation for Cancer of Breast; Lantern Slide Demonstration. P. Syms, New York.
127 *Cancer of Bladder. J. B. Squier, New York.
128 *Basal-Celled Epithelioma; Report of Two Hundred Cases. R. F. Barber, Brooklyn.
129 *Early Recognition of Cancer of Stomach. J. Friedenwald, Baltimore.

127 and 128. Abstracted in THE JOURNAL, May 22, 1915, p. 1790.

129. Abstracted in THE JOURNAL, May 22, 1915, p. 1788.

Oklahoma State Medical Association Journal, Muskogee

July, VIII, No. 2, pp. 57-90

130 Cancer of Uterus. J. Overton, Tulsa.
131 Pathologic Breast and Its Treatment. F. Y. Cronk, Guthrie.
132 Early Diagnosis of Cancer of Stomach. C. J. Fishman, Oklahoma City.
133 Diagnosis and Management of Gastric Ulcer. A. W. White, Oklahoma City.
134 Surgical Aspects of Chronic Gastric and Duodenal Ulcer. H. Reed, Oklahoma City.

Washington Medical Annals

May, XIV, No. 3, pp. 131-220

135 Case of Cesarean Section in Breech Presentation. W. S. Bowen, Washington, D. C.
136 Epilepsy in Young Adults and Adolescents, with Reference to New Treatment Based on Pathogenesis. T. A. Williams, Washington, D. C.
137 Roentgen Ray Diagnostic Factor in Myositis Ossificans Circumscripta. C. A. Pfender, Washington, D. C.
138 *Unusual Case of Foreign Body in Appendix. L. H. Reichelderfer, Washington, D. C.
139 Two Cases of Ulcer of Stomach. C. S. White, Washington, D. C.
140 Case of Papillomatous Cyst of Nipple. E. A. Balloch, Washington, D. C.
141 Artificial Pneumothorax in Pulmonary Tuberculosis; Report of Cases. W. D. Tewksbury, Washington, D. C.
142 Case of Peridiverticulitis. A. L. Stavely, Washington, D. C.
143 Case of Plastic Operation on Abdomen and Perineum. L. A. Martel, Washington, D. C.
144 Case of Primary Carcinoma of Liver. H. A. Ong, Washington, D. C.

July, No. 4, pp. 221-280

145 Opium Habit and Its Treatment. D. P. Hickling, Washington, D. C.
146 Advance in Knowledge of Thymus Gland. E. H. Reede, Washington, D. C.
147 Relation of Physician to Coroner's Office. C. S. White, Washington, D. C.
148 Case of Hydatid Cyst of Liver—Operation; Recovery. G. T. Vaughan, Washington, D. C.
149 Case of Fibrosarcoma of Orbit Seventeen Months After Exenteration and Roentgen Ray Treatment. R. S. Lamb, Washington, D. C.
150 Case of Malignant Epithelioma Treated by One Massive Dose of Roentgen Ray. C. A. Simpson, Washington, D. C.

138. **Foreign Body in Appendix.**—Some weeks after accidentally swallowing a small, straight pin, Reichelderfer's patient complained of abdominal pain. Roentgenogram showed the pin in an upper coil of the small intestine. The patient improved and left the hospital. During the summer she swallowed three other pins, one of which she remembers was bent, the one recovered later at operation. For three months prior to her entering the hospital she complained of dull, dragging abdominal pains, more marked on the right side; her appetite was poor, but there was no loss of weight; there was obstinate constipation, the bowels moving once in five or seven days. There was some cough; temperature, pulse and respiration were normal.

A picture of the abdomen showed distinctly a bent pin in the region of the ileocecal valve. The constipation became worse; a diagnosis was made of partial intestinal obstruction, probably due to local peritonitis produced by the pin, and she was referred for operation which was performed Nov. 3, 1914. On opening the abdomen a diffuse tuberculous peritonitis was seen, both visceral and parietal peritoneum of the lower abdomen being covered with discrete tubercles; there were no adhesions or fluid, the process evidently being of recent origin, though no primary focus could be determined. There was no inflammatory reaction nor adhesions to point to the location of the pin, search for which was made difficult by the presence of tuberculous nodules and the thickening everywhere present. The pin was finally located in the tip of the appendix which was quite normal in appearance and without adhesions. The appendix was removed and the abdomen closed. The pin was bent in the shape of a letter U, the head and point being one-eighth inch apart.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

July, XX, No. 2, pp. 41-72

1 Roentgenography of Maxillary Antrum. N. S. Finzi and G. S. Hett.
2 Sabouraud Pastille and Roentgen-Ray Filters. A. F. Savill.
3 Some Injuries Caused by Bullets. G. A. Pirie.

British Medical Journal, London

July 3, II, No. 2844, pp. 1-40

4 Identification of Pathogenic Members of Typhoid-Colon Group of Bacilli. J. H. Smith.
5 Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. D. Bruce.
6 *Nerve Suture for Bullet Wounds. R. A. Stoney and H. Meade.
7 Localization of Foreign Bodies by Roentgen Rays. J. H. Shaxby.
8 *Treatment of Symptoms Arising from Inhalation of Irritant Gases and Vapors. W. L. Symes.

July 10, No. 2845, pp. 41-80

9 *Treatment of "Gunshot Wounds" of Knee-Joint. H. M. W. Gray.
10 *Plating of Gunshot Fractures. N. C. Lake.
11 Useful Splint for Compound Fractures of Leg. C. H. Barber.
12 Staging to Facilitate Drainage and Continuous Irrigation. E. H. Willock.
13 Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. D. Bruce.
14 Case of Chronic Intestinal Obstruction Due to Tuberculous Cicatricial Constrictions of Jejunum. S. H. Pugh.

6. **Nerve Suture for Bullet Wounds.**—From their experience with cases the authors have drawn the following conclusions concerning nerve injuries caused by modern missiles: 1. The function of a nerve may be interrupted without material injury, in which case the loss of function is only partial and returns early, probably always within a fortnight or three weeks. 2. When a nerve is partially or wholly divided loss of function is marked and permanent, and may even tend to increase. In these cases it is useless to expect spontaneous regeneration owing to the distortion and sepa-

ration of the cut ends and the great development of dense fibrous tissue which appears to follow in all cases. 3. When a nerve is divided, the sooner an operation for its suture is performed the easier it is and the greater likelihood of an early cure. In cases, however, in which the wound is septic, it may be advisable to allow time for the wound to heal. 4. Even when nothing has been done for several months, there is still a chance of a successful result if late suturing is undertaken, so that no case need be looked on as necessarily hopeless.

8. **Inhalation of Irritant Gases and Vapors.**—In the experiments conducted by Symes the "gas" (bromin vapor) was administered through a tracheal cannula. Its usual effect was rapid obstruction of the airway. Less commonly the obstruction came on gradually, several minutes elapsing before the tracing was reduced to one-half of its initial amplitude. In some cases profuse bronchorrhea appeared in the course of an hour. In all cases the relief afforded by intravenous injection of bronchodilator drugs has been little or nothing, while the same (or similar) drugs administered by inhalation have consistently given relief, which, though not always great, has at times been considerable. The drugs so far tested are the following: Amyl nitrite, injected intravenously, in suspension in normal saline, or subcutaneously without dilution, has given no relief. Inhaled, it has at times produced slight and temporary dilatation of the airway, but has more than once appeared to increase bronchorrhea.

Atropin sulphate, in intravenous doses ranging from 0.5 mg. to 10.0 mg., has been without effect on the airway; the intravenous administration of 0.1 mg. of epinephrin chlorid has on one occasion afforded slight and temporary relief, but in the majority of cases has been without benefit; intravenous injection of an infusion of stramonium leaf was without effect; inhalation of the fumes from the smouldering powdered leaf, on the other hand, has consistently relieved the obstruction. The degree of relief depends, obviously, on the amount of fume inhaled. Pulvis lobeliae cobalt, a powder containing a little lobelia in addition to stramonium, has also worked well, though, up to the present, it has not seemed more efficacious than the stramonium alone. Fumes from smouldering tobacco (or snuff) have also dilated the airway. Opium fumes have been found to give relief. The dilatation has not been great, but has, once, proved relatively lasting. Chloroform vapor has on one occasion distinctly increased the obstruction. On no occasion has it appeared to give relief.

9. **Treatment of Gunshot Wounds of Knee Joint.**—Attention is drawn by Gray to certain points which have been demonstrated by surgeons of British base hospitals to be of immense importance. In the earlier part of the war the results of the treatment of such injuries left a great deal to be desired. The great majority of such patients as recovered did so with ankylosis. The period of convalescence was usually most painful and precarious. Gray states that such infected injuries were approached with ideas regarding their treatment which experience has shown are erroneous. The chief of these were: (1) that suppurative infections of the joint demand free and prolonged drainage; (2) that drainage tubes are the best means of procuring this; (3) that these tubes must be large and must be inserted deeply into the various recesses of the joint; and (4) that strong antiseptic treatment is necessary in order to overcome the infection. These remedies are inimical to a "restitutio ad integrum," because by their deleterious action the synovial membrane and cartilages are more or less destroyed; and in most cases the best result that can be hoped for is ankylosis. On the other hand, the importance of certain factors in successful treatment were not grasped sufficiently: (1) that wounds of the knee joint which are liable to become septic demand immobilization of that joint. Few of such cases arrived at the base hospitals with an efficiently applied splint. Movement of such a knee may turn the scale in favor of sepsis, in two ways—(*a*) it may favor the entrance of sepsis to a knee previously uninfected, and (*b*) it may stimulate a virulent diffuse inflammation instead of a mild localized one. During after-treatment the splint must be retained for two or three weeks at least. During the later stages gentle passive movement may be made daily. (2) There existed quite a widespread notion that foreign bodies in the joint should be improved "only if they lead to trouble." Fortunately, the fallacy of this view has been demonstrated, and now only those which are imbedded in the bone outside the joint are left alone, if they are not causing trouble. (3) The good effect of excision of the wound of the skin and superficial tissues, or of the whole wound when possible was not appreciated.

10. **Plating of Gunshot Fractures.**—During nine months' experience of large numbers of cases in French base hospitals almost every advocated method of treatment has been given a trial, and of these, Lake says, the plating method has given the best ultimate results. The actual plating operation is not usually undertaken for four or five days after admission, which time is spent in clearing up the acute sepsis and having roentgenograms taken. To combat the sepsis no routine method has been used; each case has been treated according to the indications. Ether has been used with apparent benefit in many cases; an antiseptic dusting powder composed of benzoic acid 25 gm., salol 5 gm., quinin 25 gm. and magnesium carbonate 25 gm. has also proved of use in very dirty cases after a preliminary cleaning under an anesthetic. This powder would appear to possess the additional advantage of being slightly analgesic. Hypertonic saline solutions both with and without corresponding vaccine treatments have also been used, but apparently, once the sepsis has been limited, the application of a Bier's bandage, or if possible of a suction cup, is more efficient in causing a flow of lymph; it has been constantly used in the treatment of these cases. Sunbaths have been freely used, and injections of colloid gold were tried in many cases. In the first two there appeared to be marked improvement, but further use showed that these were probably cases of coincidence, for the average results were not equal to those obtained by the use of antisepsis vaccines.

By the energetic pursuit of these methods the sepsis can be considerably reduced after a few days, and at this period the plating is undertaken. The incision, if one is necessary, is designed, failing anatomic contraindications, so that the plate can be applied to the most satisfactory position on the bone. In many cases the original wound only need be enlarged, but, while opening up as little fresh tissue as possible, it is essential to get good exposure and at the same time to have a thought for the future drainage of the wound. The fragments are now replaced so far as possible so as to restore the continuity of the bone. Such fragments as must obviously die are removed, all others being retained. In cases in which several large pieces are completely missing, the gap so caused in the bone is carefully maintained and the plate applied to bridge it over. The most useful type of plate for comminuted fractures is one having two screw-holes fairly close together at each end, and one or two intermediate ones. In cases in which a fresh incision has been made it can usually be sewed up completely unless needed for drainage. The drainage, however obtained, must be good, and free access for the purposes of dressing maintained. In some cases the wounds are best left absolutely open for the first few days, and partial closure undertaken later.

Dublin Journal of Medical Science

July, III, No. 523, pp. 1-80

15 An Account of Irish Medical Periodicals. T. P. C. Kirkpatrick.
16 Report of Rotunda Hospital for One Year, Nov. 1, 1913, to Oct. 31, 1914. R. E. Tottenham and E. Crichton.
17 Case of Leprosy. C. M. O'Brien.

Edinburgh Medical Journal

July, XV, No. 1, pp. 1-80

18 Bilateral Lesion in Occipital Lobes Correctly Diagnosed Twenty-Four Years Before Death. B. Bramwell.
19 Case of Osteomyelitis with Pyemia. D. M. Lyon.
20 Primary Malignant Adenoma of Liver Simulating Tropical Abscess. D. G. Marshall.
21 Practice of Medicine in Day of Molière. J. B. Adams.

Journal of Tropical Medicine and Hygiene, London

July 1, XVIII, No. 13, pp. 145-156

22 Trichophyton Violaceum Var; Khartoumense. A. J. Chalmers and N. Macdonald.

Lancet, London

July 10, II, No. 4793, pp. 55-108

23 Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. D. Bruce.
24 Loss of Personality from "Shell Shock." A. Feiling.
25 *Risks from Tuberculous Infection Retained in Books. H. Kenwood and E. L. Dove.
26 Case of Primary Hepatic Carcinoma of "Cirrhosis Carcinomatosa" Type. F. P. Weber.
27 *Treatment of Septic Compound Fractures and Wounds by Ionization of Salicylate of Sodium. R. McQueen and L. H. Boothby.
28 Relationship Between Nuclear Division and Phagocytic Power in Polymorphonuclear Leukocytes. F. E. Taylor.
29 Action of Chlorin on Blood. H. W. Hake.

25. **Tuberculous Infection in Books.**—Experiments were carried out by Kenwood and Dove to test the risks of transmission of the disease by books. The following conclusions appear to be warranted: 1. There is probably no material risk involved in the reissue of books recently read by consumptives unless the books are obviously soiled. Even then the risks are slight. 2. Nevertheless, it is desirable to provide against a possible risk, however slight. This will be secured if dirty books recently received from houses in which there is a consumptive reader are not reissued until such books have been either disinfected or placed "in quarantine" in a separate room for the period of a month. It will be desirable to disinfect such a room from time to time. When such books are very dirty they should be withdrawn from circulation. The loss involved would be much reduced in time if the borrower could be temporarily deprived of his right to borrow when a book is brought back in a badly soiled condition. 3. It would be well to demand (on a printed and gummed slip) the following precautions of all readers: (*a*) not to cough into a book; always to cough in a handkerchief; (*b*) not to moisten the fingers when reading; the hands should always be dry and clean; (*c*) always to keep the book closed when it is not being read. 4. Moist heat is a simple means of destroying the infection of tuberculosis on those library books which are not likely to be injured by such a method. For this purpose it is not necessary that the temperature should reach 100 C., although it should approximate to that; nor that the exposure should exceed thirty minutes. It is proposed to extend these experiments with the object of learning if hot moist air can be efficiently employed for the disinfecting purposes without causing injury to well-bound books.

27. **Septic Compound Fractures.**—The method McQueen and Boothby employ is to first clean up and syringe the wounds with sterilized water, or preferably with a 4 per cent. solution of sodium salicylate, and if it is necessary to swab the wounds use sterilized swabs dipped into the solution; after the wound is thoroughly cleaned to plug firmly and even tightly with sterilized gauze, or ribbon gauze for the small cavities and pockets, soaked in a warm 8 per cent. solution of sodium salicylate, then laying over all a gauze pad soaked in the same; again over this is placed a piece of lint, folded four times and saturated with the solution, which is pinned to a copper mail chain electrode attached to the positive pole of a galvanic battery, and a current from 5 to 30 milliamperes is passed for at least a quarter of an hour. The chain electrode and pad are removed and a dry piece of gauze is put over the wet dressings with some wool and kept in position by a few turns of a bandage.

Quarterly Journal of Medicine, London

July, VIII, No. 32, pp. 277-355

30 *Pituitary Gland in Diabetes Mellitus and Disorders of Glands of Internal Secretion. H. J. B. Fry.
31 Achalasia of Cardia. (Cardiospasm.) A. F. Hertz.
32 *Diagnosis and Significance of Gastric Hyperacidity. F. W. Rolph.
33 Sclerema Neonatorum. W. S. Paterson.
34 *Early Diagnosis of Pulmonary Tuberculosis. E. G. Glover.

30. **Pituitary Gland in Diabetes Mellitus.**—From Fry's study it appears that definite histologic changes occur in the anterior lobe of the pituitary in cases of diabetes in the form of adenomatous masses of eosinophilic cells, colloid invasion of the anterior lobe and areas of cellular degeneration. Histologic changes in the pituitary are absent or slight in cases of acute pancreatitis and carcinoma of pancreas. Increase in weight of the pituitary occurs in myxedema due to increase of connective-tissue elements and hyperplasia of chief cells. In goiter there is hyperplasia of the chromophil cells, especially of the eosinophilic granular cells, and increase of colloid in the interglandular cleft. No histologic changes were observed in the pituitary gland in a case of Addison's disease or in a case of status thymolymphaticus.

The following conception of the activity and mode of secretion of the gland is tentatively suggested: The eosinophilic and basophilic granular cells are derived from the chief cells by formation of zymogen granules. The granular cells represent a stage of active secretion, and glandular activity is greater toward the center and posterior border of the anterior lobe. Colloid is formed from the granules. The interglandular cleft serves as an alveolus for the temporary storage of colloid. In conformity with the upward and backward direction of development of the anterior lobe, whereby it becomes attached to the posterior lobe and infundibulum, the colloid secretion passes into the posterior lobe and up into the infundibulum and gains access to the cerebrospinal fluid. The hyaline and granular bodies are derived from cells of the anterior lobe which have been carried into the substance of the posterior lobe in the process of development. It is on these cells that the call for increased secretory activity first falls. Colloid in the interglandular cleft is then utilized, and, if there is an overdemand on the secretory activity of the anterior lobe, colloid may invade the posterior part of the anterior lobe and the cells themselves become rapidly converted into colloid, until finally areas of atrophy of the cells appear. Whether the posterior lobe activates the colloid in its passage or adds some specific secretion of its own, or merely acts as an indifferent supporting structure, must be left undecided.

32. **Diagnosis and Significance of Gastric Hyperacidity.**—Rolph is convinced that there is a connection between the symptoms of hyperacidity and the concentration of hydrogen ions in the gastric contents; such quantities of highly ionized acid combinations cause disturbance when larger quantities of less ionized do not, and there may be little or much acid found on titrating with an indicator such as Töpfer's reagent, without that revealing whether there is anything abnormal or not. In either case the hydrogen ion concentration may or may not be as high as two-hundredth normal, and it is only when it is as high as that that trouble is experienced.

34. **Early Diagnosis of Pulmonary Tuberculosis.**—Investigation was carried out by Glover on a series of forty-seven cases certified as pulmonary tuberculosis and admitted to an open-air sanatorium for prolonged treatment. Each patient was subjected to as exhaustive a series of tests as possible, with a view to finding in the first place in what percentage a diagnosis of active disease could be confirmed, and in the next what tests or series of tests give the most reliable results in diagnosis. They were chosen in every instance after a consideration of the sputum report on admission. The tests finally applied to these cases were: The investigation of the complement-fixation reaction, the estimation of the tuberculo-opsonic index, and the injection of test doses of subcutaneous tuberculin.

The following conclusions are based on the results of this investigation: (1) that about 62 per cent. of cases coming under observation as supposed early phthisis, but with no bacilli in the sputum, prove to be negative; nevertheless, (2) that such negative cases may present clinical signs of impairment of percussion note, breath sounds and resonance at, at least, one apex; and (3) that moist sounds in such cases are almost invariably absent; therefore, (4) it is not justi-

fiable to diagnose active tuberculosis on the strength only of impairment of an apex; (5) that active disease confined to one apex with a repeatedly negative sputum is not common; (6) that when moist sounds are present, further investigation is needed to exclude or confirm the presence of active disease; (7) that when this investigation takes the form of the complement-fixation reaction along with the estimation of the opsonic index (if necessary, repeatedly), a final diagnosis can be made without recourse to test injections of tuberculin.

Annales de Gynécologie et d'Obstétrique, Paris

May-June, XLI, No. 11, pp. 481-544

35 *Hygiene of the Child Before Its Birth. A. Pinard.
36 The State Should Care for Children Born from Rape. A. Herrgott.
37 Rape and Telegony. G. Barrier, A. Pinard and E. Rabaud.

35. **Prenatal Hygiene.**—Pinard discusses here the hygiene of pregnancy, which includes that for both mother and fetus, and cites old writers from Soranus of Ephesus in the first century down. Their advice to the pregnant woman does not differ much from the measures recommended at present, except that exercise on foot was always advised against by the older writers. In all the literature on the subject, down to the end of the nineteenth century, there does not seem to be any mention of the hygiene of the fetus or of the working woman—all the advice was addressed to women who had private conveyances at their disposal. In 1875 Tarnier proclaimed that the urine of every pregnant woman, at least during the second half of the pregnancy, should be subjected to a careful examination. Pinard later emphasized the necessity for determining the position of the fetus during the last three months. Pinard also established the fact that the child is carried longer and is more perfectly developed at birth when the woman can rest during the last few weeks. Fatigue is an important factor in premature deliveries, and he has been preaching for years that wage-earning women should be allowed to rest during the last three months of a pregnancy. This was adopted as a resolution at the 1900 International Congress for Hygiene, and again at the French national Nantes congress. Pinard urges that as children are taught to be careful of and protect the honor and the property of the family, they should be taught that they have still another sacred possession to guard, namely, the health of the future members of the family, their posterity. He declares that this should be taught in the schools, especially the idea that all individuals are above all seed-bearers, *porte-graines,* and the idea of pathologic heredity. He emphasizes further the important facts that the human ovum cannot develop normally unless the uterus is sound, and hence that hygiene before gestation is as necessary as for the pregnant woman.

Annales de Médecine, Paris

April, II, No. 3, pp. 223-314. Last Indexed June 5, p. 1946

38 *Influence of Parabiosis on Development of Inoculated Cancers in Rats. B. Morpurgo.
39 Experimental Siderosis and Melanoderma in Relation to the Functioning of the Spleen. P. Chevallier.
40 Congenital Malformation of Large Vessels at Base of Heart; Two Cases. E. Lenoble and A. Gougeon.
41 *Meningococcus Carriers. F. Bezançon.
42 No Efficient Substitute for Cold Baths in Typhoid. (La balnéation froide et les méthodes rivales dans le traitement de la fièvre typhoide.) L. Bernard.

38. **Parabiosis Does Not Affect Development of Cancer.**—The parabiosis did not seem to modify in any way the susceptibility of the individual rats to the inoculated sarcomas.

41. **Meningococcus Carriers.**—Bezançon comments on the difficulty of detecting meningococci in healthy carriers as many microbes which seem to be meningococci yet fail to be agglutinated by the antimeningococcus serum, while cocci of other families may be agglutinated by this and also by the antiparameningococcus serum. To add to the difficulty, the true meningococcus is extremely frail, its isolation in pure cultures is difficult, and the agglutination test gives the above dubious findings.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

June, IV, No. 6, pp. 225-256

43 *Influence of Intra-Uterine Obstetric Maneuvers on the Morbidity and Mortality of Parturients. J. de Groot.

43. **Intra-Uterine Maneuvers and Childbirth Morbidity.**—De Groot has been studying this subject in the records of the maternity service connected with the University of Utrecht. He classifies the cases according as internal exploration was the only internal measure, or as complications required different measures. Among the latter he classifies the cases requiring tamponing or artificial delivery at term or before—a total of 355 cases without fatal infection. He describes the technic followed in internal exploration and preparing the woman for it, and states that between 1899 and 1908 no internal examination had been made in 41 cases in which fever developed later, or in 31 afebrile cases, while internal exploration was done on an average over five times in 441 persistently afebrile parturients, and five times in 446 who developed fever. The records show no advantage from gloves on this morbidity. In the 84 cases requiring bougie premature delivery, there were 3 cases of grave and 10 of mild infection. De Groot thinks that these data and others cited demonstrate that the morbid influence of germs from without depends on the state of the vagina when delivery commences. The microbes already in the vagina do not seem to be very dangerous. It thus proved possible to tampon the uterus and the vagina in 117 cases, with severe infection in only 15 cases and no death, and mild infection only in 22. The one fatal case in this group was explained by extraneous causes. For this reason the intra-uterine tampon is extensively used, and, relying on this, the placenta is extracted by hand when other measures fail.

The maternity service consists of a clinic with an average of about 300 childbirths a year. Here the pregnant women are examined and they are supervised afterward at home. Connected with this is an outpatient department, the *service de Policlinique,* which, to a population of 118,000, conducts about 1,900 deliveries a year. Each second-year student assists at several deliveries in the *Clinique,* after having taken a course in external examination of the pregnant woman. Before the final examinations, each medical student has to spend two months in the service of the *Policlinique Obstétricale,* living in a house devoted especially to this purpose and maintained by the medical students themselves. The number of students in this *Praktikanten-Huis* is always six or seven a month. The telephone and the bicycle guarantee prompt service, and the sterilization technic, etc., are the same as in the *Clinique.* The equipment provides facilities for isolating the woman from her environment, and the morbidity is extremely low. In 79 cases of intra-uterine tamponing there was infection in only 22 cases, mild in all but 9, and no deaths.

Bulletin de l'Académie de Médecine, Paris

June 22, LXXIII, No. 25, pp. 707-741

44 Extension Brace for Plaster Cast. (Appareil de contention et de réduction des fractures.) S. de Santa-Maria and P. Bazy.
45 The Shock from Explosion of a Shell. (Le "syndrome commotionnel," au point de vue du mécanisme pathogénique et de l'évolution.) A. Mairet and Others. (Quelques manifestations nerveuses, déterminées par le "vent de l'explosif.") P. Ravaut.
46 Auscultation of Venous Pulse. O. Josué.
47 War Typhoid; 500 Cases. H. Bourges (Brest).

Presse Médicale, Paris

June 30, XXIII, No. 29, pp. 229-236

48 What France Has Contributed to the Medical Sciences in the Last Fifty Years: General Pathology. C. Achard; Internal Pathology. J. Castaigne.

July 1, No. 30, pp. 237-244

49 Pyoculture. P. Delbet. See The Journal, July 10, 1915, p. 183.
50 *Gastritis from Asphyxiating Gases. Loeper and others.
51 Favorable Outcome of Disarticulation Below the Astragalus. P. Desfosses.

50. **Gastritis from Asphyxiating Gases.**—Loeper relates that the irritation from the chlorin gas sent into the trenches extends down the esophagus into the stomach, and these changes occur as frequently and as early as the changes in the air passages. The latter dominate the clinical picture

and the disturbances in the digestive apparatus are usually overlooked at first. They come into prominence as the respiratory phenomena become attenuated, and the gastritis keeps up for several weeks. He describes the clinical picture observed in four typical cases out of a group of six asphyxiated in April with gas fumes or gas from an asphyxiating bomb. The disturbances from the latter were most severe. Besides the signs of diffuse bronchitis and congestion of the lungs, spitting of blood, dyspnea (respiration rate 40 and 60), there were extreme weakness, actual paresis of the legs and a pulse of 56, 70 or 80. Nausea and vomiting occurred at first, then came a sensation of constriction and burning in the throat and esophagus and then painful intermittent cramps in the stomach. One man vomited black blood the next day. They were given 10 gm. a day of sodium bicarbonate, and this relieved the stomach symptoms. But they returned the fifteenth or sixteenth day with unmistakable signs of gastritis, and the stomach region was tender, but there did not seem to be hyperchlorhydria. After four days of a strict milk diet, blood was found in the stools and stomach rinsing fluid, indicating erosions, and accompanied by a train of nervous reactions. If the men had swallowed at once a 4 or 5 per cent. solution of sodium hyposulphite, the poisonous gases would have been promptly neutralized. Addition of a little atropin would have reduced congestion. Later, sodium bicarbonate and sedatives are the main reliance. A strict milk diet seems imperative, with perhaps bismuth carbonate to treat the erosions and other lesions. Under such treatment the gastritis gradually subsided.

Beiträge zur klinischen Chirurgie, Tübingen

April, XCVI, No. 3, pp. 277-398. Last Indexed July 10, p. 202

52 *Injury from Shell Without Direct Contact. (Die Granatkontusion.) R. Gaupp.
53 Disappointing Results from Use of Hollow Bone to Protect Sutured Nerve. (Deckung grösserer Nervendefekte durch Tubularnaht.) Steinthal.
54 *Experiences to Date with Wounds of Peripheral Nerves. Heile and Hezel.
55 *Double and Multiple Nerve Implanting to Bridge Gaps. (Doppelte und mehrfache Nervenpropfung bei Schussverletzungen der Nerven.) F. von Hofmeister.
56 Surgery in the Field Ambulance. (Chirurgie im Kriegslazarett.) Faisst.

52. **Shock from Shell Explosions.**—Gaupp has noticed that the direct effects of the contusion from the air are of extreme variety, as also the various conditions that may be observed afterward. Sudden death from the shock alone is not rare; immediate unconsciousness is common. It may last for hours or weeks and be followed by total loss of memory for the period since the explosion. At the same time, he says, most of what has been described as the effects of the injury are in reality nothing but traumatic hysteria. Schuster has noted that when the shell explodes near a sleeping person, it does not induce the nervous and mental disturbances otherwise observed. This throws light on the importance of the fright as a factor in the shock from an exploding shell. The emotional-neurotic factors are supplemented by the traits for which physical exhaustion is responsible. An exhausted nervous system feels the effect of the explosion more than when fresh or well rested. Treatment should be mainly psychologic, tranquilizing the patient by repose and verbal suggestion and having his mates rouse him from his stupor by friendly admonitions.

54. **Wounds of Peripheral Nerves.**—Heile and Hezel give sixteen colored plates to show the various kinds of wounds encountered and the preferable technic for treatment of each variety.

55. **Multiple Grafting in Sound Nerves to Bridge Gap in Nerves.**—Von Hofmeister gives the details of twenty-four cases of double or multiple nerve grafting, with five colored plates illustrating his special technic. It is based on the assumption that a resected nerve will regenerate along a bridge formed by a sound nerve better than without this support. It serves merely as an indifferent substance, but the living nerve tissue seems to be particularly adapted for this purpose, the fibers of the axis cylinder of the resected nerve automatically finding their correct way through it. The resected stumps are implanted in one sound nerve. For example, a gap of 10 cm. in the ulnar nerve was thus bridged by implanting the stump of the nerve above and below the gap in the sound trunk of the radial nerve. The free ends of the stump are implanted in such a way that they face each other, buried in lengthwise incisions in the radial nerve, fastened in place with fine catgut stitches, taking up as little as possible. In one case after the ulnar nerve had been bridged in this way, the gap of 12 cm. in the median nerve was bridged by implanting the stumps by the same technic in the ulnar nerve, and the middle cutaneous in the median nerve. Thus the three injured and resected nerves were bridged by other nerve trunks, entirely sound or intact between the implants.

He gives the full details of 24 cases in which this method has been applied in treatment of paralysis in wounded soldiers, 5 in January, 8 in February and 6 in March. The results already attained are very encouraging. In one case gaps of 10 and 12 cm. in the ulnar and median nerves were thus bridged, and in four months active pronation was possible; three fingers could be slightly flexed and traces of sensation are manifest. The results in this case, as the volitional control of the muscles has been regained to such an extent, and this without the co-movements of other muscles, such as persistently mar the effect of certain nerve anastomoses, certainly demonstrate that the technic has a future. He is careful to refrain from injuring the fibers of the bridge nerve, merely working the implants in between the fibers, hoping that the regenerating nerve will make its way along between the fibers of the bridge nerve.

Berliner klinische Wochenschrift

June 14, LII, No. 24, pp. 625-652

57 Mercury Spray. (Quecksilbergleitpuder—Pulvis fluens hydrargyri.) P. G. Unna.
58 *Serodiagnosis of Glanders in Four Cases in Man. (Zur Rotzdiagnose beim Menschen.) E. Gildemeister, J. A. C. W. Jahn and G. Wolff.
59 *Nutrition and Growth of the Prematurely Born. (Ernährung und Wachstum der Frühgeborenen.) L. Langstein.
60 Epidemic Diseases in War. (Erfahrungen über die Behandlung der Kriegsseuchen.) E. Leschke.
61 Explosive Action of German Bullet. (Explosivwirkung des deutschen Infanteriemantelgeschosses Mantelreisser.) K. Kolb.
62 Mikulicz' Disease and Allied Conditions. (Angeborene und erworbene symmetrische Hypertrophie der Speicheldrüsen und des Lymphgefässensystems des Halses.) J. W. M. Indemans.
63 Scarlet Fever, Diphtheria and Social Position. F. Reiche.
64 Farm Colonies for Wounded Soldiers. (Zur Verwundetenfürsorge.) R. du Bois-Reymond.

58. **Glanders in Man.**—In the four cases reported the serologic tests, agglutination, fixation of complement and conglutination all gave instructive positive findings. After considerable research on the subject of serologic differentiation, the writers state that agglutination at 1:100 or 1:200 does not seem specific; at 1:400 it suggests glanders, and at 1:800 renders it highly probable. Conglutination seems to be specific and may substitute agglutination. Three of the four cases were acute and fatal.

59. **Nutrition and Growth of the Prematurely Born.**—Langstein has made a special study of the conditions in regard to nutrition and development in 250 prematurely born children. He was able also to trace their development later. He had at his disposal in the Augusta Victoria institution an incubator room in which the temperature was kept constantly at 26 to 30 C. and the humidity at 60 per cent., but he found that the children did not thrive in this room. It facilitated bathing and weighing, but the premature babies did not do so well as in a hot-water incubator (*Wärmewanne*) in a room with ordinary ventilation. The prematurely born weighing from 900 to 1,500 gm., require the incubator, but those of 2,000 gm. and over do not need it, but do equally well in an ordinary crib with hot-water bottles. The breasts can be milked by hand and the milk is given the child until it gets strong enough to nurse. In the home it requires much energy and perseverance to get the breasts emptied by hand in this way, and lactation duly promoted.

Langstein's experience is all in favor of feeding the infant through a catheter, and he is convinced that many of the children would have died of inanition if he had attempted to feed them in any other way. Only a very small proportion are strong enough to suck; even when they suck from the bottle for the first two or three days, after that they give up and suck no more, growing more and more somnolent. The jaundice is responsible for this somnolency, and only when the jaundice subsides does the child rouse enough to suck; then the catheter can be dispensed with. He uses a No. 9 or 10 Nélaton, introducing it through the mouth every two hours, and has never had a mishap with it, scarcely even waking the child. He gives only 5 or 10 gm. breast milk at first, but gradually increases to 20 or 30 gm. and in two weeks to 250 or 300 gm., giving nine or ten feedings in the twenty-four hours. The smaller the child the greater the need for shorter intervals; as the child's weight approaches 2,000 gm. they can be lengthened.

In his study of the metabolism of the prematurely born he was impressed with the defective utilization of fat, even the fat of breast milk. Artificial food is an extremely risky experiment for these children. Buttermilk to supplement an inadequate supply of breast milk has rendered good service. On buttermilk alone the child may increase in weight, but it looks pale and bloated and seems less resistant than others. In any event, buttermilk should not be kept up for more than a few weeks. The majority of the prematurely born develop rachitis, and even breast milk is no certain protection against it. Craniotabes by the third or fourth month is the rule, and spasmophilia is more common and develops earlier in the prematurely born.

Langstein thinks there can be no doubt that both rachitis and spasmophilia have some connection with the metabolism of lime. This is especially probable in the prematurely born, as the earlier they are born the less the supply of lime in them, as we know that mineral substances do not pass from the mother to the fetus until in the last month of the pregnancy. Breast milk has very little lime content, and he seeks to remedy this deficit in lime by giving the prematurely born, from the very first months, some calcium salt, in combination with cod liver oil. It is his impression that this has protected against rachitis, and none of the children thus treated have developed spasmophilia in a severe form. None of them has even had convulsions, and the calcium treatment has certainly never done harm. He also makes a point of giving iron early, and is convinced that it has helped many to outgrow the early anemia.

Measurement every week or so of 100 prematurely born children showed that the laws of physiologic growth prevail here the same as under normal conditions. A weight of 1,000 gm. and a length of 34 cm. seem to be the limit for normal development. Some children still smaller than this have thrived, but they are exceptions and they never reached the normal standard. In 4 cases the mothers' nephritis was the cause of the premature birth, but these children all developed well. In 5 other cases eclampsia was the cause of the premature birth, and one child died and the others did not thrive well. Tuberculosis or syphilis in the mother always had a very deleterious influence on the prematurely born offspring.

There is thus every prospect for raising a healthy child if it weighs 1,000 gm. or over at the premature birth. He bases the prognosis in large measure on the turgor. An absolutely relaxed infant with bad turgor and poor tonicity is almost certainly doomed. On the other hand, even the smallest sized child with good tonus and good turgor nearly always realized the hopes placed on it. The turgor seems to be connected in some way with the water content. This seems to have something to do with the alkali constituents of the organism. The assumption seems plausible that the bad turgor and the alkali deficit entail an incapacity for living. Attacks of asphyxia during the first few days do not render the prognosis graver, but they should always be regarded as a bad sign when they occur during the second week.

The experiences related justify systematic induced premature delivery when the pelvis is so contracted as seriously to impede delivery. Everything must be prepared in readiness to give the prematurely born the proper care or take it where it is obtainable, guarding scrupulously against chilling in transit. Many of the prematurely born brought to his institution were far below 30 C. (86 F.) when received. There are portable incubators now available which avoid all danger from this source.

Deutsche medizinische Wochenschrift, Berlin

June 17, XLI, No. 25, pp. 725-752

65 Welfare Work for Blind Soldiers. (Kriegsblindenfürsorge.) E. Krückmann. Concluded in No. 26.
66 *Skin and Venereal Diseases During the War. (Verbreitung, Bekämpfung und Behandlung der Haut- und Geschlechtskrankheiten im Kriege.) W. Scholtz.
67 *Effect on the Blood of Deep Radiotherapy. (Klinische Blutuntersuchungen bei der gynäkologischen Tiefentherapie.) L. Nürnberger. Commenced in No. 24.
68 *Syphilitic Contracted Stomach. (Zum Schrumpfmagen auf luetischer Basis.) E. Mühlmann.
69 Forensic-Psychiatric Experiences with Soldiers. M. Kastan.
70 Tests of Coolidge Tube. (Die Coolidge-Röhre der A. E.-G.) H. E. Schmidt.
71 Splint with Extension for Fractures. (Eine Lagerungs- und Extensionsschiene für Extremitäten-Schussfrakturen.) H. Wohlgemuth.
72 *Position Treatment of Wounded Nerve. (Die Lagerungsbehandlung der Nervenverletzungen.) L. Mayer.
73 Detention of Captured Medical Officers. (Die Festhaltung gefangener Militärärzte.) J. Schwalbe.

66. **The War and Skin and Venereal Diseases.**—Scholtz writes from the eastern arena of war that the absence of eczema among the troops is a constant surprise. He regards this as evidence that the internal factors should be regarded more in the treatment of eczema. The skin gets no care, the clothing is not changed, and other conditions apparently invite eczema, but no severe cases are encountered. The coarse food, living out of doors and constant exercise keeping the blood circulating briskly ward off skin diseases. In regard to venereal diseases, also, the conditions, he says, are better than in times of peace, as the infected soldiers are compelled to take treatment, so that on the whole he is convinced that the war will lead to a comprehensive sanification of the male population. During peace, he says, the cases of venereal disease in the large cities average 25 per cent. for college students; 16 per cent. for clerks and 8 per cent. for workmen. The compulsory treatment of all the infected soldiers will lead to a decline in the number of cases throughout the populace. The increase in the general proportion of cases of venereal disease during the war seems to be only among the married men. They form a third of all the cases, but they do not represent a danger later for the populace at large. Scholtz urges that the discipline of martial law and the other opportunities afforded by the war should be systematically utilized for the sanification from venereal diseases of the male population and of prostitution.

67. **The Blood Under Radiotherapy.**—Nürnberger examined the blood repeatedly in 20 women given radium or Roentgen or radioactive treatment for gynecologic diseases. Nothing was found that suggested permanent irreparable injury of the blood-producing organs. Experiences have been published, however, by others, which indicate that the prolonged action, over years, of even small doses of radiant energy are liable to damage the blood-producing organs. He refers only to what he calls "deep therapy"; after each application—either at once or with an interval of one or two days—the total leukocyte and neutrophil count runs up abruptly, while the lymphocytes disappear. After from one to three days the total leukocyte and polynuclear count drop to normal or subnormal figures, while the number of lymphocytes increases. By the end of six or eight days the blood process has run its course. On repetition, it is less pronounced.

68. **Contracted Stomach on Basis of Syphilis.**—Mühlmann compares a case in a woman of 27, syphilitic for seven years, with Hemmeter's, and two other cases. All developed on the basis of syphilis acquired two, four or twenty years before. Symptoms of dyspepsia ushered in the stomach trouble, and by the end of a year the signs of a small,

shriveled stomach were unmistakable, the capacity reduced to one glass or 0.5 liter of fluid, everything over this amount being vomited, while the patients are ravenously hungry all the time. This latter feature and the lack of cachexia exclude cancer, as also the differences in the roentgenogram. Gastroenterostomy was done in his case, but when the disturbance is not very severe, treatment for syphilis and other internal measures may bring sufficient relief.

72. **Position Treatment of Wounded Nerve.**—Mayer emphasizes the necessity for applying a splint to immobilize an injured nerve in the best position. It is as indispensable here as for a fractured bone, and saves weeks of treatment and avoidable operations.

Medizinische Klinik, Berlin

June 13, XI, No. 24, pp. 661-686

74 Treatment of Infected Wounds of the Soft Parts. (Infizierte Weichteilwunden.) J. Schnitzler.
75 Prophylaxis and Treatment of Venereal Disease in the Active Army. (Zur Verhütung und Behandlung der Geschlechtskrankheiten im Felde.) H. Eicke.
76 Injury of the Skull or "Drunk?" (Schädelverletzung oder Trunkenheit?) F. Strassmann.
77 *Treatment of Talipes Cavus. (Zur Behandlung des Hohlfusses.) A. Ritschl.
78 Bacteriotherapy of Typhoid. G. Holler. Commenced in No. 23.
79 Tardy Periosteum Lesion in the Leg After Dysentery; Four Cases. J. Rauch.
80 Hot Air Box for Extermination of Vermin. R. Pressburger.
81 Reliability of Weiss' Chromogen Permanganate Differential Test for Typhoid Even in the Vaccinated. M. Rhein.
82 Diagnosis of Fracture of the Spine. (Wirbelbrüche.) H. Engel.

77. **Treatment of Talipes Cavus.**—THE JOURNAL described, March 20, 1915, p. 1039, Ritschl's method of correcting hump deformity by applying strong pressure from a band passed over the hump and down over two supports below on each



Cast and strap to apply pressure in correction of talipes cavus.

side, the ends of the strap then brought up again over the hump and band and buckled together. He here describes the application of this principle to the treatment of talipes cavus, and reports encouraging results with it.

Münchener medizinische Wochenschrift, Munich

June 15, LXII, No. 24, pp. 805-836

83 *Diagnosis of Typhus. (Zur Fleckfieberdiagnose.) E. Fraenkel.
84 Neosalvarsan in Typhoid. P. Jacob.
85 *Urethra Calculi. (Harnröhrensteine.) Gies.
86 Successful Operation for Ruptured Aneurysm of Common Carotid and Internal Jugular. W. Rühl.
87 Simplified Technic for Making Cholera Vaccine. (Choleraimpfstoff.) B. Fischer, L. Bitter and G. Wagner. Commenced in No. 23.
88 Surgical Treatment of Sinusitis After Wounds in War. (Nebenhöhleneiterungen nach Kriegsverletzungen.) Denker.
89 Wounds of the Nose and Sinuses. (Schussverletzungen der pneumatischen Schädelhöhlen.) L. Grünwald. (Verletzungen und Erkrankungen der Nase und ihrer Nebenhöhlen im Kriege.) O. Seidel.
90 Wounds of the Larynx. (Kehlkopfschüsse.) M. Nadoleczny and F. L. Böhler.
91 *Blunders in Military Surgery and How to Avoid Them. (Aerztliche Fehler bei Ausübung der Kriegschirurgie.) C. Goebel.
92 Extermination of Vermin. (Zur Bekämpfung des Ungeziefers im Felde.) K. Herxheimer and E. Nathan.
93 Wounds of the Lungs. (Lungenschüsse.) Bonne.
94 Vaccination Against Cholera. (Choleraschutzimpfung im Balkankrieg, 1913.) A. E. Tsakalotos.
95 Salol Locally Destroys Pyocyaneus. C. Meyer.
96 The Blood Pressure as Guide in Estimating Heart Disturbances. K. Vollmer.
97 Position Treatment of Fractured Femur. (Behandlung von schwierigen Oberschenkelfrakturen in der Sitzlage.) L. Drüner.
98 Improvised Spring Device for Radial Paralysis. K. Croissant.
99 One-Day Pneumonia. (Das gehäufte Auftreten einer ins Gebiet der sogen. Febris ephemera gehörigen Krankheit bei den Truppen des Ostheeres.) G. Landmann.

83. **Differential Diagnosis of Typhus.**—Fraenkel relates that further experience has abundantly confirmed his statements in regard to the characteristic histologic findings in the roseola of typhus patients. The microscope thus serves to differentiate typhus at an early stage. The anatomic substratum is a necrosis of the walls of the smaller arteries, and the accumulation of cells at these points. If typhoid bacilli are found in the blood with these histologic findings, the patient must have both typhoid and typhus. Necropsy findings in typhus show nothing else macroscopically characteristic, but the microscope reveals the typical necrosis in the walls of the small and smallest arteries. He describes the technic with which these changes are shown up best with the Pappenheim panoptic stain.

85. **Urethra Stones.**—One quite large and eleven smaller calculi had evidently developed in the urethra of a tailor of 53. He had never been able to urinate freely.

91. **Blunders in Care of the Wounded.**—Goebel declares that asepsis is realized more nearly when no trust is placed in sterilizing the hands or rubber gloves, but everything is handled with sterilized forceps. This has the further advantage of saving the hands. When the dressings are too voluminous to be removed with forceps, some orderly should be called on to do it, not the nurse or surgeon. Too many forget that the part of the dressings directly in contact with the wound should never be seized by the hand. He advises drawing the rubber glove over a well-powdered lisle thread glove before it is sterilized and leaving the latter inside it until ready to put the glove on. Any kind of an impermeable covering for a dressing is denounced nowadays. When the dressing is carried around the limb it is liable to have a constricting action when soaked with blood and pus. The tampon is often applied so tight as to do harm; it is better to pack the gauze loosely. He has often found a mass of retained pus beneath a tampon.

Another frequent blunder is to include healthy joints and parts in the dressing unnecessarily. Immobilization of the uninjured joint soon avenges itself. With fractures of the femur, the hip, knee and ankle have to be immobilized; with a fractured leg, the knee and the ankle; with a fracture of the upper arm, the shoulder should be left free to some extent. With fracture of the forearm, the arm should be immobilized in supination, what he calls the "spit palm position," as with it one might spit into one's hand, without immobilizing the elbow. The immobilized joint should be placed in a position to favor functioning later; slight dorsal flexion is much better than extension for the wrist, or even volar flexion. The elbow should be flexed at a slightly acute angle; the shoulder kept in abduction. The tendency of the thigh to rotate outward is seldom considered enough. The ankle should always be at a right angle.

Plaster casts are proving extremely useful for the wounded, but they must always be made with a large opening left. A glass or a cup set on the dressing below is an aid in making a fenestrated cast.

Goebel says that in extension of a fractured femur, he has seldom found the weights heavy enough. He advises raising the foot of the bed at least 9 inches higher than the head, and adds that a weight of over 20 pounds may be needed. The patient should be prevented from sinking down too deep in the mattress. Wounds of the jaws should get specialist treatment, and at the earliest possible moment. Splints relieve the pain from a soft part wound as well as with fractures. In conclusion he urges a preventive injection of antitetanus serum when the man was wounded during fighting in a wooded region. Also systematic and prolonged administration of hexamethylenamin in every case of injury of the skull with danger of meningitis.

Wiener klinische Wochenschrift, Vienna

June 17, XXVIII, No. 24, pp. 637-664

100 Accidental Heart Murmurs. (Zur Klinik der akzidentellen Herzgeräusche.) M. Heitler.
101 Varying Behavior of the Mitral and Tricuspid Valves with Weak Heart. (Verschiedenes Verhalten des Mitral- und Trikuspidalostiums bei Herzschwäche.) M. Heitler.
102 *Differential Diagnosis and Prophylaxis of Typhus. (Flecktyphus.) H. Boral.
103 Insects as Conveyors of Diseases. (Ueber Kleiderläuse und die Uebertragung von Krankheiten durch Arthropoden.) J. Fiebiger.
104 Fumes of Chemicals in Extermination of Lice. (Zur Methodik der Läusevertilgung durch Dämpfe chemischer Agentien.) A. Felix.
105 Tuberculous Laryngitis in Child of 2. E. Germonig.
106 Mumps in Men Over Thirty; Seventeen Cases in One Troop. H. Moser and A. Arnstein.
107 Improvised Universal Suspensory. K. Ullmann.
108 Wounds of the Testicles in War; Eighteen Cases. T. v. Mutschenbacher.

102. **Typhus.**—Boral states that it is almost impossible to distinguish between typhus and typhoid in the early stages except by serologic and bacteriologic tests. His extensive experience has confirmed anew that a typhus patient absolutely free from vermin and nits is not a source of infection to others.

Zeitschrift für Urologie, Leipzig

IX, No. 5, pp. 161-200

109 *Electrocoagulation of Bladder Tumors. (Zur Hochfrequenzbehandlung von Papillomen in der Nähe des Orificium internum vesicae.) H. Lohnstein.
110 Wounds of the Urinary Apparatus in the War. (Die deutsche Urologie im Weltkriege.) H. Lohnstein. To be continued.
111 Urologic Work on the Firing Line. (Urologisches vom Kriegsschauplatz.) A. Rothschild.

109. **Electric Coagulation of Bladder Tumors.**—Lohnstein gives an illustrated description of a fulguration catheter which can be used for various purposes in the bladder besides application of the high frequency current, all under direct visual inspection.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 17, XXXVI, No. 48, pp. 753-767

112 Habitual Abortion and the Wassermann Reaction. L. A. Oliva.
113 Improved Roentgen Technic for Locating Foreign Bodies. V. Maragliano.

Riforma Medica, Naples

June 26, XXXI, No. 26, pp. 701-728

114 Modification of Reducing Power of Cholera Vibrio in Different Environments. L. Mazzetti.

July 3, No. 27, pp. 729-756

115 Roentgen Localization of Foreign Bodies. (Nuovo metodo di localizzazione dei corpi stranieri.) V. Maragliano.
116 Synthetic Study of Arrhythmia. (Dei concetti fondamentali che informano le aritmie.) O. Cantelli. Commenced in No. 26.

Semana Medica, Buenos Aires

June 3, XXII, No. 22, pp. 689-718

117 Medical Men in Argentine Culture, Especially J. M. R. Mejia. J. Ingenieros. Commenced in No. 21.
118 *Inversion of Reflexes. (Inversion de reflejos. Sobre una nueva forma de inversion del patelar.) F. M. Maglione.

118. **Inward Rotation of Foot as Knee-Jerk.**—Maglione's patient was a man of 39 with specific dorsolumbar myelitis. When the quadriceps is tapped to elicit the knee-jerk, the only result is a rotation inward of the foot. It describes an arc of 35 to 40 degrees.

Hospitalstidende, Copenhagen

June 30, LVIII, No. 26, pp. 637-660

119 *Jaundice of the Newly Born. (Icterus neonatorum.) F. Bang.

119. **Jaundice of the Newly Born.**—Bang describes the various methods for determining the content of the serum in bile pigment, and relates that in his extensive research on the subject he found that the blood in the umbilical cord always contained a notable amount of bile pigment. The findings were positive in all the twenty-four infants examined, even at once after birth, consequently icterus in the newly born may be considered a physiologic condition. He found it the same in infants delivered by cesarean section, so the birth trauma cannot be incriminated. In all the children examined the proportion of bile pigment in the blood constantly increased during the first few days, but it began to subside after the third, fourth or fifth day, although there was still a positive reaction in all on the tenth day. It is thus only a question of degree between the newly born with or without clinical icterus. All have the bilirubinemia to some extent, and this fact demolishes some of the theories that have been advanced to explain icterus neonatorum. He used the Gmelin-Sunde technic for his tests, that is, the blue-green ring that forms at the line of contact between the serum and the reagent, which is a mixture of 300 parts nitric acid and 0.06 parts sodium nitrate. The interval before the color reaction occurs is an index of the intensity of the icterus. The number of red corpuscles increases rapidly after birth. He theorizes to explain these facts.

Ugeskrift for Læger, Copenhagen

July 1, LXXVII, No. 26, pp. 1057-1088

120 Hydrogen Dioxid Quantitative Test for Pus in Urine. (Metode til kvantitativ Pusbestemmelse ved Hjælp af Brintoverilte.) A. Norgaard.
121 Drug Eruption. (Tilfælde af Atophanexantem.) M. Brammer.

Nordisches Medizinisches Archiv, Stockholm

XLVIII, Internal Medicine, Nos. 3-4. Last Indexed Feb. 27, 1915, p. 784

122 *Research on the Nutrition and Metabolism of an Infant with Special Regard to Artificial Feeding. (Ernährung und Stoffwechsel des Säuglings.) E. Hellesen.
123 Production of Uric Acid in Man. IV. (Bildung der Harnsäure beim Menschen.) J. P. Chrom.
124 Experimental Scorbutus in Guinea-Pig Fetus and Young. (Ueber experimentell hervorgerufene Morbus Barlow an Feten und Neugeborenen.) A. Ingier.
125 Heller's Test for Albumin. (Beobachtungen bei Heller's Albumin-Probe.) K. A. H. Morner.
126 *Alkaptonuria. G. Söderbergh.

122. **Metabolism of Infant on Artificial Food.**—Hellesen's report of his prolonged research in this line fills 120 pages and is accompanied by thirty-one tables showing the metabolic findings and the conditions in regard to nourishment. The data confirm the view that carbohydrates spare the carbon and the nitrogen reserves better than fat. The research demonstrated beyond question that carbohydrate food has a marked influence on the mineral metabolism, especially of sodium. He declares that there seems to be some mysterious specific action here. Carbohydrates and fats therefore cannot substitute each other indiscriminately. Each has its specific action on the whole metabolism of force and matter, and this is a factor of great importance for their rôle as food. The research was carried out on a healthy 5 months babe, of healthy parents and breast fed till the age of 4½ months. The work was done at the Auguste-Victoria institution near Berlin which is fully equipped for all such research, as it is the central headquarters of the welfare work for and study of infants.

126. **Alkaptonuria.**—Söderbergh illustrates his 130 page article with nineteen plates, eighteen other illustrations, and seventeen graphic tracings. He discusses the clinical findings with alkaptonuria, and especially as connected with the Wassermann reaction and deforming alkaptonuric ostitis. Most of the illustrations are of a case in his own practice, the patient a farmer of 42. He compares with this case the three others that have been published in Sweden. The behavior of the Wassermann reaction, and whether the bone changes represent a new and special bone affection are the questions he sought to answer in his study of the four cases. The Wassermann reaction was strongly positive in his case at first, but became negative under a month of mercurial inunctions. It veered promptly to positive again in three of the four cases after the men had taken one morning three doses of 5 gm. each of tyrosin, the mother substance of homogentisic acid. Syphilis is extremely improbable in these cases; there are no signs of it and nothing in the antecedents to suggest the possibility of it, and yet the Wassermann reaction is positive. The bone changes of alkaptonuric ostitis resemble most closely those of Paget's disease of the bones. It is a suggestive coincidence that in this too the Wassermann reaction is often found positive with nothing otherwise to suggest syphilis. (Compare with editorial in The Journal, Feb. 27, 1915, p. 748.)

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 7 CHICAGO, ILLINOIS AUGUST 14, 1915

THE PEDIATRICIAN AND THE SECTION ON DISEASES OF CHILDREN *

LAWRENCE T. ROYSTER, M.D.

NORFOLK, VA.

We stand today at the threshold of a new era of medical knowledge. But a few years have passed since anatomy was the only branch of medicine which was based on accurate observation and proved fact; physiology and histology were studied almost entirely from a hypothetic standpoint; obstetrics was practiced even among the well-to-do largely by ignorant "grannies," with disastrous results to both mother and child. Minor surgery was attempted early, but, because of the ignorance of the causes of sepsis, the results were often as fatal as the condition for which the operation was performed; while therapeutics was practiced with an empiricism comparable with the fetish of the aboriginal tribal medicine man. All of this was primitive indeed, and yet what is rapidly being recognized as the most important branch of medicine, pediatrics, was practically unknown. A sick child was the *bête noire* of the physician, who either guessed at the cause of symptoms and consequently treated them in a haphazard fashion or promptly turned the unfortunate patient over to the tender mercies of a grandmother, who was supposed to know much about the ailments of children because she had had eight or ten of her own, despite the fact that only one or two had survived infancy.

During this period, the teaching of pediatrics was almost nil, mere mention being made of children and their ailments during the course of lectures on obstetrics or general medicine. This was the case merely because little or no study had been given to the infant physiology and pathology; consequently, since nothing was known, nothing could be taught. But times are fortunately changing. Our knowledge of physiology, while far from what is to be desired, is based on careful experiment conducted scientifically in endowed laboratories. The result of such study is far reaching and revolutionizing. Histology has won a place at the head of the exact sciences and surgery has reached such a degree of efficiency that he who practices it appears almost a wizard. The practice of obstetrics has not advanced so notably, so far as technic is concerned, but through the application of the principles of asepsis, the life and health of both patients are much better safeguarded. Therapeutics has passed from the ignorant guesswork of the alchemist, through the consequent period of skepticism, to a definite and logical position, largely through the application of rational laws of biochemistry and the knowledge of the interaction of the internal secretions. In this general transmutation of knowledge the child has not been lost sight of. Pediatrics has evolved into a study of seriousness, dignity and importance. The public as well as the profession is awakening to the hitherto undreamed of importance of its careful study, and I think I can state without a single challenge that the study of child life is the most important of the allied medical branches.

It is a far call from the "old woman" of a generation ago to the pediatrician of today. Of necessity he must be an all-round specialist, so far as his knowledge goes, limiting his efforts merely by the age of the patient. In the broadest sense, what must be the equipment of the pediatrician? Primarily, as all medical men, he should be possessed of a liberal general education. He must have a medical education in keeping with the highest standards of today.

The attendants in the best general hospitals are usually men of the highest culture, and from them must come most of the student's inspiration. The training of such a hospital is all but indispensable, while the special knowledge gained by an internship in a children's hospital is a sine qua non. Thus alone can he acquire the necessary acquaintance with the principles and problems of general medicine. He should also possess a surgical training which will acquaint him with those diseases usually classed as "surgical," their diagnosis and the indications for operation, and since biology and biochemistry are fundamentals in any branch of medicine, the microscope must be his constant companion. Through an intimate knowledge of infectious diseases alone may he become the sanitarian which is required, for pediatrics has well been called the "national preventive medicine."

These in brief must constitute his equipment from the standpoint of technical education—but he must not stop there. He must be a leader of thought in his community, not confining this leadership to the members of his profession, but, going further, must establish his position "speaking as one having authority" on all matters pertaining to child welfare, for the practice of pediatrics goes further than the mere diagnosing and treatment of diseased conditions, it must deal more and more with the prevention of disease as well. To this end the influence of the pediatrician should be felt in the boards of education, the council chamber and in all sociologic endeavor. Do I hint that the pediatrician must be a politician? Yes and no. Not the politician who seeks leadership

* Chairman's address, read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

for personal gain, but rather that leadership which "vaunteth not itself," seeks no preferment, nor accepts pecuniary reward. That leadership which, through self-sacrifice, backed by the requisite knowledge, makes him so respected and trusted that his views may be accepted and the principles he advocates applied. Nowhere are such men so needed as on boards of education. Our school buildings are frequently insanitary in the extreme, ventilation and lighting are both inadequate, while the mind of the average child, for whom the public school systems of necessity exist, is frequently taxed to a dangerous degree. The health of a community depends on the health of its children. As the health—physical, mental and moral—of the schoolchild is safeguarded, so the health of the community is conserved.

In the council chamber? Most emphatically, *yes*. One has but to glance casually over the ordinances of any community to see their utter futility from a health standpoint. Fortunately, the modern tendency is to permit the rules of the board of health to be law. But these rules do not generally include the direction of building and construction. This is usually unnecessary for the better class of dwellings, but only a short trip through the tenement district of any city will disclose insanitary conditions which, if realized by the public at large, would cause a panic. Are we our brother's keeper? We are. But if we have not an altruistic spirit, if we are impelled only by the baser motive, self-protection, we have but to remember that from the homes of the poor come our servants who prepare our food and nurse our children. Does not the pediatrician then owe his influence in stamping out tuberculosis and moral disease in a community to the children of both rich and poor? What a power one man with knowledge can be, on an official board, in improving insanitary housing conditions.

From the settlement home, one of the expressions of that newer religion, sociology, have come some of the most valuable suggestions to our profession. The "follow-up" work done by district visiting nurses and trained social workers has done more to ferret out the reasons for the spread of disease and to stamp out certain diseases than almost any other single agency; and to none has this been of more benefit than to the child; hence, the need of the knowledge and counsel of the trained pediatrician on the advisory boards of such institutions. A thorough knowledge of sociology is perhaps of more importance to the study of pediatrics than almost any other branch of information.

But the pediatrician must go even further still. He must acquaint himself with the more recent investigations, particularly in the field of heredity. Many of these studies are based as yet on hypothesis alone and lack tangible proof, but it must be remembered that most great scientific truths have been conceived in the minds of great thinkers as hypotheses long before they became proved fact.

Many diseases and conditions which were formerly considered directly inherited have been proved to be acquired during the prenatal state, and although they have been transmitted directly from mother to offspring while in utero, they are none the less acquired and not inherited. Therefore a sharp distinction must be made between inheritance and the influence of prenatal environment. We are aided in making this distinction by certain biologic investigation which has suggested if not proved that no disease is transmitted from mother to child unless there be a solution of continuity in the chorionic villi; and by the epoch-making discoveries of Gregor Mendel in fixing definite laws of heredity.

The transmission of physical characteristics and moral traits from generation to generation has been understood only since the introduction of the theory of "cell determinors" which is best explained through the hypothesis of "intracellular pangenesis" of Hugo DeVries, while certain other phenomena of character and temperament can be explained satisfactorily only by the "mechanistic theory of evolution." To quote Crile on this subject: "Man is a unified mechanism responding in every part to the adequate stimuli given it from without by the environment of the present and from within by the environment of the past, the record of which is stored in part in cells throughout the mechanism but especially in its central battery—the brain." These latter apply very forcibly to mental conditions; that is, normal, supernormal and subnormal, but especially the last, for we recognize that a child who is even slightly subnormal mentally is always less resistant to disease as well as unable to acquire knowledge. Thus it will be seen that the pediatrician must also be an alienist. This is particularly necessary at present, when there appears to be an ever increasing number of these cases coming under our notice.

Only through constant study and frequent postgraduate work can the pediatrician keep fully abreast of the best thought. Those of us who live distant from the large centers of teaching must make frequent visits to these centers and receive instruction from those possessing the facilities for scientific work. Shorter courses of postgraduate work, however, may well be taken in attendance on local, state or national societies, all of which should be considered in this light, and for the pediatrician the Section on Diseases of Children should be of great benefit. What, then, are the opportunities and duty of this section?

This section should be the clearing house for this country of the best work done each year in pediatrics. Affiliated with it are all of the leading pediatricians of America and most of those general practitioners who are particularly interested in disease as manifested during childhood. The papers read before this section should constitute the best course of lectures obtainable and must be so selected that an ever increasing number should feel impelled to attend the sections even at the cost of personal sacrifice. To further this aim a symposium might be arranged for each session led by some invited guest of such reputation that a good attendance may be assured. The utterances of the section as a whole should eventually become authoritative to the general public as well as the profession. The best papers should be selected for pamphlet distribution and even to a limited extent be given publicity through the daily press. To accomplish anything in this direction there must be established a careful censorship of all material so that nothing but sound advice and proved fact would be disseminated.

A committee from this body could well cooperate with organizations such as the Child Welfare Bureau of the federal government, the American Association for the Study and Prevention of Infant Mortality, the U. S. Public Health Service and state boards of health in studying the causes of infant mortality and

aid in their prevention.[1] Perhaps the American Medical Association might even see fit to establish a council on infant mortality and morbidity analogous to the other councils which have done such excellent work in their several fields of endeavor. Such a council could issue bulletins advocating certain procedures and broad principles and condemning unwarranted practices; or direct the agencies for child welfare in a manner which is not only suggestive but even authoritative. Thus could its influence be felt in a forceful and useful manner.

One of the greatest duties of this section is the development of the many efficient but little-known men throughout the country into writers of papers and educators of the public. To this end every effort should be put forth to insure the attendance on the sessions of the section of the 1,500 or more who, according to the information in the American Medical Association Directory, either practice pediatrics exclusively or are particularly interested in this branch, instead of the small average of 150 as at present. Our very efficient secretary has made an excellent start this year in sending out an invitation to a thousand to participate in this session and I think this is a start in the right direction which should be continued year by year.

Have I placed an ideal for the pediatrician and this section of this association too high? I think not. We follow a noble calling in the profession of medicine; we study particularly the most important part of the race; we are striving through such study to make the race better physically and to place its members in a position where they can be important members of the human family and not weaklings. Any body of men which has these for its aims cannot have too high an ideal of equipment and service.

205 Taylor Building.

STARCH DIGESTION IN CHILDREN

WITH SOME CLINICAL OBSERVATIONS *

H. H. YERINGTON, M.D.
AND
CLYDE T. WETMORE, M.D.
SAN FRANCISCO

During the past few years many articles have appeared in the literature concerning the ability of both the infant and child to digest starch. A great deal has been added to our knowledge in regard to starch digestion in infants under a year of age, but few have dealt with the subject in children past infancy. It is our object to review the literature briefly and bring to notice some clinical observations we have made in the study of cases of the latter type.

Of the three different foodstuffs, namely, protein, fat and carbohydrates, which are ingested for the supply of energy, heat and tissue building, the carbohydrates will occupy by far the largest bulk, and if the various kinds of food classified under carbohydrates be compared it is found further that the greater percentage is ingested in a form which necessitates greater chemical action in its preparation for absorption and assimilation than is required by any of the other members of this group. This form constitutes the starches, whose chemical analysis classifies them as polysaccharids and whose properties are very different from those of the simpler members of this large group.

In order that this more complex form of raw material may be utilized in the body it is necessary that it, like all other forms of food, undergo a change, a breaking down into simpler bodies. This alteration is brought about by the hydrolytic action of certain ferments, which are present in the digestive juices found in the course of the alimentary canal. Considering starch only, we find that by the action of the salivary and pancreatic juices, this substance is converted into dextrin and finally into maltose by the ferment maltase.

In working with these ferments it has been found that they are affected by different conditions; thus the velocity is increased by heat up to a certain point, at which a destruction of the ferment will occur. The introduction of a foreign body will in many cases cause a permanent or transitory inactivation of the ferment.

The digestion of starch commences in the mouth by the action on it of saliva, which contains the two ferments amylase and maltase. The former of these ferments acts on starch, converting it through the various stages of dextrins into maltose.

By the action, then, of maltase, maltose is converted into the more diffusible carbohydrate, glucose. All starches are found to be susceptible to the action of amylase although raw starches are very slowly hydrolyzed.

As human saliva is rich in ferments the large bulk of food entering the mouth should be properly and thoroughly masticated. Thus is seen the importance of teaching the child the advisability of this procedure.

It is important to consider here what action a foreign body has in inhibiting the action of the salivary ferments; thus far little work has been done to ascertain the inhibitory effect which stomatitis, infected tonsils and carious teeth produce.

By far the greater portion of amylaceous foods are attacked after leaving the stomach by the ferments of the pancreatic juice and the succus entericus, and it is interesting to note that if the ferments were entirely absent from the intestinal canal many of the carbohydrates would be capable of being absorbed from the intestines through the action of the cells of the mucosa in converting various sugars to glucose.

The action of the ferments on the carbohydrate continues ordinarily down the alimentary canal so long as any unchanged portion remains; finally the acidity present in the lower bowel becomes sufficient to inhibit or destroy the activating agent. Any portion still remaining unchanged is very liable to fermentation from bacterial action.

The question of the ability of the infant and newborn babe to digest starch has occupied the attention of physiologists and physicians for many years. Forty-four years ago Schiffer, and forty years ago Jacobi, demonstrated that the saliva of the new-born was capable of converting a small quantity of starch to sugar. In 1908 Friedlander in Cincinnati carried on a series of bead experiments in infants of all ages to ascertain the digestibility of various foodstuffs. About this time

1. The Virginia State Board of Health sends a specially prepared bulletin on the care of infants to the mother of every child whose birth certificate is filed in that office.

* Read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* From the Department of Pediatrics, Leland Stanford Jr. University, School of Medicine.

Solera and Malay worked on the comparative digestibility of different carbohydrates and showed that the action of the ferments was dependent on the degree of "soluble starch" formed by previous preparation.

In 1912 Hess experimented on pancreatic ferments obtained by the use of the duodenal catheter, showing that amylase was present in infants 12 hours old, increasing greatly in quantity after the first month. Czerny and Kellar were the first to study the ill effects of the prolonged use of starch without the addition of milk and gave us a classification of this condition.

Finkelstein believes too much carbohydrate in the form of sugar has an irritating effect on the mucosa of the stomach and intestines, producing increased peristalsis and diarrhea and interfering with absorption and assimilation.

Hesenius concluded from observations he made that 90 per cent. of the starch given by mouth disappears and that not more than 10 per cent. is recoverable from the feces; he does not assume that this large percentage is digested and absorbed, for the element of bacterial fermentation invariably plays a large rôle in the destruction of undigested starch.

Cammidge states that the digestibility of starch is largely dependent on the way in which it is prepared and cooked. Raw wheat-meal is more rapidly assimilated than raw potato starch, but when the potato has been thoroughly cooked the difference is not nearly so marked. In chronic gastro-intestinal disturbances the absorption and digestion of starch is interfered with so that its use should be carefully regulated and controlled by a microscopic and chemical examination of the stools. Vegetables are better tolerated than bread, potato, rice and simple starchy foods.

During the past four or five years in the outpatient clinic of the division of pediatrics at the Stanford medical school, a routine examination of the urine and stools has been made in the majority of cases, especially in those showing any intestinal trouble, and in all the cases which have been examined for tonsil and adenoid operations. We have observed that there is a certain type of child whose dietary is made up principally of carbohydrates and a low protein content. Their stools show an excess of undigested starch and they are listed on our index cards as the "starch-type of intestinal indigeston."

As far back as 1868 Eustace Smith of London described a series of cases of this type in younger children which he called "mucous disease" and advised the exclusion of starchy foods and the examination of the stools.

Cautley described a condition which he called "carbohydrate fever" in children having more or less digestive disturbance, liability to recurrence and no apparent origin. He thought the condition was produced by an excess of carbohydrate, combined with a deficiency of proteins and that a catarrhal condition of the alimentary tract was set up, varying in severity.

In 1911 Porter, after studying a great number of these cases, read a paper before the California State Medical Society in which he described cases in which the child showed partial or complete inability to digest starches properly. In the former cases the child often presented an urticaria, showed no gain in weight, had an enuresis, especially at night, and was very restless. In the more marked type in which the starch was not split up in the intestines, the child developed a clinical picture not unlike a long-persisting bacterial infection, with brown mucous stools, loss in weight and a large, distended abdomen.

It has been our custom in these cases to make the parents write out a four-day dietary consisting of the food the child has been having, with the quantity and hour of feeding tabulated. During this time the stool would be obtained before any treatment or change in diet began. A sample day's dietary usually ran as follows:

8:30 a. m.—Orange juice, mush and milk, hot cakes.
10 a. m.—Piece of bread and butter.
12:30 a. m.—Sliced tomatoes, baked potato, apple sauce glass of milk, bread and butter.
3 p. m.—Bread and jelly.
6 p. m.—Plate of soup, bread and butter.

GRADED AMOUNT OF STARCH AND FOOD REMAINS PRESENT IN THREE HUNDRED AND SEVENTY-TWO STOOLS IN CASES WITH DIFFERENT DIAGNOSES *

Condition	Amount of Food Remains								Amount of Starch							
	None		Small		Large		Excess		None		Small		Large		Excess	
	Stools	%	Stools	%	Stools	%	Stools	%	Stools	%	Stools	%	Stools	%	Stools	%
Hypertr. tonsils	38	13.5	112	39.8	109	38.7	22.	8	92	32.7	103	36.6	53	18.8	33	11.9
Digest. disturb.	11	28.9	19	50	5	13.1	3	8	13	23.6	23	41.8	10	18.1	9	16.5
Enuresis	3	27.2	5	45.4	2	18.1	1	9	1	9.1	7	63.6	2	18.1	1	9.2
Rickets	4	57.1	3	42.9	0	0	3	42.8	2	28.5	1	14.2	0	0.0	1	14.5
Other conditions	4	22.2	8	44.4	6	33.4	0	0	7	38.8	7	38.8	2	11.2	2	11.2

* For example, of the stools in cases in which there was hypertrophy of the tonsils, thirty-eight stools, or 13.5 per cent., contained no food remains.

In the great majority of these dietaries eggs and meat were not given, and bread, jelly, and cakes were invariably given between meals.

With such a dietary, extending over a long period of time, we would expect to find an excess of undigested starch in the stool, and in the case of an intestinal upset with diarrhea, the greater portion of the starchy food would come through the intestine with practically no splitting; this we found true, and such cases presented the distended abdomen, loss of weight, restlessness and the possible urticaria described above.

After studying this type of case we were anxious to know that percentage of starch appeared in the stools of children in fairly normal condition and on a fairly rational dietary. As it was impossible to obtain stools on a large series of children outside of the clinic, a series of fairly normal clinical cases was selected.

Our original series of observations consisted of a tabulation of 372 stool analyses from 338 children ranging from 1 to 14 years of age. The diagnoses were varied and consisted of:

Hypertrophied tonsils	267
Digestive disturbances (disturbances throughout the alimentary tract)	41
Enuresis	10
Rickets	6
Other conditions (bronchitis, eczema, jaundice, etc.)	14

The examination of the stools was made in the clinical laboratory of Lane Hospital, on the same day the stools were passed; this consisted of the microscopic examination of smears stained with Lugol's solution, which stains the starch granules a characteristic dark blue. The amount of food remains was also tabulated for comparison.

These examinations were done under the supervision of one man and for practical purposes was the best method we could follow.

From the table it will be seen that the greatest percentage of excess starch occurs in digestive disturbances, namely, 16.5 per cent., and next is rickets with 14.5 per cent. In considering the tonsils cases, in which we have an excess in 11.9 per cent., I wish to bring out a few points:

First, in 232 of these cases in which the teeth conditions were mentioned in our histories, seventy-six children showed one or more decayed teeth.

Second, the majority of these children had chronically inflamed tonsils, with repeated attacks of tonsillitis.

Third, the reports on the dietaries of this series of cases showed that nearly all of them were fed over a long period of time on a diet rich in starchy food.

Granting the statement of Cammidge that some starch is always found in the feces of infants and children, we feel that the percentage of cases containing much and excess starch (30.7 per cent.) as calculated in the series of hypertrophied tonsils is unusually high.

At a later date it may be possible to submit a tabulation of stools taken from normal children, but this is not possible at present.

We feel after making these examinations and studying cases and dietaries that the following conclusions are worth bringing before you:

1. There is a type of indigestion in children presenting certain clinical manifestations brought on by the continued use of a diet composed principally of carbohydrates.

2. This condition can be cured by eliminating the starches somewhat and giving a mixed diet fed at proper intervals.

3. The successful treatment of these patients cannot be accomplished without giving the parents a written dietary, containing the nature and quantity of the articles to be given and the time of meals.

4. Frequent examination of the stools is absolutely necessary to aid in the diagnosis and check up the progress of the case.

5. Before attempting to correct the dietary errors the oral cavity should be carefully examined, as the presence of carious teeth, chronically inflamed tonsils and nasal secretions play a most important part in the proper digestion of the child's food.

240 Stockton Street.

ABSTRACT OF DISCUSSION

DR. F. W. SCHLUTZ, Minneapolis: I would like to ask Dr. Yerington whether many of his patients showed marked skin manifestations; for example, eczema, and whether he noticed any greater tendencies to a catarrhal type of stool in these cases? Many of his cases apparently had hypertrophy of the tonsils. There is a disposition at present to interpret all these phenomena as expressions of a peculiar constitution. Possibly increased peristalsis would have some influence on the starch digestion.

DR. H. D. CHAPIN, New York: I take exception to the statements regarding barley water. Some years ago Dr. Jacobi pointed out that cereal water was exceedingly good as an addition to an infant's food. Its use became popular and it seemed to yield remarkably good results. Then the percentage method of feeding came into vogue and we were taught that it was important to get the percentage of all the food elements, proteins, fats and carbohydrates, in the same proportion as they were found in woman's milk, and we were taught that cereal decoctions were anathema—not at all scientific. It was observed also that those who were using cereal decoctions were getting the best results. So we experimented on dogs and other animals and found that the addition of a little starch made the protein more easily digestible and acted as a good attenuant to casein. As to the practical side of the question, one found it most humiliating, after having attempted to feed an infant according to accepted scientific principles without success, to have the parents go to the corner drug store, get a proprietary food for the infant and find that the baby fattened up in a short time. It is asserted that barley water is not found in mother's milk, but it is also true that the casein of cow's milk is not found in mother's milk. We must study this subject from the same standpoint and in the same way as we study science at large, and we must get the profession to look at the subject in the same way as they look at science at large. I have no sympathy with much that has been taught on the subject of infant feeding. The subject has become so complicated that the student and the general practitioner throw up their hands when they undertake to grapple with it. Each man has a method of his own which no one else can understand and which he himself sometimes forgets. We have been going from one extreme to the other and it is well to have the subject threshed out. We know that there are no cereals in mother's milk, but the casein of mother's milk coagulates differently from that of cow's milk and the cereal decoctions affect the coagulation. The proteins in the milk of different mammals all coagulate in a different way because they have a developmental as well as a nutritional value. Take the ruminant herbivora and we find that the casein coagulates in lumps which are intended to develop the motility of the animal's stomach, because the animal must feed on grass, grains, etc., and the stomach must be prepared to deal with them. In the milk of nonruminant animals the casein coagulates in soft, flocculent, jelly-like coagula which will pass out of the stomach easily. We find the protein of mother's milk midway between that of cow's milk and that of the nonruminant animals. The enzymes act only by contact, and if they can get at the food elements they act with enormous power, and by adding starch the proteins are broken up into smaller particles exposing a greater surface to the action of the enzymes and are more easily digested. We should study this subject from the practical standpoint and find out what agrees with the baby and then find the scientific reason for its use.

DR. C. G. GRULEE, Chicago: My views are identical with those expressed by Dr. Chapin. I cannot agree with the ideas just expressed in the paper, for digested starch is changed into sugar, and if the starch is not changed into sugar it goes through the digestive tract undigested and acts like a foreign body. In my opinion, barley water as a diluent does no harm.

DR. L. PORTER, San Francisco: It is our practice to make a routine examination of the stools of every infant that comes in merely as a matter of interest and with the possibility in view that we may learn something. When starch is present in large quantities its elimination is always accompanied by symptoms of indigestion, and we find that these clear up following the withdrawal of starch. This seems to show that the disturbance is due to an intolerance of starch. A number of children during the second and third years of life present digestive disturbances due to starch indigestion, but we seem to have concentrated our attention on barley water. Dr. Northrup has given us the touchstone for the solution of these problems in the alliterative expression "feedings to fit." If we could put this up over every doctor's desk we

would accomplish more than by discussion. Some babies digest starch and some do not, and barley water does not agree with a large number of children in the first few weeks of life. Dr. Chapin's point was well taken that by breaking up the gluten a larger surface is exposed, and that if it is finely divided a large surface is created which can be acted on. There are many babies in the second year who cannot digest potato, and we call these potato babies. They have stomach ache and pain referred to the umbilicus, and examination of the stools shows the presence of starch in capsules. If we take the potato away from the diet of the child the stomach aches cease. This is not scientific, but it is a truth. The same babies may later be able to digest potato well. Furthermore, there are different kinds of potatoes, and the way in which they are cooked makes a great difference. There are the old sodden, soggy potatoes that are not good, and new potatoes are not so well taken care of. Then there are old potatoes that are better suited to children. Children who have difficulty in digesting potato may be helped by substituting rice. Another point which Wallace has brought out is that children with bad molar teeth are apt to have starch indigestion because the starchy foods are not properly broken up and become like a foreign body in the digestive tract. It seems a little strange to object to bread, but in babies 1, 2 or 3 years old the bread gets into large masses and there is not a proper surface area exposed and it does not get split up. It is better to give hard crackers or zwieback, since eating these hard foods teaches the child to chew, and this is important in developing the teeth and jaws. I think we should give in the second year hard foods to babies that get intestinal indigestion.

Dr. Jay I. Durand, Seattle: There are many questions in metabolism which are yet to be answered. I have seen many babies in Finkelstein's clinic, which could not be made to gain by increasing the sugar even to 7 per cent. and 9 per cent., who would make a prompt and satisfactory gain when 1 per cent. of starch was added. The relation of fats to the different sugars presents another problem. A large series of cases were put on high fat feedings with 3 per cent. to 5 per cent. of dextrimaltose—*Nahrzucker*, as it is called there. They did very badly, almost all developing nourishment disturbances, which necessitated a change to albumin milk. Approximately an equal number with the same fat percentages and milk sugar did much better. We are now in a position to control, to a certain degree, the bacterial flora of the intestinal tract, and this is a great factor in carbohydrate digestion. The starches and sugars in excess bring a preponderance of the fermentation-producing, acid bacteria, tending to cause diarrhea. The proteins bring the putrefying, alkaline type which counteract the former. The great value of albumin milk is that you can feed much larger carbohydrate percentages and more fat with it than you can with any other nourishment yet devised. In older children there is a type of starch diarrhea often seen which will be corrected by adding beef, cottage cheese and mashed banana to the diet.

Dr. H. H. Yerington, San Francisco: The discussion of this paper seemed to be on starch digestion in infants; the paper was on starch digestion after the first year, and I am sorry more was not said on this subject. As far as skin conditions are concerned, I do not know what proportion of children having starch indigestion have skin lesions, but many of these patients having urticaria and eczema clear up rapidly when the starch is eliminated from their diets. Dr. Porter has pointed out the correlation between these children and the feeding of certain diets. A mixed diet consisting of such articles as cottage cheese, gelatin jellies, meat, eggs and broths will be found very effective.

Early Fumigation

"Bring sulphur straight, and fire," the Monarch cries.
She hears, and at his word obedient flies.
With fire and sulphur, cure of noxious fumes,
He purged the walls and blood polluted rooms.
—*The Odyssey.*

SYPHILIS OF THE STOMACH

A CLINICAL STUDY OF TWENTY-SIX INSTANCES OF DYSPEPSIA, ASSOCIATED WITH POSITIVE WASSERMANN-NOGUCHI REACTIONS *

FRANK SMITHIES, M.D.
Gastro-Enterologist to Augustana Hospital
CHICAGO

This report comprises observations made on twenty-six dyspeptic individuals whose blood serums were Wassermann-Noguchi positive. In these patients the clinical history of lues was definite or highly probable, or at exploratory laparotomy atypical gastric pathology was demonstrated. Dyspepsia was the presenting complaint. The material is from records in my services at the Mayo clinic and at Augustana Hospital.

That syphilis of the stomach is by no means so uncommon as clinicians of a decade ago considered, is evidenced by the fact that within the past six years no less than twenty-five cases have been placed on record in the United States alone. Previously there had been but about seventy authentic instances of the affection reported. This recently indicated prevalence of the ailment is largely a result of the general use of serologic tests as a guide in the differential diagnosis of unusual intra-abdominal complaints.

INCIDENCE

Our twenty-six cases occurred in the examination of 7,545 patients affected with all types of dyspepsia. This returns an approximate frequency of one instance out of every 300 gastric cases (0.34 per cent.). Of this number there were 1,603 instances in which the gastric upset was associated apparently with demonstrable pathology in the stomach or duodenum. Of these 1.6 per cent. were luetic. The relative incidence of the syphilitic affection is emphasized by noting that in this group of cases, gastric cancer was found in 15.3 per cent., gastric ulcer in 18.7 per cent., duodenal ulcer in 39 per cent., achylias or gastritis in 24.8 per cent.

PATHOLOGY

The lesion may be congenital or acquired. It may be part of a general systemic syphilis or arise as a distinct, local manifestation of the disease. The infrequency of the affection as a part of general syphilis is indicated by the oft quoted observations of Chiari.[1] From necropsies in 243 pathologically demonstrated cases of lues, of which 145 cases were hereditary and 98 cases acquired, he noted that, while *indirect* changes in the stomach wall (circulatory anomalies, interstitial hemorrhages) are relatively common, *lesions directly attributable* to lues (ulceration, gummas and scarring) are infrequent.

Careful descriptions of luetic lesions in the stomach have been made by Flexner,[2] Neumann,[3] Chiari[1] and Weichselbaum,[4] while clinical classifications depending thereon have been advanced by Hemmeter,[5] Einhorn,[6] Kohn,[7] Morgan[8] and Downes and LeWald.[9] It would

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Chiari: Internat. Beitr. z. wiss. Med., Festschr. f. R. Virchow, Berlin, 1891, ii, 211.
2. Flexner, S.: Am. Jour. Med. Sc., October, 1898.
3. Neumann: Specielle Pathol. u. Therapie (Nothnagel), xxiii, 351.
4. Weichselbaum: Bericht. d. Rudolfspitals in Wien, 1883, p. 383.
5. Hemmeter: Diseases of the Stomach, Philadelphia, P. Blakiston's Sons & Co., 1903, p. 596.
6. Einhorn: Med. Rec., New York, March 13, 1915.
7. Kohn: Am. Jour. Med. Sc., May, 1909.
8. Morgan: Am. Jour. Med. Sc., March, 1915, p. 392.
9. Downes, William A., and Le Wald, Leon T.: Syphilis of the Stomach, The Journal A. M. A., May 29, 1915, p. 1824.

seem from the nature of the ailment pathologically, that a close histoclinical grouping were possible.

Apparently the syphilitic virus first manifests itself as a dense round-cell infiltration of the loose, areolar tissue of the stomach wall. There is frequently an associated endarteritis. When the disease has once become firmly established, it appears to progress in four rather characteristic fashions: (1) by diffuse infiltrations, confined to the areolar tissue and causing thickening and stiffening of the gastric wall; (2) locally, to the submucosa and mucosa in the form of dense groupings of lymphocytes which may end as typical, miliary gummas, or coalesce, necrose and slough to form ragged-edged ulcers, not infrequently multiple; (3) in the form of single or multiple inflammatory nodules, composed of exuberant connective tissue and lymphocytes; these may involve the entire stomach wall, producing extensive tumors (ulcerating or non-ulcerating), stenoses and malformations in contour, and (4) subperitoneally and peritoneally, resulting in perigastritis associated with thickening of the wall of the viscus and dense perigastric adhesions.

As a consequence of these pathologic types the clinical manifestations of the malady are varied. Grossly, they may be summarized as those associated with chronic gastritis, ulceration (with or without stenosis), gastric tumor (with or without obstruction) and perigastritis, often with involvement of adjacent viscera.

ETIOLOGY

Sex: In the series forming the basis of this study, there were of the 26 cases, 15 men and 11 women.

Age: The minimum age was 20 years; the maximum 66. The minimum age for men was 20; for women 28. The maximum age for men was 60; for women 66. The accompanying table indicates the age incidence by decades for the sexes:

TABLE SHOWING AGE AND SEX INCIDENCE OF GASTRIC SYPHILIS

Years	Number of Men	Number of Women
0 to 10	0	0
10 to 20	0	0
20 to 30	2	3
30 to 40	2	2
40 to 50	5	2
50 to 60	5	3
60 to 70	1	1
Over 80	0	0
Total	15	11

It was noted that the average for women was 42.8 years and that for men 44.8 years, a sex difference of 2.4 years. Sixteen patients were married, five were single, three divorced and two widowed.

THE LUETIC LESION

It was sometimes difficult to get a history of the primary sore. This proved particularly so in women. Of the men, genital chancres were recorded in 7, buboes in 3, mouth or lip lesions in 1. In the women genital chancre was reported once. In two cases there had been mouth sores; in one, buboes. Definite knowledge of venereal disease in the husband was obtained in three instances; in two, the husband's condition was questionable. Of the entire group, there were five cases in which no history positive for, or suggestive of, lues could be obtained, nor in these patients could external evidences of previous lesions be seen. The Wassermann-Noguchi tests were, however, definitely positive.

Time of Gastric Disturbance After Acquirement of Lues.—Information in this line is but relatively correct, especially for the women. The average shows that there was but slight variation in the sexes. Four years was the minimum quiescent period for both sexes, while the maximum, was, for men, 38 years and, for women, 45 years.

Stage of the Disease.—So far as we were able to judge, we had no instance of a congenital affection. In two patients of each sex, the ailment appeared late in the secondary stage of lues. In the remaining cases (22) the gastric disorder was, chronologically, a tertiary manifestation.

Previous Specific Therapy.—Of the sixteen cases who gave definite or suspicious history of chancres or buboes, but eight had had antiluetic treatment. Of these only two had received a thorough course of mercury and iodid. Three had been given salvarsan for "anemia" within four years of their coming under observation.

WASSERMANN-NOGUCHI REACTIONS

These were positive in all our tabulated cases and furnish the basis of our classification. Inasmuch as the nature of the ailment demands diagnosis other than surgical or from sections of tissue removed at laparotomy or necropsy, we fail to see how another basis for classification could be adopted. Certainly, dependence solely on the "therapeutic test" of the effect of antiluetic medicines is not sufficient proof of the disease, for it has been shown that occasionally sarcomas, tuberculous lesions or other inflammatory affections are favorably influenced by salvarsan, mercury or iodids. If carefully controlled, only rarely is the positive serologic test associated with disease other than syphilis. In grave anemias, malignant cachexia or alcoholism, dubious Wassermann reactions are occasionally obtained. However, such factors were taken into consideration in our group of cases.

THE GASTRIC MALFUNCTION

Duration of All Gastric Disturbance.—Facts of considerable significance are brought out by analyses of this phase. It has been stated, frequently, that gastric syphilis manifests itself rather abruptly in late life without any previous digestive upset having been noted. Our study indicates that the average duration of dyspepsia was 8.4 years for the group: The minimum duration was six months—a male aged 60; the maximum 25 years—a female aged 52 years. There was practically no difference in the average duration between the sexes.

Duration of the Presenting Gastric Complaint.—The average time for the group was 11.1 months. The minimum was four weeks and the maximum 3 years. In women dyspepsia caused the patient to seek relief rather earlier than in men.

Types of Gastric Histories.—The cases group themselves quite readily, with regard to the clinical course of the dyspepsia, into three divisions: (1) instances in which a persistent gastric derangement appeared in individuals who had previously experienced no digestive upset; (2) instances in which a constant dyspepsia followed years of antecedent indigestion of the intermittent type; (3) instances in which continuous gastric upset arose in persons who had been affected gastrically at some past period, but who had been, for years, free from digestive disturbances. Each type will be summarized briefly.

Group 1: Two of the twenty-six instances of gastric syphilis studied comprise this group. Both were men who gave histories of genital, primary lesions. In one, the dyspepsia appeared shortly after secondary skin lesions had subsided, in the other it was the only evidence of a tertiary lesion. The affection was characterized by rather abrupt onset of epigastric pain and soreness, constant in character, but varying in intensity; by anorexia, moderate weight-loss, constipation, pyrosis, eructations, epigastric tenderness, and, in one instance, a freely movable epigastric nodule, associated with delayed vomiting. Gastric analyses revealed a fairly low formol index, absent Wolff test and moderate hypersecretion. In the case associated with epigastric nodule, fluoroscopic examination disclosed a filling-defect of the pylorus and antrum. In the other patient, roentgenoscopy pointed to a probable pyloric ulcer of the chronic, uncomplicated variety.

Group 2: This division was made up of ten cases (38.4 per cent.). The histories exhibit two rather strikingly different types of disease: (1) an early dyspepsia, characterized by frequent attacks of discomfort which has the clinical aspect of recurring peptic ulcer and (2) a subsequent period of continuous indigestion, which frequently assumes an aspect different from that exhibited by the first portion of the ailment.

The average duration of all symptoms in the first phase of the disease was 8.7 years. It varied between two years and twenty-three years. The histories indicate a gastric derangement associated with attacks of epigastric distress ("burning," "gnawing," "sore," "ache" or "colics") not uncommonly more pronounced at night or when the stomach was empty, irregular vomiting (hematemesis in one instance), water-brash, good appetite and body nourishment and abdominal tenderness. In the intervals, even without treatment, the patients were generally comfortable. So closely do symptoms and signs simulate those of ordinary, recurrent gastric ulcer, that the clinical differentiation, without the knowledge of specific infection or positive serologic test, is quite impossible. Three patients in this group had taken so-called ulcer "cures" repeatedly and four of them had submitted to surgical exploration: in two, ulcer of the stomach had been noted and posterior gastro-enterostomy performed.

The average duration of all symptoms in the second portion of this group was 1.12 years. The shortest period of discomfort was three months; the longest nearly three years. This phase of the ailment was different from that preceding it, in the sense that the patients were constantly annoyed by epigastric distress, frequently aggravated at night and not rarely of sufficient severity to require opiates (40 per cent.). During this stage, weight loss was not uncommonly rapid and of marked degree. The average weight loss in three months preceding the time that the patients appeared for examination was 17.3 pounds. There was one case in which weight loss was mentioned as "slight." The least weight loss was 6 pounds, the greatest 39.

Epigastric pain and tenderness were generally most marked in the right upper quadrant. In four instances (40 per cent.) there was a palpable epigastric mass. Pain was most commonly relieved by limiting the amount of ingested food, by lavage and the taking of alkalies. In two instances persistent vomiting developed, with coincident evidences of marked gastric stagnation. Test meals revealed an average total acidity of 39.7, average free hydrochloric acid 30 and average combined acid of 9.8. In only one instance was hydrochloric acid absent. The highest free hydrochloric acid noted was 110. Twelve-hour retention was demonstrated in but two cases. In six instances in which the formol index was estimated, it averaged 11. In three instances the Wolff test for soluble albumin was positive, but was negative in five. Lactic acid was observed but once. In the case in which hydrochloric acid was absent, organisms simulating those of the Oppler-Boas group were recorded.

Roentgenoscopy returned the diagnosis of chronic peptic ulcer or suspicious ulcer or "tumor" of the stomach in eight instances. In only one case had the question of syphilis been considered. In five patients exploratory laparotomy was performed. In three instances, smooth, pale calloused ulcers were noted (in one case three ulcers were noted on the anterior wall and one on the lesser curvature). The stomach of another patient exhibited a profuse infiltrating scirrhus growth, with a small nodule on the lesser curvature. In the remaining case, a smooth, hard tumor the size of a lemon occupied the pyloric portion of the stomach.

From the above summary of cases making up Group 2, it is seen that the clinical course strongly simulates that of chronic peptic ulcer which later undergoes malignant degeneration—with this exception, however, that while anemia, weight loss, pyloric obstruction, cachexia and epigastric nodule or ridge may be present, the gastric analysis reveals moderately high total and free hydrochloric acid with no increase above the normal formol index, and with only irregular manifestations of a positive Wolff test. Even at laparotomy the diagnosis is often in doubt, but surgeons of experience have learned to leave undisturbed the well-delimited, hard, plaque-like ulcers and the firm nodular tumors which arise from a stomach wall, already thickened by diffuse, infiltrating, exuberant connective tissue. It is in this class of case that information of vital value is received from the serologic test. The reaction frequently determines the advisability of surgical interference.

Group 3: Fourteen cases composed this division. The early portion of the histories in these instances is not characteristic of any definite type of intragastric disease, associated with any special, gross, anatomic lesion. Previous to the terminal complaint, the early gastric upset has made itself manifest in spells often at long or irregular intervals. Not uncommonly, the different attacks exhibit no similarity as to type. In this group, the average duration of the early gastric dyspepsia was 9.1 years. The shortest period was one year; the longest twenty-five. In this first stage the indigestion was variously associated with epigastric discomfort (often styled "vague ache" with tightness and burning), and frequently complicated by irregular, colicky attacks. The pain was usually situated in the pit of the stomach, or right epigastrium, but not rarely had no definite point of localization. Pain relief was commonly obtained by diet, alkalies, vomiting, the ingestion of food or the administration of an opiate. In but three instances did the epigastric distress bear any definite relation to food intake. This type of gastric malfunction eventually terminated in a stage in which the dyspepsia was constant. There then ensued loss of appetite, constipation or constipation alternating with diarrhea, and weight decline averaging, for the group, 20.7 pounds. In three instances there were epigastric ridges or masses, in two cases such were complicated by pyloric obstruction. The test meal revealed an average total acidity of 51.9, an

average free hydrochloric acid of 30.9 and average combined acidity of 18. There was only one instance in which hydrochloric acid was absent. In eight instances, in which the formol index was estimated, it averaged 10.2. In the same group the Wolff test was positive three times. Roentgen record of an intragastric condition simulating chronic ulcer or tumor was obtained in nine cases. In the remaining instances, the examination was not made or its result was questionable. Surgical exploration was performed seven times. Laparotomy disclosed chronic ulcer or single and multiple fibrous nodules. In one case the stomach appeared negative, but the gallbladder was filled with stones.

The above description of cases making up Group 3 demonstrates that although the early part of the history may differ markedly from that composing the first portion of that outlined by Group 2, the terminal stage and the laparotomy findings are strikingly similar to it.

LABORATORY DATA FOR THE ENTIRE SERIES

Blood: In seventeen cases in which hemoglobin was estimated, it averaged 74 per cent. The variations were from 20 to 90 per cent.

Stool: Of twelve cases tested for occult blood by the benzidin technic, positive reactions were obtained in two.

Test Meals: Persistent, twelve-hour retention was demonstrated in six instances (23 per cent.).

Gastric Acidity: In but two cases was absent hydrochloric acid proved. The average free hydrochloric acid for the group was 33 and the maximum 110. The average total acidity was 51.4. The maximum was 114. This was a short term case included in Group 3 in which pyloric stenosis with a palpable epigastric nodule was observed. Combined hydrochloric acid and acid salts averaged 14.2. The minimum was 0 and the maximum was 36. The presence of lactic acid was determined in the gastric contents from three cases (11 per cent.).

Altered blood was proved to be present in seven gastric extracts (26 per cent.).

The Wolff-Junghans' test was positive in five cases in the entire group. The formol index, as estimated by the formaldehyd titration method suggested by Sorenson and Schiff, averaged for the group 10.2. The minimum was 6 and the maximum 14. It would seem that this test when interpreted in the light of clinical history and other laboratory data promises to furnish an important point of differentiation between syphilitic and malignant lesions, inasmuch as we have shown that in a series of eighty-seven gastric cancers and ulcera carcinomatosa the average formol index is 21.

Microscopic Examination of Unfiltered Gastric Extract: In these, using the colored agar staining method, budding yeasts were demonstrated in eleven cases (43.3 per cent.); sarcines in four cases (15.3 per cent.) and organisms apparently of the Oppler-Boas type once (3.8 per cent.).

INFORMATION DERIVED FROM ROENTGENOSCOPY

Usually neither fluoroscope nor plate methods return pathognomonic signs. The Roentgen method may ocularly demonstrate deformities in gastric contour, but in the main such deviations from the normal might readily be observed in benign or malignant peptic ulcer and carcinoma, scirrhus or medullary. It has seemed to us that a Roentgen sign of some worth were to be deduced from the rather anomalous finding of a gastric tumor or extensive deformity, associated with a fairly high degree of peristalsis and with test meal returns showing normal, or slightly reduced free hydrochloric acid. When a positive Wassermann-Noguchi test is concomitant the diagnosis is established with reasonable certainty. Not rarely, the Roentgen demonstration of extremely small gastric nodules, multiple ulcerations or tumor formation proves suggestive enough to lead to the making of serologic tests and the beginning of specific therapy.

TREATMENT

The most satisfactory results are obtained by the intravenous injection of salvarsan, followed by a thorough course of mercury (by fumigation, inunction or hypodermically) and iodids. Not infrequently, the anemia coincident wtih the disease demands the free use of iron and arsenic. The associated dyspepsia may urgently call for relief by such measures as diet, alkalies, lavage, or, for the pain, opiates.

It would seem that one should be cautious about speaking definitely regarding the cure of gastric syphilis. Inasmuch as we have shown that the disease may exist for years and manifest itself frequently by periodic digestive upsets, it behooves us to be rather careful in informing patients respecting what may be expected from therapeutic procedures. Should the case be one of the type associated with infrequent attacks, it is quite possible that such attacks would have become quiescent even without the administration of medicines. In treating the continuous stages of the ailment, one rarely obtains complete cessation of all symptoms and signs. In our series when reliable data were available, but four patients were wholly freed from dyspepsia for so long as a year. Three patients were not benefited at all, while twelve patients appeared to experience amelioration of their gastric disturbances.

29 South La Salle Street.

ABSTRACT OF DISCUSSION

DR. DUDLEY FULTON, Los Angeles: I have seen but one case in my practice that I thought to be syphilis of the stomach, a patient aged 36, who presented the typical syndrome of septic ulcer and who failed to improve under the ordinary medical treatment. The history of syphilis and a 4-plus Wassermann test led to mixed treatment with clearing of the symptoms, the patient making uninterrupted recovery. The diagnosis of syphilis of the stomach is difficult to establish. In many cases a conjecture is resorted to where satisfactory proof of the diagnosis is lacking. But it is significant that of late a good many clinicians and surgeons have reported cases of gastric syphilis which were not recognized until after operation. More recently, where demonstrable lesions of the stomach were demonstrated in syphilitics, the benefit of the doubt was given and medical treatment for syphilis administered, with cure resulting in some of the cases. In the future, syphilis of the stomach will probably be recognized more often than in the past. Gastric syphilis is undoubtedly a clinical entity which represents simply a refinement in diagnosis. The reasons why syphilis of the stomach has been overlooked so frequently in the past are various. In the first place the symptoms are not typical; secondly, both the macroscopic and the microscopic lesions are often difficult to recognize definitely, but at the present time the Wassermann test and roentgenology bridge over these difficulties in diagnosis. When a patient with a history of syphilis, who has well defined gastric symptoms and in whom the roentgenogram demonstrates gross changes in the stomach, a tentative diagnosis of syphilis of the stomach is justifiable and specific treatment may be instituted; but it should be remembered that the disappearance of symptoms is not definite proof of the syphilitic nature of the gastric lesion any more than does the relief of gastric symptoms in

cardiorenal disease establish proof of a primary gastric trouble. On the other hand, the lesion may be too old or the treatment instituted too late for treatment to be of avail. Aside from these more or less theoretical considerations of the subject, it would seem that the rules suggested by Chase are sufficiently exacting and practical in clinical work. These are that there must be more than the statement of the patient that he has had syphilis. The Wassermann test must be positive. Second, there must be evidences of syphilis elsewhere in the body. Third, there should be demonstrable lesions of the stomach, as shown by the Roentgen ray. Lastly, there should be therapeutic improvement.

Dr. S.Marx White, Minneapolis: We can scarcely overestimate the importance of Dr. Smithies' contribution. His evidence and that of others who are studying the incidence of syphilis of the stomach would seem to show that it is not a frequent malady in the form which he has described. It is a subject to which particular attention needs to be drawn because it is so commonly overlooked. It is impossible to say whether the pathologists of the dead-house are giving us the correct impression or not. They are inclined to look somewhat askance at the diagnosis of syphilis of the stomach because of their failure to find lesions after death, such lesions being very infrequent at necropsy. But we should not let that influence us unduly because the same thing was true in lesser degree in ulcer of the stomach, which was found at first most frequently by the surgeon. Dr. Smithies calls attention to the importance of the Wassermann and the Noguchi tests in the recognition of this condition. I believe no case of organic disease of the stomach which gives evidence of change in form in the radiographic outline of the stomach, should be passed without the consideration of syphilis as a possible cause. In cases with the evidence of ulcer or ulceration with perigastritis, we should beware of the possibility and make tests for syphilis. We should be inclined to consider the possibility of syphilis in all cases of disease of the stomach and heart where the symptoms are not clear, and make proper serologic tests. I have seen four cases in which the evidence pointed to syphilis of the stomach, and in two very definite improvement occurred on the institution of proper antisyphilitic treatment.

One case simulated clinically carcinoma with palpable tumor. That case disappeared from observation and about four years later the patient died under the care of another physician with the diagnosis of carcinoma of the stomach. The patient had concealed his syphilis, but necropsy showed that it was not a case of carcinoma of the stomach, but was syphilis. Another subject to which we should pay attention is the occurrence of gastric disturbances, particularly during the so-called secondary stage of syphilis. These are much more common than we are inclined to believe. I have seen a number of instances of the milder type in the eruptive stage of syphilis.

Dr. Max Einhorn, New York: According to my experience, syphilis of the stomach is more frequent than is generally believed. However, the variety which goes on to tumor formation is not very common. In this variety we may find all the symptoms, without exception, of cancer of the stomach. We found in the majority of cases which we have observed that there was a deficiency or absence of hydrochloric acid, that lactic acid and blood were present, especially occult blood in the stomach. For the practitioner these cases are of the greatest importance, because for syphilis we have a treatment which will cure the patient, whereas we cannot cure the patient with cancer. The Wassermann reaction is of assistance in some cases, but we have seen cases with a negative Wassermann reaction. There was then a large tumor, with the Wassermann reaction negative, and on operation we found the tumor so large it could not be removed and the abdomen was closed up. In the varieties in which there is only an inflammatory process, it may disappear without any treatment at all, without iodids or mercury, and so we might think it is not luetic. But in the case we had under observation the tumor could be palpated and it was believed to be an inoperable cancer. Iodids and mercury were given notwithstanding the Wassermann was negative, and to our surprise the patient got well. The Wassermann test in that case had been made by a thoroughly competent physician. There may be the question of sarcoma or cancer in such cases, but that should not deter us from a consideration of the possibility of syphilis of the stomach although the Wassermann reaction may be negative at the time. Because the Wassermann test is found negative, we should not conclude that nothing can be done. Empiric treatment is justifiable and can do no harm to the patient.

Dr. George Eusterman, Rochester, Minn.: We have had under observation twenty-one cases of syphilis of the stomach. In an earlier period ten were explored by the surgeons, and later improved under treatment. In eleven others there was a history of infection with or without a positive Wassermann, gastric disturbances and gross changes in the stomach determined by Roentgen methods. I wish to emphasize the importance of excluding other causes in suspected syphilis, and also to warn every one to not make too hasty a diagnosis of syphilis. There may be positive Wassermann reactions with gastric upset not due to syphilis, or the Wassermann test may not be obtained in a case of syphilis of the stomach; the Wassermann reaction may be absent following the use of salvarsan. The symptomatology is variable because the pathology is variable. These patients all showed extensive deformity of the stomach, or multiple strictures, hour-glass stomachs, etc. I am not including here the cases of syphilitic gastritis but am speaking only of the organic lesions due to syphilis. One of the most characteristic features is the absence of definite symptomatology. All of these patients had achylia or marked reduction in enzymotic activity. There was an apparent paucity of history of hemorrhage.

Dr. Charles E. Sears, Portland, Ore.: I have had occasion recently to review the literature of syphilis of the stomach, and in connection with this I was very much interested in Dr. Smithies' remark regarding the therapeutic test as a diagnostic procedure. The undoubted cases of syphilis of the stomach which have been reported, in which the lesions are more than transitory, are very few. For this reason I think Dr. Smithies' paper is all the more important. In order to establish a symptomatology on which to base the recognition of these cases, we should exclude, for scientific report, the cases in which the diagnosis was decided by the therapeutic test. For practical purposes we must make the diagnosis at times by the therapeutic test. The question of the secretory function of the stomach in these cases is interesting. I have had a case under observation recently in which the manifestations were those of carcinoma of the stomach. It was only six months in duration, of gradual onset, achylia, and without definite pain, in a young woman who had concealed her previous syphilitic history until an operation had been performed. A diagnosis of probable carcinoma, possibly developing on an ulcer, was made and at operation a plaque-like ulcer was found involving the lesser curvature close to the pylorus and a pylorectomy was done because of the many indurated lymph glands found on the peritoneal surface near the ulcer, which were very suspicious of carcinoma. The ulcer was subjected to microscopic examination and a very pronounced lymphocytic infiltration was the most characteristic thing found. There was no evidence of carcinoma. In the reported cases in which gastric ulcer has been undoubtedly demonstrated to be syphilitic, achylia was found in practically all the cases and nearly as often there was found absence of definite pain. In the cases recognized by therapeutic test the frequency of night pain is very striking. The absence of pain and the presence of achylia I believe are important; whether they are characteristic of syphilitic ulcers time will show.

Dr. Frank Smithies, Chicago: Dr. Eusterman has stated that in his experience the test meals from cases of gastric

syphilis revealed absent hydrochloric acid. A few years ago it was supposed that in order to diagnose carcinoma of the stomach it was necessary to have absent free hydrochloric acid in the gastric extract. We now know that when the diagnosis of carcinoma rests on this finding we are dealing with the hopeless, terminal condition. An analogy probably exists in syphilis of the stomach (where the diagnosis is based on the Wassermann test) at the stage when we can handle it medically, and at that when there is such deformity of the stomach as to simulate that of gastric cancer. I think we should make an effort to diagnose syphilis of the stomach before the patient is dying from syphilis of the stomach, just as it behooves us to recognize cancer of the stomach before the patient is ready for the undertaker. This paper has served its chief purpose if it has called attention to the fact that syphilis of the stomach may be recognized during life and sufficiently early to permit of proper therapy. Cases exist in which there may be no hydrochloric acid in gastric extracts just as in carcinoma, but when the disease is early recognized there may be normal hydrochloric acid.

It will be recalled that I based my classification essentially on the findings of the Wassermann and Noguchi tests. Dr. Einhorn has shown that the therapeutic test is not conclusive for diagnoses, although it may be valuable clinically. Syphilitic ulcers simulate the carcinomatous in many ways. The Roentgen ray may show gross deformity of the stomach and even tumor formation. There may be hypoperistalsis or delayed emptying. There may be a relative low hydrochloric acid titration, but many of our cases did not show it. The information derived from the Wolff-Junghans' test and the estimation of the formol index offers valuable assistance in differentiating syphilitic and malignant gastric ailments.

DR. JOSEPH VON WERTHERN, San Francisco: In cases of gastric ulcer occurring in young women, could we fairly assume the hypothesis that those particular cases might be due to inherited syphilis?

DR. FRANK SMITHIES, Chicago: In cases of gastric ulcer occurring in young women such is a possibility without the history or clinical evidence of syphilitic infection if Wassermann-Noguchi tests are positive.

SPECIFIC TREATMENT OF THE MALIGNANT FORMS OF MALARIA*

C. C. BASS, M.D.
Professor of Experimental and Tropical Medicine, Tulane University of Louisiana School of Medicine
NEW ORLEANS

By malignant forms of malaria I mean those cases of malaria that prove fatal, those that would prove fatal without proper treatment and those that are sufficiently severe to immediately endanger the life of the patient. The specific treatment of this or any other form of malaria is treatment with quinin. There is no other specific remedy for malaria.

Practically all cases of malignant malaria are due to the estivo-autumnal plasmodium (*P. falciparum*). This parasite spends about three-fourths of its life cycle lodged in capillaries and only about one-fourth in the circulating blood. The very fact that it remains during so large a portion of its life in capillaries enables it to produce the severe forms of malaria. It seems quite possible that prevention of the proper flow of blood through the capillaries of vital organs by large numbers of plasmodia lodged in them may be the chief source of symptoms which would lead to the case being classified as one of malignant malaria. For instance, almost all patients have coma for a greater or lesser period before death. Coma is perhaps the most certain symptom indicating a malignant form of the disease. Coma in malaria is due to the anemia of the brain resulting from the large number of capillaries plugged by malaria plasmodia.

Quinin in the blood does not reach plasmodia lodged in capillaries. If in sufficient concentration, however, it does kill those in the circulating blood. Plasmodia lodged in capillaries come out into the circulating blood after they segment and are thus exposed to the action of any quinin that is in the blood at the time. Since, in estivo-autumnal malaria there is continuous segmentation—each parasite segmenting independently of others—and continuous appearance of young plasmodia in the blood stream it is necessary to keep a sufficient concentration of quinin in the blood to kill them at all times. Whenever a dose of quinin is introduced directly into the blood it appears in the urine in a few minutes. Many individuals eliminate more than 50 per cent. of it within twelve hours and practically all within twenty-four hours. Thus it is seen that in order to have sufficient quinin in the blood at all times to destroy malaria plasmodia as they appear, which they will do for a period of at least thirty-six hours, it is necessary to administer it every few hours during this period.

There are three methods of administration for consideration—by mouth, hypodermically or intramuscularly, and intravenously. Administration by mouth in malignant malaria is frequently impossible on account of the condition of the patient, or if it can be administered it is frequently vomited. Not only may it be difficult to administer in this way, or be vomited, but if retained, absorption in these cases is slow and uncertain. It is likely to be several hours before the quinin reaches the blood stream where its effect is desired. Many a patient dies with enough quinin in his stomach to have saved his life if it had been given properly.

The next method of administration is introduction into the tissues by means of a hypodermic syringe. We are accustomed to think of the hypodermic as a rapid means of getting drugs into the blood stream. This is so with many drugs, but it is not so with drugs like quinin which cause severe local damage to, and frequently necrosis of tissue. The least irritating form of quinin—the bimuriate with urea—will produce necrosis of tissue if introduced in sufficient concentration. If more dilute, inflammation only is produced. It is less likely to produce necrosis when injected into the muscle than when injected into loose areolar tissue. The rate of absorption varies with the dilution employed and the tissue into which it is injected, as well, perhaps, as with different individuals. Sometimes some of it reaches the blood stream in a few minutes, but at best it is many hours before all of the dose injected is in the blood. In case of severe local inflammation it may be many hours or days before the quinin is absorbed, or in case of necrosis it may never be absorbed. Many a patient has died of malaria with more than sufficient quinin in his tissues to have saved his life had it been properly administered.

Whenever quinin is administered intravenously it reaches the circulating blood at once where it is needed, and whatever good can be accomplished by specific

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

treatment begins to be realized. Whenever, as in malignant cases of malaria, the life of the patient depends on getting quinin into the blood stream quickly, there is no other method to consider.

The dose and method of administering quinin intravenously are important. I do not believe it is ever necessary to exceed 30 grains of quinin hydrochlorid during twenty-four hours when administered intravenously, nor do I believe more than 10 grains should ever be given at one time. Large doses of quinin given intravenously are very dangerous. Twenty grains often produce considerable shock, dizziness, nausea, etc., and a dose of 50 grains has killed in several instances. A serious mistake often made in the treatment of the most urgent cases of malaria is the introduction of large and dangerous doses of quinin which are repeated at frequent intervals until the patient dies. I have known of several instances in which one hundred grains or more of quinin had been administered during the last twenty-four or thirty-six hours before death. Usually, this destructive treatment is continued because the patient continues to get worse. The symptoms attributed to a continuation of the reproduction of malaria plasmodia are usually due to the quinin. Examination of the blood of such patients usually shows few malaria plasmodia and most of them are dead or dying. The necropsy fails to reveal sufficient plasmodia to cause death. In other words the cause of death is quinin poisoning and not malaria. In view of these statements and ideas, if correct, the amount of quinin given should not approximate the lethal dose. Danger can be further avoided by administering it in several small doses not exceeding 10 grains at any time. Ten grains of quinin hydrochlorid given intravenously every eight hours or 5 grains every four hours will kill plasmodia in the blood stream and prevent their reproduction as certainly as any larger quantity and will not endanger the life of the patient. It is true that it does not reach plasmodia lodged in capillaries until they segment and their merozoites appear in the blood stream.

Theoretically, inhalation of amyl nitrite should tend to dislodge plasmodia from the capillaries, and if done after quinin has been introduced into the blood, would expose many of them to the action of the quinin that would not otherwise be exposed.

In most malignant cases of malaria the total quantity or mass of malaria plasmodia produced during a single life cycle of the parasite is enormous. The volume of an estivo-autumnal schizont at maturity is about that of a red blood cell. Using this as a basis we may calculate approximately the total volume that would be produced in the body of a patient during the life cycle of a plasmodium. It is common to find in such cases at least one red blood cell in every five to contain one or more plasmodia. If we assume that a man has 6,000 c.c. of blood, one-half of which, or 3,000 c.c. are red blood cells, there would be produced 600 c.c., or more than a pint of malaria plasmodia. It is strange, but nevertheless true, that patients often recover when given proper treatment in spite of this enormous amount of foreign protein in their blood stream. May it not be due to the fact that the protoplasm of the parasite is of very low toxicity?

As soon as a case of malignant malaria passes out of the severe attack, then of course the treatment is not different from that of other cases of malaria and will not be discussed here.

Malarial hemoglobinuria may be discussed briefly under the title of this paper. In malarial hemoglobinuria something occurs which causes hemolysis of the patient's cells. Cells containing plasmodia, and thus damaged, are affected more certainly and more extensively than the normal cells. As a result they are hemolyzed, leaving the plasmodia they contained exposed to the plasma, which promptly destroys them. The only object of giving quinin in malaria is to destroy plasmodia, and if most or all of the plasmodia have disappeared, which is the case in hemoglobinuria, there is no indication for quinin. There is a certain amount of contraindication, however, because quinin tends to increase hemoglobinuria or to precipitate attacks in otherwise susceptible individuals.

SUMMARY

The proper specific treatment of malignant or pernicious malaria is quinin administered intravenously.

The dose should never exceed 10 grains of the hydrochlorid.

The total quantity given should never exceed 30 grains during twenty-four hours.

Malarial hemoglobinuria does not require quinin. Quinin is harmful in most cases of hemoglobinuria.

ABSTRACT OF DISCUSSION

Dr. Walter Brem, Los Angeles: Dr. Bass has offered an interesting experimental explanation of the fact that has long puzzled those who have worked with malaria; that is, that the estivo-autumnal parasites disappear from the blood after the early stage of their development. Dr. Bass said he thought that the pernicious cerebral type of malaria is due to blocking of the capillaries of the brain. In my work in Panama I came to divide the pernicious cases into three groups. In the first group I put the cerebral cases, due to plugging of the capillaries of the brain. The second group includes those in which there is intense infection. Determined by the appearance of hemogoblin in the urine, detected not by the naked eye but by tests for blood in the urine, I found that a 6 per cent. infection of the blood corpuscles was the dividing line between pernicious malaria of the type of intense infection and the nonmalignant type of malaria. The capillaries of the brain in these cases often became blocked. I never saw recovery of a patient who became comatose with a 6 per cent. infection of the red blood corpuscles, whereas in the comatose group with less than 6 per cent. infection I have often seen recovery. The third group is the provisional group of the hemoglobinuric type, the so-called blackwataer fever, which I believe to be due to malaria, although that has not been absolutely proved.

I was interested in the fact that from experimental observations Dr. Bass had arrived at the same conclusions that I had reached from clinical observation and pathologic studies at necropsies, namely, that quinin does not reach the parasites lodged in the capillaries of the brain, so that when this occurs to any great extent, recovery is practically impossible.

As to the methods of administration of quinin, in Panama I gave quinin intramuscularly for a long time, but I finally arrived at the conclusion that the only call for the intramuscular injection of quinin, excluding the malignant cases, is when the patient is nauseated and vomits the quinin when given by mouth. Even in the cases in which there is vomiting during the paroxysms, during the intermissions quinin can be given by mouth and is quite effectual. I found the best method of administering quinin in routine to a larger number of patients, is to give it during the early morning hours, when they are not vomiting and can take it best. This I found was due to the fact that the paroxysms occur in the afternoon in over 80 per cent. of the cases. The quinin in this way is introduced before the sporulation of the large

number of parasites which cause the paroxysms, and it then seems to have the best effect. Thirty grains of quinin given in this way was better than 40 grains given in 5-grain doses every four hours, with two extra 5-grain doses before the paroxysm was due. I have seen several cases in which the patients died after the destruction of the parasites as far as we could tell, and they showed evidence of intense toxemia at necropsy.

DR. C. S. WILLIAMSON, Chicago: I should like to ask Dr. Bass as to the time necessary to keep up treatment after recovery from the immediate symptoms. In Chicago we see little malaria and all of it is apparently imported. However, I have seen cases in the past year which have given considerable trouble from recurrences. After giving quinin until the symptoms disappeared, and then in one case giving it for three months until the spleen was apparently no longer enlarged, to my intense disgust there was a recurrence after some three or four months, the patient having been in Chicago all the time. I would like to know how long Dr. Bass gives quinin and what is to be our criterion in stopping the drug. My own experience has been insufficient to settle this question.

DR. C. C. BASS, New Orleans: In endeavoring to answer the question of the last speaker, I feel we have a great deal to learn in the treatment of malaria. There is a great deal that is desirable to know that we do not yet know. We cannot lay down dogmatic rules by which all cases of malaria can be cured or can be disinfected of the malarial plasmodia. Most cases are disinfected by taking quinin for a period of four to six weeks. The cases that continue and relapse from time to time after that much treatment or even more are exceptional cases. Often it occurs that a patient gets rid of his malaria after three or four days' treatment with quinin. Often a little longer is sufficient to rid the patient of his malaria for all time. The apparent cases of relapse after thorough treatment are often cases of reinfection. The recent work on malaria carriers has brought to light most valuable information along this line. Given a family in which a case or two of malaria exist, if we examine the other members of the family we will find some of them also have plasmodia, although they are not sick and possibly never will have attacks of malaria. They are quite capable of infecting mosquitoes and the patient therefore lives in a house where there are infected mosquitoes capable of reinfecting him. That of course would not occur where there were no mosquitoes to be infected.

THE RELATION OF ANIMAL TO HUMAN SPOROTRICHOSIS

STUDIES ON AMERICAN SPOROTRICHOSIS III *

K. F. MEYER

SAN FRANCISCO

In several publications on "Sporotrichosis in Man," investigators have advanced the theory that the infection in some of the cases was undoubtedly from cases of animal sporotrichosis. The evidence supporting their views is mostly indirect, and since 1911 it has been my effort to investigate such cases and to reach, if possible, more definite conclusions. Most of the work which I report in this paper was carried out in Pennsylvania.

Spontaneous sporotrichosis in animals has been known to exist in the United States since 1909, when Page, Frothingham and Paige[1] described their findings of sporotricha in the pus of abscesses, which had been collected from so-called cases of "epizootic lymphangitis" in Butler County, Pennsylvania. The disease of "epizootic lymphangitis" was reported by Pearson[2] in 1907, his attention having been called—by veterinarians in the western part of the state—to such cases, which resembled farcy, but did not give the immunity reactions of that disease.

Following the publication of Pearson on this subject, Fischer[3] from Ohio; Crewe[4] from North Dakota, and Mohler[5] reported cases of epizootic lymphangitis in Ohio, North Dakota and Iowa.

In 1912, I was able to report[6] before the Pathological Society in Philadelphia, that epizootic lymphangitis does not exist in Pennsylvania, so far as my investigations permitted me to procure material, but that all of the cases were sporotrichotic infections. By examination of pus and serums of horses from North Dakota, which I received through the courtesy of some of my students, I established conclusively the existence of the malady in that state. By positive cultures from material received, the proof was forthcoming quite recently that sporotrichosis of horses existed also in Montana, close to the North Dakota border and the Missouri valley. According to a personal communication from Dr. J. R. Mohler, the pathologic laboratory of the Bureau of Animal Industry has isolated a sporothrix from the pus of a case of "mycotic" lymphangitis from South Dakota.

Illustrations in various livestock reports from Iowa and Ohio clearly prove the occurrence of sporotrichosis in those states. Personal information obtained from Kansas would make it appear that sporotrichosis is also seen in that state; bacteriologic evidence could not be procured, however, even though repeatedly asked for.

In the state of Pennsylvania, until 1913, the disease was declared a reportable disease, and therefore the most reliable information could be obtained from this state. According to the figures mentioned in the accompanying table, which will be discussed later, more than three hundred cases have been observed since 1907. The figures have been collected from the animal reports of the Pennsylvania Department of Agriculture. They are, for the years 1907-1911, fairly dependable, although most of the cases were diagnosed by mallein only and not by cultural tests. But inasmuch as farcy is the only disease which will be mistaken for sporotrichosis in Pennsylvania, a negative mallein or agglutination test will decide, with fair accuracy, if the later dermatomycosis is present or not.

With a few exceptions, most of the cases occurred in the northwestern part of the state, in Butler, Armstrong, Jefferson, Mercer and Clarion counties. Three cases were found to have originated in Philadelphia and adjacent counties. On the accompanying map is indicated the location of the cases of sporotrichosis

---

* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* From the Department of Pathology and Bacteriology, University of California.

* Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped, addressed envelope.

1. Page, Frothingham and Paige: Sporothrix and Epizootic Lymphangitis, Jour. Med. Research, 1910, xxiii, 137.
2. Pearson, L.: Epizootic Lymphangitis in Horses and Mules. Thirteenth Rep. Pennsylvania Dept. of Agric., 1908, p. 134, and Circular No. 8, Commonwealth of Pennsylvania, State Live Stock Sanitary Board, Harrisburg, 1907.
3. Fischer: Epizootic Lymphangitis, Seventh and Eighth Annual Reports of the State Board of Live Stock Commissioners of Ohio, 1907-1908, p. 13, and 1908-1909, p. 13.
4. Crewe: Second Annual Report of the Live Stock Sanitary Board of North Dakota, 1908.
5. Mohler, J. R.: Mycotic Lymphangitis, Twenty-Fifth Annual Report Bureau of Animal Industry, for the year 1908, Washington, 1910, p. 229.
6. Meyer, K. F.: Sporotrichosis of Man and Domestic Animals in Pennsylvania, Path. Soc., Philadelphia, Sept. 26, 1912.

observed in Pennsylvania in 1909-1912, and one realizes at once that the distribution of the cases follows the hilly water-sheds of the Allegheny and Ohio rivers closely.

Apparently, telluric conditions are an important factor, because most of the horses found infected worked on farm lands recently opened for cultivation. The rods are invariably spread with decayed logs and other remnants of the virgin forest. In some localities, infected horses were found grazing on pasture lands which were thickly studded with old tree stumps. Through the work of de Beurmann and Gougerot[7] it is known that on the bark of trees particularly and on vegetable matter in general, the sporotricha develop saprophytically. In the middle West and Northwest the distribution of sporotrichosis along the Mississippi and Missouri Rivers seems to support the observations in Pennsylvania. It is probable, however, that the organisms—particularly the spores—have been brought down by the river-water to the prairie land from the thickly vegetated forest lands; the gradual diminution in the number of cases from the source toward the mouth of the river, is quite indicative of the condition in North Dakota, Kansas, Missouri, etc. The climatic conditions play, perhaps, a certain rôle; at higher temperatures the sporothrix does not grow very well, but it resists very low temperatures quite satisfactorily.

In those localities where intensive growth of the fungus is favored by temperature and moisture, most of the infections are apt to take place.

The epidemiologic investigations of equine sporotrichosis in Pennsylvania have shown that sporadic cases only, are common. In 1910, twenty-four, in 1911, eleven, and in 1912, thirty-six cases were reported, but in no instance was more than one animal affected on the same premises. In this respect the disease differs widely from true "epizootic lymphangitis" which always spreads rapidly in a stable; according to Bridré, Nègre, and Trouette,[8] in Algiers, twenty-seven horses were infected in a stable of eighty-two. Apparently there is no seasonal incidence as in "epizootic lymphangitis"; sporotrichosis infections occur during winter and summer and are not confined to the rainy season.

This is not the place to consider the extensive and detailed bacteriologic studies which were conducted with 35 strains from various sources. All the methods of identification permitted the conclusion that sporotricha isolated from animals are identical with those from man, and the name *"Sporotrichum Schencki-Beurmanni"* has been proposed for all the American sporotricha.[9]

Detailed accounts of the experiments will be given in my future publications on "Sporotrichosis."

The pathogenicity of the equine sporotricha for small laboratory animals was established, but it was noted that it is lower than for the human strains isolated in the United States. The most susceptible animals, like young rats, in many cases developed local abscesses only, from which they spontaneously recovered.

Generalization was less frequently seen with equine than with human strains. When it occurred, the equine strains used had been previously passed through the rat body. The susceptibility of guinea-pigs, rabbits, mice, etc., was very low for these strains. Apparently this difference did not exist for man. A laboratory infection which resulted from the handling of equine strains is ample proof of the danger which is connected with working with sporotricha.

The history of this infection is the following:

On April 15, 1913, I noticed on the dorsum close to the nail-bed of the third finger of the left hand a small ulcerated area. A formaldehyd eczema, which had healed very slowly, was thought to have been the source of a benign-bacterial infection, and accordingly the finger and hand were treated with mercuric chlorid and alcohol dressings. Iodin was also applied occasionally. No healing occurred, and by April 20 there appeared a round swelling on the middle of the ulnar side of the left arm, and on the internal surface of the humerus a large tumor, 6 by 3 cm., was felt. Soon afterward, on the middle of the dorsal side of

SPOROTRICHOSIS IN MAN AND ANIMALS IN NORTH AMERICA*

State	1898 M.	1900 M.	1904 M.	1905 M.	1907 M.	1907 H.	1908 H.	1909 M.	1909 H.	1910 M.	1910 H.	1911 M.	1911 H.	1912 M.	1912 H.	1913 M.	1913 H.	1914 M.	1914 H.	Total Human Infections, Cases
California	.....	.....	.....	....	...	....	.....	1 (C)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1 (1C)
Dist. Columbia	.....	.....	.....	....	...	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1(1C)	.....	1 (1C)
Illinois	.....	.....	.....	....	...	....	.....	.....	.....	2(1C)	.....	.....	.....	.....	.....	1 (C)	.....	.....	.....	3 (2C)
Indiana	.....	1	.....	....	...	....	.....	.....	.....	.....	.....	.....	.....	1 (C)	.....	.....	.....	.....	.....	2 (1C)
Iowa	.....	1 (C)	.....	....	...	....	.....	.....	.....	.....	.....	.....	.....	1(1C)	.....	.....	.....	.....	.....	2 (2C)
Kansas	.....	.....	.....	....	..	....	.....	1 (C)	.....	2(1C)	.....	9 (5C)	.....	1 (C)†	.....	.....	.....	.....	.....	13 (8C)
Minnesota	.....	.....	.....	....	...	....	.....	.....	.....	.....	.....	.....	.....	2 (2C)	.....	.....	.....	.....	.....	2 (2C)
Missouri	1 (C)	.....	.....	....	...	....	.....	.....	.....	2(1C)	.....	1 (1C)	.....	.....	.....	.....	.....	5 (5C)	.....	9 (8C)
Montana	.....	.....	.....	....	...	....	.....	.....	.....	.....	.....	.....	.....	1 (C)	.....	.....	.....	.....	.....	1 (1C)
Nebraska	.....	.....	.....	....	...	....	.....	.....	.....	5(1C)	.....	.....	.....	2 (2C)	.....	1 (C)	.....	.....	.....	8 (4C)
New Jersey	.....	.....	.....	....	...	....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
New York	.....	.....	.....	....	...	....	.....	.....	.....	.....	.....	2 (2C)	.....	.....	.....	.....	.....	.....	.....	2 (2C)
North Dakota	.....	.....	8 (1C)	2	1	.....	.....	.....	.....	1(C)	.....	1 (C)	.....	9 (4C)	1 (1C)	.....	3	.....	.....	22 (7C)
Ohio	.....	.....	.....	....	...	....	8 (?) §	.....	2§ 1D	.....	.....	1 (C)	.....	.....	.....	.....	.....	.....	.....	1 (1C)
Pennsylvania	.....	.....	.....	....	...	(97)‖ (4C)	35D(2C)§ 16‡	.....	56 23D 5(11D)‡	.....	22‡(14D)	.....	27(15D) 1 dog	1(1C)	36 (7D) (8C)	2 (2C)	20 (16C)	.....	2 (1C)	3 (3C)
South Dakota	.....	.....	.....	....	...	....	.....	.....	.....	.....	.....	1 (C)	.....	2 (2C)	1 (1C)	1 (1C)	.....	.....	.....	5 (4C)
Texas	.....	.....	.....	....	...	....	.....	.....	.....	1	.....	1 (C)	.....	.....	.....	.....	.....	.....	.....	1 (1C)
Virginia	.....	.....	.....	....	...	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1
West Virginia	.....	.....	.....	....	...	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1(1C)	.....	1 (1C)
Wisconsin	.....	.....	.....	....	...	....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1
Canada	.....	.....	.....	....	...	....	.....	.....	.....	.....	.....	2 (1C)	.....	.....	.....	.....	.....	.....	.....	2 (1C)
	1 (1C)	2 (1C)	8 (1C)	2	1	.....	.....	2 (2C)	.....	14(5C)	.....	19(13C)	.....	20(15)	.....	6(5)	.....	7 (7C)	.....	82 (50C)

* In this table M = man; H = horse; D, killed; C, diagnosed by cultures. † Probably. ‡ Diagnosed by simple microscopic examination.
‖ In all more than 100. § Total number not certain.

7. De Beurmann and Gougerot: Découverte du Sporotrichum Beurmanni dans la nature, Bull., et. mém. Soc. méd. d. hôp. de Paris, 1908, No. 37, p. 733.

8. Bridré, Nègre and Trouette: Recherches sur la lymphangite épizootique en algérie, Ann. d. l'Institut. Pasteur, 1912, xxvi, p. 701.

9. Meyer, K. F., and Aird, J.: Various Sporotricha Differentiated by the Fermentation of Carbohydrates, Jour. Infect. Dis., 1915, xvi, p. 399.

the carpal joint a nodule, 3 by 3 cm., was noted, being well defined from the increased edema on the dorsum of the hand. Along the lymph vessels, as far as the elbow, numerous nodules—the size of small peas—developed, and by April 28 the cubital lymph node was about the size of a cherry. On the internal side of the second phalanx of the third finger, a small nodule—the size of a pea—was readily felt. These processes, which developed slowly, were absolutely painless. The large swelling on the upper arm felt uncomfortable and, on touch, somewhat tender; it was more a hindrance to the movement of the limb than anything else. No general symptoms of fever were noted, and I attended to my regular work without the slightest discomfort. By April 25 I had made the clinical diagnosis of sporotrichotic lymphangitis following a primary sporotrichotic ulcer on the third finger, the portal of entry being the dermal defects of the formaldehyd eczema.

By April 30 the gumma on the dorsum of the hand was slightly fluctuating and was lanced. Several loops of a serous, honey-like pus were pressed out. Microscopically, a few doubtful, gram-positive mycelia of a sporotrichum were noted, but by May 3 nine colonies of a typical sporothrix had developed in one tube.

Iodin treatment, which began April 25, was intensified, and for one and a half months daily from 4 to 6 grams of sodium iodid were taken internally. Sodium cacodylate and strychnin were used for two weeks. By May 21, the nodule on the dorsum of the hand was 1.5 by 1.5 cm.; the large swelling on the humerus was the size of a large cherry-stone. The lymphostasis had subsided, but a complete absorption of the nodules was not accomplished until the middle of July of the same year.

The serum gave the following reactions on the dates mentioned:

Date 1913	Agglutination*	Complement Fixation	Serum c.c.
April 30	1: 60	+	0.2
May 10	1:350	+	0.05
May 21	1:150	+	0.05
June 15	1: 60	+	0.1
November 10	1: 20	+	0.3

* Method of Widal, Abrami and Joltrain.[10]

An intradermal test with killed spores of a mixed suspension of sporotricha was positive on June 15, 1913. In December, 1913, various skin tests with streptothrices, were all negative.

This case represents a true laboratory infection, with cultures. For many weeks previous to the development of the ulcer on the third finger, no necropsies on animals had been carried out nor had I come in close contact with infected animals. Large Pasteur flasks with growing sporotricha were handled, in a living condition transferred from one flask to another and used for fixation and agglutination tests. According to my records, equine strains only were used at that time, so that this accidental infection is more or less in form of an experiment, proving the pathogenicity of the equine strains to man.

The laboratory infection is the second one in the United States. The infection of the case of Wilder and McCullough[11] probably resulted from human strains, but inasmuch as Mr. McCullough worked also with one of my equine cultures, the report of my case will perhaps be of more than personal interest.

I have already discussed the question of contagion in animal sporotrichosis and have mentioned that there is sufficient evidence on hand to conclude that contact infections between horses occur in rare instance only. One human case of direct contact infection in a family, described by Widal and Joltrain,[13] is known, but on the other hand the observation of Perkins[14] and others: that a mother with a large wound on her finger treated the sporotrichotic lesions of her child, are ample proof that the healthy body ordinarily resists a sporotrichotic infection, even when the contamination with organisms contained in the pus is a severe one. The suppuration from the lesions was extensive and it seems impossible to assume that the organisms contained therein did not enter into the unbandaged wound of the mother's hand.

The contact infections between animals and man, on the other hand, deserve detailed consideration, particularly when one realizes how widely distributed animal sporotrichosis is in the United States as compared with France, where the disease exists endemically without there being any evidence that horses or other animals are spontaneously infected.

Animal sporotrichosis has been observed to occur spontaneously in the following countries and has been described by the following writers:

In horses: Madagascar (Carougeau[15]); United States (Pearson;[2] Page, Frothingham and Paige;[1] Fischer;[3] Mohler;[5] Sutton[16] and K. F. Meyer).

In dogs: France (Gougerot and Caraven[17]); United States (K. F. Meyer).

In rats: Brazil (Lutz and Splendore[18]); France (Jeanselme and P. Chevalier[19]).

In addition to these reports, numerous instances are cited in the literature in which the infection was probably carried from animals to man by their bites or hides.

Rouslacroix[20] reports a case of sporotrichosis as the result of a dog bite; Sutton's[21] case was due to a hen bite, and another case of Rouslacroix[22] was attributed to a parrot bite. Rispal and Dalous[23] describe a case of sporotrichosis following the bite of a horse. Olson[24] accuses gophers; Stickney[25] suspects hides, and Quain[25] a tuberculosis-like infection in a heifer. These cases could doubtless be increased in number, because in one case of R. L. Sutton's[21] the primary trauma and portal

10. Widal, Abrami and Joltrain: Séro diagnostic mycosique, Ann. d. l'Institut. Pasteur, 1910, xxiv, p. 1.

11. Wilder, W. H., and McCullough, Clifford, P.: Sporotrichosis of the Eye, THE JOURNAL A. M. A., April 11, 1914, p. 1156.

13. Widal and Joltrain: Sporotrichose chez membres d'une même famille, Bull. et mém. Soc. méd. d. hôp. de Paris, 1908, No. 36, p. 647.

14. Perkins, in De Beurmann and Gougerot: Les sporotrichoses Paris, 1912, p. 224.

15. Carougeau: Sur une nouvelle mycose sous-cutanée des équidés, Jour. d. méd. vét. et. d. Zootech., January, February, March, 1909, pp. 8, 75, 148.

16. Sutton, R. L.: Sporotrichosis in Man and in the Horse, Boston Med. and Surg. Jour., 1911, clxiv, p. 179.

17. Gougerot and Caraven: Sporotrichose spontanée du chien, Presse méd., 1908, No. 43, p. 337.

18. Lutz and Splendore: Ueber eine bei Menschen und Ratten beobachtete Mycose, Centralbl. f. Bakteriol., 1907, xlv, p. 631.

19. Jeanselme and Chevallier: Transmission de la sporotrichose à l'homme par les morsures d'un rat blanc, Bull. et. mém. Soc. méd. d. hôp. de Paris, 1911, No. 10, p. 287.

20. Rouslacroix, in de Beurmann and Gougerot: Les sporotrichoses, Paris, 1912, p. 278.

21. Sutton, R. L.: Sporotrichosis in America, THE JOURNAL A. M. A., Dec. 24, 1910, p. 2213.

22. Rouslacroix, in de Beurmann and Gougerot: Les sporotrichose des animaux, Rev. gen. de. méd. vét., 1913, xxl, p. 557.

23. Rispal and Dalous: Deux cas de sporotrichose, Ann. de dermat. et de syph., 1909, No. 12, p. 689.

24. Olson, G. M.: A Case of Sporotrichosis in North Dakota, THE JOURNAL A. M. A., Sept. 21, 1912, p. 941.

25. Stickney and Quain: Discussion of the Article of Gustav F. Ruediger and Miller: Sporotrichosis in North Dakota, Jour. Minnesota Med. Assn., 1911, xxxi, 512.

of entry were acquired through a dog bite when feeding kaffir corn to a pet. In every instance the animals were not visibly infected, and in the case of Sutton the kaffir corn could just as well have been contaminated with the spores of the sporotrichum as the saliva or teeth of the dog. My observations, in finding sporotricha in the mouth cavity of an apparently normal horse, explain the case of Rispal and Dalous in which the horse bite caused sporotrichosis in a draughtsman.

It cannot be denied that animals will act as passive carriers of sporotricha. Their mouth cavities, skin and hair, being soiled with vegetable matter, can carry the organism for a long period, and even a multiplication of the sporotricha can take place. I cultivated sporotricha from the skin and hairs collected from two horses associated with sporotrichotic animals in isolation stables where such animals had been kept for several years.

Lutz and Splendore[18] and Gougerot[26] had previously found the same conditions existing in rats, rabbits and cats. Such passive carriers, which mostly act as such temporarily, are, in their importance, similar to insects. In one experiment I observed that ordinary house flies (musca domestica) having fed on sporotrichotic organs of a rat, could infect Sabouraud's plates with sporothrix spores three days after contact with the infected material, and after death the spores remained alive, on the cadavers, for over twenty days (longest period tested).

It appears possible, therefore, that various agents, animals not excluded, can act as vehicles of the sporotricha in a manner similar to that found in many other diseases. This condition is, perhaps, the more apparent in sporotricha because it is a disease of the rural surroundings, and livestock on farms are more apt to come in contact with the spores than any other possible transmitter.

The aspect concerning the importance of animals as active or principal carriers is entirely different, however. As I have pointed out, such infections occur in considerable numbers, and when studying superficially the accompanying map, on which I have shaded the states in which equine sporotrichosis has been recorded, one notices that practically in the same states in which numerous cases of human sporotrichosis have been observed, animal infections are found. Although the information available is very meager, I judge through personal communications that the extent is even a larger one, and I am of the opinion that in Ohio, North Dakota, Kansas and Missouri, numerous cases of equine sporotrichosis occur, annually, which are not properly recognized and, therefore, are not reported.

In Pennsylvania the number of cases per annum has gradually decreased since 1907, until only 20 cases were reported in 1913; of these 20, 16 were diagnosed by cultures or serum tests. In 1912, when my attention was called to the detection of such cases, only 36 were found. Most of the cases I have seen, personally, in the northwestern part of the state, and I was very anxious to find out if any human cases had ever been the result of handling such horses.

When making a survey of Jefferson County, for human infections, in 1912, I found one case which at the beginning appeared to be a contact infection from a horse. The history of the case is the following:

26. De Beurmann and Gougerot: Les sporotrichoses hypodermiques, Ann. de dermat. et de syph., 1906, p. 1005.

FIRST CASE OF SPOROTRICHOSIS OBSERVED AND BACTERIOLOGICALLY PROVED, IN PENNSYLVANIA

History.—At the beginning of April, 1912, E. B., aged 16, a native of Strattonville, Jefferson County, Pennsylvania, observed on the index finger of his left hand a small "pimple" which developed later into a small, irregular ulcer. He remembered having had a small cut on this finger and having treated a horse which suffered from so-called "hives" on the hind legs. In the following months the ulcer became enlarged, and, along the finger and arm, numerous small, hard nodules developed which softened only after from two to three weeks, some discharging a viscid, thin pus. The treatment advised by Dr. A. Ray McNeil, Westville, Pa., consisted in cauterization with phenol and general antiseptic dressings.

Examination, July 1, 1912.—The patient is strongly built; is in perfect physical condition; shows no signs of undernutrition; has no elevation of temperature; the mucous membrane of the throat and pharynx are normal; on the dorsum of the second and third phalanx of the left index finger is an irregular ulcer, about 1.5 cm. in diameter; two days previously it was burnt out with phenol and shows fresh granulations which bleed freely. The edges are slightly undermined and some small pockets contain necrotic tissue. The surrounding skin is thickened and reddish blue. On the thumb a small ulcer, the size of a penny, with a grayish ground and bluish edges, lies in an indurated area of skin. On the dorsum of the finger and palm are a few hard nodules, the size of a pea. All around the metacarpeal joint a few hard and soft nodules are felt. On the inner and outer surfaces of the forearm, numerous reddish-brown and also bluish discolored areas are noted. Some are distinct nodules; some are flattened, covered by bluish skin and represent small abscesses in the subcutis. The lymphatics are hardened, enlarged and contain numerous nodules of various sizes. None of these nodules is soft. On the forearm one bluish, discolored area shows distinct cicatrization. According to the patient, this abscess had spontaneously discharged a small amount of pus. The cubital lymph node is hard, the size of a large cherry. The axillary lymph node is slightly enlarged and tender on compression. The nodules are indolent and cold. The bluish, discolored, soft areas are very tender to the touch. The subcutaneous nodules are confined to the course of the lymphatics. One of the small abscesses on the inner surface of the forearm was lanced; a reddish, stringy, honey-like pus exuded, but by pressing on the lymphatics on the upper arm, about 10 c.c. of the same pus escaped freely.

Smears of the pus showed mostly polymorphonuclear leukocytes and a few mononuclear cells; no mycelia could be detected after prolonged search. The culture tubes of Sabouraud's glucose agar, inoculated with the pus and carried close to the body, showed, three days afterward, from 10 to 15 typical colonies of the *Sporotrichum schencki-beurmanni.* Cultures from the tonsils and pharynx revealed no sporotricha. The serum of the patient gave the following reactions:

Wassermann, with guinea-pig's heart: negative.

Agglutination of sporothrix spores, grown and handled according to Widal, Abrami and Joltrain: 1:500.

Complement fixation: positive with 0.2 c.c. serum.

I immediately advised Dr. McNeil of my findings and diagnosis, and suggested treatment with potassium iodid.

On July 30 I again saw the patient. The ulcers were completely covered with dry skin. There were still a few nodules, the size of a pea or a pinhead, to be felt along the inner and outer surfaces of the forearm. Seven bluish-red, cup-like, contracted scars were seen on the forearm. The lymph vessels were fine and were only indicated by the nodules, the size of a small pea. The lymph nodes were small. According to a letter from the father of the patient, complete recovery was achieved in the course of eight weeks. In a letter dated December, 1913, the patient informed me that he was in perfect health.

This case is of interest in two respects, namely:
1. It is the first authentic case observed and studied in

Pennsylvania. There is no doubt but that the infection was contracted in Strattonville where the boy was born as he had not left the village for three years prior to his illness. The case developed in a locality where, according to our knowledge, sporotrichosis in animals is common (eight cases reported in Jefferson County in 1912). 2. According to the father and the patient, the infection was contracted from a horse suffering from "hives." This term implies in the mind of the farmer that the horse was affected by eczema or a similar infection. Having my interest directed toward such cases, I was particularly anxious to prove my suspicions. A careful examination of the horse revealed that the animal had probably been affected with a form of eczema. The skin was hypertrophic and scaly, and along the coronary band decidedly scarred, but no nodules or distended lymph vessels or hypertrophy of the subcutis—the signs of latent or healed sporotrichosis—could be found. The blood serum examined for immune bodies—a procedure which, in my experience, permits a retrospective diagnosis if that animal was previously affected with sporotrichosis—gave negative results.

Several samples of the scales and hair of the horse, examined culturally, three months after the infection had occurred, did not demonstrate the presence of sporotricha, and the suspicion that the horse was, perhaps, a passive carrier, was not well supported.

In the light of these findings, the infection of the boy at Strattonville, Pa., doubtless was not due to a contact infection with an active animal sporothrix carrier. To suspect that the horse was a passive carrier at the time the infection took place is reasonable, but the circumstances for the infection were just as favorable for other agents, like soil or other material, containing the spores which entered the body of the young farmer by way of the small cut on his index finger. The trauma was responsible, in the first place; hence any direct association with the horse is rather far-fetched, in my opinion, in a rural region where probably the water, the sponge, the brush, etc., used for treatment of the animal, were contaminated with sporotricha.

If direct contact with infected horses were the cause of sporotrichosis in man, more cases would undoubtedly have occurred in the northwestern part of Pennsylvania, where hundreds of horses have been handled, treated and necropsied by veterinarians and farmers. The case reported is the only one in that section of the state. It is possible that the case of Haynes and Cherry,[27] reported from West Virginia, is another human case contracted in the Ohio-Allegheny belt of sporotrichosis.

The second case on record in Pennsylvania, reported in 1913 by Miller,[28] was contracted in Philadelphia by a man handling tin cans. The cut was the portal of entry for the sporothrix. From a comparative viewpoint, his case proves that sporotricha exist in Philadelphia and surroundings. The case in a dog and three cases in horses, all in the city of Philadelphia, were never satisfactorily explained as to their origin of infection. Until 1912 much support was given to the idea that the animals contracted the disease in the western part of the state and that probably an undetected, endemic focus existed in Philadelphia, due to such outside infections. Inasmuch as, recently, cases of equine sporotrichosis unquestionably developed in Lancaster and Montgomery counties, and Miller's case originated in Philadelphia, these cases are now better explained.

These and other facts gathered in Pennsylvania make it now imperative to investigate whether sporotrichosis in man, reported in this country and abroad,



Geographic distribution of sporotrichosis.

27. Haynes, R. H., and Cherry, S. L.: Case of Sporotrichosis, West Virginia Med. Jour., March, 1915, ix, 303.
28. Miller: Sporotrichosis, Ann. Surg., 1913, lviii, 540.

is actually proved to be a contact infection from diseased animals.

Full credit should be given to Hyde and Davis[29] in having suggested the possibility of human infections from horses affected with sporotrichosis. In their case a transmission of the "unknown disease" from the horses to the patient in North Dakota is, however, very improbable for many reasons.

In the first place, my studies have revealed that the mortality from sporotrichosis is very low and, in the second place, so far no cases of nasal sporotrichosis have been observed or recorded in the United States. The description given by Carougeau[15] for cases of nasal sporotrichosis in Madagascar corresponds more with true epizootic lymphangitis than the other malady.

In my opinion, the disease among the horses in North Dakota, with which Hyde and Davis associate their human infection, was farcy and not sporotrichosis. This view has also been expressed by several residents of North Dakota whom I interviewed concerning these cases. It is unfortunate that this disease of the horse has not been studied bacteriologically.

In the third place, the history of the human case states that the patient could not remember having come in contact with the diseased horses of a neighboring farm. In what manner contact took place, however, is not described by Hyde and Davis. Inasmuch as sporotrichosis is not contagious, the presence of infected horses on a farm cannot be made any more responsible for the infection than biting insects or vegetables which are well known to be passive carriers, particularly in North Dakota where the largest number of sporotrichosis cases has been contracted by the usual channels of wound infection. Personally, I do not think that, in this case, contact infection is proved.

In the case of sporotrichosis reported by Richard L. Sutton,[16] a diseased horse is mentioned as being indirectly responsible for the infection. The clinical data concerning the horse correspond in many respects with our knowledge of equine sporotrichosis, but unfortunately no bacteriologic proof is available, and our information concerning animal sporotrichosis in Kansas is limited. It is not stated that the baling-wire with which the patient injured his hand, or that part of the manger which the farmer repaired, had been soiled with pus from a diseased horse. Also, in this case, the circumstances leading to the infection can be explained in other ways. In my opinion, the connection between horse and man is better established than any other case on record—but it is in no way conclusive.

The only true contact infection proved bacteriologically is the observation by Carougeau[30] in Madagascar. A veterinarian punctured his hand when operating on a mule affected with sporotrichosis.

In the table the cases of sporotrichosis observed since 1898 are given, including all of the cases reported to the end of May, 1915. The summaries of Hamburger[31] and Ruediger[32] have been enhanced by the reports of Cooke,[33] Ravogli,[34] R. L. Sutton,[35] Rhamy and Carey,[36] Adams,[37] Newmann,[38] Dermody and McMartin,[39] Miller,[28] B. F. Davis,[40] Wilder and McCullough,[11] Simpson,[41] Haynes and Cherry,[27] Albert and Grover,[42] and McGavock,[43] in the United States; and G. E. Learmonth[44] in Canada.

The cases of Cooke, Haynes and Cherry, Simpson, McGavock, etc., are particularly valuable, because the evidence collected demonstrates the wide distribution of sporotrichosis in the United States. A total of eighty-two cases (and one additional case, reported by Wolbach, origin of infection and details not known to me) has so far been reported; two new cases in Pennsylvania and two in Canada are here included. Of these cases, fifty were diagnosed by culture tests; in twenty states the disease has been observed, and probably in most of the cases originated there. Apparently in those communities where the interest was aroused by some physicians, more cases have been recorded than elsewhere. Across the North Dakota border, in Alberta, Canada, two cases have also been seen.

Out of about 400 cases of human sporotrichosis described in the international literature, only one or two cases (Carougeau's and Sutton's cases) can be connected with cases of equine sporotrichosis. This fact, and the evidence discussed herein in detail, do not support the theory that human sporotrichosis is very frequently transmitted from horse to man.

If other animals play an important rôle in the United States, it has not yet been demonstrated. So far, no rats examined by the writer have been found to be infected. In South America one human infection was attributed by Lutz and Splendore[45] to the bite of a spontaneously infected rat. It would be exceedingly valuable if investigations were conducted to ascertain whether gophers or ground squirrels in regions where sporotrichosis is common, can spontaneously contract this mycosis. Dogs, cats and horses can probably harbor sporotricha in the mouth cavity and, as I have demonstrated for the dog, also be active transmitters of the organisms, so that in those states where sporotrichosis is common, proper attention should be paid to bite wounds from such animals. The same can be said regarding the injuries from birds, like parrots and chickens, even though neither spontaneous nor experimental infections have been successfully demonstrated in them. Their beaks, soiled with spores, can act as vehicles of transmission. The cases of Sutton[21] and Rouslacroix[22] are sufficient proof.

Bovine animals are not susceptible to sporotrichosis, according to some of my experiments. On the other

29. Hyde and Davis: Sporotrichosis in Man, Jour. Cutan. Dis., 1910, xxviii, 321.
30. Carougeau: Premier cas africain de sporotrichose de de Beurmann, transmission de la sporotrichose du mulet à l'homme, Bull. et mém. Soc. méd. d. hôp. de Paris, 1909, No. 34, p. 507.
31. Hamburger, Walter W.: Sporotrichosis in Man, The Journal A. M. A., Nov. 2, 1912, p. 1590.
32. Ruediger, Gustav F.: Sporotrichosis in the United States, Jour. Infect. Dis., 1912, ii, 193.
33. Cooke: Texas Med. Jour., 1914, lx, 190.
34. Ravogli: Lancet-Clinic, Aug. 2, 1913.
35. Sutton, Richard L.: The Occasional Clinical Resemblance of Blastomycosis and Syphilis to Sporotrichosis, The Journal A. M. A., Jan. 11, 1913, p. 115; Sporotrichosis in the Mississippi Basin, ibid., Oct. 3, 1914, p. 1153.
36. Rhamy and Carey: Jour. Indiana State Med. Assn., p. 274.
37. Adams, G. S.: Another Case of Sporotrichal Infection in Man, The Journal A. M. A., June 7, 1913, p. 1784.
38. Newmann: Western Med. Rev., 1912, p. 646.
39. Dermody, L. A., and McMartin, C.: A Case of Sporotrichosis, The Journal A. M. A., Sept. 19, 1914, p. 1028.
40. Davis, B. F.: A Case of Sporotrichosis, Surg., Gynec. and Obst., 1914, xix, 490.
41. Simpson, C. A.: Cutaneous Sporotrichosis, Washington Med. Ann., 1915, xiv, 79.
42. Albert, H., and Grover, A. L.: Sporotrichosis, Iowa Med. Jour., 1913, xix, No. 9.
43. McGavock, E. P.: Sporotrichosis (?), Old Dominion Jour. Med. and Surg., 1914, xix, 132.
44. Learmonth, G. E.: Sporothrix Bearing Some Resemblance to Sporothrix Beurmanni, Canadian Med. Assn. Jour., 1915, v, 32.
45. Splendore: Sporotrichoses americanas, Brazil Med., 1909, xxiii, 361.

hand, the hides can probably act as transmitters of spores, like any other agricultural product.

CONCLUSIONS

Spontaneous sporotrichosis of domesticated animals, particularly horses, is very common in certain parts of the United States.

Extensive bacteriologic, serologic experiments have proved the identity of the causative organisms in human and animal sporotrichosis. The pathogenicity for human beings was observed in an accidental laboratory infection.

The geographic distribution of equine sporotrichosis, which is apparently closely connected with certain telluric and climatic conditions, covers, in two states, the same territories from which numerous cases of human infection have been reported in the last five years. In Pennsylvania, equine sporotrichosis—as so-called "epizootic lymphangitis"—has been noted in as many as 150 cases annually.

Only two human cases are on record in that state. A careful study of one case suggested at first a contact infection with a sporotrichotic horse, but this assumption could not be proved conclusively. The evidence collected does not support the theory that human sporotrichosis is very frequently transmitted from horse to man in the United States. The cases of Hyde and Davis, Sutton and others are discussed from this point of view, and compared with the cases reported by Gougerot, Carougeau, Lutz and Splendore, and Rouslacroix.

The absence of sporotrichosis among veterinarians and farmers in Pennsylvania—where equine sporotrichosis is so exceedingly common and so often treated, calling forth undoubtedly close contact with infectious material—demonstrates that sporotrichotic infections in man are established by this channel of contact in rare instances only.

Second Street and Parnassus Avenue.

THE RECENT METHODS OF TREATING DIPHTHERIA *

FRANK C. NEFF, M.D.

KANSAS CITY, MO.

Wide publicity has been given in America during the past year to Schick's discovery of the skin reaction to diphtheria toxin. This reaction is of interest in the treatment of exposed individuals because of its bearing on the practice of passive immunization.

Schick[1] in 1913 published his conclusions and results, which I summarize as follows:

> Diphtheritic children before a serum injection possess no protection bodies against the toxin of diphtheria. The prophylactic use of antitoxic serum supplies this lack. Many individuals without ever having shown symptoms of a diphtheria infection, already possess antibodies: in the new-born, 80 per cent.; older children, up to 50 and 60 per cent., and adults, up to 90 per cent. Children 2 to 5 years of age gave the highest percentage of positive reactions. For a great number of persons, therefore, the prophylactic injection could be abandoned.

Schick finally adopted 0.1 c.c. of a 1:1,000 dilution of the toxin (computed to 1/50 of the single lethal dose for a 250-gm. guinea-pig) as the quantity to be injected within the skin. With a successful injection, one sees immediately a white, wheal-like elevation with a punctate design corresponding to the mouths of the hair follicles. Following the central infiltration of the toxin solution, there usually develops in from twenty-four to forty-eight hours a somewhat lighter red areola which, after a further twenty-four to forty-eight hours, fades without pigmentation. There remains, then, the central part, distinguishable through its pigmentation, so that in the later stages the area of the central infiltration corresponds to the diameter of the pigmented part of the skin. At the end of one week the scaling and pigmentation are characteristic. An inflammatory reaction at the site of injection occurs in some individuals in spite of antitoxin content of their blood. Definite conclusions then can only be drawn by the negative outcome of the reaction, which proves the presence of antibodies in sufficient quantity for prophylaxis.

The reaction, then, is due to the direct irritant action of the toxin in the skin; little or no antitoxin in the blood fails to neutralize the toxin injected. The negative reaction indicates that the toxin has been neutralized.

All exposed children in an institution are tested with diphtheria toxin. After twenty-four hours those reacting positively get an immunizing dose of serum, the negative ones do not. This saves a great number of persons the injection of serum with its discomfort, sensitization and expense.

At the Gilliss Orphans' Home in Kansas City, the test was made on eighty-one children following the development of several cases of diphtheria in the institution during November, 1914. The outcome of the test was recorded on each child's record and those reacting positively were isolated and closely watched. Fortunately no new cases developed at that time. One girl who gave a negative reaction on November 14 developed diphtheria four weeks later, which demonstrated the truth of Schick's assertion that the immunity of the individual against diphtheria may from some cause be changed. It is a clinical fact observed in diphtheria hospitals that nurses who go on service without sufficient rest or when reduced in health show less resistance than at other times.

When a child with the disease has been admitted to the hospital we have, when possible, brought in the other members of the family for inspection and culture, administered the Schick test and at the end of twenty-four hours immunized the ones reacting positively.

We had an interesting confirmation of the fact that few new-born infants react to diphtheria toxin, in the testing of sixty-five infants, forty-four of whom were under 1 month of age, and only two as old as 5 months. Only one of these sixty-five, a child 13 days old, reacted positively.

Sufficiently large numbers of observations have been made and published to show that a negative reaction shortly after exposure is of practical use as an index of the individual's lack of susceptibility at that particular time, and makes unnecessary a prophylactic injection of serum.

EARLY DIAGNOSIS OF DIPHTHERIA

Nowhere probably is an early diagnosis of more importance than in diphtheria. Reiche[2] has just reported that the mortality increased in 6,250 cases

---

* Read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Schick, B.: Die Diphtherietoxin-Hautreaction des Menschen als Vorprobe der prophylaktischen Diphtherieheilserum-injektion, München. med. Wchnschr., Nov. 25, 1913, p. 2608.

2. Reiche, F.: Ztschr. f. klin. Med., 1915, Parts 3 and 4.

in the Hamburg epidemic according to the day of the disease on which the serum was received, from 4.4 per cent. the first day to 33.6 per cent. on the seventh day.

Typical cases are diagnosed clinically fairly early, but we have come more and more to the conclusion that many cases of diphtheria cannot be diagnosed except by the microscope. Such cases are often the nasal, laryngeal and atypical tonsillar ones. The practice of waiting twenty-four hours for a culture is now no longer necessary, for twelve hours at the most is sufficient. Clinical diphtheria should be injected without waiting, though it is usually possible by immediate smear to confirm fairly accurately the diagnosis. Light swabbing of a membrane is often inconclusive, but deep scraping of the membrane with a swab or curet until bleeding occurs makes it possible to obtain the Kiebs-Loeffler bacillus for immediate recognition on the coverglass with Ponder's stain. Antitoxin is administered at once and the culture a few hours later is examined for confirmation.

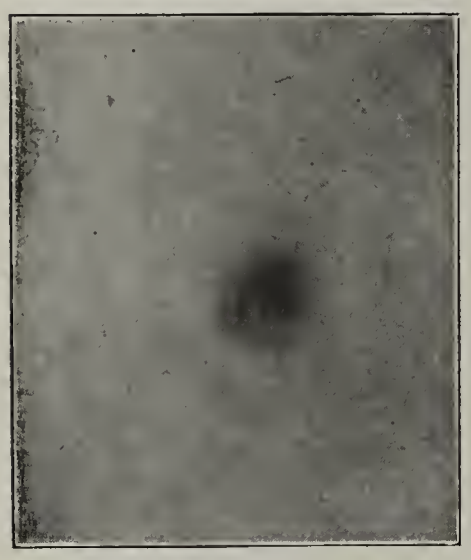


Fig. 1. — Diphtheria skin reaction forty-eight hours after injection of toxin.

METHODS OF ADMINISTRATION AND DOSAGE OF ANTITOXIN

Mild cases of diphtheria injected early have, in the experience of most men, responded uniformly well to subcutaneous injection. In the past, however, not sufficient antitoxin has been given at the first dose, especially when several days have elapsed before treatment was begun; the administration of the serum was distributed over several days, with ineffectual and useless repetitions; therefore the dosage and the most efficient method of administration become questions of great importance.

TABLE 1. — DIPHTHERIA CASES AT ISOLATION DEPARTMENT, KANSAS CITY GENERAL HOSPITAL, FOR NINE MONTHS, 1914-1915

Age	No. of Cases	Average Units in Recovered Cases		Number of Deaths
		Mild	Severe and Late	
Under 12 months	3	2,000	23,000*	1
12 months to 5 years	46	4,400	9,400	6
6 to 10 years	47	5,100	10,700	2
11 to 14 years	17	6,100	8,100	0
15 years and over	42	8,500	12,000	0
Total	155			9

* One case.

The mortality among the 113 children was 7.9 per cent. Total mortality was 5.8 per cent. Average day of the disease when fatal cases received first dose of serum was the third. Average number of units received on first day of treatment in fatal cases was 6,100. Four of the nine deaths occurred within twenty-four hours of admission to hospital.

Morgenroth of Berlin, in 1907, was the first to show the relative rapidity with which antitoxin is absorbed when injected subcutaneously, intramuscularly and intravenously. Four hours after the injection, the antitoxin in the blood following intramuscular use is five to twenty times as much as after subcutaneous injection.

TABLE 2.—SERUM INJECTIONS

Method of Administration	Subcutaneous	Intramuscular	Intravenous
Number of cases	63	46	89
Cases receiving only one injection, per cent.	63.4	66	62
Reactions appearing immediately after injection	2	2	14
Average time until three negative cultures, days	21.9	18.5	19

Total injections, 198.
Number of cases of serum sickness, 24.
Percentage of serum sickness, 15.
Average number of serum injections per case, 1.2.

Rolleston[3] is an advocate of the exclusive intramuscular use of antitoxin, believing that it is more rapidly absorbed and less rapidly excreted. The number of his injections averaged only 1.2 per cent.

Ganghofner[4] advocates intramuscular in preference to the subcutaneous injection of serum because of the much more rapid absorption of the serum, and because it is as easily performed and with less pain.

For immediate neutralization of the toxin the intravenous is probably the most rapid. Morgenroth states that the amount of antitoxin in the blood just after intravenous injection is the greatest. Park[5] has demonstrated the fourfold efficiency of serum introduced directly into the blood stream. The method is no longer in the experimental stage as the literature shows. Kausch[6] believes that the caution previously held by the profession concerning intravenous injection is unfounded. In the hands of the inexperienced, the technic is more difficult, but there is no reason for expecting a greater danger from infection.



Fig. 2.—Skin reaction one week after toxin injection.

Successfully introducing serum into a vein of any child is not a difficult thing as a rule. The veins of the arm, the scalp or the neck are preferred, in the order named. Nor is there danger from an immediate general serum reaction in young children, a fact which has been proved by the extensive observations of Park. Antitoxin must be used in diphtheria, and in many cases it is necessary to get the greatest possible benefit from it.

3. Rolleston and Macleod: Intramuscular Injection of Antitoxine in Treatment of Diphtheria, Brit. Jour. Child. Dis., July, 1914.
4. Ganghofner: Prag. med. Wchnschr., 1913, xxxviii, 565.
5. Park: Boston Med. and Surg. Jour., Jan. 16, 1913.
6. Kausch: Deutsch. med. Wchnschr., 1913, No. 48.

Hence reactions are not contraindications to serum use.

The dosage of antitoxin must of course be governed by the severity of the case, and by the length of time the disease has existed when the patient comes for treatment. It is probable, also, that the weight of the individual should enter into the question of dosage, in order that sufficient antitoxin may be introduced into the blood stream to give the necessary concentration. There is no objection, except expense, to the maximum dose necessary to safeguard the individual. Park states that a thousand times as much antitoxin is given as is required for the amount of toxin, to reach the tissue which has been damaged by the toxin.

The tabulation of our hospital cases since Sept. 1, 1914, is shown in Table 1.

COMMENT

There were only three infants under 12 months of age. One of these received enormous doses of antitoxin. This amount is excluded in making up the average administered in all cases.

In spite of the greater severity of the disease, as a rule, where the intravenous injection was employed, the number of units received was practically no greater than in the milder cases. In order to be sure that cases received enough antitoxin for a cure, more was given, probably, in certain mild cases than was needed. The average shows that our milder cases received 6,000 units and the severe and late cases 10,000 units. It has been our effort to give in one dose sufficient antitoxin for the entire course of the disease. The number of injections, however, was 1.2 per case.

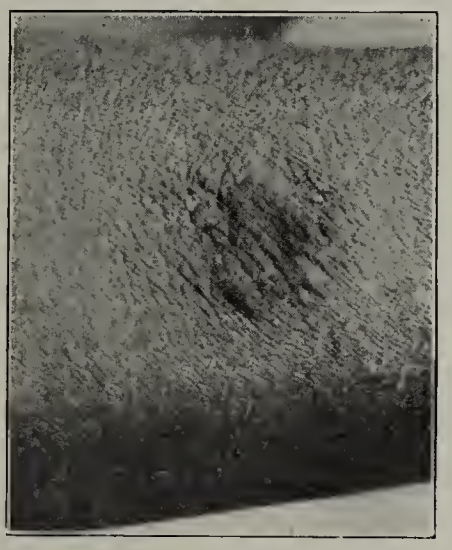


Fig. 3.—Appearance of reaction in negro child at end of two weeks.

CONCLUSIONS

While in a general way it is accepted that diphtheria should be diagnosed and treated at the earliest moment, it is shown by our hospital cases at admission that much time has been lost. Of more importance than serum dosage or its method of use is the institution of treatment early in the first day of sickness.

In order to avoid the delay that frequently exists while a diagnosis is being made, we suggest that the municipal health board and hospital extend its emergency service to include the immediate distribution and collection of culture tubes and swabs, making it possible in clinically positive as well as in doubtful cases to administer the serum within a few hours.

Smears should be examined immediately in all cases, and antitoxin administered at once if microscopically or clinically positive. Cultures should be reported on within twelve hours if possible.

Serum should be given at the earliest period within the first twenty-four hours. As it has been proved that the intramuscular injection gives more rapid and efficient results, and as it is practically as easy of administration as the subcutaneous, there is no reason why subcutaneous serum injection in diphtheria should not be abandoned. Intravenous injection gives less discomfort than any other method, if those cases having reactions are excepted. We found no contraindications to its use beyond the occasional difficulty in finding a vein, and we shall continue to use it as the method of choice in severe and late cases.

ABSTRACT OF DISCUSSION

DR. JOHN ZAHORSKY, St. Louis: An epidemic of diphtheria in St. Louis last winter assumed some of the most toxic forms I have ever seen. We tried all the methods of making the injections, cutaneous, intramuscular, and intravenous, and found that the intravenous was not always practicable on account of the reaction. In serious and neglected cases it is often necessary to adopt the intravenous method. As to the relative value of the subcutaneous and intramuscular methods, I am as yet not decided. In a case of moderate severity there is a time when the pseudomembrane just after the administration of antitoxin, for a few hours shows a furious increase in growth. This may go on for five or six hours and the whole throat become involved. What has the antitoxin done? It has lowered the resistance temporarily. Can we stop this spread better by the intramuscular injection than by the subcutaneous? It seems to me that the time of the spread is shortened by the intramuscular injection. Much of the serum on the market is not perfectly clear; it has small particles which it ought not to have and I would be afraid to use it for fear it might do some harm. There ought to be some way of filtering it to remove such particles. Again, there is some discomfort associated with the administration of the intramuscular injections, so in my cases I prefer the subcutaneous if the circulation is good, the pulse good and there is no lymphadenopathy; but if the circulation is poor, the limbs cold and the child pale, we must not depend on a subcutaneous injection but must resort to the intramuscular injection.

DR. LANGLEY PORTER, San Francisco: I would like to ask Dr. Neff what were his results with the Schick reaction in respect to sloughing, and what were the results of the doses of antitoxin he gave in laryngeal diphtheria?

DR. ARTHUR A. O'NEIL, San Francisco: The paper does not agree with what we have found with reference to diphtheria in San Francisco. In San Francisco the cases are not recognized so early and indeed, many cases are moribund when we see them. In our cases the small amounts of antitoxin advocated by Park do not seem applicable. In laryngeal diphtheria we give sixty thousand units and repeat it up to 310 thousand units and those patients have been saved. I wonder at the statements made that patients can be saved with the small amounts that have been spoken of. We give the antitoxin intravenously or intramuscularly and usually in massive doses, forty or sixty thousand units at a time. Even with these large doses the mortality is from 12 to 15 per cent. I have yet to be convinced of the advantages of giving small doses. I believe in giving massive doses and giving them frequently. As to anaphylaxis, I have seen it occur in only one case.

DR. HENRY D. CHAPIN, New York: I think it is unsafe to argue from institutional work that we will find the same things in private practice. I have tried both large and small doses of antitoxin and I have found an average dose as effective as the very large doses, and I cannot understand why the very large doses are necessary. In institutions we get the late and bad cases. I do not think it is safe to let it go forth that we favor these large doses, or that such large doses as mentioned in the paper help us in our work.

DR. JESSE M. MCGAVIN, Portland, Ore.: I agree with Dr. Chapin regarding large doses of antitoxin. In 1908 in Vienna Dr. Pirquet did not give large doses even in the laryngeal cases. I would like to ask if any one here has had experience with Vincent's angina, and if they have used diphtheria antitoxin in these cases. I have had cases in which they looked, as far as the membrane and clinical

symptoms were concerned, like diphtheria but the spirillum was found. These cases proved very obstinate to treatment and I should like to know the experience of others in the use of antitoxin in these membranous origins.

Dr. John A. Colliver, Los Angeles: It should be mentioned that there is a pseudoreaction that may be mistaken for the true reaction unless one understands the difference. It is usually indurated and disappears in about twenty-four hours. In Professor Pirquet's Kinderklinik I saw Docent Schick working on another method of making his test. It is somewhat similar to the von Pirquet tuberculin test. This method eliminates the pain that is incident to the ordinary Schick intradermal method. The drill is used in the same way as in making the tuberculin test. Smaller doses of antitoxin are used there than have been mentioned here. The body weight plays an important part.

Dr. W. W. Behlow, San Francisco: I disagree with Dr. Chapin and Dr. McGavin and agree with Dr. O'Neil with regard to the large doses of antitoxin. I have observed the disease both here and in Boston. In Boston the small doses were used for years, but they did not bring the results that had been shown from the large doses that have been used in recent years. If the small doses did the work, why was it that after using them for several years in the Boston City Hospital they abandoned them for larger doses? The children were not being saved by the small doses. Then Dr. McCollum and Dr. Place increased the doses several thousand units before the patients got well. Why is it that small doses give good results in the hands of some men while in the hands of others they do not?

Dr. W. P. Lucas, San Francisco: In regard to the Schick reaction, the reader did not say anything about the pseudoreaction. In some cases we find a reaction that disappears within twenty-four hours. In some of these reactions there is considerable infiltration, but they may be distinguished from the true reaction by the fact that they disappear at the end of forty-eight hours. In some cases, even with a moderate reaction, I have seen necrosis. I have made the test in over 400 children in the last few months and 21 per cent. showed some necrosis. There were none due to infection, cultures being sterile. In a few cases large sized blebs formed, which broke down and became necrotic. These usually healed readily. In many cases the reaction remained two or three weeks. In positive cases there will be marked redness at the end of twenty-four hours. In institutions it is important to know when to make the inspection, whether it is better at the end of forty-eight hours or at the end of seventy-two. If we can know this it will be that much time saved. In institutions we have cultures of the throat made at the same time as the Schick test. If we find that we have 50 to 65 per cent. of positive tests, that eliminates one-third of the work, since the negative cases will not have to be watched. Only those reacting positively are given antitoxin. If one has children in institutions or in schools where they can be watched closely, it may not be necessary to give antitoxin.

Dr. Frank C. Neff, Kansas City: I do not think there is anything in my paper that would indicate that I advocate small doses. An average early dose of 6,000 units in children who have a mild case and of 10,000 units in severe cases constitutes fairly large amounts for single doses. As brought out by Park and Schick, the dose should be an adequate one, sufficient to counteract all the toxins, given as early as possible and at one time. So far as the pseudoreaction is concerned, I did not mention it as a pseudoreaction, but I spoke of it as an anaphylactic or inflammatory reaction that disappears in the course of the first forty-eight hours. Schick found that he had some sloughing with stronger solutions of antitoxin, but with greater dilutions he did not get it. I have seen only one case of sloughing in 500 injections, and I believe that an overdose of the solution was injected in this case.

I have never used antitoxin in Vincent's angina. Occasionally a patient comes into the hospital with a diagnosis of diphtheria who has been getting antitoxin with no improvement. An examination of the inflammation has showed it to be Vincent's angina. From this I would infer that antitoxin has no value therein. We considered the cases of laryngeal diphtheria as severe cases from the standpoint of the stenosis, even if the cases were not toxic or late; however, an early serum injection in laryngeal cases produces just as favorable results as in the other types of the disease.

A LABORATORY METHOD FOR THE DIAGNOSIS OF SMALLPOX*

JOHN NIVISON FORCE, M.D., Gr.P.H.
Assistant Professor of Epidemiology
AND
HELEN LOWELL BECKWITH, M.S., Gr.P.H.
Assistant in Hygiene, University of California
BERKELEY, CALIF.

This paper presents the details of some experiments conducted with a view toward developing a method for the diagnosis of smallpox by means of a skin reaction produced by the intradermal injection of smallpox vesicle contents into previously vaccinated rabbits.

In several infectious diseases the invading organism acts as a cutaneous allergen and the application of this allergen to a skin previously sensitized gives rise to substances which cause an inflammatory reaction at the site of application.

Jenner[1] in his original series of experiments noted that cutaneous allergic phenomena were produced on the application of variolous material to the scarified skins of persons sensitized by previous smallpox or cowpox. Tieche[2] in 1912 showed that these reactions were not produced in persons immune to smallpox when varicella material was used, and suggested the use of these reactions in differential diagnosis. He further suggested that the material be heated to 70 C. for five minutes in order to avoid accidental infection with syphilis. "Nothing is needed," writes Tieche, "for judging this reaction except an eye trained in dermatology and a person who reacts with typical allergy. Since the physician can himself acquire this allergy through successive vaccinations (with vaccine virus) he can try the reactions on himself in doubtful cases." In a later communication Tieche[3] asserts that he has employed this method of differential diagnosis in 34 cases. The material from 14 of these produced allergic reactions on three previously vaccinated persons. The material from the remaining 20 cases did not give allergic reactions and these cases later proved to be either varicella or erythema multiforme.

In reviewing the work of Tieche it occurred to us that more consistent results could be obtained through the use of sensitized animals by trained observers at established laboratories than by experiments conducted by the family physician, perhaps unfamiliar with the phenomena of skin reactions, on human beings whose exact allergic condition might be largely

---

* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Jenner: An Inquiry into the Causes and Effects of Variolae Vaccinae, London, 1798.

2. Tieche: Ueber die Verwendbarkeit des vakzinalen Allergie (Frühreaktion von Pirquet) als diagnostiches Hilfsmittel bei Verdacht auf Variola, Cor.-Bl. f. schweiz. Aerzte, 1912, xlii, 626.

3. Tieche: Differentialdiagnose von Variola und Varizellen mit Hilfe der kutanen Allergie, Cor.-Bl. f. schweiz. Aerzte, Sept. 5, 1914, p. 1121.

a matter of conjecture. We accordingly determined to apply vaccine virus, smallpox vesicle contents, and varicella vesicle contents to the skins of previously vaccinated animals and observe the resulting cutaneous allergic phenomena.

In choosing the method for the application of the allergen to the sensitized skin we decided on intradermal injection.

Von Pirquet[4] has shown that this method is much more delicate than the direct application to the scarified skin, since a given quantity of allergen will produce a reaction intradermally after an equal quantity has failed to give the cutaneous reaction in the same subject. The intradermal test was applied by Moussu and Mantoux[5] in 1908, for determining tuberculosis allergy in cattle, by Van Es and Schalk[6] in experiments with avian tuberculosis, and recently by Gay and Claypole[7] as a method of producing the typhoin reaction in sensitized rabbits.

We employed the following technic in giving the intradermal injections: On the day preceding the test, two areas about 5 cm. in diameter were clipped and shaved on the back of a previously vaccinated rabbit. The injection was made with a glass tuberculin syringe provided with a 26 gage needle 10 mm. in length. The amount injected was between 0.05 and 0.1 c.c. and if properly placed was felt as a small lump in the skin. The intradermal reaction appears within twenty-four hours after the injection, but may not reach its maximum until the second day. It disappears gradually. It is characterized by an infiltration of the skin at the site of the injection, with redness and often heat. The redness fades before the infiltration disappears.



Fig. 1.—Intradermal reaction produced by injecting 0.1 c.c. of a 1 in 10 dilution of the contents of a smallpox vesicle in physiologic salt solution; Rabbit 9. Forty-eight hours after injection. The rabbit was vaccinated three and one-half months before the date of the test.

Experiment 1.—A. A series of five rabbits previously vaccinated with rabbit-grown vaccine virus was given intradermal injections of a 1 in 10 dilution of rabbit-grown vaccine virus in physiologic salt solution. Control injections were made in three of these rabbits with a 50 per cent. glycerin diluent used in the preparation of the vaccine virus. A normal rabbit received both injections. Positive reactions were obtained in each of the vaccinated rabbits, while the normal rabbit showed no reaction. The control injections of glycerin produced slight redness but no induration.

B. A series of guinea-pigs which had been previously vaccinated with calf-grown vaccine virus was inoculated with calf virus. In some cases the inoculations were in the form of skin scarifications and in others the intradermal method was employed. In every case cutaneous allergic phenomena were present whether the guinea-pigs had been originally vaccinated on the skin of the scrotum or by the subcutaneous injection of 1 c.c. of a 1 in 100 suspension of vaccine pulp in physiologic salt solution. A normal guinea-pig used as a control to the above intradermal injections, though showing no reaction, was sensitized to such a degree by the single intradermal injection that it presented allergic phenomena on later skin vaccination.

C. A series of calves which had been used for the production of vaccine virus was given intradermal injections in the skin fold at the root of the tail using a 1 in 10 dilution of calf-grown vaccine virus. Positive reactions occurred in each instance, while two control calves gave no allergic reactions during the first twenty-four hours, but at the end of the usual incubation period developed typical vaccinia vesicles at the site of inoculation.

This experiment shows that cutaneous allergy to vaccine virus is present in rabbits, guinea-pigs, and calves which have been sensitized by vaccine virus. The virus used for the vaccination of an animal need not necessarily be produced from an animal of the same species, and this rule applies also to the virus used for the intradermal test. The cutaneous allergy is present whether the original vaccination was on or under the skin.

Having studied the reactions produced in previously vaccinated animals by inoculations with vaccine virus, the next step was to compare these reactions with those obtained by inoculation with smallpox vesicle contents.

Experiment 2.—A. The inoculation was made with the contents of a small capillary tube which had been sent to the state hygienic laboratory with the statement that it had been filled from a smallpox pustule. Data as to the period of the disease or age of the material were not furnished. A previously vaccinated rabbit was given an intradermal injection of a 1 in 10 dilution of the contents of the capillary tube in physiologic salt solution. A normal rabbit was inoculated as a control. At the end of twenty-four hours, the site of the inoculation in the sensitized rabbit showed an indefinite red areola 20 mm. in diameter with slight induration. The control rabbit showed no redness or induration at the site of inoculation.

B. A series of five previously vaccinated rabbits was given intradermal injections with a 1 in 10 suspension in physiologic salt solution of material from the following case:

R. A. B., an employee in the department of grounds and buildings, was admitted to the university infirmary, July 27, 1914, with the following history: Patient had returned to Berkeley, July 6, from a visit to the family of a brother in Eureka, Humboldt County. The brother's children were just recovering from alleged chickenpox. At that time a mild epidemic of smallpox was present in Humboldt County. The patient began to feel ill on July 22, and on the next day developed a papular rash on his face. He continued at work driving a team on the university campus until the rash became pustular, when he reported to the infirmary. When examined

4. Von Pirquet: Ueber die verschiedenen Formen des allergeschen Reaction bei der Revaccination, Ztschr. f. Immunitätsforsch. u. Exper. Therap., Orig., Nos. 1 and 2, July 5, 1911, p. 1.
5. Moussu and Mantoux: Sur l'intro-dermo-réaction à la tuberculine chez les animaux, Proc. Sixth Internat. Cong. on Tuberculosis, iv, Part 2, p. 821.
6. Van Es and Schalk: Avian Tuberculosis, Bull. 108, North Dakota Agric. Exper. Sta.
7. Gay, F. P., and Claypole, Edith J.: An Experimental Study of Methods of Prophylactic Immunization against Typhoid Fever, Arch. Int., Med., November, 1914, p. 671.

the patient had a well-marked pustular eruption on the body, face, palms and soles. A clinical diagnosis of smallpox was made, the patient isolated, and his fellow workmen vaccinated. On July 28 the contents of several pustules were collected in capillary pipets and placed on ice. All of the rabbits inoculated with material from R. A. B. gave sharply positive reactions, though the test was not applied to three of the five until nine days after the material was collected.

Since the smallpox vesicle contents used in the preceding experiment preserved their properties as allergens for nine days at ice-box temperature, it would seem to be practicable to collect vesicle contents in capillary tubes at the bedside and ship in vacuum bottles or other suitable containers to central laboratories for intradermal tests on rabbits sensitized to vaccine virus.

Cutaneous allergic phenomena having been produced in previously vaccinated animals with both vaccine virus and smallpox vesicle contents, it became necessary to show a constant inability to produce the reaction with varicella vesicle contents in order to prove the value of the test in the differential diagnosis of smallpox from chickenpox.

Experiment 3.—A. Material for this experiment was collected from varicella cases occurring in the service of the university infirmary. In each instance the contents of varicella vesicles were collected in capillary pipets, diluted with physiologic salt solution to represent 1 part in 10 of the vesicle contents, and injected intradermally into the skin of a rabbit sensitized to vaccine virus. In no instance was a reaction produced by inoculation of varicella vesicle contents.

TABLE 1.—RESULTS OF THE INOCULATION BY INTRADERMAL INJECTION AND SKIN SCARIFICATION WITH VACCINE VIRUS, OF RABBITS, GUINEA-PIGS, AND CALVES PREVIOUSLY SENSITIZED WITH VACCINE VIRUS

Animal	Date of Vaccination	Date of Test	Manner of Test	Result
Rabbit 2	2/24/1914	3/ 9/1914	Intradermal	3/10: Reddened area 20 by 22 mm. Induration. Back shaved and vaccinated with no result
Rabbit 3	3/24/1914*	3/31/1914	Intradermal	4/ 1: Reddened area 10 by 12 mm. Control spot showed only slight redness
Rabbit 4	3/ 2/1914	3/17/1914	Intradermal	3/18: Reddened, indurated area
Rabbit 4	3/ 2/1914	3/20/1914	Intradermal	3/21: Deeply reddened, indurated area 25 by 25 mm. Control swollen slightly but not red or indurated
Rabbit 6	.....	3/19/1914†	Intradermal	3/20: Slightly swollen, not red or indurated
Rabbit 6	.....	3/20/1914†	Intradermal	3/21: Slight swelling. No redness or induration. Control, slight swelling, no redness or induration
Rabbit 9	4/ 3/1914	4/21/1914	Intradermal	4/22: Induration and redness
Guinea-pig A	2/19/1914*	3/5/1915	Vac. on scrotum	3/ 6: Redness and induration around scratches 3/ 8: No vesicles. Redness disappeared
Guinea-pig B, C, D, E	2/ 4/1915	2/11/1915	Intradermal	2/12: Diffuse redness and induration from 16 to 40 mm.
Guinea-pig B, C, D, E	2/ 4/1915	2/19/1915	Scrotum	2/20: Slight areola along line of vaccinated scratches 2/21: Decreasing
Guinea-pig 1	.....	2/19/1915†	Intradermal	2/20: Slight diffuse redness, no induration 2/21: Redness 6 by 7 mm. induration 2/24: Increasing in size 2/26: Decreasing
Guinea-pig 1	2/19/1915‡	3/17/1915	Vac. skin of vulva	3/18: Well-marked areola along line of vac. scratches 3/19: Decreasing. 3/20: Decreasing
Guinea-pig 2	.....	3/17/1915†	Vac. skin of vulva	3/18: Slight redness on vaccinated scratches 3/19: Beginning vesicles 3/20: Vesicle formation
Calf 171	12/18/1914	1/18/1915	Intradermal	1/19: Indurated red area 20 mm. in diameter 1/20: Redness and induration still present
Calf 172‖	1/21/1915	1/21/1915	Intradermal	1/22, 1/23, 1/24: No reaction. 1/26: Typical vaccinia vesicle coincident with general vaccinia eruption
Calf 172	1/21/1915	2/11/1915	Intradermal	2/12: Indurated spot 10 by 15 mm. 2/13: Decreasing
Calf 173	1/28/1915	2/11/1915	Intradermal	2/12: Indurated spot 12 by 12 mm. 2/13: Decreasing
Calf 174	2/11/1915	2/11/1915	Intradermal	2/12, 2/13: No reaction 2/16: Well developed vaccinia vesicle at site of inoculation coincident with general vaccinia eruption

* Subcutaneously.
† Normal.
‡ Intradermal.
‖ Normal; vaccinated for vaccine production.

TABLE 2.—RESULTS OF THE INOCULATION BY INTRADERMAL INJECTION WITH SMALLPOX VESICLE CONTENTS OF RABBITS PREVIOUSLY SENSITIZED WITH VACCINE VIRUS

Rabbit	Date of Vaccination	Date of Test	Result
3	3/24/1914	7/29/1914	7/30: Reddened areola, 25 mm. in diameter, hot and slightly indurated
9	4/ 3/1914	7/29/1914	7/30: Reddened area, no induration 7/31: Areola 15 mm. in diameter, marked induration Animal photographed (Fig 1).
2	2/24/1914	8/ 6/1914	8/ 7: Well-marked indurated area
4	3/ 2/1914	8/ 6/1914	8/ 7: Deeply reddened indurated area
7	3/25/1914	8/ 6/1914	8/ 7: Sharply positive reaction, red and indurated

TABLE 3.—RESULTS OF INOCULATION BY INTRADERMAL INJECTION WITH VARICELLA VESICLE CONTENTS OF RABBITS PREVIOUSLY SENSITIZED WITH VACCINE VIRUS

Rabbit	Date of Vaccination	Date of Test	Result
2	2/24/1914	12/ 3/1914	No induration or redness
3	3/24/1914	12/ 3/1914	No induration or redness
4	3/ 2/1914	4/11/1914	No induration or redness
4	3/ 2/1914	12/ 3/1914	No induration or redness
9	4/ 3/1914	12/ 2/1914	No induration or redness
11	Normal	12/ 3/1914	No induration or redness at any time for the week succeeding test

B. A series of rabbits was injected intradermally with material obtained in the following case which presented certain "border-line" characteristics:

A. M. H., a student, was admitted to the university infirmary, Jan. 15, 1915, with the following history: During the Christmas vacation he had occupied a bed with his brother at his home in San Diego. Dec. 30, 1914, the brother

developed a rash strongly suggestive of smallpox. The brother was isolated and A. M. H. was vaccinated and the health officer finally decided that the brother had chickenpox and A. M. H. was allowed to return to the university. On Jan. 14, 1915, A. M. H. noticed vesicles on his body. January 16, patient showed scattered vesicles over his body characteristic in distribution and general appearance of chickenpox. January 17, the eruption had become more general and several of the lesions had become umbilicated. January 18, edema of the face; a profuse eruption appeared on the face, body and arms, with many umbilicated pustules and papules on palms and soles. January 19, maximum temperature 39.4 C. (102.9 F.). January 21, pustule contents were collected and a series of vaccine sensitized rabbits was inoculated intradermally. January 22, the patient was photographed (Fig. 2). No reaction occurred in any of the series of rabbits.

Had the student whose case is here described been first seen at the height of the eruption, and had he not been vaccinated successfully a few years previously he would have offered a splendid exercise in clinical differential diagnosis. It is in this class of "border-line" cases that we hope the skin reactions of sensitized rabbits and guinea-pigs will prove a diagnostic aid.

It appears that cutaneous allergic phenomena are produced, in animals previously sensitized with vaccine virus, by the intradermal injection of vaccine virus and smallpox vesicle contents. On the other hand, such phenomena are not produced by the intradermal injection of varicella vesicle contents. There is a possible objection to the last statement, since the cutaneous allergy in the preceding series of rabbits might have expired before they were tested with varicella vesicle contents.

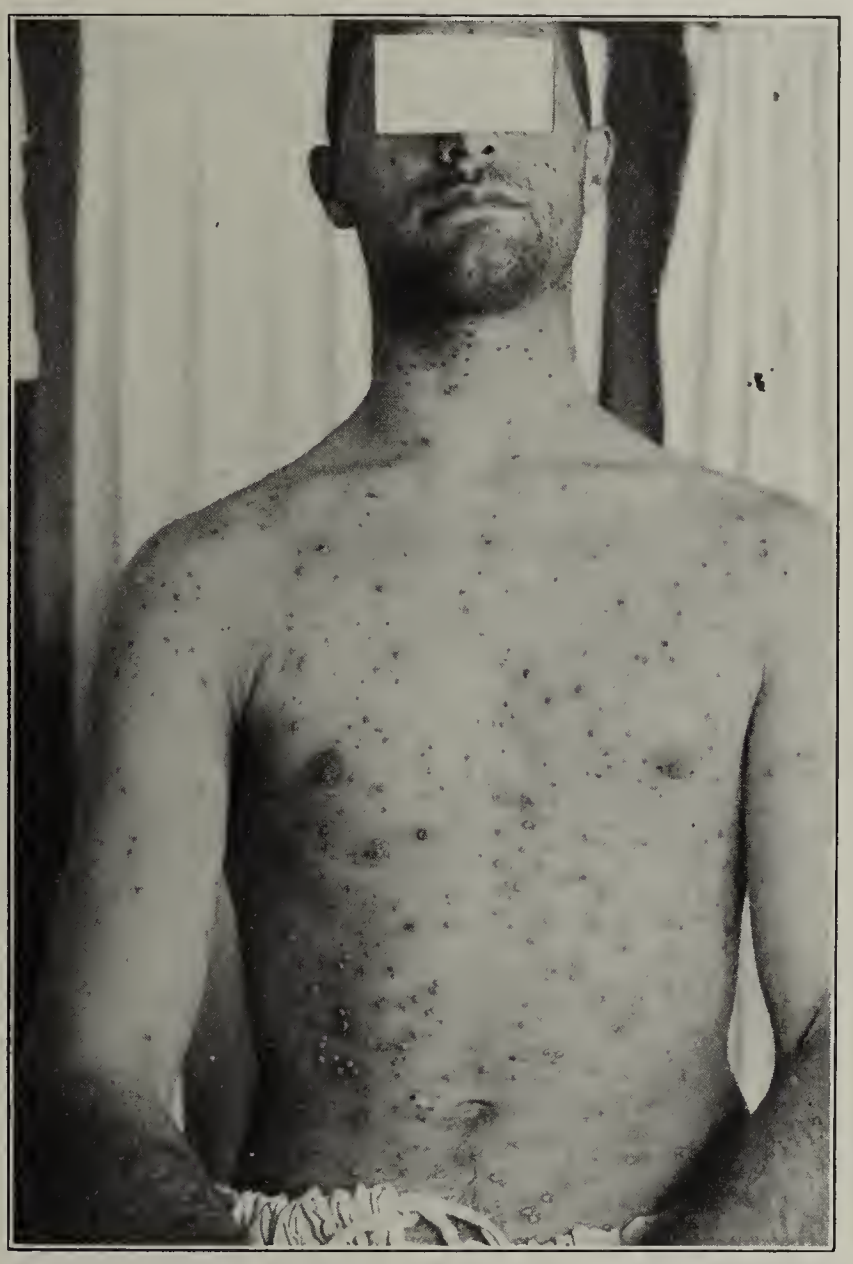


Fig. 2.—Chickenpox. Eighteenth day after appearance of eruption. Umbilicated pustules. History of exposure to varicella which in its early stages was so suggestive of smallpox that patient was quarantined and all contacts vaccinated.

Experiment 4.—The preceding series of rabbits was given intradermal injections of commercial glycerinated vaccine virus not diluted with physiologic salt solution. The test was made one week after the last injection with varicella material described in Experiment 3, *A*. Positive reactions occurred in every instance. The test was repeated in fourteen weeks and positive reactions were seen in several of the rabbits. Since all but one of these animals had been originally vaccinated with rabbit-grown virus it follows that the reactions to calf virus were not reactions to calf protein.

This experiment shows that the failure of the rabbits to react to varicella material was not due to an absence of cutaneous allergy, since several of these rabbits retained cutaneous allergy to vaccine virus for one year after the original vaccination.

SENSITIZATION OF RABBITS

The strain of vaccine virus used in the original vaccination of the series of rabbits used in the foregoing experiments was derived from vaccine pulp collected from a calf and ground in five volumes of glycerin. It differed in no way from ordinary commercial glycerinated vaccine virus. The strain had been grown only on calves and was derived originally from smallpox cases. The technic of vaccination was the following:

A gray rabbit was placed on an animal board, the hair of the back clipped and the skin shaved over an area approximating 15 by 20 cm. The skin was washed with sterile water in order to free it from soap, and was dried with sterile cotton. A suspension of the seed virus was made by adding enough physiologic salt solution to produce a dilution of 1 in 50 of the original vaccine pulp. One c.c. of this suspension was rubbed into the freshly shaved back of the rabbit, using the edge of a scalpel. At the end of five days the vaccinated area was washed, dried, and the pulp removed with a sharp curet. The pulp was immediately ground by hand in an agate mortar with seven volumes of a mixture consisting of 50 per cent. glycerin, 49.5 per cent. of sterile water and 0.5 per cent. phenol. After grinding the glycerinated pulp it was stored in the ice box without straining through bolting cloth. In each case this 1 in 8 seed virus was diluted to represent 1 in 50 of the original pulp before being used to vaccinate the next rabbit of the series.

By carrying the original calf-seed virus through four generations of rabbits we obtained a strain of virus which would grow readily on the backs of rabbits. It seemed obvious, however, that the technic of immunization might be much simplified if the virus could be administered subcutaneously and yet result in the sensitization of the animal. In an attempt to thus simplify the technic of immunization a normal rabbit was vaccinated subcutaneously at a previously shaved site with 0.5 c.c. of a dilution in physiologic salt solution representing 1 in 100 of vaccine pulp from another rabbit. This dose was repeated at intervals of three days until five doses had been given. On the day following the last dose a slight infiltration appeared at the site of the last injection. A normal guinea-pig was also vaccinated subcutaneously at a previously shaved site with 1 c.c. of a dilution in physiologic salt solution of commercial glycerinated vaccine virus representing 1 in 100 of the original pulp. No reaction was observed at the site of vaccination during the subsequent week.

Subsequent tests of these two animals (Table 1) showed that they had been sensitized by the subcutaneous vaccination.

The efficiency of subcutaneous vaccination has been well tested. As far back as 1865, Chauveau[8] vaccinated six children by subcutaneous injection of 0.02 to 0.04 gm. of vaccine lymph. Three of these children were revaccinated in the usual way with positive results while two gave negative results on revaccination twice repeated. Calmette and Guerin[9] vaccinated rabbits subcutaneously in 1901, while Kraus and Volk[10] produced immunity in monkeys by subcutaneous injections of vaccine virus diluted 1 in 500 with physiologic salt solution. Knöpfelmacher[11] produced immunity in children by the subcutaneous injection of 1 c.c. of a bacteria-free suspension of one part of glycerinated (1 in 4) vaccine virus in 200 parts of physiologic salt solution. He noted between the eighth and twelfth day following the vaccination the sudden appearance at the site of inoculation of a pea to plum-sized infiltration surrounded by an areola of redness. The areola faded in a few days but the infiltration often persisted for a week. In a later series of experiments Knöpfelmacher[12] immunized twenty children by the subcutaneous injection of 0.5 to 1 gm. of vaccine lymph heated to 58 C for one-half hour. These children gave negative results to skin vaccination performed nine days after the subcutaneous vaccination, but showed cutaneous allergic phenomena.

TABLE 4.—RESULTS OF INOCULATION BY INTRADERMAL INJECTION WITH COMMERCIAL VACCINE VIRUS OF RABBITS PREVIOUSLY SENSITIZED WITH RABBIT-GROWN VACCINE VIRUS

Rabbit	Date of Vaccination	Date of Test	Result
2	2/24/1914	12/10/1914	12/11: Areola of 10 mm., slight induration 12/12: Areola of 12 mm. marked induration 12/14: Indurated area 11 mm., no redness
		3/29/1915	3/30: Areola of 10 mm., slight induration 3/31: Areola 12 by 20 mm., slight induration 4/ 2: Areola 10 by 20 mm., slight induration 4/ 3: Decreasing
3	3/23/1914*	12/10/1914	12/11: Diffuse redness 33 mm. in diameter, heat and slight induration. 12/12: Areola 12 mm., marked redness, marked induration 12/14: Induration 7 mm. in diameter, areola 15 mm.
4	3/ 2/1914	12/10/1914	12/11: Diffuse redness 13 mm. in diameter, slight induration 12/12: Areola of 12 mm., marked induration 12/14: Areola of 11 mm., marked induration
		3/29/1915	3/30: No reaction. 3/31: No reaction 4/ 2: No reaction. 4/3: No reaction
7	3/25/1914	12/10/1914	12/11: Diffuse redness of 9 mm., no induration 12/12: Areola of 11 mm., no induration 12/14: Areola of 14 mm., slight induration
		3/29/1915	3/30: No reaction. 3/31: No reaction 4/ 2: No reaction, hair is growing rapidly and covering shaved area 4/ 3: No reaction, hair has covered area 4/ 5: Area shaved, revealing areola of 10 mm. deeply reddened, markedly indurated
8	3/25/1914	12/10/1914	12/11: Areola 11 mm., marked induration 12/12: Areola 15 mm., marked induration 12/14: Areola 14.5 mm., induration
		3/29/1915	3/30: Areola 12 mm., slight induration 3/31: Areola 20 by 15 mm., marked induration 4/ 2: Areola 15 by 15 mm., marked induration 4/ 3: Decreasing
9	4/ 3/1914	12/10/1914	12/11: Areola 12.5 mm., slight induration 12/12: Areola 12.5 mm., marked induration 12/14: Areola 12 mm., marked induration
11	†	12/10/1914	12/11: No redness, 2 mm., induration. 12/12: Same 12/14: No change
12	†	3/29/1915	3/31: Diffuse redness, no induration 4/ 2: Redness faded, no reaction

* Subcutaneously. † Normal.

The cell inclusions first described by Guarnieri[13] in 1892, which are found in the proliferating epithelial cells of the vaccinated cornea of the rabbit, are now considered to be evidences of tissue reaction in the presence of small "elementary bodies" which belong to the group of filterable viruses. Cell inclusions are characteristic of the group of dermotropic diseases to which variola, vaccinia, and varicella belong. In fact Swellengrebel[14] has shown that the cell inclusions of varicella are very similar to those produced by corneal inoculation with vaccine virus. The only differences noted were that the varicella inclusion bodies appeared more feebly stained, showed a structure more like the cell nucleus in character, and were more often found within the cell nucleus than the vaccinia inclusion bodies.

Paul[15] scarifies the rabbit's cornea with the edge of a cover glass which has been dipped in the smallpox vesicle contents. At the end of thirty-six hours tiny "air blisters" can be seen with a hand lens. After forty-eight hours these vesicles are visible to the naked

LABORATORY METHODS FOR THE DIAGNOSIS OF SMALLPOX

8. Chauveau: Bull. de l'Acad. de méd., 1865, xxxi, 1111.
9. Calmette and Guerin: Recherches sur la vaccine experimentale, Ann. de l'Institut Pasteur, 1901, xv, 161.
10. Kraus and Volk: Weitere Studien über Immunität bei Syphilis und bei der Vaccination gegen Variola, Wien. klin. Wchnschr., 1906, xix, 620.
11. Knöpfelmacher: Subkutane Injectionen von Kuhpockenlymphe, Ztschr. f. Exper. Path., 1907, iv, No. 3, p. 880.
12. Knöpfelmacher: Aktive Immunisierung des Menschen mittelsabgetöteter Pockenvakzine, Med. Klin., 1910, vi, 619.
13. Guarnieri: Ricerche sulla patogenesi ed eziologia dell'infezione vaccinica e variolosa, Arch. per le sc. med., 1892.
14. Swellengrebel: Ueber Zelleinschluesse die bei der Hornhautimpfung mit Varizellen auftreten, Arch. f. Hyg., 1911, lxxiv, 164.
15. Paul: Zur Differentialdiagnose der Variola und der Varicellen. Die erscheinungen an der variolierten Hornhaut des Kaninchens und ihre fruehzeitige Erkennung, Centralbl. f. Bakteriol., Orig., March 13, 1915, p. 518.

eye though their contents have not as yet become turbid. In three or four days epithelial necrosis occurs at these spots with corneal ulcers. In order to differentiate the forty-eight-hour lesions of smallpox from those of accidental deep scarification, Paul immerses the enucleated eyeball in a mixture of mercuric chlorid and absolute alcohol. On inspection with the lens the focal necrotic spots immediately appear as white circular punctures "comparable to the development of a photographic plate." Inoculation with varicella material fails to produce these spots. Paul considers this method of great diagnostic value in "the so-called border-line cases of smallpox" and certainly it is much simpler than comparison of the inclusion bodies. However, Paul admits that in vivo the lesions are so small and transparent that they can easily be overlooked. In order to confirm the diagnosis even as late as the forty-eighth hour after inoculation of the cornea, it is necessary to enucleate the eye of the rabbit, being extremely careful not to smear the eyeball with blood.

Since the diagnosis by means of the inoculation of rabbit's cornea requires time, skilled technic, and its final interpretation is doubtful, it follows that it is not suitable as a routine laboratory procedure. Another method consists in rubbing the suspected material on the freshly shaved back of a rabbit, but this requires a greater quantity of material than is ordinarily obtainable from the doubtful case with a few poorly developed pustules.

The method of Tieche requires only an individual sensitized to smallpox. In his experiments Tieche made use of three persons so sensitized, none of whom gave a reaction to varicella material. He does not state if these persons had ever had chickenpox. If so would there not have been a chance that they might have been sensitized to a possible varicella antigen contained in the varicella vesicle? This objection is rendered more valid since Kling[16] has succeeded in producing typical varicella vesicles in fifty-eight children by arm-to-arm inoculation of the varicella vesicle contents. The vesicles did not appear until the eighth day even in children recently vaccinated with vaccine virus. Tieche asserts that this reaction could not be confused with the allergic reaction produced by variola material; but suppose these recently varicellated children had been given intradermal tests with varicella vesicle contents, would we not have been justified in expecting cutaneous allergic phenomena?

By the use of animals sensitized to vaccine virus we eliminate a possible error due to the use of human subjects who may have had varicella, while the observations on cutaneous allergy are much simpler and can be made at least a day earlier than those on the inclusion bodies or even the "air blisters" described by Paul.

CONCLUSIONS

1. Rabbits sensitized by vaccination with vaccine virus will give a marked intradermal reaction with smallpox vesicle contents in from twenty-four to forty-eight hours, but will not give such a reaction with varicella vesicle contents.

2. The cutaneous allergy following the original vaccination was present for at least eight months though there had been no stimulation by the allergen during that period (Rabbit 8).

3. The intradermal reaction was produced with smallpox material nine days after removal from the patient.

4. A laboratory diagnosis of smallpox is, therefore, available to physicians and health officers, since vesicle contents may be shipped in capillary tubes to central laboratories and there used for making intradermal tests on sensitized rabbits or guinea-pigs.

TABLE 5.—RESULTS OF VACCINATING THE BACKS OF RABBITS WITH A STRAIN DERIVED FROM CALF SEED VACCINE VIRUS

Rabbit	Date of Vaccination	Source of Seed Virus	Date of Collection	Result
2	2/24/1914	Calf	3/ 1/1914	A few scattered vesicles
4	3/ 2/1914	Rabbit 2	3/ 8/1914	3/ 6: Erythema of shaved area 3/ 7: Beginning vesicles 3/ 8: Typical vesicle formation. Pulp collected from part of vaccinated area 3/12: Typical crusts on remaining pustules
5	3/10/1914	Rabbit 4	3/15/1914	3/13: Papules 3/14: Beginning vesicles 3/15: Typical vesicles. Pulp collected
7	3/25/1914	Rabbit 4	3/30/1914	Fair vesicle formation. Mixed with pulp from Rabbit 8
8	3/25/1914	Rabbit 5	3/30/1914	Good vesicles. Mixed with pulp from Rabbit 7
9	4/ 2/1914	Rabbit 7 Rabbit 8	.....	Good vesicles. Allowed to run full course of vaccinia without collection

2631 Derby Street—2757 Telegraph Avenue.

ABSTRACT OF DISCUSSION

DR. ALLEN F. GILLIHAN, Oakland, Calif.: I hardly think the mass of the profession realizes the importance of the diagnosis of smallpox. The average physician reports any old thing to the health office and calls it smallpox. Sometimes there is a rash that is hard to distinguish from true variola. Heretofore health departments have had no satisfactory laboratory method of diagnosis; the inclusion bodies and corneal inoculation are not of practical value in health office laboratory work. If Dr. Force's method stands the test of time, I think it will prove very valuable, because it will settle the diagnosis of a great many cases of mild types of true variola. Under ordinary circumstances we could follow the case clinically and watch its development, but for epidemiologic reasons it behooves us to know as soon as possible whether it is smallpox or something else. The only criticism that I have to offer of Dr. Force's paper is that in the papular stage one can get practically no vesicle contents, because there is no vesicle as yet, and it is thus impossible to get material with which to make a diagnosis. Of course,

16. Kling: Schutzimpfung gegen Varizellen, Berl. klin. Wchnschr., Nov. 10, 1913, p. 2073.

in three or four days the patient will develop vesicles, and in due time pustules; then there will be material to work with, but by that time usually your diagnosis is already made.

DR. L. B. WILSON, Rochester, Minn.: It occurs to me that by using laboratory animals rather than immune persons for testing supposed smallpox virus, we would avoid the possibility of infection with streptococci, which are not infrequently present in symbiosis in cases of severe smallpox.

DR. JOHN NIVISON FORCE: Ability to produce a skin reaction is not a test of the viability of either vaccine virus or smallpox vesicle contents. Dead material will give the reaction. I suggested shipping in a vacuum bottle in order to prevent decomposition. With regard to Gillihan's remark that variolation is forbidden by the state law, I will reply that Tieche suggests that the material be heated to avoid possible infection. My criticism of Tieche's method is based on the theoretical assumption that there is a varicella antigen in the varicella vesicle, since Kling has produced vesicles by arm-to-arm varicellation. If Tieche's subjects had once had varicella it is possible that they would give skin reactions to varicella material, just as they would give reactions to smallpox material if they had been recently vaccinated. By the use of animals you remove this doubt.

With regard to the criticism that by the time the case has advanced to the vesicular and pustular stages you will have no more difficulty with the diagnosis, I was not considering so much the difficulties of making a clinical diagnosis as the situation that may confront every health officer when he has to decide against other physicians in the community. If he appeals to the State Board of Health and they send an epidemiologist, some one some day may be even brave enough to question the state officer. We need, I think, something for the protection of the health officer, or vice versa, for the protection of the public; some laboratory diagnosis by which we can definitely say: "Here is a report on the material submitted by you. It gives a reaction characteristic of smallpox vesicle contents." Also we do not want a reaction that is too technically difficult for the average laboratory worker. It is the public health significance of the question which appeals to me more than the clinical aspects.

HELEN BECKWITH, BERKELEY, Calif.: There is one point that Dr. Force did not bring out, and that is that nearly every physician is capable of collecting the material from the suspected case of variola or varicella, which is a decided advantage over the corneal test sometimes suggested. In the latter the material has to be collected and sent in a very careful way in order to carry out the test. In the skin test the material may be quite old, if kept cold, or may even be heated and still give a positive reaction.

Japanese Imperial Institute for the Study of Infectious Diseases

The Imperial Japanese Commission to the Panama Exposition is distributing a pamphlet describing the plant and the work of the Imperial Institute for the Study of Infectious Diseases located at Tokyo. The institute was founded in 1892 for the purpose of promoting the bacteriologic investigations begun by Kitasato. Its scope has been much extended since that time, when it was a private institution. It has been taken over by the government and much enlarged and its work made to include the study not only of the parasitology of the islands but of the bacteriology of the infectious diseases and the production and distributions of serums and vaccines for their prevention and cure. Teaching is also conducted in the institute, two courses of three months being conducted each year, with the view chiefly to the training of men for scientific health administration work. The graduates of these courses now occupy positions of responsibility in health work throughout the empire. The buildings and equipment of the institute are extensive and complete, and in the pamphlet their description is accompanied by numerous illustrations. A bibliography of over 400 publications of the institute is appended.

FOCAL DISEASE OF THE BRAIN

A CLINICAL REPORT OF EIGHT CASES *

CHARLES R. BALL, M.D.
ST. PAUL

The medical profession in general is inclined to be pessimistic with reference to operations for the removal of brain tumors. If the operation for the removal of a suspected brain tumor is proposed, the surgeon rather delights in quoting to you, with a shrug of his shoulders, that statistics show that recovery takes place in only from 3 to 5 per cent. of all cases. In answer to this general view, Cushing says:

> It depends on what is meant by recovery. If we put a strict construction on the word recovery, the statistics of the surgeon are probably correct, but if we can be satisfied with the alleviation of suffering, the preservation of vision and the prolongation of life in relative comfort and usefulness, often for many years, certainly 50 or 60 per cent. of all patients can be thus helped.

We are so intent on the localization and removal of the growth in its entirety in order to obtain a recovery in its strictest sense that we often miss the opportunity offered for relief in the 50 or 60 per cent. of the cases. Some of us no doubt are able to recall several humiliating occasions when we thought we had surely localized a brain tumor, but, after the surgeon had exposed the area where we fully expected to see it tower above the surrounding brain tissue, nothing but normal brain in all directions was found. The tumor, the chief object of the operation, from our point of view, was not found, and in our disappointment we forgot all about the relief of symptoms which, from the patient's point of view, was the real reason why he submitted to the operation. If we cannot find the tumor, let us try at any rate to do everything possible to afford our patient relief.

Case 1 is a good illustration of what may be done toward this end although no tumor was found.

CASE 1.—Mr. G. S., aged 50, was seen in consultation in October, 1913. His symptoms were those of a slowly developing right-sided hemiplegia, the paralysis beginning in his foot and within a period of six months involving the entire right side. In addition to the paralysis, he had very severe attacks of epilepsy about once a week. These attacks were increasing in frequency. He had great fear of these attacks, and for several days after an attack he was quite confused mentally. There was nothing of a jacksonian character about the attacks. He was greatly depressed and cried easily. Six years before the beginning of his trouble he had fallen downstairs and injured his head quite badly.

Examination.—The serum Wassermann and spinal fluid examinations were negative. He had previously taken specific treatment to which he did not respond. The deep reflexes on the right side were more active than those on the left. There was also a Babinski. There were no sensory changes. The eye backgrounds were normal.

The diagnosis of brain tumor, involving the left motor area, was made and an operation advised with the understanding that it was not probable the tumor would be found, but that the outlook for relieving the epilepsy was good. The patient consented to the operation because of his great desire to be relieved from his attacks of epilepsy.

Operation.—The left motor cortex was located according to the method of Krönlein; a large bone flap was made over this area and the brain exposed. The appearance of dura and cortex was fairly normal. By palpation of the brain

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

with the finger no evidence of any tumor lying beneath the cortex was discovered. With the firm conviction, however, that somewhere in the left motor area there must be a lesion which by reflex irritation through the left motor cortex caused the epileptic seizures, it was decided to clip out the cortex according to the method of Feodor Krause. The cortex was accurately located by means of faradic stimulation, and the entire area thus determined was removed to the depth of about one-fourth inch.

Postoperative History.—The entire right side was completely paralyzed for about two weeks after the operation. Then gradually the strength in it began to return. The epileptic attacks disappeared entirely. A recent inquiry in regard to this patient brought the information that he was in excellent health and spirits and was able to take care of his business. Some paralysis still existed on the right side, but he had better use of his leg and quite as good use of his arm and hand as he had prior to the operation.

The removal of the motor cortex in this case saved the operation from being a complete failure. With no visible tumor to remove, we endeavored to do the next best thing and relieve our patient of his most distressing symptom.

CASE 2.—Mr. G. S., aged 40, was seen in consultation Oct. 7, 1914; family history negative; personal history unimportant. Patient was perfectly well until in January, 1914, when he began to suffer with headache. The headache was more or less constant and had gradually become worse; when I first saw him it was so severe at times that full doses of morphin hypodermically failed to relieve him. During these severe headaches he became delirious. He occasionally had attacks of vomiting, projectile in character.

Examination. — The serum Wassermann and spinal fluid examinations were negative. The intraspinal pressure was greatly increased; temperature was normal; white blood count, 14,300; slight trace of albumin in urine; physical condition fairly good; hemoglobin, 79 per cent. There was considerable pain in back of head extending down the neck; any jarring, as riding in train or shaking the bed, increased discomfort in head. A good deal of rigidity in the muscles of the neck was present. Percussion in the occipital region seemed to cause more pain than elsewhere on the cranium; changing position from lying down to sitting up or moving the head, caused dizziness. There was no nystagmus or paralysis of eye muscles, There were double choked disks on both sides with retinal hemorrhages. Hearing in both ears was good. The two sides of the face seemed equally well enervated. Deep and superficial reflexes were present on both sides. There was no Babinski. There were no sensory disturbances. When lying down patient appeared to have good control of both upper and lower extremities. When he walked, he threw feet forward and body and head backward, so that he had to be well supported to keep him from falling backward. Vigorous specific treatment gave him no relief.

As there were no definite localizing symptoms and the headache was becoming unbearable, a decompression operation was advised. Taking into consideration the occipital pain, rigidity of neck muscles, high degree of choked disks, vertigo on change of position and the position assumed by the patient when he attempted to walk, the good mental condition of the patient, except when he was suffering severely, and the absence of any paralysis, it was thought wiser to make the decompression in the occipital region.

Operation.—Suboccipital decompression was performed on October 17, exposing fully both lobes of the cerebellum and the medulla; the dura was very tense and when it was opened serous fluid oozed out. The cerebellum presented a normal appearance; the cerebellar-pontine angle on both sides was exposed and a trocar was put into the cerebellar lobes in different directions, but nothing was found. The dura was left open and the wound was closed.

Postoperative History.—The patient made a fairly uneventful recovery from the operation. His relief from severe headache was immediate. In two weeks his choked disks had entirely disappeared. Up to the present time he appears to be in the best of health and says he never felt better in his life.

The case may be regarded as an unusually successful result from decompression. It also illustrates a point which I wish to emphasize. Owing to the complexity of brain function frequently we are unable to localize a brain growth accurately. If, however, we study all the symptoms with reference to whether the growth is situated anterior or posterior to the tentorium, we shall be less apt to err in our decompressive measures than if we attempt a more definite localization. We are sometimes misled in cases in which the general symptoms all point to a posttentorial growth but because of some few paralytic symptoms direct our efforts to the motor area.



Fig. 1.—Greatly enlarged sella in Case 7.

CASE 3.—Miss M. S., aged 29, single, schoolteacher, was seen in consultation Dec. 5, 1914. Family and personal history, unimportant. The present trouble began seven years ago with a slight buzzing and gradually increasing deafness in right ear. The past two months she had attacks of vomiting of the projectile type. She has been able to teach regularly, however, until within three or four days of the date of the consultation. She now complains of headache, which has been present for some time. This is particularly severe in the back part of her head and down her neck. The pain is increased on coughing or sneezing as well as by any other jarring, such as riding on the train. There is a feeling of stiffness in the muscles of the neck.

Examination.—General state of nutrition, good; heart and lungs, apparently normal. Station is poor, with tendency to fall toward the right; in walking her gait is unsteady and she tends to fall, also, toward the right. Pupils symmetrical, equal in size and reacted to both light and accommodation; horizontal nystagmus, areflexia present in right eye, left eye normal. There was diminished sensation on the right side of face and right side of tongue. There was a slight involvement of the seventh nerve on the right side. Hearing in right ear greatly diminished; left ear, normal. Bone conduction in right ear not increased. No other involvement of the cranial nerves was observed. The deep reflexes were normal. There was no Babinski. Loss of muscle sense in right arm and leg was marked. There was an awkwardness and slowness in the movements of the right arm and hand (adiado-

kocinesis) apparent in supination and pronation and movements of the fingers. Percussion over the head did not reveal any particular area of sensitiveness; mental condition, good; serum Wassermann, negative; urine, negative; choked disks on both sides, with only slight impairment of vision.

The diagnosis was slow growing tumor of the right cerebellar-pontine angle. Operation was advised and accepted.

Operation.—A tumor about the size of an English walnut was found in the right lateral recess and as much of it as possible removed. It was found to be sarcomatous in character.

Postoperative History.—The recovery of the patient after operation was uneventful. A recent communication from her physician says: "Two days ago she came alone to my office and walked up a long flight of stairs. She walks as yet in an unsteady manner and does not dare to trust herself away from home in any walks of more than three or four blocks. There is still some difficulty in the use of the right hand but this is better than before the operation. The headache and choked disks have entirely disappeared and the vision is normal in both eyes. There is just a suggestion of the nystagmus; sensation on the right side of the face is normal but still diminished in the tongue. In general her condition has steadily improved since the operation, although the improvement in the past two or three months has been very slight. She is planning to take up her school work in September."

This patient is another example of a partial recovery, since the nature of the growth and the fact that it was not entirely removed makes the outlook for its return extremely probable. It cannot be classified in the statistics of absolute recovery (from 3 to 5 per cent.), but may justly be regarded as a successful brain operation, since relief from all distressing symptoms up to the present time was obtained. The case is interesting because of the length of time intervening between the appearance of the first symptoms and the development of symptoms severe enough to cause the patient to seek medical aid; also for the reason that she was able to continue her regular work as schoolteacher for so long a time with such a large growth in this location.

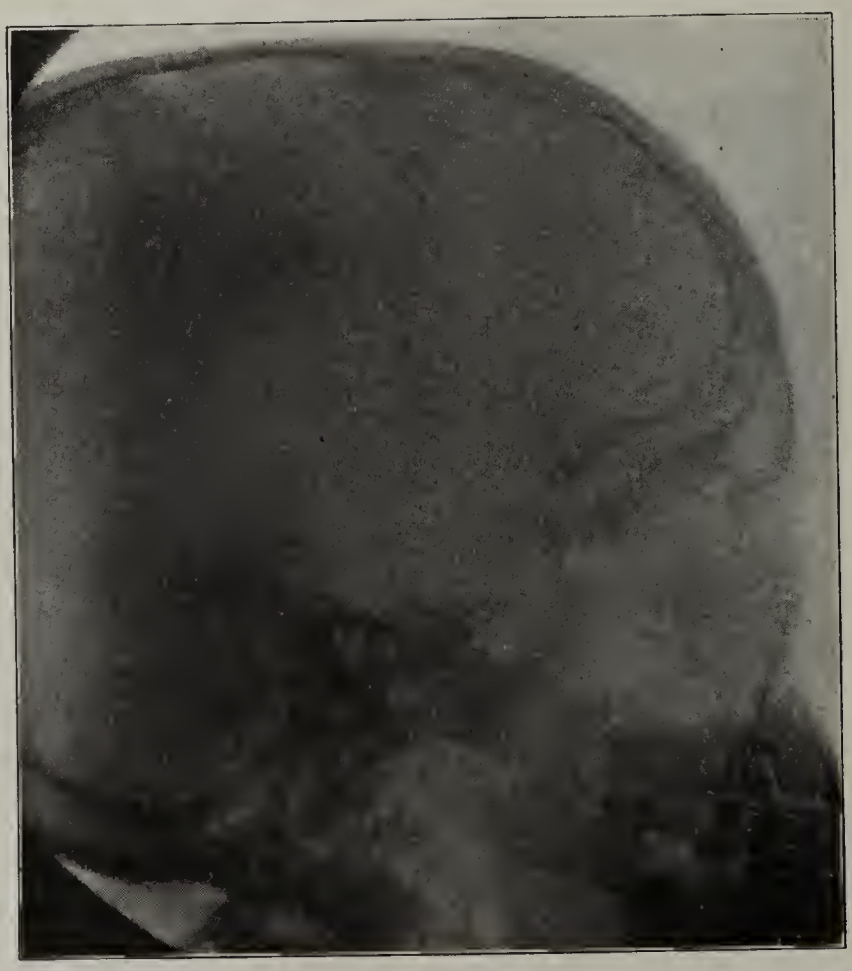


Fig. 2.—Slightly enlarged sella in Case 8; posterior clinoid indistinct.

Case 4.—Mrs. M. W., German, housewife, married, aged 52, was seen in consultation March 4, 1913. Family history and personal history, up to beginning of present trouble, unimportant. Present trouble began about one year previous to date of consultation with a severe attack of epilepsy in which the patient fell to the ground and was unconscious for several hours. She has had two attacks of this nature about a month apart. In addition to these attacks she has seizures coming three or four times weekly which are distinctly jacksonian in character. The attack always starts in the left thumb with a cramping and painful sensation; this rapidly extends to the forearm, then arm and face and sometimes to the other side of the body. During the attack the pain in the muscles of the arm is intense. Usually consciousness is retained but occasionally it is lost for a few seconds. The entire attacks last three or four minutes. Her memory is poor, particularly for recent events; she becomes dizzy when she gets up quickly or bends forward; stooping down will often bring on an attack.

Examination.—The physical condition of the patient is good. She eats and sleeps well. She is quite free from headache, and percussion over the cranium does not reveal any sensitive areas. The pupils are symmetrical in shape, but the left is larger than the right; both react to light and accommodation. The eye backgrounds are normal. Movement of bulbi free. There is no nystagmus. Hearing and vision good. No paralysis of facial nerve. Deep and skin reflexes present. No Romberg. The sensation, for both touch and pain, is much diminished in left hand. Astereognosis in left hand. She is quite clumsy with her left hand. The strength in it is also lessened. Scrum Wassermann negative. No spinal fluid examination was made.

The diagnosis was brain tumor situated in left posterior central convolution.

Operation. — This patient was operated on April 1, 1913. A large flat tumor covering and firmly adherent to the brain cortex, lying mostly posterior to the fissure of Rolando was found. This tumor had perforated the dura in many places and had eaten into the skull. Because of its great tendency to bleed, its firm adherence to the brain tissue beneath it and its evident malignant nature, no attempt was made to remove it. Microscopic examination of small portions of it removed at the operation indicated that it was of a sarcomatous nature.

Postoperative History. — The patient lived almost two years after her operation without much change in her condition.

In this case it is interesting to note that the symptoms correspond with our ideas of brain localization; also, notwithstanding the presence of a large tumor which had in many places destroyed the dura and bone tissue about it, there was almost complete absence of pain and no sensitive areas were discovered by percussion.

Case 5.—Mr. N. C., Swede, aged 60, was seen in consultation Sept. 15, 1914. Family and personal history not important. The patient says he has always been in excellent health. He cannot remember ever having had a severe illness. No history of influenza or ear disease. He was feeling perfectly well and working on his farm, as usual, when one day, six weeks before his visit to me, he was suddenly seized with a severe epileptic convulsion and fell unconscious to the ground. He remained in an unconscious condition for several hours. He apparently made a good recovery from this attack, but in three or four days he had another of the same nature, and after this attack he noticed an awkwardness and clumsiness in the use of his left arm and leg. This condition of the left side had steadily become worse so that at the time of examination paralysis of the left leg was almost complete. The patient also had typical attacks of jacksonian epilepsy, starting in the left toe and extending over the entire left side.

The slightest irritation of the skin over the left side would bring on one of these attacks. Occasionally he lost consciousness in these attacks but usually not. He complained of considerable headache, mostly over the back part of his head.

Examination.—Physically, nothing significant was observed except a marked degree of pyorrhea. Temperature was constantly normal. Pupils were equal and reacted to both light and accommodation. There was no nystagmus, no cranial nerve paralysis. The eye backgrounds were normal. The deep reflexes in the left side were more active than in the right. Ankle clonus and the Babinski were present in the left side. The muscle sense on the left side was greatly disturbed. The patient when asked to close his eyes and touch his nose with the tip of his index finger seemed unable to locate his face. He was unable to recognize any object put in his left hand by the sense of touch. His mind remained clear until within a few days before his operation, when he became mildly delirious at times. The entire cranium was sensitive to percussion but apparently no one place more than another. Urine negative and serum Wassermann negative.

Operation.—The patient was operated on Oct. 3, 1914. The brain over the left motor area was exposed. In breaking back the bone flap the dura was torn and on inspection a little pus was noticed oozing out through the opening; tracing the pus back to its origin, a large completely encysted abscess was found situated about one-fourth inch below the dura, situated at the upper part of the Rolando fissure and posterior to it. The abscess contained about 2 ounces of white thick pus.

Postoperative History.—The patient recovered from the immediate shock of the operation but died on October 7, four days afterward, of septic meningitis.

The interesting feature in this case was the unexplainable cause of the abscess, unless the pyorrhea might be so regarded and the evidently long duration of it without causing any symptoms.



Fig. 3.—Patient 8, showing tendency toward obesity and feminization of type.

CASE 6.—Male, German, aged 48, was seen in consultation Oct. 5, 1914. Family and personal history unimportant except that patient was kicked on the head over the left parietal region when 11 years old, by a horse. He was not rendered unconscious by the injury nor was he attended by a physician. He remembers that his mother dressed the wound and it discharged pus for some time. The scar is still plainly visible. In August, 1914, he tripped and fell on a hard cement floor, striking his shoulder and face and jarring his whole body. A few days after this fall he felt some pain in his big toe on the right side. He soon began to notice that he could not handle the right leg and foot as well as formerly. This condition increased and gradually involved his arm. At the time I first saw him he could not walk without help and then with the characteristic swing and drag of the right limb, typical of a hemiplegic condition. He complained of headache chiefly in the occipital region.

Examination.—His mentality was good. He had no vomiting spells. His vision was also good. Nothing significant was found in the physical examination; temperature normal; serum Wassermann, negative; spinal pressure, much increased. Globulin reaction ++. Lymphocytes 5/3. Spinal fluid Wassermann, negative. Pupils were equal and reacted to both light and accommodation. No nystagmus. Field of vision, normal. Eye backgrounds, normal. No evidence of cranial nerve involvement. No Kernig. Both deep and superficial reflexes present. No ankle clonus or Babinski; slight Romberg; no sensory disturbance; marked weakness of right arm and leg.

Patient was able to be up and walk around with help and on several occasions went out for an automobile ride; each time after returning he seemed more helpless. On October 10 he began to vomit and became stupid and confused mentally. The paralysis in arm and leg was now absolute.

Operation.—Oct. 13, 1914, he was operated on. A large bone flap was made over the motor cortex on the left side. When the dura was opened no pulsation could be felt, and an area of boggy consistency was revealed. When a trocar was put into this area a clear yellowish fluid flowed out and on enlarging the opening numerous fresh blood clots were found. This cyst was situated between the dura and brain and was flattening the brain convolutions down into the cranial cavity. The walls of the cyst were as thick as the dura itself. The cavity of the cyst was packed with gauze and the wound closed.

Postoperative History.—The next day after the operation the patient began to use his paralyzed arm and leg apparently without difficulty. He was delirious for several days and had several convulsive attacks; otherwise his recovery was uneventful. At the present time he appears perfectly well and works every day.

This case is interesting in that it shows the remote effects of old head injuries. The cyst was undoubtedly caused by the injury which the patient had received when a boy. It was probably beginning to degenerate when he had his fall in August. This fall started the cyst to bleeding and enlarging. The automobile rides increased the bleeding and consequently the rapid progression of symptoms during the last week before the operation were explained.

The two following cases are examples of disease of the pituitary body:

The following case falls in Dr. Cushing's classification of pituitary disease in Group 1, representing those cases in which, along with definite constitutional disturbance, caused by defective glandular function, there are also neighborhood symptoms due to pressure.

CASE 7.—Male, aged 19, family history, negative. This boy was a full-term baby. He was normal in every way up to his eleventh year; at that age he began to lose his hearing, first in the left and then in the right ear, and gradually within a period of three years he became totally deaf. No other symptoms accompanying this deafness were observed. In July, 1914, five years after he had become totally deaf, he was taken suddenly sick with vomiting and severe pains in the left temple. The severe pain continued for four or five days, when a complete ptosis of the left eye occurred.

Examination.—When I saw the patient in August there was still the ptosis, a dilatation with paralysis to both accommodation and light of the left pupil, and some neuralgic pain at times. No other symptoms were observed. The Wassermann in the blood and the three reactions in the spinal fluid were negative. No satisfactory diagnosis was made at this time. On Feb. 8, 1914, I saw this patient again. The ptosis had almost completely disappeared, the pupil reacted to both accommodation and light and was nearly normal in size. In the seven months since my last examination the patient had gained 15 pounds in weight; his lips were somewhat thickened and protruding. His voice was falsetto in character. There was a development of his breasts and a rounding out of his hips which suggested the feminine type of form. About one month before his visit to me he began

to lose the vision in his left eye. An examination of the field of vision showed vision in the left eye almost entirely gone. He could barely distinguish as shadows one's fingers on the nasal side; on the temporal side he was totally blind. In the right eye his nasal vision was good, but on the temporal side it was gone. There was also a paralysis of the external rectus. The eye backgrounds were fairly normal in appearance. Very little pain was complained of. There was 0.5 per cent. of sugar in the urine and a mild polyuria. He got up about three times during the night to pass his water. A roentgenogram (Fig. 1) of his cranium showed an enormously enlarged sella, about 3 cm. in width and 2 cm. in depth, with the posterior clinoid process scarcely visible. The anterior wall of the sella appeared to project into the sphenoidal sinus. A diagnosis of tumor of the hypophysis was made and operation advised.

Operation.—This was performed on February 27, by Dr. Cushing. A hemorrhagic cyst situated in the center of the pituitary body was found; the contents were evacuated and the walls destroyed as well as possible.

Postoperative History.—The patient made an uneventful recovery. On April 24, less than two months after the operation, vision in the right eye was fairly normal, and in the left eye, fingers on both the nasal and temporal sides were easily counted by the patient. His voice had lost its falsetto character. Sugar was still present in the urine but in less than half the amount found before the operation. The neuralgic pain and polyuria had disappeared entirely.

Case 8.—Male, aged 14, family history, negative; personal history, up to time of present trouble, unimportant. In January, 1913, the patient received a severe blow on the right side of the forehead, just above the right eye, which rendered him unconscious for about ten hours. As a result of this blow there was a cut above the right eye about 1 inch in length, the scar from which is still plainly visible. On the day following the accident he complained of an attack of dizziness which lasted fifteen or twenty minutes, during which the objects in the room seemed to go around and he lost consciousness for a few minutes. The attack was followed by a headache. At first he had similar attacks every day, but after a few months they became less frequent, occurring at the present time two or three times a week. In these attacks he must always lie down or sit down. In the dizzy part of the attack he complains of a noise in his ears, which he describes as like the sound of a bell after it has quit ringing. In addition to the dizzy attacks he has periodic attacks, coming regularly once in three or four weeks, of severe headaches during which he is completely prostrated and vomits frequently a greenish fluid. The resemblance of these headaches to migraine in a patient with such typical symptoms of hypopituitarism leads one to wonder whether disturbed function of this gland may not play an important rôle in the causation of migraine in general. The patient's disposition is irritable. He has had two severe nosebleeds since his accident. He goes to school almost every day but usually comes home at 10 o'clock recess on account of headache. He has made no progress in school whatever since his accident although previous to the accident he made good progress. He has not cared to play or indulge in games with other boys. His appetite in general is poor. The patient's father and mother, as well as his brother and sister, are slender. Several days before his accident, dressed in a heavy sheep-lined coat he weighed 92 pounds; in May, 1913, his first weight taken after the accident, he weighed 114 pounds; on Dec. 29, 1914, 169 pounds; in March, 1915, 181 pounds, and in April, 194 pounds, making a gain of over 100 pounds in a little over two years.

Examination.—The physical and neurologic examination is in general negative. Equal parts of urine with Haines solution has at times given a complete reduction, with a reddish yellow deposit. The roentgenograms show a slightly enlarged sella, the width of which is 15 mm. and the depth 12 mm. The general appearance of the patient at first glance bears some resemblance to the myxedematous type. The face is anemic and puffy; the lips thick; the breasts and hips are greatly enlarged; the abdomen is protruding and in standing erect the limbs assume the knock-knee position observed in the female. The skin presents a mottled bluish appearance in many places. The hand is typical of this type of pituitary disease, the fingers tapering to very small end phalanges.

This case belongs to the third group in Cushing's classification, in which the neighborhood symptoms are wanting and the constitutional symptoms are predominant. These cases are especially interesting because they call attention in a striking manner to the remarkable constitutional changes which may be produced in a comparatively short time by the disturbance of functions of this little gland. When we reflect that this gland is only one of a number which seems to be intimately related in function and vitally important to our physical and nervous welfare, we are better able to realize the complex nature of life and the enormous difficulties which often confront us in accounting for symptoms and making diagnoses in so-called functional nervous disease. The number of cases reported is too small to permit of any general deductions. I wish to emphasize, however, two points mentioned in my introduction. First, the result in operations for brain tumors would be more often successful if our localization was studied more with reference to whether the growth was situated anterior or posterior to the tentorium. If this can definitely be determined decompression can be made to relieve the pressure symptoms at least for a while. Second, if no tumor or signs of tumor are found, let us not throw up our hands immediately, but endeavor in a rational and intelligent manner to ascertain if something further may not be done for the relief of the most trying symptoms.

Lowry Building.

ABSTRACT OF DISCUSSION

Dr. C. Eugene Riggs, St. Paul: Dr. Ball's paper recalls to all of us many interesting cases of focal brain disease. Among the number of hypophysial growths I have seen, I succeeded in referring one to Dr. Cushing. He operated; there was marked amelioration of symptoms for a year, with subsequent death. I have come to the conclusion that when epilepsy manifests itself after middle life, it is suggestive of syphilis or brain growth. I had a case, apparently of essential epilepsy—a young man—on going into the history of which I found that a year previous there had been trauma of the cranium. An exploratory operation was made and we found a cyst overlying the cortical area. Last year the *British Medical Journal* contained a reference to some thirty cases of brain tumor in which the symptoms had been absolutely masked by a psychosis. Recently I examined a case of Dr. Hammes' in which the patient apparently was suffering from a manic-depressive state. It was only toward the close of his life that any objective symptoms manifested themselves, and postmortem revealed a large growth.

Dr. Cecil E. Reynolds, Los Angeles: I was surprised to hear that in Dr. Ball's second case the surgeon undertook a subtentorial decompression without any localizing signs. I gather from Dr. Ball's paper that there was nothing to show any lesion under the tentorium, and I cannot see why that most excellent operation of Cushing—the subtemporal decompression—was not done in that case. The subtentorial operation is inconvenient from the standpoint of gravity, and, as Horsley pointed out many years ago, the danger of all brain operations increases as you approach the occiput and as you get near to Reid's base line. Personally, I think by far the greatest danger of operations for tumor is in the pressure. I do not think one can overestimate it. In all cases in which there is intense headache, vomiting and raised blood pressure, etc., I would do a subtemporal decompression before attempting to look for a tumor. The case of brain abscess

without assignable cause was particularly interesting to me. I operated in a similar case and reported it in THE JOURNAL in 1912, and Henderson reported a similar case about the same time in the *Lancet*. The case of jacksonian epilepsy which was cured by excision of the center was a particularly fortunate one. I have never been bold enough to cut out a center that appeared healthy to the naked eye, although in one case recently of jacksonian epilepsy in which the fits began in the hand, I found no localized lesion, but by my somewhat thorough palpation of the hand center I caused a paralysis of the arm below the shoulder which lasted for some weeks. During this time there were no fits, and I began to think that the child would remain well, but, unfortunately, when the paralysis cleared up the fits recurred. It is possible that if I had been as radical as was Dr. Ball, a permanent cure might have ensued.

DR. D. M. HANSEN, Lincoln, Neb.: I would like to ask whether Dr. Ball used the Roentgen treatment for hyperpituitarism. I think the majority of patients would consent to that more readily than to operation.

DR. G. A. MOLEEN, Denver: I do not think there is anything more flattering than finding a tumor where one has, through the study of localizing symptoms, presumed it to exist, and nothing is more elusive than a diagnosis based on what seemed to be certain symptoms. Sometimes radiographs may assist us, but only when we take very complete pictures. They should be taken from both sides and anteroposteriorly, and preferably stereoscopically. A good deal of accent is given to a picture if some of the bony configurations which should show through are blurred at a certain point. The more dense structures usually give a distinct shadow and therefore dense tumors should usually give a very striking shadow. On the other hand, I have had in my experience a cyst giving a distinct shadow so large that it was thought to be a defect in the plate, and yet when the cyst was opened on the operating table it was found to occupy almost the entire hemisphere. In a recent case of tumor the skiagram showed a distinct shadow in the neighborhood of the sella turcica. The symptoms were referable to the anterior portion of the temporosphenoidal lobe. There was not sufficient remaining of the optic phenomena to say that there was a bitemporal hemianopsia, since the blindness had already progressed to a great extent, but operation revealed an accumulation of fluid deeply situated in the anterior portion of the temporosphenoidal lobe near the middle line.

In reference to pituitary tumors, I have in mind a case (I do not know whether to say a boy or a man) 4 feet 6 inches in height, 28 years old. Growth stopped at 12 years following an attack of scarlet fever. Skiagram of the head showed a very large sella turcica. There was peripheral, bitemporal limitation of the visual field. His hands were small, there was no pubic hair and he presented an infantile appearance. The epiphyses of the phalanges and metacarpals were shown by the radiogram to be separated or ununited. This was undoubtedly a tumor of the pituitary body, but not with the usual hypertrophy—rather with a sudden cessation of development. I desire principally to emphasize that sometimes in the hands of good radiographers a skiagram (when taken bilaterally and stereoscopically) may be of considerable contributory value, but should not be relied on exclusively.

DR. C. R. BALL, St. Paul: To answer Dr. Reynold's question in regard to the second case as to why I decided to make a suboccipital rather than a subtemporal decompression, this was one of the points I wished to emphasize in my paper. There was pain and rigidity in the back of the neck, extending down between the shoulders, vertigo on changing position, intense headache, a high degree of choked disk; there was also asynergia as manifested by the walk of the patient; he threw his body and shoulders far backward and had to be supported in order to maintain his balance. These were the deciding factors which caused me to recommend the subtentorial decompression. I have never had any experience in treating hyperpituitarism with the Roentgen ray. I do not see from the location of the hypophysis how we could hope to affect it without also affecting the surrounding brain tissue. In shrinking up cysts of the pituitary body we would also be liable to shrink up brain tissue, which in most instances I would not consider a very desirable thing to do.

CHRONIC TETANY

REPORT OF CASE *

J. P. MUNROE, M.D.
CHARLOTTE, N. C.

Clinicians are constantly on the alert to find a definite pathology for those conditions classed as functional diseases.

In recent years an unusual amount of attention has been directed to the so-called "regulators" of metabolism, namely, the glands of internal secretion, and the vegetative nervous system.

In my opinion, many cases, heretofore designated neuroses, on thorough investigation would be found to have a pathologic basis along the lines indicated. In this particular class of cases, the parathyroid gland is perhaps more often at fault than is generally supposed. Along with this, a serious want of balance in the vegetative nervous system is often an important factor.

The classical definition of tetany is: "It is a disease whose symptom complex consists essentially in intermittent bilateral muscular contractions which are painful in character, and usually without loss of consciousness."

The pathology of tetany, as understood today, is based on the postmortem findings, the results of operations and therapeutic tests.

It is generally agreed that the underlying factor is deficient parathyroid secretion, that this causes deficient calcium content in the blood, and that a hyperexcitability of nerve cells and fibers results from this calcium deficiency. There are those who believe that this irritation affects chiefly the central nervous system. MacCallum's experiments, however, indicate that it is peripheral nerve irritation. It is probable that both the nerve cells and the nerve fibers are irritated.

It is interesting to note that Sabbatini's experiments with trisodic nitrate, a salt of citric acid, which renders inert calcium salts, will if injected into the system, cause tetany.

I wish to state parenthetically that in the treatment of the case here reported, the fruits containing citric acid seemed decidedly harmful, and it was only after fruits of this kind were prohibited that any improvement was attained.

Berkley and Beebe advanced the theory that the most important factor is a large increase in ammonia, resulting from certain metabolic changes, endogenous toxins or from the introduction of exogenous toxins into the system. They have produced tetany by injecting ammonia, and then relieved it with calcium salts.

Operative tetany has occasionally occurred from the unintentional removal of the parathyroid glands in operating on the thyroid. Crocker reports five cases in 1,000 operations, and Frazier was able to collect eight cases in 2,000 operations.

---

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

The latest case reported that has come under my observation was reported by Johnston and Budd, at the Southern Medical Association, November, 1914. In this case, symptoms of tetany appeared thirty hours after operation, and death occurred in fifty-two hours, preceded by tetanic convulsions. The difficulty of protecting these little glands in thyroidectomy will be apparent by a brief reference to their anatomy. They consist of four small lobes of two on each side, each 6 to 7 mm. by 3 to 4 mm. by 1 to 3 mm. They lie behind the thyroid gland, and are closely adherent to it.

It is well at this point to refer briefly to the autonomic nervous system. We have two separate and distinct autonomic systems, enervating, smooth muscular fibers and the secreting glands, namely, (1) the sympathetic system proper, and (2) the autonomic proper, also called the vagal system in the wider sense.

Both these systems appear to be acting constantly, and in a certain sense are antagonistic to each other. A certain tonus exists in each system. Under normal conditions there is a sort of balance maintained between the tonus of the sympathetic proper and the autonomic proper or vagal system. For example, in a dim light the pupil is kept half way between contraction and dilatation. If the third nerve of the vagal system is stimulated, contraction results, whereas if the sympathetic system, which supplies the radiating fibers, is stimulated, dilatation would result.

Similarly the heart's contractions are kept at about 72 per minute under the balanced action of the accelerator nerves of the sympathetic system and the inhibitory nerves of the vagal system.

Both systems seem to be under a double control: (1) control exerted through the cerebrospinal axis; and (2) control dependent on the direct chemical action on the autonomic nervous system by substances called "hormones," which are derived from the glands of internal secretion. Sympathetic tonus appears to be kept up by a constant flow of epinephrin.

The posterior lobe of the pituitary gland has a similar action, selective, especially on the uterine muscle.

We do not know of any internal secretion exerting a similar effect on the tonus of the vagal system.

There are medicines, however, that are known to increase this tonus, and some have a distinctly stimulating effect. Then again, there are medicines which have a paralyzing effect. These facts form the basis of certain therapeutic tests. The medicines commonly used for these tests are epinephrin, atropin and pilocarpin.

Epinephrin increases sympathetic tonus and thereby tends to balance excessive vagal tonus.

Pilocarpin stimulates the vagal system, at least parts of it, and thereby balances excessive sympathetic tonus.

Atropin tends to paralyze or depress the nerves of the vagal system, and thereby has practically the same effect as epinephrin in cases of excessive vagal tonus.

Kahn and Falta, after demonstrating that tetany is not confined to the voluntary muscles, but extends as well to the autonomic nervous system, produced some evidence indicating that tetany is essentially a disease of excessive vagotonic condition of the nervous system. The case which I report seems to lend support to this view. Falta, by using a dose of pilocarpin that has practically no effect on a normal person, has shown that the same dose may produce acute dilatation of the stomach and cessation of peristalsis, if given in a case of tetany.

This suggests an interesting question, whether the term gastric tetany should be used to designate a distinct type. Jelliffe and White (page 109) say, "The course of tetany in gastric dilatation is toward a fatal termination, unless there is surgical intervention or relief of the dilatation." Cases of gastric tetany reported (Osler) are about thirty, with a fatality of 33 per cent. for patients operated on and 67 per cent. for those not operated on.

This would seem to indicate need of operation in cases of gastric dilatation in tetany.

If one were to judge by such experiments as those of Falta, cited above, or be guided by therapeutic results in the case which I report, perhaps the conclusion might be reached that gastric tetany is only an incident, sometimes present and sometimes absent in the general condition of chronic tetany.

It may at least be suggested that no patient should be operated on for dilatation until proper remedies have been used for balancing vagotonic and sympatheticotonic conditions.

J. S., woman, aged 26, single, first examined Aug. 8, 1914, had negative family history except that one sister was a great sufferer from bronchial asthma. Personal history was negative. The present illness began in the latter part of 1913. After suffering for some time with dyspepsia, the patient had an acute attack of indigestion which was followed by some sort of convulsion. After this, it was noticed that she had apparent hemiplegia of the left side. At infrequent intervals these convulsive seizures returned, and general prostration became very marked.

At present examination, patient is not able to walk without assistance, and the indigestion has been so pronounced that she has been using stomach pump and lavage every day.

It was some time after this examination that she was seen in one of these so-called convulsions. This came one day after a bath. This convulsion lasted several minutes, in fact was not relieved until sufficient chloroform was used to produce thorough relaxation. She appeared to be thoroughly unconscious, but it was afterward learned that she could hear and understand some things that were going on. The arms were sharply flexed, the hands closed and pressed so strongly against the neck as to interfere with respiration. Respiration was somewhat labored, but not changed in rhythm. The legs were rigid and cataleptic.

The nature of this attack, together with other symptoms and signs, left no doubt as to the diagnosis of chronic tetany.

Briefly, these signs and symptoms were as follows:

1. Bilateral spasms of the hands, lower extremities and respiratory muscles, as already described.
2. General muscular weakness and partial hemiplegia of the left side.
3. Gastric dilatation.
4. Transverse ridges on the teeth.
5. Chvostek's sign.
6. Trousseau's sign.

These in themselves appeared sufficient basis for the diagnosis of chronic tetany. At this stage of my study and treatment of the case, Dr. Barker of Hopkins happened to be in our city and gave a very interesting clinical lecture on this case, confirming the diagnosis.

It became an interesting study, however, in the further management and treatment of the case to note the symptoms referable to the autonomic nervous system.

In Van Oorden's tabulation of sympatheticotonic and vagonic symptoms, he presents in parallel columns about thirty-six symptoms in each group opposing or balancing

each other. In this case, there were only two that belonged to the sympatheticotonic, and these were not present very long, namely, urticaria and low gastric acidity.

On the other hand, there were present, more or less all the time, except when relieved by treatment, about twenty vagotonic symptoms, namely: myosis; frequent winking; frequent spitting; arrest of secretion of gastric glands; hypermotility of stomach and intestines; vomiting; enophthalmos; bradycardia; low blood pressure, 90 systolic; asthmatic attacks occasionally; pylorospasm; dermatographia; gag reflex absent; clammy hands and feet in later stage of case; eosinophilia in early stages; increased fat tolerance; increased sugar tolerance both before and after epinephrin; pilocarpin caused extreme salivation; atropin well borne; epinephrin well borne.

The patient's response to the therapeutic tests of epinephrin, atropin and pilocarpin was very instructive. A very small dose (1/20 grain) of pilocarpin produced excessive sweating and salivation. Epinephrin chlorid, hypodermically, was well tolerated, and on account of its quick action, more than once prevented a threatened convulsion. Atropin also was well borne, and by its use, pylorospasm was relieved, after which the gastric dilatation disappeared, as shown by roentgenogram, all of which would indicate that in this case we have not only deficient parathyroid secretion, but also a disturbed condition of the autonomic nervous systems.

Treatment.—Diet: The diet indicated in such cases consists of foods rich in calcium, as milk, eggs, etc. In this case no material improvement was obtained until diet had been limited to buttermilk. Later eggs, fish, chicken and vegetables were added.

Parathyroid gland tablets, from 1/20 to 1/10 grain each, have been given continuously and seem to be advantageous, but they are not of themselves sufficient to control the symptoms.

The powdered suprarenal gland is given in capsules, each of 5 grains, three times a day, and seem indispensable. In threatened convulsions, epinephrin chlorid, from 0.001 to 0.002 gm., usually wards off an attack. Under use of suprarenal powder, blood pressure was brought up from 90 to 110.

Powder of the pituitary body adds to the comfort of the patient and is given almost continuously in 5-grain doses. It does not seem so indispensable as the suprarenal powder.

Calcium lactate has been given in 20-grain doses three times a day and is indispensaable. Once, when calcium lactate could not be obtained at the drug store, calcium chlorid was substituted temporarily. It may have been a simple coincidence, but a convulsion followed a half hour after the first and only dose given, indicating, as some assert, that chlorids are harmful.

Atropin, 1/100 grain, given hypodermically, gave first relief to pylorospasms, and under its use for a short time the gastric dilatation gradually disappeared.

Later, tincture of hyoscyamus, in full doses, was given for a period of two weeks.

The patient had been using lavage daily. I gradually dispensed with this after beginning atropin.

Massage and electricity were used regularly while the patient was in the hospital. She was dismissed April 4, 1915, very much improved.

One complication surprised me, and I have not seen it mentioned in connection with any other case, namely, hemorrhage, apparently vicarious menstruation. The first hemorrhage came from the pharynx. A capillary oozing for several hours resisted all local and general treatment, until atropin was given, which arrested it promptly. This hemorrhage was estimated to have amounted to 2 or 3 pints, and caused extreme anemia and prostration lasting several weeks. There has been a second hemorrhage, occurring also during menstruation, since the patient left the hospital, this time from the bowels. I had neglected to give instructions to use atropin, and again a large amount of blood was lost.

The patient is still under the treatment outlined, and I do not consider her cured. A recent letter, however, says that she is doing well and hopes soon to go to the mountains.

ABSTRACT OF DISCUSSION

DR. J. T. FISHER, Los Angeles: In regard to this interesting report of a chronic tetany, Dr. Munroe has made two points which would lead me to think that perhaps in addition to tetany the patient was suffering from some functional disturbance which might be designated by some of us under a different heading. I wish to ask Dr. Munroe if, in his examination, in addition to the points he brought out, he determined whether or not the patient had limitation of the visual field or any sensory defects that we find in ordinary hysteria? The case at least had some of the ear marks of that most protean psychosis.

DR. JULIAN M. WOLFSOHN, San Francisco: I am glad to see that Dr. Munroe has attacked this important subject of tetany from the standpoint of the vegetative nervous system. So far there are very few cases of tetany that have been worked up with special reference to the vegetative nervous system. Using as a basis different tests, in one case of tetany that came under my observation, which I have described in THE JOURNAL of May 16, 1914, I have come to practically the same conclusion as Dr. Munroe. The majority of symptoms fall on the vagotonic side of the classification. An important keynote to the treatment of the case is thereby gained. It would be very interesting to have more reports, especially from the surgeons, who occasionally see artificially produced tetany, and from the clinicians who see these patients more often.

DR. CECIL E. REYNOLDS, Los Angeles: Can Dr. Munroe give us the physical signs of the hemiplegia that he spoke of? I know nothing about hemiplegic tetany, but its presence in this case certainly suggests a hysterical element. In many cases, when there is pylorospasm, this complication is so extremely distressing and lowers the patient's resistance to such an extent as to make manifest in a physical form deep emotional complexes preexisting in the mind.

DR. JOSEPHINE A. JACKSON, Pasadena, Calif.: I wish Dr. Munroe would tell us the whole story of this subject. Dr. Reynolds, Dr. Fisher and I on this western coast are inclined to view this case as hysteria. I do not recall any symptoms, as Dr. Munroe read his paper, that would be lacking in hysteria. The physical symptoms and loss of faucial reflexes might be present in hysteria. The contraction of the muscles, the obstetric hand, the overexcitability of the various reflexes, I find again and again in cases of hysteria. The cardiospasm and pylorospasm are exceedingly common in hysteria. The fact that the patient had this condition, marked at times, and then disappearing (elicited by pressure on the forearm) would suggest that the very attention that was paid to her in eliciting the symptom intensified the tonicity of her muscles. An increased excitability of the reflexes may obtain in conditions as widely different as that of hysteria from the normal condition of a parturient woman. All obstetricians know that if the woman is afraid of her physician, if she has no confidence in him and feels that he is some terrible bringer of instruments, all uterine contractions may cease when he comes into the room. The cause is purely psychic, of course, but it is sufficient to check the hormone formation that stimulates the lumbar cord which brings about contraction of the uterine muscles. The hysterical individual likes an audience, and must have attention. If this woman had the obstetric hand when she did not know she was observed it would more readily suggest tetany than having it only when being tested. The doctor described wonderfully well the influence of the vagotonic and sympathetic nervous systems. We are just touching the edge of knowledge of this subject. The interrelation between the influence of the psyche (mind) on this machinery of its own, and the influence of this machinery on the mind that is the master, is so close that we can hardly tell which inaugurates the activity of the other.

DR. FRANK R. STARKEY, Philadelphia: That tetany is at least at times hysterical in nature I am convinced, although the rôle of the autonomic nervous system and the relation between the autonomic nervous system and the glands of internal secretion would lead one to believe that these are

involved in many cases. One of the cases which rather vividly impressed on me the degree of suggestibility in this condition was that of a man who had been treated at a hospital in Philadelphia for a number of years for attacks of tetany. If he were pressed on the biceps (the foot on this side was markedly extended) he would immediately go into a very painful tetanic spasm. He was so aware of the description of his condition that I was satisfied suggestion had a good deal to do with it. I talked with him along the lines of complete recovery and said to him: "I have something here that will surely either completely cure this condition or greatly benefit you at once." I gave him 1/10 grain of calomel by mouth three times a day and he was completely well within forty-eight hours. That was four years ago and there has never been a return. It must have surely been a purely mental condition in his case and suggestion brought about recovery.

Dr. George A. Moleen, Denver: I think to separate the dilator fibers of the pupil from the sympathetic system may possibly be an error. I think it has been rather clearly shown that the dilator fibers take their origin in the first and second sympathetic, which supply the auxiliary spinal system (ciliospinal) to be delivered to the radiating fibers through the ophthalmic branch of the gasserian ganglion. This is supported also by two or three pathologic conditions. Tumors of the gasserian are frequently followed by paralysis of the dilator fibers, as well as the same result in enucleations of the ganglion. Also the tuberculous glands of the neck which we see so frequently in Colorado have given rise to many theories for the anisocoria or unequal pupils seen with the dilatation on the same side. The character of the muscle fiber as well is sufficient to indicate its sympathetic supply. It is pretty well established that the dilator fibers like the circular fibers receive their supply from the sympathetic system. This is merely a matter of comment on what I understood Dr. Munroe to have said as to the supply of the pupillary fibers.

Dr. J. P. Munroe, Charlotte, N. C.: Dr. Reynolds asked especially about the hemiplegia. As a matter of fact, it was not a true hemiplegia. On examination I found that the weakness was general. There was no Babinski and it was not a true hemiplegia at all.

As to the suggestion that it may have been a case of hysteria, I will admit that on first examination I considered it hysteria, and it took me some time to reach a different conclusion. There were no stigmata of hysteria that I could detect. No contraction of the visual field. There was no emotional disturbance. The patient was one of the most even tempered people, always cheerful, and had a very bright disposition. Dr. Barker of Hopkins happened to be in our city when I had made my diagnosis, and he thought at first he had me up a tree, and gave a very interesting clinical lecture on this case before the county society. It was only in the latter part of the examination that he came to the conclusion that my diagnosis of chronic tetany was correct.

Working of Child Labor Laws.—The government has made inquiry into the working of the child labor laws of various states, and in a recent press bulletin has given a brief statement of the result of the inquiry in regard to the Connecticut law. In Connecticut a child cannot go to work until he is 14 and until 16 cannot work until he has an employment certificate. He cannot get a certificate and stay out of school unless he has a job. If he quits work the employer must notify the State Board of Education, and he cannot go to work again without a fresh certificate. This is the striking feature of the Connecticut law, that the Board of Education controls the enforcement of the law and dovetails it with the compulsory education law. Agents of the state travel from town to town issuing working certificates, inspecting shops for violations of the law and visiting the homes of children who have left their jobs. The government inquiry is in charge of Miss Helen Sumner, of the Industrial Division of the Children's Bureau.

DISTURBANCES OF THE ACOUSTIC NERVE

IN THE EARLY STAGES OF SYPHILIS *

GEORGE H. WILLCUTT, M.D.
SAN FRANCISCO

Although this subject has been presented by many during the past three years, I desire to give a brief summary of the work done along this line and add a few deductions of my own as a result of the examination of some 293 cases of syphilis, most of them in the first and second stages of the disease. During the year ending June 30, 1914, I examined these cases at the Ohrenklinik in Vienna under Professor Urbantschitsch and have tabulated my notes and appended them to this article for reference.

These cases were all referred to the Ohrenklinik from the skin clinics of Finger, Riehl and Ehrmann for otiatric examination prior to the administration of salvarsan, as great stress is laid on the aural contraindication in Vienna and great caution is taken to have a careful otiatric examination made previous to the injection.

The majority of patients examined were in the secondary stage, although a good number of primary, and a few latent cases are included in the list.

In summarizing these cases the most noticeable point is the almost constant shortened bone conduction, which Wanner[1] (1903) and Oscar Beck[2] (1911) called attention to some years ago as being of great value in the early diagnosis of syphilis. This condition had been reported previous to this time by Crockett[3] of Boston, but no stress was laid by him on its importance. Nov. 2, 1896, Crockett reported on three cases of acute syphilitic affection of the inner ear, and in all three cases he found a complete loss of bone conduction for a middle-register fork, while the air conduction was almost normal. He laid stress, however, at that time on the fact that in acute syphilitic cases, the loss of the low tones was usually not found, while the upper limit was somewhat lowered and did not bring out the importance of the lost bone conduction.

Wanner, to the astonishment of the internists, was able to make the diagnosis of syphilis in 95 per cent. of the cases he examined, before the appearance of any general symptoms, and the diagnosis was later confirmed by positive Wassermann reactions and characteristic findings. He made his tests with an a^1 (426 d. v.) fork, while Beck used the c^1 (256 d. v.) tuning fork in his cases. The accuracy of this means of measuring the bone conduction time was strenuously attacked as unreliable and valueless; but after further investigations the difference between the bone conduction of the syphilitic and nonsyphilitic cases, with but few exceptions, was so clear and marked that the electric forks and other methods for the more exact determination of such, were found unnecessary and discarded for all ordinary use. The use of the electric fork confirmed that such conditions as described were present in from 80 per cent. to 90 per cent. of the cases examined (Urbantschitsch).

Kabatschnik[4] of Kiew claims that the Schwabach and Rinné tests are never reliable, as bone conduction

---

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Wanner: Verhandl. d. deutsch. Otol. Gesellsch., No. 22, 1913.
2. Beck, O.: Verhandl. d. deutsch. Otol. Gesellsch., No. 22, 1913.
3. Crockett: Boston Med. and Surg. Jour., Feb. 11, 1897.
4. Kabatschnik: Monatschr. f. Ohrenheilk., 1912, xlvi, No. 11.

differs with the mastoid bone being of the eburnated or of the pneumatic type. There are some of us who agree with him to a certain extent, especially in cases in which the variation is of a very small amount, for we know the condition of the bone will cause such variations, but we certainly could not conceive of the condition of the bone being responsible for the great amount of shortening observed in connection with these reported syphilitic cases, in some of which the reduction was twenty-five to thirty seconds and in one case forty-three seconds.

In June, 1914, Emerson[5] of Boston read a paper to the Philadelphia Laryngological Society on "A New Test for Labyrinthine Disease of Specific Origin." Emerson, after giving a summary of Kerrison's classification of specific disease of the labyrinth, gives a very interesting paragraph on the hearing test he has found useful in the diagnosis of specific labyrinthitis. He says in part:

> Given (1) a bilateral affection, with marked lowering of the upper notes, (2) a positive Rinné test, (3) with low bone conduction and (4) normal low limits for the Dench fork, and the cause is probably syphilis. Eight cases out of ten so studied showed the Wassermann reaction either double or triple positive. . . . Kerrison, however, depends for his diagnosis upon (1) the diminished bone conduction, (2) a negative Rinné, (3) loss of hearing for the higher musical tones, (4) plus constitutional evidence of the disease.

Both Emerson and Kerrison have made diagnostic points of the lowered or shortened bone conduction, but differ on whether the Rinné test is positive or negative in these cases. Politzer, Rohrer, Urban, Oscar Beck, Emerson and others have found that the Rinné test is usually positive in these cases, while Kerrison[6] found it negative, especially in adults who have suffered from chronic constitutional syphilis over a period of years.

Whether the lesion is a toxic degeneration of the acoustic nerve or whether it is due to increased intracranial pressure, as held by O. Beck, remains to be proved; but unless a preexisting or concomitant middle-ear disease is not accounted for, one will find a positive Rinné test the rule. One is able to confirm this statement by referring to the table of cases added to this paper, as the only cases in which I found a negative or a plus-minus Rinné present had either adhesions, scars or perforations, and destruction of the drum and ossicles from an old middle-ear disease, or at the time of examination had an active middle-ear disease running its course.

I found a number of cases in which the air conduction was shorter than the normal, but in such the bone conduction was reduced to such a degree that it was still shorter than the air conduction and a positive Rinné was still present. Emerson also found that the air and bone conduction were both lowered in some of his cases, but their relation was such that a positive Rinné was present in every one of them.

Beck[7] found that the bone conduction was markedly reduced in comparison with the shortening of the air conduction in syphilitic affections of the inner ear and also that the lengthening of the bone conduction often could not be elicited in syphilitics having middle-ear disease, as is characteristic in a like condition in a non-syphilitic case. He cites a case of acute otitis media in a young woman in whom he found a typical otiatric picture, a swollen, reddened membrane with loss of all detail. There was a marked impairment of hearing in the affected ear, the Weber test lateralized to the affected side, air conduction was almost normal, but the bone conduction of the affected side was not lengthened. This led him to made a diagnosis of "acute otitis media, most probably in a syphilitic individual." The syphilitic infection was later admitted by the patient and the Wassermann was found to be very strongly positive. The bone conduction in this case was in all probability shortened some seconds before the onset of the acute otitis media, but was brought back to the normal by the middle-ear disease, so that the bone conduction was in reality lengthened by the middle-ear condition, although it did not pass the "normal point" in comparing with the normal bone conduction of the examiner.

I had a parallel case (Case 38) to this, in which a syphilitic patient developed an acute otitis media in the right ear. The drum was bulging and markedly injected. Light reflex and all normal landmarks were obliterated. The Weber test lateralized to the right ear. The Rinné test gave right, negative; left, positive. Schwabach test: right, lengthened three to five seconds; left, shortened twenty-two seconds. Eight weeks later, after treatment for the acute condition, a control examination was made and the following interesting changes were noted: Weber lateralized to left; Rinné test: right and left positive; Schwabach test: right, eighteen seconds short, left, twenty-one seconds short. After the healing of the acute otitis media, the lengthened bone conduction of the right ear returned to the shortened condition that was undoubtedly present prior to the onset of the acute disease. A striking point in this case is the variation found in the bone conduction of the right ear, this being from twenty-one to twenty-three seconds.

In considering this shortening of the bone conduction for diagnostic purposes, one must naturally make allowances for small differences in patients past the middle age, for we find the physiologic changes in the vessels present which lead to a shortened bone conduction in itself. One shrould, therefore, be guarded in laying stress on a slightly shortened bone conduction as suspicious of syphilis in patients past 50 years of age unless accompanied by the other diagnostic points, positive history of infection and a confirming Wassermann reaction. This also holds true in regarding such metasyphilitic types of the disease as paresis and tabes, for the patients are usually past the middle-age limit and the normal physiologic changes may have occurred.

Lewy[8] of Chicago, in a paper on "Some Curable Affections of the Acoustic Nerve," read before the Chicago Laryngological Society in May, 1912, takes up a group of cases in which there was a lessened hearing power for tuning forks, especially by conduction through the cranial bones and also a lessened hearing power for the spoken and whispered voice. These cases differed from actual acoustic nerve degeneration in that recovery followed appropriate treatment. He mentions forms due to general anemias of long standing, to general systemic depression, to neurasthenia, drug-intoxications, toxemias of various infectious diseases and constitutional diseases. These, with such other conditions as "occupation deafness,"

5. Emerson, Francis P.: Laryngoscope, 1914, xxiv, No. 10.
6. Kerrison: Diseases of Ear, Philadelphia, J. B. Lippencott Company, 1913.
7. Beck, O.: Ann. Otol. Rhinol. and Laryngol., 1913, xxii.
8. Lewy: Laryngoscope, March, 1913.

myxedema, hydrocephalus, brain tumor, meningitis and epilepsy, may give a shortened bone conduction; but by a careful systemic, clinical and functional examination, one is able to differentiate these cases in the great majority, make a definite diagnosis and employ a suitable treatment. Lewy includes syphilis under the "infectious diseases" classification and reports a case with complete recovery after the use of intramuscular injections of mercury over a very short period of time.

A few words as to the probable cause of this reduced bone conduction in syphilis would not be amiss. Knick and Zaloziecki[9] state that in all cases of disturbances of hearing in the early stages of syphilis examined by them in the Ohrenklinik at the University of Leipzig, they found a concomitant syphilitic meningitis present, which they proved by lumber puncture, cytologic and chemical examinations and Nonne-Apelt and Wassermann reactions on the spinal fluid. They hold that the cause of the disturbance is probably to be found in a syphilitic infection of the nerve sheath.

A great deal of work on the study of the spinal fluid with reference to the involvement of the nervous system in the early stages of syphilis has been done by Wile and Stokes[10] at the University of Michigan Hospital with very interesting and instructive results, but personally I had no opportunity for doing this work in the series of cases I report due to objections on the part of the chiefs of clinics in the Allgemeines Krankenhaus.

Oscar Beck has observed that following lumbar puncture in syphilitic cases, the shortened bone conduction tends to become normal again within three or four hours after the procedure, returning gradually to the shortened condition after two or three days' time. This caused him to believe that the shortening is due to an increase of intracranial pressure and that in those cases of syphilis in which no increase in pressure is found, no shortening of the bone conduction is present.

In all of Knick and Zaloziecki's cases the spinal pressure was increased, to a certain degree, and although they failed to state whether the pressure was measured in the vertical or horizontal position of the patient, the increase, in either case, is sufficient to be considered. According to Plaut, Rehm and Schottmüller, the normal cerebrospinal pressure, measured in the horizontal position, is from 10 to 12.5 cm. of water, while in the vertical or sitting position it increases to 20 cm. I have tabulated here the cases mentioned, that one may see at a glance (1) the duration of the syphilitic infection, (2) increase of cerebrospinal pressure, and (3) the phase of the Nonne and Wassermann reactions in the cerebrospinal fluid.

It is interesting to note that in all of their cases, with the exception of one (Case 6) in which a right-side chronic otitis media was present causing a negative Rinné on that side, the Rinné was invariably positive and the bone conduction was shortened an appreciable amount. In Case 6 the bone conduction was very short, notwithstanding the existence of a middle-ear disease. It will be noticed that the duration of the disease in these cases was from seven weeks to eight months, and although it is now generally accepted that during the first months of a syphilitic infection the fate of that patient with regard to the incidence of cerebrospinal syphilis is in all probability determined, one hesitates to believe that a syphilitic meningitis could be developed to such an extent, in so short a time as seven weeks, to cause an increased cerebrospinal pressure of sufficient degree to account for the reduced bone conduction as Oscar Beck's theory explains it. In Beck's tabulated cases included in his article "Bone Conduction in Syphilis," [7] he gives eleven cases, with a duration of between eight days and one month, in which the shortened bone conduction was present. In the series of cases I have tabulated, I find fifty-two cases (17 per cent.) of a month's duration or less, showing a definite reduction in the bone conduction and in which every condition except syphilis was excluded as a cause for such shortening. In the same series of cases, six cases of a month's duration or less failed to show this symptom. The diagnosis in all of these cases was made positive by examinations of smears from the primary lesion and demonstration of the *Spirochaeta pallida*, or by the positive history of infection (Case 68). The Wassermanns in the blood were not yet positive, five to six weeks after the inoculation being about the earliest for such reaction to appear in the average case. No glandular involvement nor any other sign of general syphilis was present in any of these cases. Still I found a reduced bone conduction. What is the explanation of this condition?

VARIOUS FINDINGS IN CEREBRO SPINAL FLUID IN SYPHILITIC CASES

No.	Duration of Syphilitic Infection	Cerebrospinal Pressure in cm. of Water	Nonne Reaction (Cerebrospinal)	Wassermann Reaction (Cerebrospinal)	Remarks
1	Initial lesion and eruption present	28	+	+	Exact duration of disease not stated
2	Seventh week Ninth week	35 18	+ +	+ + +	Five weeks after "606" injection After further injections
3	Two months	24.5	+	—	Two weeks after injection for initial lesion, prior to eruption
4	Three and one-half months	23.5	+	+	
5	Seven months Eleventh month	23 11	+ —	+ + —	Three weeks after "606" injection Deafness, right ear; normal, left ear
6	Eight months Ninth month	8-9. 21-22	+ +	+ + +	Seven weeks after "606" injection
7	Eight months	16-17	+ +	+ +	

9. Knick and Zaloziecki: Berl. klin. Wchnschr., 1912, Nos. 14-15.
10. Wile, Udo, and Stokes, John H.: Jour. Cutan. Dis., September, 1914; Further Studies on the Spinal Fluid with Reference to the Involvement of the Nervous System in Early Syphilis, The Journal A. M. A., May 1, 1915, p. 1465; Involvement of the Nervous System During the Primary Stage of Syphilis, ibid., March 20, 1915, p. 979.

After a careful consideration of this question I believe the explanation of the condition can be satisfactorily given in one way. There is without doubt an excretion of toxin or endotoxin into the system beginning very shortly after inoculation and increasing in amount during the period of multiplication of the spirochetes. This toxin is carried through the body by the blood stream. The toxicity of this is not sufficient to affect any of the organs except the most sensitive ones. For this reason we have no general signs or symptoms elicited until the amount of toxin is sufficient to overcome the protective agents of the blood, resulting in the skin eruption and the beginning of the secondary stage. At this time we find that the Wassermann reaction is positive, owing to the excess of alleged antibodies in the blood.

The central nervous system, being the most sensitive tissue, is the site of the first disturbance due to the action of the toxin, although still in minute quantities. The brain, meninges and cranial nerves are subjected to the toxin, and symptoms of irritation result. The brain is not so frequently affected as the cranial nerves, especially the auditory, optic and facial, but in a number of early cases I have found patients complaining of headache, and this is, to my mind, to be explained by a low grade of syphilitic infection or toxic irritation of the meninges. I do not believe this can be due to an increased intracranial pressure in this primary stage, as Beck explained it, any more than I believe the shortening of the bone conduction is due to it.

The disturbance of the acoustic, optic and facial nerves found in these early primary stages is undoubtedly due to a toxic syphilitic irritation of the nerve sheaths and also of the peripheral end-organs, these being most sensitive to the toxin. As these develop an immunity to the toxin, we find a slower progression of the symptoms or even their complete cessation at times, perhaps never again to recur.

The acoustic nerve appears, for some unexplainable reason, to be the most sensitive of the cranial nerves and for that reason we find a greater percentage of affections of this cranial nerve in the early stage. It is also shown by examination that the cochlear branch is affected to a far greater degree than the vestibular branch although in a number of cases I found both cochlear and vestibular branches affected, and in a few cases (Cases 62, 105, 138, 188, 194, 226) I found the vestibular branch affected more than the cochlear branch.

Knick and Zaloziecki[9] concluded their article with the statement:

> In all examined cases of disturbances of hearing in the early stages of lues, there exists at the same time a luetic meningitis, proved by lumbar puncture. Accordingly the cause of the disturbances is probably to be found in a luetic infection of the nerve sheaths.

This concurs with my opinion, although the cases reported by these men were all in the secondary period, but they do not state that such is their belief concerning the primary cases.

Voorhees[11] makes the statement in his interesting article "Notes on Syphilis of the Ear, with Especial Reference to the Use of 606," that we find affections of the cochlear branch (most common), vestibular branch or both branches of the acoustic nerve in early syphilitic cases and that patients, at the same time, may show symptoms of a polyneuritis cerebralis syphilitica. These conclusions of his, however, were also made after examination of a number of cases of the secondary stage.

Another interesting statement of his, of a condition which I have observed in a couple of cases, is that the nerves may be affected as they enter the internal auditory meatus and give symptoms of cochlear, vestibular, facial and trigeminus irritation, the so-called "Frankl-Hochwart's disease." This condition, also known as "polyneuritis cerebralis menieriformis," is more frequently due to a rheumatic affection of the basal nerves of the brain, but is occasionally seen in syphilitic cases. In this condition the prognosis of the vestibular affection is usually fair, but that of the cochlear should be guarded, as a great degree of deafness usually results.

Professor Voss[12] in his article on "Hör- und Gleichgewichts-störungen bie Lues" concludes with a summary in which he says:

> The existing pathological-anatomical changes laid to the diseases of the inner ear are local signs of a co-existing or preceding, but healed, meningitis cerebrospinalis luetica and that it results in neurological changes of the acousticus nerve and in inflammatory symptoms of the peripheral end-organs of this nerve.

He also states that the affection may be unilateral or bilateral and can affect the nerve as a whole or one only of its component parts.

His view that the diseases of the inner ear appearing in the course of syphilis are, almost without exception, the results of a general infection, I do not consider correct unless he means that they may be due to a general dissemination of the toxin throughout the body before the appearance of general symptoms or in those cases that do not develop acoustic disturbances until the secondary or tertiary stages.

Professor Wile[10] states that the nervous system may be, and probably is, frequently involved before there are other evidences of the hematogenous spread of the *Spirochaeta pallida* from the site of the initial sore. Such involvement may be slight so far as clinical symptoms go. Serious involvement may, however, occur extremely early with very marked changes in the cerebrospinal fluid and with definite impairment of the nervous function. The clinical changes most commonly noted in this preroseolar period are headache, involvement of the optic and acoustic nerves and increased reflexes. I, personally, staunchly support this view and think it substantially supported by the cases reported by him and by those I present herewith.

I also disagree in some points with Voss' statement that the diagnosis of a syphilitic affection of the acoustic nerve is founded on (1) the preceding syphilis, (2) the characteristic functional tests of the cochlear and vestibular nerves, (3) the eventual sympathetic affection of the other cranial nerves, (4) the existence at the same time of other syphilitic symptoms, especially from the inflammatory changes in the cerebrospinal fluid, and finally on (5) the eventual improvement to complete recovery under suitable treatment. Some cases may lack all but one or two of these symptoms, especially the early primary cases of the disease, and the characteristic functional tests and initial lesion are the only symptoms present. As before stated, this primary nerve affection is not always present, but it is found in the great majority of cases sufficiently well marked to lead an otologist immediately to consider syphilis as

11. Voorhees: Am. Jour. Dermat., April, 1912.

12. Voss: Verhandl. d. Otolog. Gesellsch., No. 22, 1913.

a probable cause in cases in which there is no other cause for the symptoms present.

Before briefly referring to the use of salvarsan in cases of syphilitic affection of the acoustic, I wish to add one or two facts that I have noticed in this work. In the secondary stage of the disease, I have found the bone conduction shortened to a greater degree in cases that have had no secondary eruption and to a lesser degree in those with a marked and general eruption. This has also been observed by Beck, Voorhees and others. The prognosis of the nerve affection is more favorable in cases showing an extensive eruption than in those not showing such.

I have also observed that in some cases in which there is a great difference in the amount of shortening between the two sides, there also exists an appreciable difference in the reflexes of the two sides of the body. I do not make the statement that such a condition is always present, nor have I investigated the cause, but the condition has been noticed and should be further studied.

I do not care to go into the subject of the use of salvarsan in acoustic disturbances to any great degree, for many opinions are expressed on the subject with almost as many differences, but I will briefly review a few of those expressed by men of much experience in the use of the preparation and add that I believe the individual case must be carefully studied before one can say there is or is not danger in the administration of the specific.

Professor Wile has told me that he had yet to see a case of deafness following a small dose of salvarsan among all of the cases treated at the University of Michigan during the past three years, that proved to be permanent and did not clear up on further salvarsan therapy, combined at times with mercurial treatment.

Wile believes the secret of salvarsan therapy is to employ a minimal initial dose of 0.3 gm., repeating the injections at intervals of from four to seven days, varying with the individual case, until the full dose is reached, the patient receiving from three to five or more injections. He grades his dosage about as follows: 0.3 gm., 0.45 gm., 0.5 gm. and 0.6 gm.

With the excellent results reported, this method should have due consideration, and if tried by the skeptic may prove of great value in the future treatment of these cases.

Dr. Charles M. Smith in his article "Use of Salvarsan in Ear, Nose and Throat Manifestations of Syphilis," read at Boston in November, 1913, says he believes that if aural symptoms develop in syphilis either before or after the use of salvarsan there should be an immediate and thorough use of either salvarsan or neosalvarsan. He also believes that the auditory nerve lesions following the use of this treatment are due to the specific infection and not to the arsenic of the salvarsan.

Harris,[13] in his paper "Administration of Salvarsan," says that the nervous complications of the therapy should be divided into two types: (1) syphilitic and (2) toxic. He places the auditory nerve affection in the first of these, as the most common nerve affected in either or both of its branches. He claims it is important to recognize the fact that this complication is due to insufficient treatment and usually recovers under energetic antisyphilitic treatment either with mercury or the salvarsans.

Beck[14] of Chicago reported in May, 1912, forty-seven cases of syphilis in his own practice, with positive Wassermann reactions, in which salvarsan acted marvelously in every case with no complications affecting the auditory nerve. He refers to the number of auditory nerve affections on record following the use of salvarsan, but after investigating these and obtaining subsequent reports, he found practically not a case of permanent injury to the auditory nerve from the use of salvarsan. Most of the cases cleared up on continuing the antisyphilitic treatment of salvarsan, mercury or potassium iodid.

Regarding the opinions of some of our foreign authorities, Zaloziecki says the relapse nerve conditions, or "neurorecidives" after the use of salvarsan, differ in no way from other early syphilitic affections of the cranial nerves, and are, for the most part, manifest syphilitic meningitis cases. H says he has as yet no reason for attributing to salvarsan a neurotropic action.

Professor Voss claims that the increased number of inner affections in secondary syphilis reported since the introduction of Ehrlich's salvarsan, is to be traced back to an underdose of the remedy. He believes the best results are obtained by the combined salvarsan-mercury treatment and advocates most energetic treatment as well.

These opinions are not accepted by some of the Vienna and Berlin men. Oscar Beck of Vienna still holds to his original view that ear affections appearing from four to eight weeks after the injection of salvarsan are contraindications to any further salvarsan therapy, as we are still in doubt what rôle salvarsan plays in the origin of these so-called "neurorecidives," whether inducing unusually early changes in the cerebral vessels, basilar meningitis, toxic nuclear disease or disease of the nerves in their narrow canals. He maintains the safest therapy in these cases is a strong mercurial treatment.

The question that remains to be solved after all the pros and cons are discussed is: Does or does not salvarsan cause such a toxic degeneration of the cranial nerves, especially the acoustic nerve, as is sometimes seen after the use of other arsenical remedies?

240 Stockton Street.

13. Harris, Frederick G.: Index Oto-Laryng., February and March, 1914.

14. Beck, Joseph: Ann. Otol. Rhinol. and Laryngol., September, 1912.

Health Department and Automobile Accidents

A recent *Bulletin of the Health Department* notes the fact that thirty persons were killed in the streets of New York City by automobiles during the month of May and blames the legislature for statutes which do not offer sufficient protection to the pedestrian and which expressly prohibit any local authority from enacting supplementary protective regulations. The bulletin points out that it is the clear duty of the authorities to see to the competency and trustworthiness of every would-be operator is satisfactorily established and that if the legislature is unwilling to enact protective regulations applicable throughout the state, that a request be made that the hands of the Board of Aldermen and the Health Department be untied so that they may adopt an ordinance which will compel those who desire to operate motor vehicles in the streets of the city to submit to an adequate test of fitness as a condition precedent to the obtaining of a license or permit. The support of all the people of the city is desired in order that this demand may be made when the next legislature convenes.

SYPHILIS OF THE INTERNAL EAR (HEREDITARY) *

HILL HASTINGS, M.D.
LOS ANGELES

The patient, a girl, aged 20, was referred Dec. 18, 1914, on account of dizziness, deafness and noises in both ears. The dizziness dated back four months and of late had grown worse. The dizziness was not attributed to the ears. Four years ago there was slight roaring and very slight deafness in the right ear for which she was treated in the East and apparently cured. A year ago noises of a roaring character, and deafness, again began in the right ear and a little dizziness was noticed. In September, 1914, deafness and noises in the left ear appeared with severe spells of dizziness. This gradually grew worse until at the time of consultation she was almost totally deaf in the left ear. The patient claims that she has had, during the past year, attacks of deafness that were as severe as the present deafness, but that they would rather suddenly clear up to a great degree, only to recur again. Since November 1 the dizziness has been very severe, so severe that she would have to sit down quickly to keep from falling.

Her general health has always been excellent. The tonsils and adenoids were removed in her childhood. She has not been subject to head-colds. She had trouble with the eyes when a child (interstitial keratitis) which will be referred to later.

Family History.—The patient's father had lues before he was married; his wife was infected before the child was born. Both were apparently cured and they have remained free from symptoms since. There was considerable apprehension at the time of the birth of the child, but they were relieved to find that she was perfectly well. They were not aware of the connection between their trouble and the present ear trouble; nor were they aware of the cause of the former eye trouble.

Physical Examination (Dec. 18, 1914).—The patient is a strong, active, well-built girl, apparently healthy in every way, except as noted. The teeth show decidedly suspicious signs of hereditary syphilis. The canines, upper and lower, are decidedly pegged and small, of white, chalky color, with the biting end worn off to a small, flat cusp. The incisors, upper and lower, are very small, of poor luster, somewhat pegged, with biting surface worn. The nose and throat are normal except for a deflected septum. Both drum membranes are dulled and somewhat retracted; the eustachian tubes open normally with a catheter, without any moisture apparent either in the tympanum or tube, and inflation did not improve the hearing.

There is complete deafness in the left ear to acoumeter, whisper, speech and all forks. Loud speech was heard in the left ear, but she was not able to distinguish the words. In the right ear the acoumeter was heard at 4 feet, a whisper at 20 feet, conversation at 6 feet, dim. There was considerable elevation of the lower tone limit, C/64 and c/128 forks were not heard; c^1 (256) reduced (25 seconds), as are also c^2 and c^3; c^4 fork is heard well, almost normal. The Galton whistle is heard almost normal in both ears (using the noise apparatus in the ear not tested). There is no spontaneous nystagmus. The use of the Siegle otoscope in the left ear produced considerable dizziness and immediately caused a marked nystagmus to the right ("fistula symptom"); the patient had to lie down. Nystagmus was markedly controlled by looking to the left side. The dizziness and nystagmus that were produced lasted about fifteen minutes.

Bone conduction was markedly decreased on both sides; on the left mastoid no fork could be heard; on the right mastoid bone conduction was reduced considerably; the Weber test was uncertain (the patient could not hear forks on the top of the head). On account of the evident lesion of both parts of the eighth nerve and the history of interstitial keratitis and the Hutchinson-like teeth, lues of the labyrinth was diagnosed and the family history obtained from the father, as above noted.

The patient was referred for a Wassermann and an eye examination. The blood Wassermann was reported as probably negative; there was a slight reaction but not sufficient to be considered at all positive. A spinal Wassermann was objected to. The eye report (Dr. A. L. Macleish) was the following: "Patient has slight oscillatory nystagmus in each eye, most obvious when she looks intently; the eye wanders away with an oscillatory movement. Ophthalmoscope shows numerous delicate vessels in each cornea, apparently just outside of Bowman's membrane; most close-set at periphery, but showing also in the lumen; apparently not containing blood; typical of interstitial keratitis after the exudate has been absorbed; more close-set in right eye. View of fundus in right eye a little clouded, but no lesion of either fundus found anywhere. Nerve heads and vessels normal." Dr. Macleish thought the eye condition was the result of inherited lues.

The patient was immediately put on mercurial treatment, inunctions 1 dram a day.

On Jan. 8, 1915, twenty-six days after the first examination, there was improvement in the left ear, hearing for conversation at 3 feet; slight hearing for low tones developed; C/128 fork could be heard fairly well, Galton whistle heard up to 25; there was still no bone conduction to be obtained through either ear. The right ear, on the other hand, had become markedly deaf—conversation had diminished from 6 feet to 6 inches. There was nothing in the middle ear or tube to account for this deafness. The tube opened large and free without any sign of middle-ear inflammation. The rapid decrease in hearing in the right ear was accompanied by a severe dizzy spell; she was walking, and had to sit down; there was considerable nausea for about one hour; the dizzy spell passed off when she went to bed. No nystagmus was present when she was seen in the office and pressure with the Siegle's otoscope failed to develop nystagmus, as found at the first visit. It appeared that the increased deafness in the right ear followed this dizzy spell. For three or four days there were slight attacks of dizziness with a constant feeling of fulness in the head.

March 5: After three months of mercurial inunctions the patient has improved so far as the dizzy spells are concerned. She has had very slight dizziness on getting up in the morning, but no more severe attacks. Hearing has remained about the same in the left ear; the right ear has improved slightly, conversation going up to 6 feet, high tone limit going up to Galton 15.

March 29: Hearing in the right ear has gone up to 20 feet for conversation, though still poor in the left ear. The patient's vestibular reaction to turning, and to hot and cold irrigation, was tried. It had not been tried earlier because the patient and her family were opposed to anything that might bring back the dizziness. We were surprised to find no nystagmus response whatever either from turning or from the use of hot or cold water in each ear. Two quarts of cold water, 68 degrees, were used in each ear and later 2 quarts of hot water (118 degrees) were used in each ear.

April 9: Hearing for conversation in the left ear improved to 10 feet and hearing in the right ear dropped back to 1 foot. Bone conduction, however, again apparently disappeared; she failed to hear the C fork or A^1 fork. The vestibular reaction was again tested as before, in the presence of a consultant, and there was absolutely no response to turning or to hot or cold water irrigations, using the same temperatures as before, hotter than ordinarily could be borne, 118 degrees. Equilibrium was good so long as she kept her eyes open, but with eyes closed there was considerable sway-

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

ing, and on attempting to walk a line with eyes closed there was very marked staggering—not more to one side, however, than to the other. The fistula symptom could not again be elicited.

May 3: Except for a few slight dizzy spells she has been comfortable now for nearly four months. The vestibular reaction was again tested without any response from turning with head erect, but with chin on chest slight rotary nystagmus developed on rotation. This was of short duration, but plainly seen and was developed on turning to either side. In previous examinations for developed nystagmus this position of the head had not been used, so we do not know whether this might not have been found at an earlier examination. It apparently indicated that there was some response from the superior canal. The patient's equilibrium with the eyes closed was then tested and found as follows: With head erect, face forward, she felt as if she was falling to the left and backward. With head erect, face to the right, the tendency was to fall to the left and backward; with head erect, face to the left, she felt like falling to the right and backward. Pointing tests with each hand and forearm were apparently normal except with the right hand which showed a slight tendency to point to the left. The pupils responded normally to light and accommodation.

May 20, 1915: There has been a gradual improvement in the left ear—hearing for conversation, 4 feet; forks, C/64 vibrations not heard, but c^1, c^2, c^3 and c^4 were all heard, but reduced in time. Galton heard up to 30; whisper is markedly good, 20 feet plus, although bone conduction is still absent for c, C and a^1 forks. Hearing in the right ear has not improved; hearing for conversation, 3 feet, C not heard, all the other forks heard by air conduction—no fork by bone conduction. Again, as in the left ear, a whisper is heard unusually well, 20 feet plus; Galton heard up to 20; acoumeter likewise is heard 10 feet left ear, and 4 fect right ear. Treatment was then changed from mercurial inunctions to salicylate of mercury, intramuscular injections. A spinal Wassermann test was not made because the family objected, nor was salvarsan used for the same reason. A second blood Wassermann was negative.

The interesting points in the case are: (1) the hereditary history; interstitial keratitis, signs of which remain; the appearance of the teeth which was markedly suggestive, although not absolutely typical, of Hutchinson's description; (2) the rapidly progressive nerve deafness in the left ear, coincident with severe dizziness; absence of bone conduction and temporary complete deafness to all forks and all sounds except loud conversation; partial return of hearing and cessation of dizziness; (3) later, the rapidly progressive nerve deafness in the right ear, likewise accompanied by attacks of dizziness; (4) failure to develop nystagmus from rotation or from hot or cold water irrigation, except as noted with chin on chest position; (5) the "fistula symptom" in the left ear, which has been reported by Alexander as suggestive of lues of the labyrinth.

Our interpretation of the case is that the severe dizziness complained of before the first examination, associated with almost complete deafness in the left ear, was due to syphilitic involvement of the left labyrinth which was active when I first saw the case; and that the dizzy spells later complained of, which were associated with increase of deafness in the right ear, were due to similar syphilitic changes in the right labyrinth.

The fistula symptom observed, as well as the response to rotation only in the chin-chest position (1 canal active) also suggests that the lesion is in the labyrinth rather than in the nerve trunk.

Trust and Savings Bank Building.

AUDITORY NEURITIS *

GEORGE P. WINTERMUTE, M.D.
SAN FRANCISCO

The following cases may be considered as fairly typifying the symptoms and findings in neuritis of the eighth nerve:

Case 1.—J. B., a man aged 31, stated that he was perfectly healthy until nine days previous to the examination, when he had a severe attack of influenza, and in sneezing he noticed that his right eye did not close, and that the angle of the mouth on the right side did not move. This was followed in a day or two by tinnitus, and the day before the examination he was attacked by dizziness and vertigo. Examination showed Shrapnel's membrane thin and retracted.

EXAMINATION OF RIGHT EAR

Conversation	5 meters
Weber	in the head
Rinné	positive
Schwabach	shortened slightly
C 1	positive
C 4	positive
Spontaneous nystagmus	present: horizontal to the right on looking to the right; horizontal to the left on looking to the left; negative looking straight ahead.
Turning Reaction	Turning right 40 sec. Turning left 30 sec.
Caloric	positive
Galvanic	positive with 3 milliamperes

Diagnosis: A case of neuritis just starting, with the cochlear nerve very slightly affected; the vestibular more so, but still giving a good reaction. The facial showed paresis, but not complete paralysis.

A Wassermann reaction proved positive. Under prompt antisyphilitic treatment of inunctions of mercury and administrations of potassium iodid the case cleared up within six weeks, and was then lost sight of.

Case 2.—A man aged 28, was infected by syphilis, and six weeks later had macular exanthems. His hearing had always been normal. He received 0.4 gram of salvarsan intravenously, and his skin symptoms disappeared. Six weeks later he was attacked with strong tinnitus, and he consulted an aurist who told him he could find nothing abnormal.

The patient was then attacked by vomiting, dizziness and staggering. Eight days after his tinnitus he became deaf in the right ear, and tinnitus began in the left ear. Two days later he became deaf in both cars. Examination showed the drums to be normal.

EXAMINATION OF EARS

	Right Ear	Left Ear
Conversation	deaf	ad concham
Weber	not heard	
Schwabach	negative	very short
Spontaneous nystagmus, present; to the right on looking to the right; to the left on looking to the left		
Caloric	negative	negative
Spontaneous pointing error followed his nystagmus		

Turning to right and left gave no perceptible change in his nystagmus.

Ataxia was present, but was not typically vestibular. A Wassermann was done and was positive. The patient was put on injections of mercury salicylate which were continued for a month. At this time another Wassermann was done which was negative. He was then put on mercury inunctions, and given iodid internally for twenty-five days, when he developed diarrhea, and the ear condition showed no change. He was then put on injections of pilocarpin for a month. At this time the vestibular nerve showed signs of recovery. Turning to the right gave nystagmus

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

15 seconds. Turning to the left gave 15 seconds. Caloric remained negative. The hearing showed no change. The patient at this time passed out of observation.

CASE 3.—A man aged 43 had been hard of hearing in the left ear for twenty years, has had for two years a discharge in the right ear. For two years has had a keratitis in the right eye; and has had enlarged inguinal glands. He has been dizzy since the age of 15. His hearing in the right ear was good until two years previously. He consulted an aurist, and after fourteen days' treatment he suddenly became deaf. (This may be regarded as a coincidence.) Afterward his hearing improved. Six months previously a radical operation was performed on the right side. Four days after the operation he was attacked with vomiting, dizziness, nystagmus of the third degree and facial paralysis. The caloric reaction was present.

EXAMINATION OF EARS

	Right Ear	Left Ear
Conversation	deaf	deaf
Schwabach	very short	very short
A	positive with hard stroke.	positive with loud stroke
C 1	negative	negative
C 4	negative	negative
Spontaneous nystagmus,	absent	
Spontaneous pointing,	normal	
Turning to right	7 seconds	turning to left 7 seconds
Pointing after turning in both directions showed a trace of normal deviation		
Fistula sign	negative	
Caloric	slightly present	slightly positive

Diagnosis: Syphilitic neuritis on the left side. On the right side it is questionable if the patient had a serous labyrinthitis following the radical operation, or whether he developed a neuritis on this side. The fact that he became suddenly deaf in the ear, followed by improvement, together with his syphilitic history, the nerve lesion on the opposite side, with coincident facial paralysis, renders the diagnosis of neuritis on the right side the more probable. Subsequent improvement under antiluetic treatment confirmed the diagnosis.

From these cases we see that auditory neuritis is a disease coming on suddenly, as a rule, producing tinnitus and deafness when the cochlear branch is affected; producing dizziness, vertigo, disturbance of equilibrium, spontaneous nystagmus and probably vomiting when the vestibular branch suffers; and a combination of these symptoms when both branches are involved.

ETIOLOGY

The disease, in the great majority of instances, is due to syphilis. Moran reports cases due to alcoholism. Large doses of some drugs such as quinin and the salicylates have produced it. I, personally, saw a case in which the patient died a few days after the onset of the symptoms, and the postmortem showed hemorrhagic nephritis, a degenerated liver and the brain cloudy (as seen in alcoholics). The neuritis had been due to toxemia from internal diseases. While toxic cases are occasionally seen, the great proportion of cases seen clinically are syphilitic, and with the exception of the initial period it is found in all the stages of syphilis, including the hereditary.

It is not within the scope of this paper to discuss the pathology of the condition, further than to say that the lesion is in the nerve itself, and not in the labyrinth, as was formerly supposed. It is a mooted point whether the central or peripheral neuron is first attacked. Microscopically the nerve shows the ordinary degenerative changes of neuritis, with atrophy of its end organs.

SYMPTOMS

The cochlear branch is the more vulnerable of the two. Consequently, the cochlear symptoms are the first, usually, to appear, and the last to clear up. Not only in the ordinary disease process, but in similar conditions caused by pressure, such as eighth nerve symptoms produced by intracranial pressure, the cochlear branch is first involved. So, too, the rule holds in drug toxemias when the cochlear usually is alone involved, and in tumors of the acoustic, tinnitus and impaired hearing show themselves before the vestibular symptoms come on. The disease may limit itself to the cochlear branch, in which event the patient escapes the much more distressing series of vestibular symptoms. The disease may affect the cochlear branch on one side, and the cochlear with vestibular branch on the other side. All possible variations are seen in the involvement and escape of the four branches of the two nerves, and in the time intervals between the onset in each branch. That is to say, between one branch being involved, and the disease limiting itself to this one, and all four branches becoming involved, we have cases showing the greatest variation, both in extent of involvement and in the intervals between the onset of each set of symptoms.

Tinnitus is the first symptom of affection of the cochlear branch to attract the patient's attention. It is abrupt in onset, and usually severe. It is greatest in the beginning of the disease, and grows less as destruction of the nerve proceeds. It is also constant, and not dependent on the pulse or position of the head. It is followed by loss of hearing, which also shows a wide variation in its extent. Hearing loss may be only partial or it may be complete. It is characterized, however, by its sudden onset, and also by the variation from day to day. When the infiltration of the nerve is great, many of the fibers are incapacitated by pressure, and the patient hears badly; on other days the infiltration is absorbed, the pressure is reduced, and those fibers which are not degenerating recover their function, and the patient hears much better.

The shortness of bone conduction is a constant symptom. Even when the patient has fair hearing for conversation in the early stages of the nerve infiltration, the bone conduction will show a surprising shortness. Beck has noticed this in syphilitics who have no apparent ear symptoms; and he regards it as one of the signs of syphilis. The other functional tests in uncomplicated cases are those of nerve deafness. Weber goes to the side of the better ear; Rinné is positive; high pitched notes are badly heard; low pitched tones are, relatively to high, better heard.

The vestibular symptoms are much more distressing to the patient, and the alarm they cause him drive him at once into the physician's hands. He is very apt, however, when the cochlear branch is only slightly involved, not to associate them with his ear, and to seek aid from the general practitioner. Dizziness is of the labyrinthine type which causes the subjective sensation of the floor or ceiling revolving around the patient, and objects which he looks at, moving. It is accompanied in severe attacks by vomiting, or at least by nausea, pallor, and, sometimes, perspiration. Spontaneous nystagmus is present, and is of the vestibular type, that is, rotary, combined with horizontal. The nystagmus is very apt to change its direction. When

the patient looks to the right it may be to the right, and when he looks to the left it may change to the left. The gait suffers in proportion to the dizziness.

At the height of the attack the patient staggers to keep his balance, and even after the dizziness has become comparatively quiescent the patient suffers from a sense of insecurity in turning sharply around, or in walking in the dark. The attacks of dizziness come at intervals. Unlike inflammations of the labyrinth, in which the first attack is always the most severe, and from this climax the dizziness and corresponding vestibular symptoms taper off gradually in their severity, neuritis is apt to have one or two mild attacks preceding severe ones. These symptoms in neuritis come in the form of attacks lasting usually for two or three days with intermissions in which the patient may be fairly comfortable. The Romberg sign is present at the height of the attack, and gradually diminishes as the other symptoms subside. The falling reaction follows the direction, as a rule, of the slow component of the nystagmus, in twisting the patient's head over each shoulder in the Romberg position. The spontaneous pointing error will vary with the nystagmus during the acute attack, but the error becomes less and less, and pointing is usually normal within a few days. The caloric reaction is usually lost during the stage when the vestibular nerve is thrown out of function, and so too, the turning reaction, as a rule, shows lack of irritability on the affected side; but it is almost characteristic of neuritis that the caloric reaction and the turning reaction show great variations. As a rule the turning reaction is first lost, followed by the caloric, but cases show variation in having one positive and the other negative. Again with all symptoms pointing to great loss of function in the vestibular branch, the ear may show extreme irritability to the caloric reaction. The labyrinth may be so irritable that in rare cases a positive fistula test may be obtained with, of course, the drum intact. Ruttin's double sided caloric irrigation shows one side more irritable than the other, but not necessarily the normal side if the disease is unilateral. The variation between the findings in the turning reaction and the caloric reaction is one of the salient features of neuritis. The vestibular branch is more likely to recover than the cochlear, and it is the one in which signs of recovery are first manifested.

As cases have been reported of destruction of the labyrinth without symptoms in inflammatory conditions, so too Beck regards it probable that in rare instances destruction of the nerve may proceed without manifest symptoms.

The drum, as a rule, presents nothing abnormal in appearance, but occasionally a case is seen in which herpes of the drum is present. The serum may be clear or blood tinged. Probably the majority of the cases run their course without subjective sensations in the ear, but some cases are seen in which there are alternate sensations of heat and cold in the concha, and the eye can perceive the blood injection present, and the touch actually shows a difference of temperature between the affected and unaffected sides. Other cases show a sense of formication in the feeling of ants crawling over the ear, or other curious subjective interpretations of sensations. It is probable that there is fifth-nerve involvement in these cases which present auricle sensations. The coaffection of other nerves is quite common in auditory neuritis. Of these the seventh is the most usual, and it manifests itself, as a rule, by facial paresis, rather than complete paralysis. The extrinsic eye muscles are next in frequency of involvement, and of course are recognized by squints, diplopia, etc. The fifth is not frequently, but is sometimes, affected, and shows itself in hyperesthesia, paresthesia and anesthesia in the areas of its distribution. When we have a series of nerves coincidentally affected we have the clinical picture of polyneuritis cerebralis of Frankl-Hochwart.

DIAGNOSIS

The diagnosis of neuritis is not difficult when uncomplicated by a purulent otitis media. The cochlear and vestibular symptoms coming suddenly in a patient with normal drums, and with the history of no previous ear trouble, together with the frequency with which other nerves are involved, render the diagnosis comparatively easy. When a chronic or an acute otitis media happens to coexist the difficulties are greatly increased because there is always a possibility that the Ménière symptoms may be due to a serous or a suppurative labyrinthitis. There are some cases in which the diagnosis is practically impossible, and there undoubtedly have been cases incorrectly diagnosed and operated on under these circumstances. Our main reliance in such cases must be placed on the time interval, which usually occurs in neuritis between the appearance of the cochlear and vestibular symptoms. In labyrinthitis the cochlear and vestibular symptoms appear together, whereas in neuritis the probabilities are that an interval separates the manifestations of each branch. If the facial nerve is affected in neuritis it is just as likely to precede the involvement of the eighth; in serous labyrinthitis it follows or is coincident with labyrinth symptoms.

As a rule in neuritis the turning reaction is first lost, followed by the caloric; whereas in serous labyrinthitis, if both are not negative, the caloric is lost first, and is followed by the turning. The labyrinthitis is usually accompanied by the symptoms of acute exacerbation of the middle-ear trouble, and these may be of assistance in drawing a correct conclusion. The diagnosis in this combination, however, is difficult, and should neuritis come on with symptoms from both branches at the same time in a patient with a running ear, a mistake in the diagnosis is not unlikely. Tumor of the acoustic nerve might easily be mistaken for neuritis. In this condition our main reliance must be placed on the choked disk which appears early and quite constantly in tumor of the acoustic, and which, if present, determines the diagnosis. Cases of basal fracture with hemorrhage into the labyrinth, have the history of the accident and period of unconsciousness, together with other signs of damage, such as bleeding from the ear or the presence of a hematoma. In hemorrhage into the labyrinth such as occurs in leukemia the other symptoms of the blood condition are present.

PROGNOSIS

The prognosis varies with the branch affected, and also with the freshness of the affection when it comes under treatment. The cochlear branch is the more vulnerable to attack, and the more susceptible to permanent damage. Consequently, it is well to be guarded in giving a prognosis as to the amount of recovery of hearing which will take place. The vestibular nerve recovers much more frequently, and even when

recovery does not take place in this branch, compensation sets in from the other labyrinth, and by the patient calling his other senses, such as vision, tactile, and muscular sense to his aid in maintaining his equilibrium. He does not suffer, consequently, the inconvenience eventually from the loss of his vestibular nerve that follows the loss of the cochlear. The prognosis in the syphilitic cases varies with the freshness of the case at the time it comes under treatment. The sooner treatment is instituted after the onset of the symptoms the better is the outlook for recovery. In those cases which are of long standing, even though antisyphilitic treatment was not used, improvement does not take place when it is instituted in that gratifying way which follows the fresh case. The prognosis in hereditary syphilis is not good. A few cases have been reported with improvement in hearing following active treatment, but the great majority report the condition unchanged.

TREATMENT

Inasmuch as the great majority of the cases are due to syphilis the treatment consists of antileutic measures; and this brings us to the great question which has agitated the profession in the last three or four years, whether salvarsan is not more dangerous as a causative factor in producing the neuritis than as a curative agent for its repair. Several years ago Finger drew the attention of the profession to the great increase in the number of cases of neuritis of the eighth nerve since the introduction of salvarsan as a remedy for syphilis. Oskar Beck followed him with a number of cases which he reported as probably due directly to the salvarsan, and since then the literature has been rich with case reports and conclusions both pro and con on this mooted point. Alexander also came forward, and drew attention to the greatly increased number of cases in his clinic since the salvarsan era began. Beck's chief points were: the increased number of cases seen in the early stages of syphilis, the fact that after the injections of arsacetin (605) on mice the animals developed labyrinthine symptoms, and sections of their eighth nerve showed degenerative changes. He afterward made the same injection experiments with salvarsan, and reported the same degenerative changes in the nerve. He thought also that salvarsan had a selective affinity for the vestibular nerve, for while reports of previously isolated affections of the vestibular nerve were extremely rare in the literature he found ten cases in the Vienna clinic following the use of salvarsan.

These points, together with the fact that arsenic toxemia had been known to produce neuritis in various nerves, together with the history of atoxyl having produced many cases of optic neuritis, led him to the conclusion that salvarsan was probably a cause in itself in producing neuritis, and he laid down the rule that it should only be given in cases in which the patient had perfectly normal ears, or at the most an affection which was purely limited to the middle ear, but that it was contraindicated in any case of inner-ear trouble, such as otosclerosis, boiler-maker's ear, etc. Ehrlich then made a series of experiments on animals by injecting salvarsan, and making, sometime afterward, microscopic sections of the nerves, and he reported that he found no bad results, and that his sections showed no changes, whatever. We have, here, two sets of experiments with differing results, but the point is well brought up that such experiments are not conclusive in drawing conclusions as to the effect of salvarsan on man.

Ehrlich explained the cases following salvarsan, in the following manner, and described them as "neurorecidives." His explanation is that salvarsan rapidly sterilizes the body by destroying the spirochetes, excepting in the nerves lying in bony canals, the blood supply of which is very scanty. The spirochetes remaining in these nerves multiply rapidly, produce a local swelling, a consequent choking of the nerve, and in this way produce the nerve symptoms. Nichols augments this theory by pointing out that the rapid destruction of the spirochetes prevents the natural resistance bodies being further formed in the system, and that, consequently, the spirochetes which remain in the nerves proliferate and multiply with unopposed rapidity. The theory of Ehrlich has been pretty well accepted by the profession. In addition to this, Assmann, Dreyfus and others have pointed out that in nearly all cases of neurorecidives when the cerebrospinal fluid is examined, many cases show the presence of luetic meningitis, as shown by a positive Nonne-Apelt reaction, increased cells, increased globulin and a positive Wassermann reaction. This meningitis is latent, producing no meningeal symptoms except headache, but, in the opinion of Wechselmann, Assmann, Haike, Frey and others, it may furnish an explanation for the affection of the basal cranial nerves so often seen. Ehrlich's explanation, while acquitting salvarsan of being the direct cause of neuritis, is corroboratory of the increased number of cases since its introduction. That the cases have been increased has been combated with the explanation that our means of diagnosis of this condition is of recent development, and that, formerly, cases occurring were unrecognized. The labyrinth symptoms not being well understood caused a different explanation to be given by both the practitioners and the specialists into whose hands the cases fell. Otto Mayer searched the records of the Gratz clinic when it was under Haberman, and found sixty-five cases of acoustic paralysis, which commenced in the secondary stages of lues, so that he discredited the statement that neuritis in the early stages of syphilis had increased since the employment of salvarsan. Frey also found some cases, quoted in the literature, and Kreibich and a number of observers reported cases in the early stages of syphilis. Benario, in order to show that neuritis is not due to salvarsan, collected a series of 210 cases of general neuritis following the use of salvarsan, and 121 following mercury. Of the 210 cases, 79 were of the acoustic nerve, and of the 121, 46 were of the acoustic. From this he drew the conclusion that neuritis of the auditory nerve was not more frequent after salvarsan than after mercury. Of the 79 cases, both branches were affected in 33 cases, the cochlearis, alone, was affected in 23, the vestibularis, alone, in 6 cases, and the eighth nerve, combined with other cranial nerves, in 17 cases. Finger attacked this table on the ground that the number of cases treated with mercury which produced 121 neurorecidives was unknown, and, consequently, the table was valueless as showing the relative frequency of nerve lesions under the two systems of treatment.

Gerber reviews the whole subject, and divides the matter into three questions: first, How many bad results were due to early errors in the administration of salvarsan? second, What results are to be attrib-

uted to salvarsan and neosalvarsan? and, third, How many were neurorecidives, the condition disappearing under further treatment? We know that mistakes were made in giving salvarsan, that the intravenous method is less dangerous than the intramuscular, that the remedy must be fresh, and unexposed to the air; that mistakes were made in the water; and that too large doses of neosalvarsan at first were given. But even with such mistakes it is difficult to attribute the cases as clearly being due to the toxic effects of the remedy administered. Gerber compares the small group of cases which have been reported by Urbanschitch, Beck, Benario, Muller and others, where within a few hours or a day, after the injection of salvarsan, eighth nerve symptoms appeared, and lasted only a brief time, as analogous to the Herxheimer reaction in the skin, and differing in this way from the true neurorecidives which do not appear for from six to nine weeks after the injection.

Stepanoff, in order to satisfy himself as to whether salvarsan was injurious to the nerve, made 100 functional examinations of 33 cases in the secondary stages of syphilis treated with salvarsan and mercury. He found the vestibularis nerve usually normal, but sometimes showing decreased reaction. The cochlearis usually showed improvement after treatment. Denker also made 100 functional examinations of 22 patients, making the first examination before the injection of salvarsan, the second four or five days after and the rest extending over a period of from one to four months. His conclusion was that not the slightest harm was done to the nerve by salvarsan. Probably the strongest argument in favor of salvarsan is that 121 cases of neuritis following mercury treatment were treated with salvarsan, and of these 39 were cured, and 29 were improved. And stronger still are the cases reported when a neurorecidive followed the use of salvarsan, but on successive injections of the remedy cleared up. These results seem impossible if salvarsan had a selective action in itself in producing auditory neuritis.

It is probable that the conclusion arrived at by Haike and Wechselmann is correct, that salvarsan does not directly produce neuritis, but that indirectly the number of cases have been increased by the production of neurorecidives.

The treatment of neuritis when the syphilitic etiology is clear comes down, consequently, to the treatment of the syphilis, and the preponderance of evidence seems to show that salvarsan and neosalvarsan are the best remedies. They should be given in repeated doses, two weeks or a month apart, and combined with mercury in the intervals. Knick, Zaloziecki, Werther, Botey, Germanski and a great many others report good results in the earlier stages. In the long-standing cases hope should not be abandoned until repeated injections have been tried. Krumbein reports one case which showed no improvement until a year after treatment, at which time considerable improvement took place, and sufficient other reports are at hand to allow us to indulge in the hope of at least obtaining considerable improvement, if not a cure. When lues cannot be shown, we must endeavor to ascertain the cause of the toxemia, and treat it. When no cause can be definitely ascribed we must treat the case on the principle of a toxemia, and use all the elimination channels to combat it. In hereditary syphilis great improvement is not to be expected, although such cases have been reported. Seibenmann had some success in five cases, the promptest results coming in the freshest cases. Wanner, Leidler, Urbanschitsch and Beck all report cases with results, which, while not brilliant, render the salvarsan treatment worthy of trial.

1018 Shreve Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. WILLCUTT, HASTINGS AND WINTERMUTE

DR. J. HOLINGER, Chicago: The subject of functional tests of the ears has interested me ever since 1892. There was a great deal of mistrust against these tests, especially the tuning fork tests, at first, but the clear diagnoses as we heard them today and as they appear more and more, show that the criticisms that were enunciated at first were unfounded. Dr. Willcutt told us about the appearance of hard hearing soon after the appearance of the primary lesion of syphilis. This is new and important. In the later stages we expect to find all kinds of nervous symptoms. A great deal of work is still to be done. The work on this subject so far has produced many surprises. In some cases, especially during the early stages, we see wonderful results; in others we meet with an absolute lack of all response to treatment. We must study the reasons for the wonderful improvement in some cases, and the complete loss of hearing under careful, regular, systematic treatment in others. If you are optimistic in your prognosis you will meet with severe setbacks. Especially do I think we must be careful in cases of congenital syphilis. There we see patients toward the end of adolescence—say 16 to 20 years—where apparently slight hard-hearing which can be differentiated from otosclerosis begins with or without vestibular symptoms. At first specific treatment seems to do very nicely, but later on, after two or three or four months, you might have very surprising disappointments. It is my experience that in congenital syphilis we have to be very guarded in our prognosis. Even the results Dr. Hastings has shown I would not take as final. Wait and see whether in four or five years these improvements will keep up. I am sorry to say that, but I am speaking from experiences which have taught me this lesson.

DR. FRANCIS P. EMERSON, Boston: The small number of cases which I have observed—some eight or ten—causes me to hesitate to make any general deductions. The observations which have been made by Dr. Willcutt and others are of great practical use to us in cases which have failed to respond to treatment for chronic deafness, and particularly those cases in which we have no systemic evidence of syphilis being present. The cases I refer to particularly are those in which there is no physical evidence of syphilis and in which we are unable to get a history of syphilis, and yet we have a marked loss of hearing and our usual treatment does no good. Those cases which I reported a year ago in Philadelphia came under observation from the fact that in the clinic we had a large number of what we call "hospitalized" cases, namely, cases which were reporting constantly for treatment and not getting any better, and in starting to examine these patients systematically, that is, having a Wassermann made of every one and getting a careful history of every case, we found that in the hearing tests in those cases in which the Wassermann was positive, there was a surprising similarity in the formula. That is, there was a history of deafness over some little time, and yet the low notes were normal, and while the upper register was cut down to 1/25 or 1/35, making their hearing decidedly impaired, they presented a positive Rinne. There might be a lowering, as Dr. Willcutt says, both of air conduction and bone conduction, but the relation is still positive. The important diagnostic point is the lowering of bone conduction.

These cases are important, because a great many times in examining the nose and throat you find evidence of trouble in the nasopharynx that you might take as the

cause of their deafness, with other characteristic changes in the membrana tympani, so that the findings which Dr. Willcutt has brought out are of exceeding importance in arriving at a right diagnosis.

DR. GEORGE W. MACKENZIE, Philadelphia: Dr. Willcutt mentioned several authorities who found the Rinne negative in syphilis while others found the Rinne positive. I had hoped that perhaps he might explain why there should be such a variance in their findings. In a unilateral case of pure internal ear condition, we note in the milder grades the Rinne positive, but as the deafness increases the positive character gradually diminishes until it becomes plus-minus, and eventually with absolute deafness we have a negative Rinne. The reason for the negative Rinne is that the bone conduction is transferred from the other side. It is possible that some of these authors may have examined cases more or less unilateral and of moderate degree, while the others examined cases more pronounced. Where syphilis exists it more often affects both ears than a single ear, although I have in mind cases in which but one ear was affected. In cases in which both sides are involved the positive character of the Rinne is accentuated. Dr. Willcutt did explain that in cases in which there is a mixed condition, namely, with secondary middle ear trouble, we find the Rinne reversed. I think one of the authors he quoted said the bone conduction was shortened out of proportion to air conduction. Such a condition is impossible, for there is no condition in which we can find the bone conduction shortened more than the air. The air conduction must shorten in proportion to the bone conduction. His findings in regard to the acoustic apparatus and the vestibular apparatus are in accord with my own experience. In going through a deaf mute institution I had an opportunity to examine quite a number, and found the acoustic apparatus suffers more than the vestibular in all varieties of internal ear trouble. With treatment the vestibular apparatus may be benefited more than the acoustic. The reason is that the acoustic is phylogenetically the younger, therefore more vulnerable.

Dr. Hastings referred to absence of nystagmus by turning. If the vestibular apparatus on both sides is destroyed it would eliminate nystagmus by turning, but not so in a unilateral lesion.

The fistula sign is not an absolute indication of fistula of the labyrinth. Alexander and Lasalle report several cases, some of them quite normal, in which the fistula symptom was positive. In trying to determine whether the lesion is in the internal ear or the nerve, I would suggest that you try the galvanic test. In the internal ear condition with the nerve intact you get a reaction from the affected side with the cathode, provided you use sufficient current. In the nerve lesions, no matter what strength of current is used, for instance 20 milliamperes, you will get no reaction with the cathode.

DR. D. HAROLD WALKER, Boston: I think it is well to recognize that toxemias other than that of syphilis exist, such as alcohol, tobacco and, particularly, constipation. Before giving salvarsan, it seems necessary to institute a prolonged treatment by mercury, then salvarsan, until there is no further improvement in hearing. I would like to speak of a case which illustrates this point. A young girl with no history of syphilis became deaf suddenly in both ears; she could hear nothing, not even by placing her ear against a piano. She was treated by a local physician, pilocarpin and iodids being given. She was admitted to the eye and ear infirmary. After trying to exclude everything else, it was thought the condition might be due to syphilis. The Wassermann reaction was negative in both the blood and the cerebrospinal fluid. She was given inunctions of mercurial ointment for about three months, with no improvement, and as a last resort salvarsan was given. After the first dose the patient could hear noises and later the spoken voice. After the fourth treatment she heard a whisper several feet distant. It is probable that the mercury set free the spirochete, giving the salvarsan a better chance to attack.

DR. H. B. GRAHAM, San Francisco: I want to commend Dr. Hastings' paper in that he has been so accurate in reporting the details of his case. There is nothing that is quite as confusing or quite as disconcerting in a hunt of the literature as to find that a man had "a nystagmus." If one does not know any more than that it is not worth much. I think this matter of detail should apply to our future work in regard to syphilis. We must correlate our findings in these cases, because we must follow the history of syphilis in the future from a different standpoint. We have records of cases in the primary or the secondary stage, or inherited syphilis, all producing different symptoms. In the inherited cases are we dealing with the spirochete or is there such a thing as one inherited case containing a spirochete and another case no spirochete? Is it the toxin introduced into the body that is producing the area of infection? All of these things must be gone into as distinct entities. In congenital syphilis we undoubtedly have a shortened bone conduction. What is it due to? I do not think we are able to tell. If we have a family with a shortened bone conduction and without any other signs of syphilis except in one member of the family, I think we have a right to say that there must be some toxemia in other members of the family that is producing this shortened bone conduction. I have such a family. Four children have no signs of syphilis excepting this shortened bone conduction. A fifth child had epilepsy, which has entirely disappeared after salvarsan treatment. This one child has had a number of signs of inherited syphilis. The presence of shortened bone conduction is not indicative of course of syphilis in all cases, and it becomes very confusing when we are attempting to make a diagnosis of intracranial pressure. Whether intracranial pressure produces in all cases shortened bone conduction, and whether intracranial pressure is present in these syphilis cases, I do not know; but in tumors of the brain there is no shortened bone conduction, and it has misled a number of us in our diagnosis of intracranial conditions, because we were confusing these things with syphilis and trying to prevent an operation when there was an intracranial tumor present.

I want to call your attention to one of the statements of Dr. Wintermute which is of very great value, and that was the disappearance of the adequate function of the nerve in lues before the inadequate function disappears. The adequate function of the vestibular branch of the eighth nerve is a response to a turning motion of the body. The inadequate functions are responses to the galvanic current and to heat and cold. In a slow degenerative process the turning function disappears first.

DR. CULLEN F. WELTY, San Francisco: Shortened bone conduction leads many ways. I have observed two cases of syphilis with shortened bone conduction. How much shortened the bone conduction may have been prior to infection I am not able to say; but I think in studying these cases, our histories alone are conflicting until we have the findings prior to this trouble. In many cases we find shortened bone conduction without syphilis. In many cases of acute infectious diseases we have a shortened bone conduction without a record. There is some sort of infection that takes place during that disease.

The differentiation between nerve deafness and neuritis of the cochlear branch is very hard for me to make. As for Dr. MacKenzie, I have not used his mode of differentiation, and if that is accurate, I think it is the only reliable one that we can employ at present in the differentiation of these two conditions. I had a case similar to that of Dr. Hastings', of hereditary lues with acute exacerbation of the ear symptoms; that is, intense vertigo, tinnitus and nausea; the patient fell on the street. When I saw her several days following, I had to shout in an ear trumpet to make her hear. There was no bone conduction. Large doses of salvarsan were given. Hearing returned for ordinary conversation, but she still had some slight vertigo and tinnitus. After the second dose in a week, the vertigo and tinnitus disappeared. My instructions to the patient were to have salvarsan as soon as she noticed the slightest bit

of associated vertigo and tinnitus. She has had three additional injections and is now doing clerical work. She had marked interstitial keratitis.

I can recall another interesting case of a nurse at the city and county hospital with a diagnosis of acute Ménière's disease—intense vertigo, tinnitus, nausea and vomiting for several days. I saw her one week following, when there was decidedly shortened bone conduction on one side. In the course of four weeks she had a similar attack and there was approximately the same shortening of the bone conduction on the opposite side. These attacks continued for about three months, when she became totally deaf. This was some nine years ago. At that time, I called it acute Ménière's disease. She did not have a tumor, as she is still living and all the symptoms have subsided.

DR. H. W. LOEB, St. Louis: I would like to add a word with reference to the effect of salvarsan on the internal ear. Early in the use of salvarsan a patient was referred to me with this history: Several weeks before he had an extragenital chancre which had been operated on. His surgeon made a smear and distinct spirochetes were discovered and the chancre excised; he had then given him large doses of salvarsan. Ten days later the young man was taken with vomiting and spontaneous nystagmus, paralysis of the right side with complete deafness on the left side. He had been in that condition for three or four days when he was referred to me. I found the hearing tests indicated absolute loss of hearing on the left side, and I found spontaneous nystagmus leading toward the right side. The pointing test was very clear indeed, being toward the affected side. He was under my observation for three years, during which time the spontaneous nystagmus continued, to my surprise and much against my prognosis. This has disappeared and he now has a vestibule that responds to all the tests, but he has never recovered his hearing. I think that carries out the understanding that the cochlear part of the auditory nerve is far more vulnerable than the vestibule. Furthermore, he has never had a positive Wassermann and no other evidences of syphilis that could be made out. To me that is about as convincing as anything we get from postmortems.

DR. HARRY L. POLLOCK, Chicago: I have had recently an experience in which I found this shortened bone conduction in a case of acquired syphilis. I think the two papers should have been divided—congenital and acquired—because the prognosis is quite different. Dr. Willcutt stated that he did not know why the eighth nerve was most frequently involved. I have been under the impression that it was because the nerve passed through the narrow, bony canal, and the toxic effect of the syphilis caused a swelling in the canal, not only in the nerve but also in the sheath, and that this pressure caused the eighth nerve to be most frequently affected.

In regard to the Herxheimer reaction and deafness following large injections of salvarsan we know that in giving large doses of salvarsan we get edema of various parts of the body, and also get this in the eighth nerve. I have had quite a number of patients with syphilis in other parts of the head to whom I gave salvarsan, and following that a short time there was beginning nerve deafness, often as early as twenty-four hours following injection; but this gradually disappeared, or if it did not disappear it was followed within one week by another maximum dose of salvarsan, and then it cleared up entirely. The best results in these cases of syphilis of the ear I obtain by giving maximum doses, treating about once a week, giving as high as six or seven consecutive doses, and in all acquired cases I can say without exception the hearing was completely restored.

DR. WILLIAM R. MURRAY, Minneapolis: I would like to refer briefly to a case of syphilis that showed a very marked Herxheimer reaction following the administration of neosalvarsan. The patient, a woman aged 25, was entered at the outpatient department of the university clinic. She had secondary syphilis. The Wassermann was positive. There was no involvement of seventh or eighth cranial nerves, and no history of any ear trouble. Neosalvarsan was administered twice in doses of 0.6 gm. Ten weeks later the patient had a sudden attack of vertigo, nausea, and vomiting, followed by tinnitus and deafness in the left ear, the deafness becoming total in one week; tinnitus and deafness in the right ear, one week after involvement of the left, with total loss of hearing. Two weeks after the onset of deafness in the left ear, a left facial paralysis appeared and one week later a right facial paralysis also appeared. It was at this time that the patient came under my observation. Repeated Wassermanns were negative, both blood and spinal fluid. Otoscopic examination was negative. No nystagmus was present; caloric and turning reactions absent; no pointing errors; total loss of hearing. Treatment consisted in the administration of neosalvarsan, injections of salicylate of mercury, and potassium iodid. Neosalvarsan was given in small doses, from 0.3 to 0.6 gm., and the mercury and potassium iodid continued over a long period of time. The result of eight months' treatment was disappearance of tinnitus and facial paralysis. Deafness permanent.

DR. GEORGE H. WILLCUTT, San Francisco: I am disappointed that we did not have more of a discussion on the probable cause of this shortened bone conduction in syphilis. From the work I have done along this line, I favor the primary nerve infection or irritation theory rather than that of the increased intracranial pressure. Dr. Graham mentioned the relationship between increased intracranial pressure and bone conduction, in that in certain conditions of increased pressure we have a diminished or shortened bone conduction. This is very true and it is also very interesting to note that in a few cases of lues in which Beck did a lumbar puncture, there was a tendency for the shortened bone conduction to return to the normal. This may immediately follow the puncture, or it may come on gradually three or four hours following. In some cases of a shortening of fifteen or twenty seconds, it diminished to five or six seconds, a marked improvement but not to the normal. In a few days (three or four) it would be back to the twenty seconds again. Although this is in favor of Beck's theory, I do not believe it is satisfactory to explain the condition in the great majority of cases. In reply to Dr. MacKenzie, I think that only Dr. Kerrison reports the finding of a negative Rinne test in these cases. Urban, Politzer, Rhorer, and Emerson have reported that the majority of cases showed positive Rinne tests. I believe the difference in opinion is to be explained by the fact that the Rinne may change in these cases as just described by Dr. MacKenzie; but I have found the positive Rinne the rule. Dr. Pollock spoke of the relation of diminished hearing or deafness following the use of salvarsan and the Herxheimer reaction. Dr. Karl Theimer of Vienna considers the disturbances of hearing appearing within the first ten days after the use of salvarsan as analogous to the Herxheimer reaction and advocates the use of small doses of the specific to prevent this reaction occurring. I would like to report the case of an Austrian naval captain who had a severe primary infection and who received a large dose of salvarsan. Previous to the injection the otologic examination showed absolutely normal vestibular and cochlear reaction. Following the injection on the nineteenth day, complete bilateral deafness and loss of vestibular reaction were observed. After ten more doses the condition remained the same and when I last saw him, four months after the initial dose, he was in the same condition. This is one case that can probably be laid to the toxicity of salvarsan.

DR. HILL HASTINGS, Los Angeles: I think we are finding syphilis of the ear more often of late because we are looking for it. We all have had cases of syphilitic neuritis without knowing it; I know I have had. It is due to the use of the Wassermann test that we are able to find these cases of syphilis. Alexander says that in syphilis of the labyrinth there is always found a relatively great reduction of bone conduction. Alexander also says that in hereditary syphilis we get the fistula symptom more frequently than in acquired syphilis. Barany also mentions the fistula symptom as suspicious of syphilis of the labyrinth. Politzer says

hereditary lues is more common in females. His diagnosis is, (1) shortened bone conduction, (2) interstitial keratitis, and (3) the fact that both ears are involved. It is interesting to note that Politzer is the only man who reports a case within one week after the initial lesion (in 1878); since then all the reports have been of cases in the secondary stage, usually early, but not earlier than three or four weeks after the primary lesion. I have had a case recently, however, that occurred six years after the initial lesion, and the patient never knew he had syphilis. He was married, had a healthy child, and was astonished to know that he had syphilis. The Wassermann was 4-plus, and he was cured under mercurial injections.

Dr. Walker advises the use of salvarsan in the case I reported and I agree with him. In a general way I believe that the otologist is not the man to advise what the treatment should be. I think when he has made his diagnosis and told the patient what is wrong, that there his responsibility ends. It is wise for him to give advice, but I think the patient should be sent to a neurologist, and particularly to one who is doing syphilitic work, and let him give the treatment. It is not up to us to treat syphilis. This question of salvarsan therapy in disease of the eighth nerve is too new, the opinions too conflicting, for us to take any deliberate stand. In my patient the father objected to the use of salvarsan. Prof. Udo J. Wile recently advises small doses of neosalvarsan in syphilitic neuritis of the eighth nerve and reports good results from the cases sent him, with ear diagnosis made by Professor Canfield of the ear department.

DR. G. P. WINTERMUTE, San Francisco: Dr. MacKenzie's experiment with the turning nystagmus is very interesting, and possibly that may be the explanation of the well-known fact that in neuritis the nystagmus varies. I was much surprised to hear Dr. Hastings say that the majority of cases occur in the secondary stage of syphilis. I think Dr. Beck considers it rare in the secondary stage, and this was one of his points for considering salvarsan as the cause. Since this a number of cases in the secondary stage have been reported, but I do not think it is more prevalent in the secondary stage than later on.

MYOTONIA CONGENITA*

W. A. JONES, M.D.
MINNEAPOLIS

The various types of muscle-disease suggest to the general reader either a juggling of names or a confusion of ideas, and usually both. The literature, too, on the subject illustrates a diversity of opinion; but, out of the collection of reported cases, one may safely classify and differentiate clinical types.

Myotonia congenita, or Thomsen's disease, was first carefully described and recognized as a type by J. Thomsen, a Danish physician of Kappeln, Silesia. Thomsen was a sufferer from the disease, and came from a family in which it had existed for five generations, although the disease was described—at least a disease similar to myotonia congenita—by Charles Bell in 1832, but was not put in its proper category. Benedikt described a similar condition in 1864; von Leyden, in 1866; and in the same year Erb collected twenty-eight cases. Thomsen's paper, however, did not come out until 1876, and then was entitled "Tonic Cramps in the Voluntary Muscles in Consequence of an Inherited Psychical Disposition." [1]

Since 1876 the number of cases reported has rapidly multiplied; hence the confusion in the differentiation of these muscle-diseases.

In order briefly to summarize what is usually found under myotonia congenita, the following case will, perhaps, give an outline, although it presents no new features:

Mrs. E. S., aged 41, married twenty-one years ago, and the mother of six children, four of them dying within the first five months of disorders of metabolism. Two children are living and well. The parents of the patient are both living. The father is 62 years of age and in good health. The mother is 58, and very gross in appearance, probably suffering from obesity. She lives in a distant city, and consequently it is impossible to investigate her present condition; however, it is stated by the patient that the mother has suffered from a cramp-like attack in both hands for a great many years. This is the only history the patient has been able to give as to the possible heredity of her present trouble. A brother of the patient is living and well, and two sisters are living and in good health.

Mrs. S. has always been below par physically, and during childhood suffered from measles, mumps, chickenpox, and repeated attacks of tonsillitis. She has never had diphtheria or scarlet fever.

At 29 years of age she had an attack of smallpox.

Her menstrual life began at 14, and at 39 the menstrual periods became irregular and scanty in amount. She never sustained an injury of any sort, except at the age of 29. Following the attack of smallpox she was operated on for tubal pregnancy.

For the past twenty years she has had marked varicose veins, especially in the left leg; and these have caused her a great deal of inconvenience, and she has the usual stinging sensations which occur in a varicose condition.

The patient uses no drugs or alcohol, but has the tea habit, drinking from eight to twelve cups per day, and, in addition, two cups of coffee.

She has no evidence of a circulatory or a respiratory disease, and there is no active dyspnea, nor any palpitation. Her digestive apparatus is good, although her bowels are somewhat irregular and she complains of the usual distention of the abdomen. She is able to do her housework, although under some hardships; and for years she has attended to all her household duties and the care of her children.

The patient remembers that ever since she was a little child she has had trouble in moving her hands. She recalls that they would be in a definite position, and when she wanted to move them she found it impossible, for a few seconds, to make the required muscular effort.

During her young womanhood she had at times some difficulty in talking, and in other uses of her tongue. She says that her tongue would become spastic when she attempted to speak, or to move it in eating and swallowing. She described the sensation as a cramp in the tongue, similar to the cramp-like sensation in her hands. This condition has largely disappeared as regards the tongue; that is, she is able to speak clearly and distinctly, has no hesitancy in the movement of the tongue, nor has she any difficulty in swallowing. Occasionally, after shutting her jaws she finds it difficult to open them; the jaw feels as if it had been locked. These attacks, or tonic spasms of the jaw, never last more than a moment.

Six years ago, during her last pregnancy, when she was 36 years of age, the patient noticed that there was some difficulty in her feet and legs. The onset was very gradual; but it slowly and progressively grew worse. At the present time, if the patient attempts to go upstairs, she places one foot on the step, then the muscles become locked, and it is impossible for her to move her other foot and leg for several seconds. She also has difficulty in getting on the streetcar. With one foot on the lower step and the other foot either on the ground or in midair, she cannot get into the car until the muscles unlock. She also has difficulty in getting up from her chair.

---

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Osler: Modern Medicine, vi, 395.

Various attempts are followed by a spasm of the muscles, but she is finally able to arise.

When the patient is lying down, and has no weight on her feet and legs, she is able to move them in whichever direction she pleases, and the movements of the hands and arms also improve when she is lying down, although, occasionally, she has a spasm, and it is more or less difficult. Repeated efforts on her part, either to move her arms or legs, render each movement easier.

When the muscles are stimulated by electricity, either the faradic or the galvanic current, they promptly respond to the stimulation, but the relaxing movements require from four to eight seconds. The muscles of the forearm and the arm, as well as those of the leg, show this same electrical reaction, and the same hesitancy in their relaxing movements. This applies particularly to the movements of extension. There is some spasticity on passive movement; and her gait is more or less spastic until she is thoroughly under way. She has no contractions, and no muscular atrophy, except that the left lower face exhibits a little restriction of muscle movement, that is, it does not respond as promptly as the muscles of the right side. The movements of the upper face are plainly present, but weak. She has no atrophy of other face muscles, or of the sternomastoid or the vasti of the thighs.

The reflexes are obtained with some difficulty. They are feebly present in the biceps, are obtainable in the triceps, and are absent in the Achilles on both sides. The deep reflexes of the patellar group are obtained only on reinforcement. There is no clonus. She has flexion from plantar irritation, but there is no Babinski or other phenomena. Her grasp is rather feeble, as shown by the dynamometer; and she is able to force the instrument only up to point 7.

Her general condition is poor; she is pale and stringy looking, and has a tired, woe-begone expression. She has a small goiter, which involves the right and middle lobes. It is soft and a little boggy, but there are no other symptoms, although this condition has been present for about eight years.

The teeth are poor, and she has a decided pyorrhea alveolaris.

The bladder control is a little impaired, but not to any degree which renders her at all uncomfortable, perhaps no more than the average woman who has had six children.

The pupils are equal in size, and react to light and accommodation. There is no disturbance of vision or of any of the other cranial nerves.

A section of the muscle was removed from the upper arms, from the triceps area, and the following microscopic findings obtained, the description being from sections of muscle mounted and stained with hematoxylin and eosin:

The tissue seems to stain somewhat deeper than normal muscle, and in places shows marked affinity for the hematoxylin, but no degenerative changes can be distinguished. No distinct vacuolation was noted, although in places it might appear as such; but in all probability, it was due to separation of fibrillae or to an artefact.

By far the most striking features to be noted are the increase in size of muscle fibers and the presence of numerous nuclei, arranged, as it would seem, in fairly definite order.

The increase in size of the muscle fibers is very marked, varying from two to three times the normal size of muscle fibers. A lack of normal parallelism, while present, is but slight, especially when the size of the fiber is considered. The various muscle bundles do not appear as compact and firm as normally, but seem more loosely bound together, the individual fibrillae being more or less separated. Crossed striation, which has been reported to be absent in some cases, is certainly but feebly marked in places, while in others it seems to be absent.

The abundance of nuclei which stain a deep blue, and apparently do not partake in the general increase in size, is of interest. Just why they exist in such numbers and arrangement is not easily explained. From longitudinal sections it would be difficult to say whether the nuclei were in the muscle fiber or about it. From cross-section it would seem, however, that the nuclei arrange themselves about the muscle fiber and in or beneath the sarcolemma. These nuclei are usually in single rows, of varying length, and not confined to any portion or section but very numerous and all fibers show presence of these rows, as a rule but one row to a fiber, but this is not constant, as in places there would seem to be several rows. This may be due to the overlying sarcolemma sheath, or adjacent muscle fiber. These nuclei vary from six to thirty in a row, placed end to end.

A connective tissue change has been described; in the present case, except for a moderate looseness of separate muscle bundles, no change is to be noted.

The etiology of this case is rather obscure, except that it presents a very marked suggestion of heredity.

One cannot but consider that the exanthematous diseases that this patient went through in early childhood may have contributed to the early appearance of her symptoms. Then, too, she was a slight, frail, and rather poorly nourished type of woman. Also, the fact that four of her children died from nutritional disorders may tend to emphasize the theory of Dr. Ralph Pemberton,[2] who claims that in most of the cases of myotonia congenita there is a lessened creatinin output and a marked loss of calcium and nitrogen. This may or may not be an important factor, although in the majority of cases of myotonia congenita which come under observation, the patients are discovered to be suffering from the disease at about the twentieth year. Not uncommonly, however, children under the age of puberty are found to exhibit these awkward movements, which prove, under examination, to be a tonic spasm. It has been recorded by most observers that the majority of cases of myotonia congenita occur in men, and the lesser number in women. Just why, it is not easy to determine. The diagnosis of this case rests on the myotonic action of the muscles; that is, the response to stimulation and the slow relaxation which follows the voluntary contraction, the attitude of the patient, the character of the movements when an effort at standing and walking is made, and the use of the hands and arms are all a part of the myotonic action.

The prognosis in this case corresponds to other cases reported and depends on the severity or extent of the initial spasm. Not infrequently these people are able to carry on their work, as is the case with our patient. The disease, however, is essentially a chronic one, and progressive, with minor relapses or remissions.

The treatment is purely speculative. Various things have been done, but drugs have not proved advantageous; in fact, no permanent benefits have been realized from exercise, massage, or baths. The only thing that seems definite in the treatment of the disease is to keep the patient as active as possible; and, if there is a question of loss of lime salts, they can be introduced. These patients should, however, be kept from undue excitement or undue exposure to cold.

In connection with the report of this case it might not be out of place to refer to a somewhat similar condition which is known as Eulenberg's disease, or paramytonia congenita, an affection something like Thomsen's disease, in that the tonic spasm appears in certain voluntary muscles, more particularly in the face, so that the patient is unable, for fifteen minutes or longer, to open his eyes or to speak. The tonic spasm in Eulenberg's disease is usually caused by cold, but not by exertion as in Thomsen's disease.

2. Pemberton, Ralph: Jour. Med. Sc., cxli, 253.

Dysbasia angiosclerotica, or "intermittent limp," occasionally found in man, is found analogously in horses and is called "spring-halt." This condition is found in middle life and among gouty people or excessive smokers. On walking, the legs tire, and are heavy and painful with a cramp-like pain or limp. Persistent effort increases the difficulty, and it is associated with mottled, purple or red spots over the area of distribution of the posterior tibial or dorsalis pedis artery, due, supposedly, to a temporary spasm of the sclerotic vessel.

Tetany and myotonia congenita may be associated. Paolo Blau[3] records such a case. A young man of 21, a soldier, gave a history of symmetrical spasms of muscles of both extremities, the voluntary muscles particularly being involved. While marching he found it impossible to continue. The attacks came on after a long period of rest, and lasted from four to fifteen minutes. They began by a drawing pain in the neck, paresthesia, and a heaviness in the lower extremities. It was thought that these attacks were brought on by excitement. A sister and an uncle of the young man were similarly affected.

Myotonia congenita may also have associated with it von Graefe's sign.

Dr. J. P. Sedgwick[4] calls attention to von Graefe's sign in connection with several cases of myotonia congenita. He was able to collect histories of twenty-nine members of a family, thirteen of whom were affected with myotonia congenita, and sixteen were free. No atrophies were recorded, but all of the affected cases showed the von Graefe sign to a greater or less degree.

The most common muscle disorder with which Thomsen's disease may either be confused or associated is myotonia atrophica. This disorder or type is characterized by the rare association of muscular atrophy with slow relaxation of muscles after voluntary contraction. The weakness of the facial muscles, giving rise to the myopathic face, marked atrophy of the sternomastoids, the vasti of the thighs, and the dorsiflexors of the feet, are characteristic and salient symptoms. This name, "myotonia atrophica," was first suggested by Rossolimo, but others have described it as Thomsen's disease with muscular atrophy.[5]

Dr. Fred E. Batten,[6] in an article on "Myopathy," records a number of these cases and states that the condition of the muscles is the same as in other myopathic cases. He quotes Steinert as having found degeneration of the posterior columns in the lumbar cord, thus differentiating it from Thomsen's disease. Dr. Batten believes that these two diseases—that is, Thomsen's disease and myotonia atrophica—are simply variations in type or that they belong to the mixed types in which there may be intermediate forms or symptoms which serve as connecting links between types. It is interesting to note in connection with the term "myopathy" that there are four or five groups which are described under this common heading, which do not belong to the myotonia congenita group unless we accept the statement of Batten that they are all varieties of the same type of disease. For instance, in simple atrophic myopathy there is a lack of power and tone in all the muscles of the body, and to these Batten has given the name of "infantile." This disease is congenital or starts in early infancy and advances but slowly; and in some instances the patient is able to develop certain groups of muscles. It exhibits none of the typical myotonic muscular actions. In the next group comes pseudohypertrophic paralysis, in which there is weakness of certain groups of muscles with hypertrophy of some and wasting of others.

This disease is quite commonly known, and hardly merits further description, except that it may be combined with myotonia. Arthur F. Hertz[7] records a family in which the father and mother are normal, but the oldest son, aged 25, and the oldest daughter, aged 18, and the youngest son, aged 13, were all affected. A fourth son, who was drowned at the age of 18, was "also very slow" in his muscular movements. The generalized muscular hypertrophy is illustrated in each case. All showed myotonic action on voluntary contraction. Just another case to add to the confusion.

One form of myopathy is the juvenile form of progressive muscular atrophy, which is characterized by a weakness and wasting of the muscles about the shoulder girdle. Erb first described it, and probably it is a type of the living skeleton whom we formerly saw in the museums and other exhibitions. In this type of muscular atrophy there is no myotonic action.

The next form is the facio-scapulo-humeral form of Landouzy and Dejerine, which involves the face muscles, the shoulder, the pelvic girdle, and the muscles of the upper arm and thigh. The weakness of the face muscles is often present at birth; and here, too, this disease has none of the symptoms which characterize myotonia congenita. Then, too, there is distal myopathy, described by Sir William Gowers in 1902, and also recorded by Spiller, Dejerine, Thomas, and Campbell. The salient features of this type are a weakness and atrophy of the muscles below the elbow and knee, while the proximal muscles remain well developed.

Family periodic paralysis is another peculiar condition which might be confused with myotonia or myopathy. The paralysis, however, which is the characteristic feature, is very unique. If the patient is seen during the attack, the diagnosis is very simple. The paralysis, which may last from hours to days, is unaccompanied by any disturbance of sensation or disorders of consciousness, is irregular in its periods of occurrence, and is followed each time by a complete recovery.

Perhaps I may be pardoned if I refer, briefly, to another disorder or disease of the muscles which is commonly known as Oppenheim's disease, and described by him as myatonia congenita and by others as amyotonia. It has also been termed congenital hypotonia, or a myoplasia, and is known and referred to by Batten as the "infantile type of myopathy."

I simply introduce this as an excuse to call attention to the similarity in names rather than to discuss the condition, which is quite unlike a myotonia congenita. All of these terms include a condition in which there is an extreme flaccidity of the muscles, most marked at birth or early childhood, and associated with entire loss of the deep reflexes, and great weakness, but no absolute paralysis of any muscle. The limbs are most affected, and the face is almost

3. Blau, Paolo: Wien. klin. Wchnschr., March 18, 1915.
4. Sedgwick, J. P.: Am. Jour. Med. Sc., July, 1910, p. 80.
5. Batten, Fred E.: Brain, 1909, p. 87.
6. Batten, F. E., in Allbutt and Rolleston's System of Medicine, vii, 31.
7. Hertz, Arthur F.: Proc. Roy. Soc. Med., 1914, vii, 139.

always exempt. The muscles are small and soft, but there is no local wasting. The limbs are so flexible that a child or infant may be lifted up by an arm or a leg; and the joints and muscles and trunk seem to hang down as if without any support whatever, and certainly without resistance. In these amyotonias contractures are prone to occur in time. The faradic excitability of the muscles is increased, and strong stimuli are borne without complaint. It is claimed there is a tendency to slow and progressive amelioration. Notwithstanding the difference in opinion as to the amyotonias and myopathies, they are evidently separable and distinct clinical types of disorder. In discussing the differences between these types of disease, Collier and Wilson[8] draw the following conclusions:

1. The myopathies are conspicuously family diseases, whereas no family tendency has been recorded in amyotonia.

2. Several types of myopathies often show family relationships, one with another, whereas no case of amyotonia has been recorded in a myopathic family.

3. A large majority of the cases of amyotonia are congenital, the conditions being obvious at birth.

4. In a minority of the cases of amyotonia it has appeared acutely, and has reached its most severe degree in a few days. In none of its several types is myopathy apparent at birth nor has it appeared acutely or reached its maximum in a few days.

5. Local muscular wasting, which is a marked feature of myopathy, is not present in amyotonia.

6. The course of myopathy is one of progressive increase in muscular weakness; that of amyotonia is one of progressive amelioration of the symptoms.

7. The return of the deep reflexes in amyotonia may occur after months or years, while in myopathies the deep reflexes remain absent.

8. So far no nerve trunk or spinal-cord lesions have been demonstrated in true amyotonia and it may be added that no nerve or cord lesions have been found in true myotonia congenita.

Pillsbury Building.

ABSTRACT OF DISCUSSION

Dr. Frank B. Starkey, Philadelphia: This subject of myotonia and myopathy has interested me very much because it has been attributed by a great many to disturbance of the glands of internal secretion. So far as I know, there is nothing definite to demonstrate this, and from the standpoint of treatment I do not believe that this theory can be borne out. I have had occasion to treat quite a large number of these cases, and they did not seem to respond to treatment along the lines that usually prove effective in cases of disturbance of the glands of internal secretion.

Dr. G. W. Robinson, Kansas City, Mo.: In his closing statement, I believe, Dr. Jones said that no central nerve lesion had been found in true myotonia. Previously, I understood him to say that Batten had found degeneration of the dorsal cord tracts. One interesting feature is this: we cannot diagnose these cases (myopathies or myelopathies) without the clinical history. Wilson says that there is no differentiating pathology which will enable us to make a diagnosis by examination of the muscles. Many theories have been advanced, but it occurs to me that we should consider the antagonism between the cerebellum and the cerebrum in relation to muscle tone. The cerebral cortex inhibits muscle tone, while the cerebellum accelerates it. Whatever the condition may be, I believe there is some difficulty in the origin or discharge of nerve impulses in the control of the muscle tone, as we have a muscle that contracts and will not relax readily. We have in myotonia an accelerated tone which means the overaction of the cerebellum or underaction of the pyramidal mechanism.

Dr. Francis X. Dercum, Philadelphia: I would like to ask Dr. Jones whether the affection described by Dr. Rich of Ogden, Utah, about twenty-one years ago is not identical with that of Ehrenberg?

Dr. W. A. Jones, Minneapolis: The reference which Dr. Dercum has just made to Dr. E. I. Rich's observations in Utah, I know nothing of, consequently I cannot adjust the dates as to whether Rich's observations antedated those of Dr. F. E. Batten. Dr. Robinson of Kansas City, Mo., evidently misunderstood the paragraph in my paper. I, quoting from Batten, he quoting some one else, said that myotonia atrophica had been found to be associated with some degeneration of the spinal cord, consequently it was not a true myotonia congenita. Perhaps after all Dr. Thomsen was quite right when he said the disease myotonia congenita was one in which the psychical influence was the predominating factor.

8. Collier and Wilson: Brain, May, 1908, p. 1.

OPERATION OF MASSACHUSETTS' LAWS FOR HOSPITAL OBSERVATION IN CASES OF ALLEGED MENTAL DISEASE AND DEFECT*

HENRY R. STEDMAN, M.D.
BOSTON

Hospital observation of the alleged insane and mentally defective is so little made use of in this country that a restatement of its advantages, based on an experience of ten years of its operation in Massachusetts, may be helpful in extending the practice, particularly as the field of its usefulness there has become widened during this period to an extent which prevails in no other state.

The advantages of hospital observation in criminal cases over the practice of occasional examinations at the jail or prison must be plain to all. It is not an uncommon experience with psychiatrists to find evidence insufficient under these conditions. I have reported[1] an instance of this in which the late Dr. Jelly and myself, after a number of examinations, were on the point of pronouncing the prisoner to be not insane and therefore responsible, when still another interview was decided on. Then for the first time his actual mental condition came to the surface in denunciatory explosions springing from marked delusions of persecution and conspiracy, establishing mental disease beyond question.

There can be no question that an opportunity for hospital examination in obscure cases, where the subject can be under day and night supervision, can be examined by a staff of resident physicians and must live under the eyes of nurses trained to observe and report the talk, conduct, peculiarities and habits of patients, should be of the greatest help in reaching prompt and accurate decisions. Such a proceeding would also save expense to the state and make retrials less frequent. Moreover, where the law requires that in all criminal cases in which the plea of insanity is raised, the person shall be subjected to a period of hospital observation, as in the state of Maine, it undoubtedly tends to lessen the number of cases in which insanity is resorted to as a defense. Still

* Read at the meeting of the American Neurological Association, May 7, 1915.

1. Stedman, H. R.: Proc. Am. Medico-Psychological Association, May, 1904.

further, the evidence of unprejudiced state medical officials is likely to have far more weight with juries than that of paid medical experts engaged with a view to *ex parte* testimony.

The classes of criminals most likely to be affected by such a law are, first, those who conceal their delusions. These persons are notoriously suspicious, and persistently refrain from unburdening themselves to the examiners, so that many long interviews may be needed to gain their confidence sufficiently to elicit their false beliefs. Persistent feigning can also be far more easily and quickly detected under hospital conditions and surroundings than in jail, owing chiefly to the difficulty which a prisoner experiences in keeping up the pretense of insanity uninterruptedly and consistently (as he must to be successful) where he is watched day and night by careful observers. Most malingering is, as all know, bungling and readily exposed; but it is only with the utmost difficulty that really adroit feigning can be detected by the expert in occasional visits to the jail. Others are notorious capital cases. Here hospital observation as an adjunct to expert examinations must be of advantage in silencing popular clamor lest the prisoner escape just punishment through what is termed the "insanity dodge." The delay involved also tempers public opinion, as does the evident intent of thorough investigation shown in a term of hospital supervision. Another and important point is the fact that the hygienic conditions, mental, moral and physical, of close confinement and seclusion in jail are apt to impair the mental condition of those who are insane, and to our knowledge in more than one case have undermined the general health of the patient.

Although hospital observation has been for many years in active operation in Maine and for shorter periods in New Hampshire and Vermont, it has applied in those states only to criminal cases of alleged mental disease or defect. In Massachusetts this was also the case for four or five years, but in 1905, when the revised laws relating to the insane went into effect, the practice was extended to noncriminals, and we now have three laws providing for such observation for different classes of cases. The special law, governing criminal cases only, provides that not only persons under indictment for any crime but those under complaint as well, who are at the time appointed for trial or sentence or at any time prior thereto found by the court to be in such mental condition that their commitment to a hospital for the insane is necessary for their proper care or observation pending the determination of their insanity, may be committed by the court to such a hospital under such limitations as it may order. The court may in its discretion employ one or more experts on mental disease, qualified as specifically provided, to examine the defendant, and a copy of the medical certificate and of the complaint or indictment must be delivered to the superintendent of the hospital. By this provision, the lower courts are given authority in their discretion to investigate the mental condition of persons who are brought before them, with the result that in numbers of minor cases, persons charged with crime or misdemeanor have been found by expert examination and hospital observation to be subjects of mental disease or defect, patients who formerly would have been dealt with simply as criminals.

Under the Maine statutes, when a person indicted for an offense or committed to jail on a criminal charge makes a plea of insanity, the justice of the court before which the case is to be tried may order him to be sent to one of the hospitals for the insane for observation and report by the superintendent of the hospital.

The Vermont observation law is similar and applies only to the alleged criminal insane. It authorizes persons indicted for offenses or committed to jail on a charge thereof whose plea is insanity to be ordered into the custody of the Vermont State Hospital for the Insane, to be there observed and detained until further order of the judge, so that the truth or falsity of such plea may be ascertained.[2]

By the New Hampshire law, also, when a person is indicted for any offense or committed to jail on a criminal charge to await the action of the grand jury, any justice of the court before whom he is tried may, on the plea of insanity, put such a person into the care and custody of the superintendent of the state hospital, to be detained and observed by him until further order of the court.

That the measure is growing in favor with lawyers and legislators is further evidenced by the enaction of a statute by the Virginia legislature at its last session (1914) providing that the trial judge may commit such an accused person to a state hospital for purposes of observation.

Still more encouraging is the incorporation of this provision in the bill to regulate expert testimony, presented by the Committee on Insanity and Criminal Responsibility of the American Institute of Criminal Law and Criminology, a committee composed of prominent leaders of the bar and of four members of this association. Section 3 of the report, which is a model for future bills for hospital observation in criminal cases, is as follows:

> Whenever in the trial of a criminal case the existence of mental disease on the part of the accused, either at the time of the trial, or at the time of the commission of the alleged wrongful act, becomes an issue in the case, the judge of the court before which the accused is to be tried or is being tried shall commit the accused to a state hospital for the insane, to be detained there for purposes of observation until further order of the court. The court shall direct the superintendent of the hospital to permit all the expert witnesses summoned in the case to have free access to the accused for purposes of observation. The court may also direct the chief physician of the hospital to prepare a report regarding the mental condition of the accused. This report may be introduced in evidence at the trial under the oath of said chief physician who may be cross-examined, regarding the report by counsel for both sides.[3]

Another strong point in favor of hospital observation for the alleged insane is the unanimous verdict of alienists and jurists in the states in which it has been adopted, that these laws have been found to be practical and thoroughly satisfactory in their operation.

Under the German law, persons who are suspected of being insane may be sent to one of the psychiatric clinics for observation. The chief of the clinic is required to render a report to the magistrate on or before some fixed date. The same law applies to criminals or persons charged with crime, but the period in the latter case may be extended if the chief of the clinic does not consider it to be sufficiently long.

The number of criminal cases affected by this law in Massachusetts is, to be sure, not large. In the past

2. Vermont Statutes, Acts of the Fifteenth Biennial Session.
3. Jour. Am. Institute Crim. Law and Criminology, January, 1913.

five years but thirty-two were admitted to the Bridgewater State Hospital (for criminals), and a much smaller number to the other hospitals. One reason for this is thought to be that frequently the mental condition of accused persons under complaint or indictment has not been recognized until after imprisonment, when they are regularly committed as insane and transferred to Bridgewater from penal institutions. The law, however, is being more generally availed of year by year in the lower courts for the not infrequent borderland and other cases in which mental disease or defect is suspected in persons under arrest. But though the number of such cases is small, they bulk largely in public importance, as they embrace many capital cases, and it is in them that hospital observation is of especial value.

Much has been said of the need of improving the character of medical expert testimony, and not a few bills have been drawn, only to fail of passage, with a view to securing properly qualified experts. By the practice of hospital observation, this requirement would seem to be met, as the opinions given would be those of physicians trained in and practicing psychiatry.

Simply the securing of accurate diagnosis in criminal cases, however, is a comparatively small part of the usefulness of the measure, for it is in noncriminal cases that it has been found to be of the greatest service. A separate law provides for this in Massachusetts, and reads as follows:

> If a person is found by two physicians qualified as provided in Section 32 to be in such mental condition that his commitment to a hospital for the insane is necessary for his proper care or observation, he may be committed by one of the judges mentioned in Section 29 to a state hospital for the insane or to the McLean Hospital, under such limitations as the judge may direct, pending the determination of his insanity.

From statistics kindly collected by Dr. A. W. Stearns, it appears that, during the past five years, 370 persons have been so committed — chiefly to the psychopathic hospital — for varying periods, the large majority remaining under observation for thirty days. Thirty, sixty or ninety days are the terms usually imposed by the court, although occasionally the time has been extended further, extension of time being usually readily granted by the court. Their progressive increase in number of years is striking, namely, 19, 47, 64, 83, 152. As to the disposition of the cases: on the expiration of the period of observation, 189, or a trifle over 50 per cent., were pronounced insane and regularly committed to state hospitals. With the exception of eight who died and a few remaining in the hospitals, the remainder were discharged to their homes outright. The available statistics relating to this group are unfortunately not uniform for the five-year period, so that their precise condition on discharge could not be ascertained, except that none of them could be legitimately certified as cases of actual mental disease needing hospital care.

As regards the type of cases under observation, one superintendent reports that those discharged were chiefly constitutionally inferior psychopaths, and this appears to obtain generally. These patients have mild psychotic episodes, readjust themselves, and return to the community. Alcoholics swell the number, and mild hebephrenics, incipient paretics, the senile, the hypomaniacal and the hysterical complete the list. The superintendents generally find the law very satisfactory for both the criminal and noncriminal. It is pronounced by them to be the fairest method of determining the mental status in most of the doubtful cases.

The committing judges without exception regard the laws as most advantageous. Hon. Robert Grant, judge of the probate court, to whom I am indebted for data on the subject, and his colleague, Hon Elijah George, who passed on most of these cases, make no question that this method of sending doubtful cases to a hospital for observation for a limited period in preference to outright commitment is finding favor with physicians and the public, and is already recognized as a valuable method of relief. The procedure, they believe, affords valuable protection to the public and those alleged to be insane, and is likely to be more and more adopted in such cases.

The law relating to the admission of patients to the psychopathic hospital at the University of Michigan embodies the only other bona fide observation law for noncriminal cases. It is practically the same as the Massachusetts statute except that it limits the observation to thirty-five days. Its operation is most satisfactory and is frequently taken advantage of. In borderland cases it especially impresses the patient, the examining physician and the court as being eminently fair.

Another provision, which to a limited extent acts as an observation measure, is the Temporary Care Act, as we call it. It prevails in one or another form in most states in which psychopathic hospitals or wards have been established. This, in brief, provides for the admission of the patient without a court order, and his detention at the option of the superintendent for ten days, within which time he must either be regularly committed or removed from the hospital, unless he makes application to remain as a voluntary patient. Under this law, together with the observation and emergency law, 1,016 persons in Massachusetts, according to the report of the State Board of Insanity, secured the benefits of treatment in our public or private hospitals for the insane during the year 1913 without the formality of a procedure before a judge, which would have been attended with delays, legal exaction, semipublicity and the stigma of having been pronounced insane, all of which were thus obviated, to the comfort and satisfaction of the patients and friends. It is not my purpose to dwell on the many advantages of such temporary care, but merely to point out that, simply as a measure of observation, the law is inadequate in many cases, chiefly because of the shortness of the time limit. Twenty-one per cent. of the patients admitted under the observation law in Massachusetts in 1914 were originally temporary care patients for whom the short period allowed had been found to be insufficient for ascertaining their precise mental condition, and they were committed under the observation law for further periods of thirty, sixty or ninety days. These laws provide the only means short of regular commitment of detaining patients who refuse to remain longer than ten days. It is possible, also that, in the hospitals in which large numbers of cases of temporary care are received, some have been hastily disposed of by outright discharge or regular commitment to a hospital as insane who would have been benefited by further observation, especially when we consider the difficulty of keeping track of the varying dates on which the ten-day limit expires in individual cases.

I have been unable on careful inquiry to find that the constitutionality of the two observation laws mentioned has ever been seriously questioned, nor did the passage of the acts encounter any opposition in Massachusetts. In New York, however, two attempts under the auspices of the New York Psychiatrical Society to bring a hospital observation bill before the legislature have been unavailing, the first because of the opinion of lawyers that such an act would certainly fail of passage on that ground, and the other because it was loosely drawn.

The temporary care act also has suffered no public criticism or individual opposition in Massachusetts, although the fact that neither a physician's certificate nor medical diagnosis of any kind is required by the act might well raise a question of its constitutionality. This is a striking proof of the need and value of such a provision.

CONCLUSIONS

1. Hospital observation is a measure of proved value in doubtful cases of mental disease and defect in both criminals and noncriminals, and is growing in favor.
2. It affords opportunity for constant observation and ample time for thorough examination under the best conditions by trained hospital psychiatrists.
3. It is of especial value in capital cases, in cases with concealed delusions and in the detection of malingerers.
4. It tends to make less frequent the plea of insanity as a defense for crime, and to lessen disrespect for expert medical opinion.
5. In many noncriminal cases it saves persons from hasty and ill-considered commitment as insane.
6. There appears to be every reason why the forty-three states which are without this valuable provision should adopt it, particularly as it has been long in successful operation in some form in six states and in Germany, and has the endorsement of our foremost jurists and alienists.

48 Beacon Street.

AN OPERATION FOR CONGENITAL EQUINOVARUS DEFORMITY

PRELIMINARY REPORT

FRANK R. OBER, M.D.
BOSTON

It has long been taught that there are three elements in every case of congenital equinovarus deformity: equinus, varus and inversion. If one expects to cure the deformity, one must secure their overcorrection.

After studying several hundred cases before and after several methods of treatment, and eight specimens in various stages of dissection, certain conclusions were drawn.

First, the equinus is due principally to a contracted Achilles tendon and a short posterior calcaneotibial ligament. Equinus chiefly recurs because the articular facets of the malleoli and the articular surface of the tibia are on the extreme posterior part of the articular surface of the astragalus, which is much narrower than the anterior portion of this surface. Consequently the mortise is narrowed, and when one attempts to overcorrect equinus, after division of the Achilles tendon, the astragalus does not slide back in the mortise as it should, but is tipped up anteriorly.

The varus is due to contraction of the posterior and anterior tibial tendons, an outward rotation of the anterior end of the astragalus and the os calcis, and to an adduction of the forefoot which gives a series of subluxations and dislocations of the mid-tarsal joint and the posterior tarsal joint. Dislocation is *chiefly maintained* by contracture of the *superior* and *inferior* calcaneoscaphoid ligaments (which are really portions of the deltoid ligament). The calcaneoscaphoid ligaments act as a longitudinal bow string.

The inversion of the whole foot is due to contraction of the two tibial tendons and of the deltoid ligament. This contracture maintains the os calcis in an inverted and a rotated position at the astragalocalcaneal joint, the sustentaculum tali being held nearer the internal malleolus *by the short vertical fibers of the deltoid* ligament than in a normal ankle.

Since March 6, 1915, ten children, ranging in ages from 3 to 13 years, have been operated on at the Boston Children's Hospital by the following method:

A fish-hook incision, 3 inches in length, is made about the internal malleolus. The incision begins 1½ inches above the malleolus, half way between the posterior border of the tibia and the Achilles tendon, a tourniquet having been previously applied. It is carried about one-half inch below the malleolus and swung anteriorly and a little upward over the depression which represents the situation of the subluxated scaphoid. It is carried through skin, fat and subcutaneous fascia, and the anterior flap is dissected well forward so that, in sewing up, no undue strain is brought to bear on the skin edges of the wound. This incision exposes the deep fascia over malleolus, the annular and deltoid ligaments.

A semilunar incision is now made, curved upward, three-quarters inch above the tip of the internal malleolus through all the structures to the bone, avoiding the posterior tibial tendon. This flap is dissected off the bone in a downward direction, and includes both layers of the deltoid ligament, giving an excellent ligamentous flap and a wide exposure of the tibiotarsal articulation. The superior calcaneoscaphoid ligament is divided transversely by simply continuing the curved incision toward the plantar surface of the foot. By means of a tenotome the portions of the deltoid and inferior calcaneoscaphoid ligaments, which are respectively attached to the posterior and anterior borders of the sustentaculum tali, are incised longitudinally to the bone. With a blunt dissector or an osteotome, these ligaments with periosteum are actually boned off of the inferior surface of the sustentaculum tali and well down on the internal surface of the os calcis. It is not often necessary to cut the posterior tibial tendon, and it is not necessary to cut the Achilles tendon except in older children. The plantar fascia may be divided if there is considerable cavus. The foot is now grasped, both by the forefoot and the heel, and is manipulated into an overcorrected position. The *os calcis everts easily*. The head of the astragalus and scaphoid rotate into normal position. Satisfactory overcorrection is obtained.

We must secure good eversion of the os calcis if we expect to relieve or cure clubfoot. If we desire to lengthen the Achilles tendon, it may be cut at this time. The deltoid ligament is sutured at either corner, low down on the malleolus, so that this important structure will be preserved intact. The foot should be so well overcorrected that it can be held in such a position with very slight effort. A sterile gauze dressing is applied which is covered by sterile sheet wadding. A plaster is applied from the toes to mid-thigh, maintaining the foot in the overcorrected position and the knee flexed to a right angle. A window is cut over the wound with a twofold idea: It relieves any subsequent pressure on the wound and allows the foot at this point to bulge into the wound, giving more correction.

Later a complete report of results will be made, with credit for points found to have been brought out by others, and a review of the recent literature.

Special Article

PRACTICAL PHARMACOLOGY *

(Continued from page 427)

XXXI

ANTHELMINTICS

Anthelmintics are agents that kill intestinal parasites or facilitate their expulsion with the aid of evacuants.

The ideal anthelmintic would kill or stupefy the parasites but would not be absorbed from the gastrointestinal tract of the host, nor would it irritate the stomach or the bowel more than enough to cause purgation. Unfortunately, the best of the anthelmintics at our disposal are far from being ideal, and all of them are capable of causing the death of the patient if used without care, while none of them is certain in its action on the parasites.

The round worm (*Ascaris lumbricoides*) and pinworm (*Oxyuris vermicularis*) are probably the most common of this type of parasite in the bowels of children, if we except the hookworm, which is very prevalent in certain parts of the country, while the tapeworm, including the *Taenia* and *Bothriocephalus latus* (or broad tapeworm) are found more commonly in adults than in children, but taeniae are occasionally reported as occurring in children and a case of *Taenia saginata* has been very recently reported as occurring in an infant.

Gross parasites of this nature can be guarded against more easily than the bacterial infections, and the more common sources of infection should be understood more generally than is the case.

The so-called head, which is of minute size, is the real tapeworm, all the remainder, the segments, consisting of generative buds containing matured sexual organs. These are constantly breaking off and passing out of the bowel, the ova being swallowed by other animals in which they develop in various organs. For example, the hog is commonly infested with *Taenia solium,* which becomes encysted, forming what is known as "measles," and when a person eats raw measly pork he becomes the host of a tapeworm, *Taenia solium.* It is probably the tapeworm most commonly found in this country. *Taenia saginata* may infest beef in the same way. *Bothriocephalus latus* is very much more common in Europe, but it is occasionally seen in this country.

The dog is commonly infested with intestinal parasites, which are sometimes present in large numbers. Other domestic and wild animals are similarly infested.

While the eating of raw meats, especially pork, is probably the commonest source of infestation, the possibility of having the hands contaminated by pets should be borne in mind.

All active cathartics tend to remove worms and other intestinal parasites in the evacuations, but while this may occasionally succeed in ridding one of the so-called head of the tapeworm, as a rule only a smaller or larger number of segments are thus gotten rid of and these segments are rapidly replaced.

As previously stated, none of the anthelmintics is either certain in its action or free from danger; hence every precaution should be taken to insure the most favorable conditions for the expulsion of the parasite when medication is undertaken.

Medication should be preceded by a diet calculated to weaken the parasite as much as possible without greatly weakening the patient. Meat and other proteins are withheld or given in small amounts while carbohydrates are given in abundance. It is said that sharp particles, such as seeds of strawberries, and pungent substances, such as mustard, tend to cause the parasite to loosen its hold; hence these may be utilized as a preliminary to active treatment.

Tapeworms are provided with suckers, hooks or serrated margins by which they attach themselves to the mucous membrane of the intestine, and the best that can be accomplished by anthelmintics, as a rule, is to stupefy the parasite or paralyze its musculature so that its hold on the intestinal mucous membrane is released, at which time it may be swept out in a copious watery evacuation.

The patient should fast for about twelve hours before taking a taeniafuge, such as aspidium or pelletierin, but a cup of coffee may be taken in the morning on arising, that is, shortly before the administration of the drug.

A laxative may be administered previously so as to insure the almost complete emptying of the intestine, but an entirely empty tract facilitates the absorption of the drug by the host.

The parasite is usually caused to loosen its hold within an hour or two after the administration of an effective dose of aspidium; hence the purgative is usually given either at the same time or shortly after the anthelmintic.

Aspidium

Our knowledge of the chemistry of aspidium is unsatisfactory, but there are several substances, including amorphous and crystalline filicic acid, on which the anthelmintic actions of the drug seem to depend. Whatever the nature of the active principles, they are present in the oleoresin, in which form aspidium is now commonly employed.

Under favorable conditions but little of the oleoresin (or its active constituents) is absorbed into the circulation in man, but when absorption does occur severe, and even fatal, poisoning may result.

Nausea and even slight vomiting are not infrequent consequences of therapeutic doses, and this may even prevent the desired action of the drug. With absorption and severe poisoning there are violent vomiting and purging with pain in the intestines, muscular weakness and convulsions, followed by stupor passing into coma. Castor oil is sometimes administered with aspidium or afterward in order to induce purgation, but there seems to be little doubt that, because of the readiness with which it dissolves the active principles of aspidium, it promotes absorption unless purgation is prompt.

It is stated that aspidium is less effective against taeniae than against *Bothriocephalus.* It is unfortunate that this point has not been determined with certainty, for aspidium is widely used for tapeworm regardless of the species infesting the patient.

Pelletierin Tannate

The bark of pomegranate root has long been used in the treatment of tapeworm, but it contains an abundance of tannin and this often gives rise to vomiting when an infusion is employed in the dose necessary to

* This is the thirty-first article of this series to appear in The Journal. These articles, which have been prepared by Dr. R. A. Hatcher and Mr. M. I. Wilbert, will be elaborated by additional material and will be issued in book form about September 15.

act as a taeniafuge — from 30 to 60 gm. (1 to 2 ounces) — hence the tannate or sulphate of the alkaloid, pelletierin, is now almost always used instead of the bark.

Pelletierin is sometimes absorbed from the gastrointestinal tract, causing stimulation of the central nervous system, and a veratrin-like action on the muscles. It seems probable that a similar action on the musculature of the tapeworm explains its efficiency as a taeniafuge. Poisonous doses of pelletierin cause dizziness and sometimes disturbance of vision in addition to the muscular weakness.

SANTONIN

Santonin is probably the most effective anthelmintic available for the expulsion of the round worms of childhood. According to von Schroeder santonin does not kill the worm but renders the intestinal contents unpleasant, causing the parasite to seek the large bowel, from which it is expelled by the cathartic that is used in the treatment.

Sodium santoninate is soluble and this is probably absorbed into the circulation of the patient more rapidly than the insoluble santonin; hence the coarsely powdered crystals of santonin are generally directed to be used.

Santonin is always absorbed to some extent and gives the urine a deeper yellow or red color if it be alkaline. Poisoning rarely follows the administration of suitable doses of santonin, but frequently objects appear violet colored and later yellow, after its administration, and convulsions may result from poisonous doses.

Oil of chenopodium or oil of American wormseed has long been used in the treatment of round worms of children, and of late it has attracted attention in the treatment of hookworm. Two investigators reported that they used it in the treatment of nearly 1,500 cases of hookworm with more frequent success than was attained with thymol or other means.

They administered three doses, each containing 16 drops of oil of chenopodium, at intervals of two hours, and after another interval of two hours they administered a tablespoonful of castor oil to which they added a large dose of chloroform.

The oil of chenopodium does not kill the parasite but narcotizes it and it must be expelled by means of a cathartic, castor oil being employed frequently.

Several cases of severe or fatal poisoning by oil of chenopodium have been recorded and the drug should be used with caution.

At the present time the supply of thymol is said to be extremely limited, and there would appear to be no reason why the generally safer oil of chenopodium should not be used in its place.

The anthelmintic actions of thymol have been considered elsewhere.

The pinworm, or threadworm (*Oxyuris vermicularis*), is a very small parasite that inhabits the lower parts of the intestine in great numbers. It does not attach itself to the intestinal mucous membrane and may be dislodged from the bowel by cathartics and enemas.

Bastedo mentions the following as being used for irrigating the colon to remove the pinworm: infusion of quassia; lime water; quinin bisulphate 1:2,000; a solution of tannin or alum 2 gm. (30 grains) to 500 c.c. (1 pint) of water; or 15 c.c. (½ ounce) of oil of turpentine to 1 liter (1 quart) of soap suds.

He states that the *Taenia nana* is often mistaken for pinworm and one of the dwarf tapeworms is said to be the commonest of the tapeworms of childhood.

DOSAGE

The average dose of oleoresin of aspidium is given as 2 c.c. (30 minims), but larger amounts are frequently used.

The average dose of pelletierin tannate is 0.25 gm. (4 grains) and it is stated in "Useful Drugs" that not more than 0.3 gm. (5 grains) should be given at once, as that amount has caused paralysis, but Meyer and Gottlieb state that doses of 0.3 to 0.4 gm. (5 to 6 grains) of the sulphate or the tannate usually act efficiently without causing severe symptoms of poisoning. These authors advise the administration of 0.5 to 1 gm. (8 to 15 grains) of tannin with the tannate or sulphate to insure that the alkaloid be maintained in the intestine in the form of the insoluble tannate.

It may be given preferably in the form of capsules after the usual preliminary attention to the diet and emptying of the intestinal tract, and it is best followed in two hours by a brisk cathartic, such as castor oil or magnesium sulphate.

The average dose of santonin is 0.065 gm. (1 grain). Since santonin does not kill or even severely injure the worm it is better practice to give the drug for several days. Lozenges, containing 0.03 gm. (½ grain) santonin may be given to a child morning and evening for three days; twice as much is used for an adult. The last dose is to be followed by a purgative such as calomel, or a laxative dose of calomel, 0.005 gm. (1/12 grain), may be administered with each dose of santonin.

The dose of oil of chenopodium is given as 0.2 c.c. (3 minims) in the pharmacopeia, but this appears to be rather too conservative. But it would be wise to avoid the use of large doses of chloroform after maximal doses of the oil, for chloroform, which is itself an active anthelmintic in large doses, is usually considered too poisonous for common use for this purpose.

MATERIA MEDICA

Of the preparations used as anthelmintics, the more popular are:

Oleoresina Aspidii. — Oleoresin of Aspidium, U. S. P., a semisolid dark green extract. On standing it usually deposits a granular crystalline substance which should be thoroughly mixed with the liquid portion before use.

Pelletierinae Tannas.—Pelletierin Tannate, U. S. P., a mixture of alkaloids, obtained from pomegranate, which occurs as a light, odorless amorphous powder that is only slightly soluble (1:235) in water, but soluble (1:12.5) in alcohol.

Santoninum.—Santonin, U. S. P., the inner anhydrid or lactone of santonic acid, a glucosid obtained from santonica. It occurs in colorless crystals that become yellow on exposure to light and air. Santonin is very insoluble (1:5,300) in water, but soluble (1:35) in alcohol.

Oleum Chenopodii.—Oil of Chenopodium, U. S. P., a limpid, yellowish liquid having a peculiar somewhat camphoraceous odor and a pungent, slightly bitter taste.

Thymol.—Thymol, U. S. P., a phenol occurring in various volatile oils and usually obtained from oil of ajowan. It is only very slightly soluble (1:1,100) in water but very soluble in alcohol.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, AUGUST 14, 1915

LIGHT RADIATIONS AND PROTOPLASM

The newer knowledge in the field of physics has brought about a recognition of the fact that in addition to the visible electromagnetic waves, the invisible infra-red and the ultraviolet light waves also have indisputable chemical and biologic effects. To these are sometimes added the influence of what has fancifully been called Roentgen "light," as well as the "gamma light" from radioactive substances. Electromagnetic waves, as Bovie[1] has expressed it, have no effect on objects which are incapable of vibrating in resonance with them. The wave passes through the object, and the object is said to be transparent to the particular wave length in question; for example, rock salt is transparent to heat, to visible waves and to ultraviolet waves; ruby glass, to red light waves; paraffin wax, to hertzian waves; white fluorite, the most transparent substance known, to heat, to visible waves and to ultraviolet waves; thin deposits of metallic silver, to ultraviolet waves; thin aluminum plates, to Roentgen waves; and thin metals of all kinds, to gamma waves. No substance is known which is transparent to the entire electromagnetic spectrum.

Dr. Bovie[1] of the Cancer Commission of Harvard University has lately reminded us anew that the substances of which living organisms are composed are capable of resonant vibrations over a considerable range of vibration frequency, including the entire range of solar radiation. Protoplasm is capable of "detecting" and being modified in some degree by the electromagnetic manifestations constituting the radiant energy received from the sun. If we know far more about the physiologic effects of heat waves than of light on the tissues of the body, it is because experimental science has only of late become possessed of methods for investigating properly the radiations of shorter wave lengths and higher vibration frequency. Indeed, it is doubtless on this factor that the differences in the physiologic effects of hertzian, heat, light, Roentgen and gamma rays are dependent.

The physiologic effects of light must be the result of photochemical reactions. Inasmuch as only those electromagnetic waves which are absorbed are capable of bringing about physiologic changes, the study of the behavior of various tissues in this respect toward the light of various wave lengths becomes important. One of the important discoveries made by Finsen, says Bovie — a discovery which proved to be the key to his success in phototherapy — was that it is the blood in the skin which absorbs most of the ultraviolet light. Sunlight ultraviolet can penetrate blood-filled skin only a fraction of a millimeter. But if the skin is made anemic by the pressing out of the blood, bacteria can be killed by ultraviolet light which has passed through 4.25 millimeters of skin.

Practically no studies have been made on the physiologic effect of hertzian waves on the body, though they are known to be absorbed by the tissues. It is said that there is a marked increase in the photo-instability of many of the proteins and amino-acids in passing from the sunlight region of the ultraviolet to the regions of higher vibration frequencies which lie beyond. The so-called photodynamic effect of fluorescent substances has been discussed in THE JOURNAL.[2] If it is true that a large percentage of "sunlight" ultraviolet light can be absorbed in the blood stream and there bring about chemical changes, it may turn out that visible light can exert an effect on sensitized tissues as destructive as that of ultraviolet light and other radiations on normal tissues. The future is likely to see distinct advances made in this department of study involving the action of light on protoplasm.

1. Bovie, W. T.: The Action of Light on Protoplasm, Am. Jour. Trop. Dis. and Prev. Med., 1915, ii, 506.

HOW SHALL MILK BE RATED?

The quality of a designated milk supply is one of the numerous subjects on which a physician is often expected by the layman to express a helpful opinion. In seeking for a guide in this field, the professional worker has had his attention directed recently to various methods of grading or scoring food products. The grading of milk according to quality is now considered essential as a means of improving city milk supplies. Many factors enter into the problem, and at present opinions differ widely in regard to some of them. An experienced student of this subject has ventured this summarized statement: Milk to be of high quality (1) should have a food value suited to the needs of the consumer, (2) should be free from visible dirt, unpleasant odors and tastes, (3) should not contain an excessive number of bacteria, and (4) should be free from disease germs.

The purely chemical examination of milk, including the determination of its content of normal constituents and of the possible presence of deleterious substances,

2. The Porphyrins in Pathology, editorial, THE JOURNAL A. M. A., March 29, 1913, p. 998.

is no longer emphasized as it was formerly. The anxiety as to whether milk was watered or adulterated has given way to a study of other significant features. Some of these, such as odor and taste, cannot readily be analyzed; micro-organisms producing disease are not quickly detected in a practical way, so that the most effective ready criterion at present appears to be the bacterial count in milk.

In recent years there has arisen a system of "scoring" dairies which has been the subject of much criticism and many misgivings, yet has been widely adopted by important communities and food interests. A bacteriologist of the New York State Agricultural Experiment Station[1] has reminded us that the aim of the score card is to emphasize to the producer the importance of cleanliness in handling milk and to designate those places where improvement can be made. At the same time the card serves as a record of the sanitary conditions. There was at first no thought of the score being used as an index of the quality of milk produced. Recently, however, with the growing movement in favor of grading milk according to actual quality, the score card is being used as a convenient means of determining grades of milk. This implies that there is a relationship between the quality of milk and the dairy score.

An investigation conducted at the Geneva laboratories[1] was directed to a comparative study of the bacterial content of the milk—a feature of dominant importance for reasons already referred to—and the "scores" of thirty-four commercial dairies made on three representative cards. The latter cover such features as the health and fodder of the cattle; the location, ventilation and care of the stables; the cleanliness of utensils and personnel; the handling of the milk, and the transportation facilities. Brew's results show no correlation whatever between the quality of milk and the dairy score on the score cards now in use. Milk of all grades is produced in barns which would be excluded on account of low scores, as well as in the high-scoring barns.

These discoveries need not discourage those who are laboring for improved milk supplies. They mean that the current methods of score card grading are not satisfactory. A large number of the items included on the score card apparently have little or no effect on the number of bacteria present in the milk. In other words, too great emphasis is placed on unessential factors in all of the score cards studied, with a consequent lessened emphasis on the factors which actually do affect the milk.

Safety lies in clean milk rather than clean barns. It is encouraging to know that an intelligent dairyman can produce high-grade milk anywhere by the simple observation of the few essential factors of cleanliness and care, and that good milk can be produced with simple equipment. The importance of keeping down the cost of producing high-grade milk is evident. If the present mode of judging the product involves unnecessary or unessential features, it should be modified. In any event, high standards of excellence must not be sacrificed for untested assumptions.

1. Brew, J. D.: Milk Quality as Determined by Present Dairy Score Cards, Bull. 398, N. Y. Agric. Expt. Station, March, 1915.

WHERE IS THE HYDROCHLORIC ACID OF THE STOMACH FORMED?

The existence of a free mineral acid in a tissue or its secretions is of itself a phenomenon of sufficient interest to attract attention to its cause. For this reason the problem of the genesis of the hydrochloric acid of the gastric juice has never lacked investigators. In addition to the perplexing question as to precisely the chemical reaction by which the acid is liberated from the chlorids of the blood or gastric cells, there has existed considerable uncertainty as to the seat of its production.

For a long time the parietal cells of the gastric tubules were charged with the secretion of hydrochloric acid. There is a degree of parallelism between the place of occurrence of a distinctly acid secretion, in the middle region of the stomach, and the distribution of the parietal cells. In the pyloric region, where the secretion is sometimes said to be alkaline, these histologic units are lacking. The investigation of these questions goes back to the days of Claude Bernard, and a decisive demonstration of the validity of the current view has never been furnished. Not long ago a prominent writer[1] in this field frankly admitted that a convincing answer was still to be given to two fundamental questions, namely: Is the hydrochloric acid formed in the parietal cells or indeed in any of the cells of the gastric mucosa, or do the cells merely secrete a preparatory substance out of which in turn hydrochloric acid is liberated either in the ducts of the glands or on the outer surface of the mucosa?

The methods of study applied to this problem have usually been microchemical in character. Miss Fitzgerald[2] applied what was in essence the older procedure of injecting a ferrocyanid and a ferric salt into the circulation of animals and searching for a deposition of Prussian blue, which is produced in the presence of free acid. She believed that she found direct proof of the presence of acid in the lumina of the gastric glands, in the canaliculi of the parietal cells, and even in these cells themselves. In no other place except the immediate vicinity of the parietal cells was the characteristic precipitate formed.

Harvey and Bensley have taken issue with this view as the result of experiments in which they used dyes

1. Bickel, A.: Magen und Magensaft, Oppenheimer's Handbuch der Biochemie, 1910, iii, Part I, p. 72.
2. Fitzgerald, M. P.: The Origin of the Hydrochloric Acid in the Gastric Tubules, Proc. Roy. Soc., London (B), 1910, lxxxiii, 56.

that give different colors in neutral, acid and alkaline mediums.[3] They maintain that the free acid is found only on the internal surface of the stomach or in the neck of the glands. The parietal cells are said to exhibit an alkaline reaction. The hypothesis is accordingly advanced that the parietal cells secrete a chlorid of an organic base, and this compound in some way yields free hydrochloric acid only after it reaches the mouth of the gland.

The conflicting conclusions and the evidence on which they are based have been subjected to a critical examination by Dr. F. S. Hammett[4] in the laboratories of the Harvard Medical School. The details involve intricacies of technic and analysis which are of direct interest to the specialist, but can scarcely be appreciated by the general reader. It may suffice, therefore, to record here the fact that this latest consideration of the much debated problem is regarded by its author as a stable confirmation of Miss Fitzgerald's well-known experiments and conclusions.

FACTORS IN THE RESISTANCE TO TRANSPLANTED CANCER

At the present time, much of our hope for a successful solution of the cancer problems rests on the outcome of experiments on cancer transplantation in animals. Every new suggestion derived in this way is eagerly welcomed and followed up. Studies in the behavior of tissue grafts have not infrequently given a cue to observations on the development of cancer grafts. Thus, there has been found to be a resemblance between the mode of destruction of a failing tissue graft in a host of foreign species and the behavior of a homologous cancer graft in an animal with an induced or a natural immunity to transplanted cancer.

In the case of the transplantation of foreign tissue, a local lymphoid reaction appears early in the process, and lasts until the destruction of the tissue is complete. It has been shown that if an organism which normally has no resistance or defensive agencies against cells of a foreign species is supplied with adult lymphoid tissue, it may become resistant. Conversely, if a normal adult animal is deprived of the major part of its lymphoid tissue by exposure to the Roentgen ray, the ability to destroy the cells of a foreign species seems to be lost. The foreign tissue continues to grow as it would in its native host.

The extent to which lymphoid tissue may be a potent factor in the destruction of a cancer graft in animals possessing some degree of immunity to such transplants has been investigated recently at the Rockefeller Institute for Medical Research. Murphy and Morton[1] have studied the lymphocytes in animals exhibiting so-called "natural" immunity, and likewise in those endowed with the induced variety which is developed by previous injections of suitable living tissue material. They found that in mice with induced immunity, the circulating lymphocytes show no change either in actual numbers or relative proportions to the other white cells during the requisite period which must elapse between the immunizing tissue injection and the cancer inoculation. Within twenty-four hours after the cancer graft is introduced, however, there is a sharp rise in the number of these cells, continuing for many days and reaching an average maximum of nearly 300 per cent. above the normal figure. The other white cells of the blood retain their normal level. The naturally immune animals, which are able without treatment to overcome cancer graft, showed a similar response on the part of the lymphocytes. The period of increase, however, is not begun so soon after the inoculation, and the increase itself is not so pronounced. Otherwise there is a similarity in the lymphoid responses. In animals in which the cancer graft resulted in a take, the changes in the lymphocytes were minimal.

Further evidence of the importance of this lymphoid reaction in the immunity process was obtained by damaging the lymphoid tissue through exposures of immune animals to the Roentgen ray. Murphy and Morton report that this treatment resulted in complete destruction of the immunity. When the lymphoid reaction described is prevented by a previous destruction of the lymphoid tissues, cancer grafts may grow with accelerated vigor. Hence it is concluded that the lymphocyte is a necessary factor in cancer immunity.

DEATH CAMAS

Our domestic animals are exposed to a variety of noxious agencies usually only of indirect interest to physicians. Unless the harmful factors represent sources of infection to man, they do not concern the medical world further than to indicate possible hindrances to the expected supply of food and clothing which are derived from animal sources. Sometimes the scientific problems involved deserve attention, quite aside from the practical aspects of the subject.

The zygadenus is a poisonous plant abundant on many of the stock ranges of the West, and is one of the most important sources of loss to sheepmen. Apparently all species of zygadenus are poisonous. The plants are poisonous through the whole season of their growth, but the tops are somewhat more poisonous at the time of flowering. The toxicity of the bulbs and tops is about the same, while the seeds are much more toxic than other parts of the plant. Cases of

3. Harvey, B. C. H., and Bensley, R. R.: Upon the Formation of Hydrochloric Acid in the Foveolae and on the Surface of the Gastric Mucous Membrane and the Non-Acid Character of the Gland Cells and Lumina, Biol. Bull., 1912, xxiii, 225.

4. Hammett, F. S.: The Source of the Hydrochloric Acid Found in the Stomach, Anat. Rec., 1915, ix, 21.

1. Murphy, James B., and Morton, J. J.: The Lymphocyte as a Factor in Natural and Induced Resistance to Transplanted Cancer, Proc. National Acad. Sc., 1915, i, 435.

poisoning are more likely to occur before the maturity of the plant, because at that time other forage is scanty. The species of zygadenus are known under a number of popular names; the most common perhaps is death camas. In the Northwest, lobelia is the name used possibly even more generally than death camas. Other names are soap plant, alkali grass, water lily, squirrel food, wild onion, poison sego, poison sego lily, mystery grass and hog's potato.

Through a recent report from the U. S. Department of Agriculture,[1] we learn that several investigators have mentioned symptoms of poisoning with death camas in man. Heller[2] gives the symptoms as "nausea, headache, followed by more or less stupor." He states that the heart's action was lessened in frequency, while the strength of the pulse remained normal. The respirations were almost normal. In another case, vomiting was followed by the loss of all power of feeling. Heyl and Raiford[3] and Hunt speak of the irritating character of the dust when the dry plant is being ground, which leads to sneezing on the part of those doing the work. The Lloyds[4] give as symptoms in man "extreme thirst, constant vomiting, dilation of the pupil, coma, and inflammation of the stomach." They also say that in one case there were very violent convulsions. Chesnut[5] says that the symptoms in poisoned Indians are "burning and smarting in the mouth and esophagus, dumbness, nausea, profuse vomiting, foaming at the mouth, dizziness and mania."

In view of the related experiences in human cases, it is perhaps important to know the principal symptoms of intoxication in sheep, the species to which the fatalities are almost entirely confined. They experience salivation, nausea, muscular weakness, coma and sometimes attacks of dyspnea. The poisonous principle of the plant is an alkaloid or alkaloids allied to veratrin. This was first shown by Slade[6] of the Arizona Agricultural Experiment Station, who isolated a mixture of alkaloids from *Zygadenus venenosus*. He concluded that the death camas contained sabadin, sabadinin and veratralbin. At the University of Wyoming Experiment Station, a crystalline alkaloid, zygadenin, has actually been isolated from death camas leaves.[7] Its toxicologic behavior is much like that of veratrin. The resins of the plant appear to be physiologically inert.[8]

1. Marsh, C. D.; Clawson, A. B., and Marsh, H.: Zygadenus, or Death Camas, Bull. 125, U. S. Dept. Agric., May 13, 1915.
2. Heller, A. A.: The Death Camas, Muhlenbergia, 1909, v, 52.
3. Heyl, F. W., and Raiford, C.: Analysis of Zygadenus Intermedius, First Paper, 21 Ann. Rep., Wyoming Agric. Expt. Sta., 1910-1911, p. 62. Jour. Am. Chem. Soc., 1911, xxxiii, 206.
4. Lloyd, J. U., and Lloyd, C. G.: Zygadenus Nuttallii: the Death Camass of the West, Am. Druggist, 1887, xvi, 141.
5. Chesnut, V. K.: Plants Used by the Indians of Mendocino County, California, Contributions, U. S. Nat. Herbarium, 1902, vii, 321.
6. Slade, H. B.: Some Alkaloids of the Death Camas, Am. Jour. Pharm., 1905, lxxvii, 262.
7. Heyl, F. W.; Hepner, F. E., and Loy, S. K.: Zygadenine, the Crystalline Alkaloid of Zygadenus Intermedius, Jour. Am. Chem. Soc., 1913, xxxv, 258.
8. Heyl, F. W., and Hepner, F. E.: Some Constituents of the Leaves of Zygadenus Intermedius, III, Jour. Am. Chem. Soc., 1913, xxxv, 803.

THE RESPONSE OF DIFFERENT RACES TO HOT CLIMATES

The more recent experiences of white races in the tropics have taught us that the supposed dangers of climate in these parts of the world have been overestimated. The greatest enemies of mankind in the warm countries are not necessarily those associated with climate as such, but rather the group of severe infectious diseases and related insanitary influences to which the inhabitants are unduly exposed. When the foreign resident of the tropics has learned to guard himself against prevalent unhygienic conditions, to adjust his mode of life and his personal hygiene to the obvious requirements of his new environment, and to avoid the misuse of alcohol, which increases enormously the other unfavorable and detrimental influences, he need not suffer seriously by comparison with his relatives in the temperate zones.

There are certain inherent peculiarities of the tropical climate which cannot be avoided. Constant high temperature, frequently combined with high atmospheric humidity, must be combated by even the healthiest human organism. These factors call forth increased efforts to cool the body, and hence affect the activity of the skin, lungs and circulatory apparatus. The results of this increased performance are exhibited by fatigue on slight exertion and decreased nervous and muscular efficiency. In Calcutta the temperature ranges from 18 C. (64.4 F.) to 28 C. (82.4 F.); in Batavia it averages 26 C. (78.8 F.); in Sierra Leone, 27 C. (80.6 F.), and temperatures as high as 50 C. (122 F.) in the shade are not infrequent in parts of India. To these influences may be added the more problematic effect of light, which is exaggerated by the high position of the sun and the consequent directness of the solar radiations.

The colonization of the warm countries by inhabitants of the cooler zones has repeatedly raised questions as to the fitness of the white races for life in the tropics. There is a reasonable agreement that the black races tolerate the hotter climates more successfully. At any rate, they can apparently engage in physical exertion under tropical conditions with less distress than is experienced by the unacclimated white races. Are there physiologic reasons for this unlike response to extreme climatic conditions?

He who embarks on the discussion of the effects of tropical light is likely to enter a sea of controversy. The most conspicuous difference between the white races and the natives of the tropics lies in the pigmentation of the skin. Sunlight is admittedly a stimulus to the development of pigment, unless the exposure is so severe as to lead to erythema and sunburn. The comparative permeability of pigmented and unpigmented skin, as exemplified in the negro and white races, respectively, has been debated without demonstrating conclusively — let us express this with due

reserve — that the pigment has any pronounced significance in the loss of heat from the body by conduction and radiation. Apparently the pigment can function to absorb light and actinic rays, and protect the deeper tissues from damage by radiations of short wave length.

After all, heat furnishes the chief menace with which the tropical inhabitant has to contend. The body temperature of white men and negroes both at rest and during mild exertion is alike in the two races in the tropics;[1] that is, there are no unusual adjustments of the average body temperatures of the unlike individuals. Dr. Stigler[2] of the physiologic institute at the University in Vienna has sought to locate the cause for the admitted superior tolerance of the black races to excessive heat, particularly under conditions of vigorous exercise. He has observed that, so long as the loss of heat is unobstructed, the body temperature of the negro shows a slighter rise during work at high external temperatures than does that of the white man; furthermore, the "heated" negro cools to the normal more promptly, than does the white man.

These inequalities in the response to overheating of the body do not manifest themselves when the discharge of heat is impeded as it is, for example, in the steam, hot air or hot water bath. The two races respond alike when the possibility of eliminating heat in the usual ways is inhibited by the character of the environment. This may be taken to indicate that the negro does not possess any unique regulatory mechanism which enables his body to decrease its oxidative processes in any degree conspicuous in comparison with the normal metabolism of the species. According to Stigler, the more advantageous heat regulation of the negro is likewise not founded on any relatively more copious sweat production. Negroes and white men both perspire in excess under the provocation of warmth.

In view of the known facts, Stigler has reached the conclusion that the apparently superior heat regulation in the negro must be due to a more extensive loss of heat by conduction and radiation. This means, of course, a greater participation of the surface layers of the body. We are reminded that the cutaneous blood vessels of the negro are said by histologists to exhibit a comparatively large size and lumen. Perhaps they respond more effectively than do the skin capillaries of white races in the way of vasodilation. The increased removal of heat in this purely physical way by more extensive conveyance of heated blood to the skin areas makes itself manifest only when the accumulation of heat is pronounced. The temperature at which the bath produces a subjectively "neutral" sensation is the same, 34 C. (93.2 F.), for white men and negroes.

The critical reader of Stigler's investigations will note that they are based on rather meager data. If they become further substantiated, it will be highly probable that the superior temperature regulation of the negroes is an acquired characteristic developed by use. From this point of view, one may perhaps expect healthy white persons likewise to endure the tropical heat more effectively in the course of time. At present other hygienic factors still complicate the interpretation of the welfare of white races in the warm climates.

1. Lode, A.: Das Klima, Rubner-Gruber-Ficker Handbuch d. Hyg., 1911, i, 696.

2. Stigler, R.: Vergleich zwischen der Wärmeregulierung der Weissen und der Neger bei Arbeit in überhitzten Räumen, Arch. f. d. ges. Physiol., 1915, clx, 445.

Current Comment

THE EXCRETION OF MERCURY

The appreciation of the fact that the gastro-intestinal tract can serve, not only as the seat of absorption of substances taken into it, but also as a path of excretion from the body, has tended to modify both theory and practice in medicine. To cite one or two examples, the fact that iron does not appear in large amounts in the urine after administration of medicinal preparations of this element is no longer looked on as prima facie evidence that it has never entered the metabolism; for physiology now teaches that iron salts are reexcreted by the bowel. The same is true of salts of calcium and other elements; and these facts have taught the necessity of reckoning with the alimentary tract in estimating the loss of specific elements from the organism. The location for the excretion of different substances from the circulation into the gastro-intestinal canal varies in individual instances. There is no longer any question that the stomach may participate in these excretory functions quite as well as the portions of the alimentary tract farther away from the mouth. Substances that are excreted by the alimentary tract may be partially absorbed again by lower divisions of the tube. This helps to explain what is not yet sufficiently recognized in relation to the behavior of some compounds in the body, namely, that their elimination by the route of the intestine is through an ever-repeating circle of excretion and reabsorption and is therefore slow. Of this morphin is an example. It is excreted freely into the stomach and reabsorbed from the intestinal tract farther on. Gastric lavage, therefore, is a helpful procedure in facilitating the removal of this drug in cases of poisoning. The experiments of Lieb and Goodwin[1] add mercury to the list of elements which are probably excreted by the gastric mucous membrane. It has been known for a long time that mercury may be recovered from the stomach washings of patients who are under the systemic influence of this metal, quite independently of the mode by which it is administered. It is conceivable, of course, that mercury

1. Lieb, C. C., and Goodwin, G. M.: The Excretion of Mercury by the Gastric Mucous Membrane, The Journal A. M. A., June 19, 1915, p. 2041.

may reach the interior of the stomach because it is secreted in the saliva and swallowed with the latter; or it may come from lower portions of the digestive tract, such as the duodenum, by regurgitation. It has been suggested that the cycle of absorption, excretion and reabsorption in the case of mercury may explain its persistent systemic action and account for the prolonged stay in the organism. The investigations of Lieb and Goodwin on animals in which the possibility of salivary contamination was averted still showed the presence of mercury in the stomach after subcutaneous administration of the chlorid. The gastric path of excretion is thereby established, and this fact indicates gastric lavage to be an essential part in the routine treatment of mercurial poisoning.

EDUCATING THE FARMER IN MINNESOTA

State public health work in our more advanced communities has passed from the propaganda stage to that of detailed systematic study of essential factors and the devising of effective methods for improving living conditions. One of the most important problems encountered—important not only on account of the number of people involved, but also on account of its neglect for many years—is the problem of waste disposal in unsewered districts. And a question, of necessity closely correlated to it, is that of pure water supply in rural districts. In communities large enough to assume the burden of constructing and maintaining sewage systems and water-supply plants, the problem is practically reduced to one of efficient administration. But what of the isolated farm house? How can the rural family safely dispose of its waste, and how can it secure pure water at a cost that is within the resources of the average farmer? Two pamphlets, recently issued by the Minnesota State Board of Health, contain clear, practical advice on these two important questions. One, "Sewage Disposal in Unsewered Districts," gives plans for disposing of sewage from an ordinary farm house with diagrams of the various parts of such a system; the other, "Farm Water Supplies," was originally prepared for farmers but has been endorsed by the State Department of Education for use in connection with the water supply for rural schools. The dangers of impure water are discussed, and the various types of underground and surface water supplies considered. Numerous explanatory diagrams show the dangerous and the safe arrangement for dug wells, bored wells, springs and cisterns. The conventional illustration showing well pollution by seepage through soil is, according to the pamphlet, misleading, contamination usually taking place around the top, through either imperfect construction of the wall casing, or through lack of care in keeping the wall in repair. The pamphlets will be of inestimable educational value in the rural districts. One addition would be of value, that is, an estimate of cost, both for different methods of sewage disposal and for water supply. The question is essentially an economic one. Any rational person would rather live in a well-sewered house and enjoy a pure water-supply, than be without these necessities of modern life. The important question is that of expense. If it can be shown that healthful methods are not prohibitive from the financial point of view, and are in the end much less expensive than sickness, the argument for sanitary methods will be greatly strengthened.

VICTORIES OF A NEUTRAL IN THE WAR

In tribute to the United States for its victorious fight against typhus in Serbia, Sir Thomas Lipton, who, among others, furnished funds and equipment for the campaign, says, "Credit for the work of sanitation, which is rapidly making typhus a thing of the past, must go to the Americans, whose magnificent efforts have made them loved by every Serbian from the king to the lowest peasant, all of whom seem fully to appreciate the efforts of the Red Cross in their behalf." Commenting on this, the St. Paul *Pioneer Press* says:

> But this is not our only decisive "victory" in the European war. Some months ago correspondence set forth the gratitude of the people of Belgium for having been saved by American generosity from starvation. The name "America" has become a household word of reverence and affection; the Stars and Stripes were worshiped along with the colors of Belgium.
>
> No intelligent and civilized American would exchange the honor of these two signal victories of peace and good will for the most terrific victory of shot and shell which has been or will have been won on the blood-soaked fields from Calais to Constantinople. They were no less battles of brains and of courage than are the battles of cannon. Their objective was not destruction but construction, not death but life.

DANGER IN SUN BATHS

Editorially and otherwise we have called attention at various times to the deleterious or even dangerous influence of prolonged exposure of the body to the bright sunlight in those who have not been accustomed to its rays. Grawitz,[1] especially, called attention to this danger some years ago. Römer[2] now brings up the subject again, saying that lying on the sand for hours in the sun has become such a popular pastime that at a single one of the Hamburg resorts there were 18,000 taking the sun bath one Sunday. The damage is more than the sunburn resulting, as he shows by two cases reported in detail, in which headache and symptoms of serous meningitis developed after the youths had been lying several hours in the sunlight with unprotected head and no clothing but bathing trunks. Spinal puncture confirmed the assumption of serous meningitis and relieved the headache. The sun's rays had evidently penetrated the skull, he says, thus again demonstrating that sunstroke is the consequence of direct exposure to the sun. Grawitz warned that those inclined to be nervous were particularly predisposed to injury of the nervous system from this cause, and Römer adds that it is the anemic and nervously predisposed city indoor workers with whom these sun

1. Grawitz, E.: Schädliche Wirkungen der Sonnenbäder, Deutsch. med. Wchnschr., Aug. 19, 1909; abstr., THE JOURNAL A. M. A., Sept. 25, 1909, p. 1066.
2. Römer: Deutsch. med. Wchnschr., July 8, 1915, p. 832.

baths are most popular. A tanned and vascular skin is said to protect better against injury from the sun's rays, but the city dweller's skin is neither pigmented nor vascular. Instead of being benefited, the nervous are rendered more nervous, and when the summer is over they are tanned but otherwise in poorer condition than in the spring. Römer says that no one welcomes more than the physician the "back to Nature" tendency of recent years, but it is his task to warn against excesses and abuses in the "enjoyment of Nature." Even Rollier, the most expert and most successful adherent of heliotherapy, manages the exposures to the sunlight with extreme care, exposing only slowly and gradually larger and larger areas of the body to the sunshine. Dorno relates that "at Davos the direct sunlight is avoided almost as something inimical." Römer remarks that the physician will only in rare instances be able to influence this popular "sun baths sport," but he can at least raise a voice of warning of the dangers of sun baths, and urge the necessity for proper dosage, some persons being more sensitive to the sun's rays than others. Only in this way can heliotherapy be correctly estimated and properly applied.

NEW FEE-SPLITTING LAW IN WISCONSIN

In 1913, following considerable discussion of the fee-splitting evil, the Wisconsin legislature passed a law making it a fraud for a surgeon to offer or to pay a commission for surgical patients referred to him. No penalty was imposed by this law on the receiver of the commission. An amendment recently passed by the present legislature provides that "any physician or surgeon . . . who shall . . . demand, receive or retain any money or other consideration directly or indirectly from the physician or surgeon treating or operating on the patient so induced or advised shall be guilty of a criminal fraud." The penalty for either giving or receiving a commission for surgical cases is fine or imprisonment, while conviction is made an automatic annulment of the license to practice. The law as amended should be broad enough and strong enough to put a stop to whatever fee-splitting evil there may be in Wisconsin.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ALASKA

Medical Board Appointments.—Governor Strong announced on July 30 the following appointments as members of the Alaska Medical Board: first division, Drs. Harry C. De Vighne, Juneau, and Earl M. Bevis, Juneau; second division, Drs. John H. Mustard, Nome, and Curtis W. Welch, Council; third division, Drs. Joseph H. Romig, Seward, and Charles A. Winans, Valdez; and fourth division, Drs. James A. Sutherland, Fairbanks, and Aline B. Bradley, Fairbanks.

GEORGIA

Field Hospital at Tobyhanna.—Field Hospital Company No. 1, Georgia National Guard, under the command of Major Arthur G. Fort, Atlanta, was in camp at Tobyhanna, Pa., from August 6 to 14.

District Society Meeting.—The annual meeting of the First District Medical Society was held in Savannah, July 27, and the following officers were elected: president, Dr. G. W. Elarbee, Daisy; vice presidents, Drs. William W. Evans, Halcyon Dale, and Daniel B. Edwards, Savannah; and secretary-treasurer, Dr. Charles Usher, Savannah (reelected).

Personal.—Dr. William N. Adkins was elected chief examiner of the medical inspection department of the city schools, Atlanta, July 31, succeeding Dr. Robert G. Stephens, resigned. ——Dr. William P. Harbin has been appointed health officer of the new health district established under the recent act of the Georgia Legislature at Rome.——Dr. Walpole C. Brewer, Atlanta, who is in Europe, has been assigned to duty at a hospital on the Austro-Russian frontier.——Dr. A. E. Sally, Augusta, is reported to be seriously ill at his home.——Dr. William P. Nicolson, Jr., Atlanta, has arrived in France and assumed his duties with the American Hospital, Paris.——Dr. Claude A. Smith has been reelected city bacteriologist and chemist of Atlanta for the eleventh term.——Dr. Joseph H. Bradfield, Atlanta, has been elected superintendent of the Municipal Tuberculosis Sanatorium at Battle Hill, succeeding Dr. George L. Loden, Atlanta, resigned.

ILLINOIS

Personal.—Dr. Argal E. Hubbard, for two years medical director at the Ottawa Tent Colony, has resigned and will practice in Peoria.——Dr. William A. Nason, Algonquin, who has been confined to his home for several months, is reported to be convalescent.

Hospital Plans Ready.—Plans for an addition to the Peoria Municipal Isolation Hospital have been completed and work on the new building will be started early this fall. The new building will be separated entirely from the present hospital. It will be a one-story brick structure and will contain ten rooms for use and care of patients and three wards for observation purposes, with the necessary laboratories and supply rooms. The city council has appropriated $10,000 for the construction of the building.

Chicago

Personal.—A dinner party was given August 5, in honor of the fiftieth birthday of Dr. William A. Evans.——Dr. Joseph P. Smyth was elected high medical examiner of the Catholic Order of Foresters at its meeting in Providence, August 5.

Concentration of Sanatorium Administration.—The administration of the Municipal Tuberculosis Sanatorium is to be concentrated at the institution. Headquarters in the city will be maintained only for the medical director and head nurse. The trustees believe that an annual saving of about $10,000 will be made by this change.

Daily News Sanitarium.—The construction of the new sanatorium building at Lincoln Park has been postponed on account of the delay in the preparation of the site on the newly made island opposite the present location. It is hoped that the work on the new building may be commenced this fall. The contributions to the building fund last year amounted to more than $10,000, and the fund on January 1 exceeded $43,000. As the cost of the building is estimated at $90,000, about $50,000 remains to be secured, and an urgent effort is being made to this end.

Midwife School.—The Municipal School of Midwifery was founded August 7 and will have its headquarters in the Iroquois Memorial Hospital. A faculty of competent physicians will instruct the midwives. Dr. Henry F. Lewis, head of the obstetric department of the Cook County Hospital, will be dean of the school, and associated with him are Drs. Rudolph W. Holmes, William G. Lee, Carey Culbertson, Otto H. Rohrlack, Gilbert Fitzpatrick, Arthur H. Curtis, William H. Rubovits, Joseph L. Baer, Bertha Van Hoosen, Effa V. Davis and Mark T. Goldstine. Attendance at the school cannot be made compulsory, but with the power conferred on the health authorities by recent legislation, it is hoped to induce midwives to take the instruction.

INDIANA

New Hospital at Marion.—Contracts have been let for the construction at Marion of a three-story and basement hospital building.

Personal.—Dr. John Kolmer, Indianapolis, is seriously ill in St. Mary's Hospital, Rochester, Minn., following an operation for gastric carcinoma.——Dr. Leonidas Mason, Bluffton, suffered a cerebral hemorrhage August 4 and is reported to be improving.——Dr. Jehu Z. Powell, Logansport, who was operated on recently at St. Vincent's Hospital for the removal of gallstones, is reported to be convalescent.——

Dr. Herman H. Kamman, Columbus, fractured his right arm above the elbow and dislocated his right arm at the shoulder, while cranking his automobile, recently.——Dr. William L. Thompson, Mooresville, suffered a fracture of a rib and severe bruises in a collision between his automobile and another motor car, recently.——Dr. N. Austin Cary, Crawfordsville, has passed his examination and has been commissioned Captain in the Medical Corps, Indiana National Guard.

MASSACHUSETTS

Health Movies.—The State Department of Health has prepared moving-picture films which portray the evils of insanitary conditions, neglected children, the ravages of typhoid, and the bad results of improper health conditions, and these films may be obtained for exhibition by any city, town, school or organization which makes application.

Personal.—Dr. Francis X. Mahoney, for several years chairman of the Health Board of Boston, has been appointed health commissioner.——Dr. Franklin G. Balch, who was to have sailed for Europe, July 31, was unable to sail and it will therefore be necessary for Dr. Edward H. Nichols, in charge of the Harvard unit in France, to select one of his chief surgeons as head of the unit when he sails for home, about August 20.——The appointment of Dr. Elisha H. Cohoon, for eight years a member of the staff of the Rhode Island State Hospital for the Insane, Howard, as administrator of the Psychological Hospital connected with the Boston State Hospital, has been approved by the executive council and the State Board of Insanity.

MARYLAND

Personal.—Frederick C. Blanck, head of the Bureau of Food and Dairy Inspection of the Baltimore Health Department since 1911, has resigned to accept a position in the Bureau of Chemistry in the United States Department of Agriculture, Washington, D. C.——Dr. John F. Hawkins, Baltimore, sustained painful injuries in a collision between his automobile and another motor car, recently.——Dr. James E. Gauline, Baltimore, together with his wife and a male nurse, was chloroformed and robbed while asleep.

MINNESOTA

Laboratory Reestablished.—The work at the Mankato branch laboratory of the State Board of Health, the activities of which were discontinued in April owing to lack of funds, was resumed August 2.

Infectious Diseases for July.—The report of the city health department of Minneapolis shows that during the month of July there were 15 new cases of infectious diseases. Of these 2 were diphtheria, 6 measles and 7 smallpox. Of the 7 smallpox cases not one had ever been vaccinated. Seven cases of pulmonary tuberculosis were also reported during the month of July, all among miners.

Personal.—Dr. Edward W. Buckley, St. Paul, was elected supreme physician of the Knights of Columbus, at its annual convention in Seattle, August 4.——Dr. Frank H. Knickerbocker, Staples, has been appointed a member of the Todd County Sanatorium Commission for two years.——Dr. Harold Stone, Minneapolis, has started for France where he will take up work with the American Ambulance, Paris.

Faculty of Graduate School of Medicine.—At a recent meeting of the regents of the University of Minnesota the faculty of the graduate school of medicine and the Mayo Foundation were merged. The faculty is named as follows: Dr. Charles H. Mayo, professor of surgery; Drs. Edward S. Judd and Emil H. Beckman, associate professors of surgery; Drs. Christopher Graham and Harry S. Plummer, associate professors of medicine; Drs. Herbert Z. Giffin and Walter D. Sheldon, associate professors of medicine; Dr. William F. Braasch, professor of urology; Dr. Melvin S. Henderson, associate professor of orthopedics; Dr. Carl Fisher, associate professor of ophthalmology and otology; Dr. Justus Matthews, associate professor of rhinology and laryngology; Dr. Russell D. Carman, professor of roentgenology; Dr. Louis B. Wilson, professor of pathology; Dr. William R. McCarthy, associate professor of pathology; and Dr. Edward C. Rosenow, professor of experimental medicine.——The regents also have appointed a special committee on reorganization for the graduate school. This committee consists of Drs. James E. Moore, Clarence M. Jackson and Jennings C. Litzenberg, from the medical faculty; and Drs. Louis B. Wilson, William F. Braasch and Melvin S. Henderson from the Mayo Foundation.——Dr. Richard O. Beard has been appointed assistant dean of the medical school.——The resignations of Drs. James S. Gilfillan, Peter A. Hoff, and Charles D. Freeman, St. Paul; and Drs. John E. Hynes and George D. Head, Minneapolis, from the faculty, have been accepted.

NORTH CAROLINA

Sanatorium Fire.—The Elbermar, a tuberculosis sanatorium at Asheville, was seriously damaged by fire, July 18. The patients were removed without casualty.

Laboratory for Winston-Salem Hospital.—Arrangements have been made by the hospital commission for the installation of a modern laboratory equipment at the City Hospital, Winston-Salem.

Sanatorium for Fraternal Order.—A committee from the supreme council of the National Union recently visited Asheville and secured an option on a large tract of land in Buncombe County on which it is proposed to erect a sanatorium for tuberculosis for the use of afflicted members of the order.

Typhoid Fever at Greensboro.—More than forty-five cases of typhoid fever were reported in the epidemic at Greensboro up to July 31. Nine deaths have occurred and up to the present two sources of infection, the one, a well in which dairy utensils have been washed and the other a spring in a suburb of the city, have been found and the health authorities are using every exertion to restrict the disease.

NORTH DAKOTA

The Dunseith Sanatorium.—Members of the State Board of Control held a meeting July 12 to consider bids for the State Tuberculosis Sanatorium at Dunseith. The last legislature made an appropriation for three new structures, namely, $2,800 for a refectory building, $4,500 for a cottage for the superintendent and $4,500 for a dairy barn and silos. Appropriation were also made of $3,500 for a heating plant for the refectory building, $1,000 for kitchen equipment and $1,000 for a cold-storage plant.

Hospital News.—A contract for the erection of a building for the new Effington Hospital was let July 24. The building is to be of brick, two stories and a basement in height, and 53 by 34 feet.——Contracts for $18,580 have been let for the erection of a new power house and addition to the Grand Forks Deaconess Hospital. The building will be of fireproof construction, three stories and a basement in height, and will add thirty-two rooms to the hospital.——St. John's Hospital, Fargo, has awarded a contract for the erection of a nurses' home to cost $50,000.——The directors of St. Luke's Hospital, Fargo, are arranging for an addition to that institution which will more than double its facilities.——Bids are advertised for the new $25,000 hospital to be erected at Kenmare. The building is to be two stories and a basement in height, of brick and fireproof construction and located immediately south of the present hospital and will be connected with it. ——Elmer Hospital at Arnegard will be reopened in the near future.

NEW YORK

Personal.—Dr. Frederick B. Bowman, Buffalo, has accepted an appointment in the Canadian army, hydrologic corps, and has arrived in England.——Dr. Albert H. Ely, New York City, has been reelected president of the Southampton Village Improvement Association.——Dr. Lowyd W. Ballantyne, Syracuse, has been commissioned Lieutenant, Medical Corps, N. Y. N. G., and assigned to duty with the local company. ——Dr. Wardner D. Ayer, has assumed charge of the laboratory connected with the Syracuse Bureau of Health.

Activity in the Enforcement of Vital Statistics Law.—Active steps are being taken by the State Department of Health to enforce the law requiring the report of births by physicians within five days. Dr. Hermann M. Biggs, state commissioner of health, has sent to district attorneys throughout the state, a list of physicians to have been persistently negligent in this matter and the county prosecutors have been asked to warn the offending physicians that further infractions of the law will be promptly prosecuted. The county prosecutors are practically unanimous in the belief that the offending physicians should be brought to trial. The penalty for violation of this law is that the violator "shall for the first offense be fined not less than $5 nor more than $50 and for each subsequent offense not less than $10 or more than $100 or be imprisoned in the county jail not more than sixty

days, or be both fined and imprisoned, in the discretion of the court."

New York City

New Milk Station.—A new milk station has been opened at 752 Onderdonk Avenue, Ridgewood, Borough of Queens. No definite district has been outlined for this station, and it is expected that the clientele will be drawn from the surrounding area.

Typhoid Fever in Brooklyn.—The Bay Ridge district of Brooklyn is suffering from an epidemic of typhoid fever. Up to August 5 thirty-eight cases had been reported. The department of health has detailed nurses to visit every family in the affected area and to distribute literature and advice with reference to the preventive measures to be adopted.

Campaign Against Mosquitoes in Queens.—A mass meeting was held in Forest Hills, July 5, at which time deputy health commissioner, Dr. Haven Emerson, and others spoke and resolutions were passed urging the borough president to go ahead with the draining of the Flushing and Jamaica Bay marshes, and an executive committee with representatives from all the villages in Queens was formed for the purpose of arousing interest in efforts looking to the extermination of this pest in the Borough of Queens.

New Procedure in Measles.—In cases of measles a new method of procedure has been adopted by the health department. All cases reported by physicians are acknowledged by the borough office, but no visits are made by nurses. All cases reported from lay sources are visited by the district diagnostician to confirm the diagnosis. A copy of the measles hanging card will be sent to every home from which a case of measles is reported. After September 1 a new special acknowledgement card with school certificates attached will be used and supplementary instruction will be issued at that time.

Clinic Studies Fur Trade.—Since the opening of the clinic for occupational diseases by the department of health, an investigation of the fur industry has been carried on. The statistics compiled by the health department show that in the fur trade mercurialism was found in 1.5 per cent. of the persons examined, partial deafness in 16 per cent., asthma in 2 per cent. and eczema in 4 per cent. The health department has issued recommendations to the manufacturers of fur advocating the following: Provision of devices to remove hair, dust, fumes, gases and vapors from the workshops; to forbid sweeping during working hours; to demand the use of rubber gloves by those handling dyes and chemicals; to make provision for proper ventilation of street clothing, and the abolition of the common drinking cup.

OKLAHOMA

State Board Election.—At the annual business session of the State Medical Board held in Oklahoma City, July 13, Dr. LeRoy Long, McAlester, was elected president, and R. V. Smith, Tulsa, secretary.

New Institutions for Indians.—The new Indian Hospital, Fort Sill, erected at a cost of $40,000, is now opened to all patients.——Plans are being prepared for an Indian sanatorium to be built at Talihana, to cost $250,000.

Personal.—Dr. Everett G. Newell, Supply, has resigned the superintendancy of the State Hospital and has been succeeded by Dr. Charles B. Hill, Guthrie.——Dr. Romney E. Johnston, Bridgeport, was severely burned recently while lighting the gas in his house.——Dr. Charles L. Simmons, Orlando, has been appointed physician to the Agricultural and Mechanical College at Stillwater.——Dr. Robert H. Harper, Afton, has returned to St. Louis where he will enter a hospital for treatment.——Dr. James M. Workman, Woodward, who was recently operated on in a hospital in Wichita, is reported to be doing well.——In a collision between a Santa Fe train and his automobile in Oklahoma City, Dr. William N. Taylor sustained a fracture of the left arm and other severe injuries and is under treatment in St. Anthony's Hospital.——Drs. Newton H. Lindsay and James R. Calloway have been selected as physicians for the State Training School, Paul's Valley.——A leave of absence has been granted to Dr. Walter L. Capshaw, professor of anatomy in the medical school of the State University, Norman.

OREGON

New State Health Officer.—Dr. David N. Roberg, Portland, who was elected state health officer several months ago to succeed Dr. Calvin S. White, arrived in Portland, July 10, from China where he has been engaged in research work for the past two years.

State Board Election.—At the annual meeting of the Oregon State Board of Medical Examiners held July 31, in Portland, the following officers were elected: president, Dr. Charles T. Chamberlain; secretary, Dr. Luther H. Hamilton (reelected), and treasurer, Dr. Herbert S. Nichols, all of Portland.

Antituberculosis Society Organized.—The Oregon Society for the Prevention of Tuberculosis was organized at a meeting held in Portland, July 2. Drs. Ralph C. Matson, Portland, and Edward A. Pierce, Portland, were elected members of the executive committee and the following physicians members of the board of directors: Drs. Grover C. Bellinger, Salem; Arthur W. Chance, Portland; Harvey J. Clements, Salem; Urling C. Coe, Bend; Matthew H. Ellis, Albany; Edward P. Geary, Portland; Kenneth A. J. MacKenzie, Portland; Mary MacLachlan, Portland; Ralph C. Matson, Portland; Ray W. Matson, Portland; Willis B. Morse, Salem; Edward A. Pierce, Portland; Elijah B. Pickel, Medford; Henry C. Randle, Nehalem; Alan Welch Smith, Portland; Charles J. Smith, Portland, and Robert W. Stearns, Medford.

PENNSYLVANIA

Orphanage Quarantined for Smallpox.—The Orphanage of the United Brethren Church at Quincy was quarantined August 4 by the chief medical inspector of the state, Dr. Benjamin F. Royer, because one of the matrons was found ill with smallpox. The ninety-seven children have been vaccinated.

Faculty Change.—Dr. John Jenkins Buchanan, professor of surgery in the School of Medicine, University of Pittsburgh, for the past fourteen years, has resigned his active teaching and has been elected professor emeritus. Dr. Robert Talbott Miller, for the past five years a member of the staff of the department of surgery of the school, has been promoted to the full professorship.

Epidemic at Erie Not Feared.—On August 4 the State Department of Health dispatched a corps of sanitary engineers to Erie under the command of Chief C. A. Emerson. Dr. Samuel G. Dixon, state health commissioner, has issued the following statement of the conditions there: "The work now in progress should insure against any epidemic following the disastrous flood. The water supply in the major portion of the city has remained intact, and those sections where the connections have been destroyed are securing their supplies from a pure source. The floods, of course, have sent sewage polluted water broadcast and the people have been warned against using water from surface wells, and have been warned to observe precautions after working in the débris. The city and state are cooperating to recover the bodies. Four hundred men and seventy-five teams have been at work, and the city authorities have been requested to increase this number. The department of health engineers are on the ground acting in an advisory capacity, and the city authorities, following a resolution of the councils, have welcomed and cooperated with them in every way possible."

Philadelphia

Personal.—Dr. Robert Tait McKenzie has been appointed a captain of the medical corps of the British army and has been given charge of the physical examination of recruits at the Aldershot military training camp.——The honorary degree of Master of Science was conferred on Dr. John A. Kolmer of the University of Pennsylvania, by Villanova College, at its annual commencement, June 17.

Schoolchildren Taught Swimming.—Public school swimming centers, conducted under the auspices of the board of education, have just finished their first term with a record of 390 boys and 558 girls, who know how to swim. Altogether there were 3,000 enrolled for the first term. Of these 1,581 attended the classes and took six or more lessons. After the pupil has learned to swim, a special test is given; the pupil is required to swim for twenty minutes. The swimming centers are open for ten weeks.

Babies' Hospital.—Twenty-five children of all ages from 3 months to 12 years are under treatment at the country branch of the Children's Hospital at Wynnefield. These children have been transferred from the children's hospital on Twenty-Second Street, and will benefit by living on the wide porches. This branch is situated on a 9-acre plat near the Park trolley. The institution has organized a system of

training nurse maids. Under the supervision of Miss Doolan and another trained nurse, ten young women are taking a nine months' course.

SOUTH CAROLINA

District Physicians Meet.—At the semiannual meeting of the Eighth District Medical Society held in Aiken, July 13, Dr. Ransom H. Timmerman, Batesburg, was elected president; Dr. Harry H. Wyman, Aiken, vice president; and Dr. Robert A. Marsh, Edgefield, secretary-treasurer, (reelected). The next meeting will be held in January at Johnston.

Pellagra at Orphanage.—The U. S. Public Health Service has directed Surgeon Joseph Goldberger to take charge of the cases of pellagra at the Epworth Orphanage, Columbia. The disease has been prevalent at the orphanage for a long while and has been spreading during the last year. At present between seventy-five and a hundred of the 250 children at the institution, are affected by the disease.

Hospital Items.—Plans have been prepared for St. Mary's Hospital, Anderson, and contracts were let July 27. The building will cost about $7,000. The plans call for the usual administration rooms, five private rooms for white patients; a male and female ward to hold six patients each; two wards for colored patients, an operating room, diet kitchen, etc. The building will be one story in height with basement, but provision will be made for the addition of another story.——The new State Park State Hospital for the Insane will accommodate 300 patients which will provide for the overflow of the Columbia State Hospital for the time being. Dr. D. C. Sandy is in charge of the occupational training of the patients.——Work on the improvements at the Columbia State Hospital has been commenced. These improvements are to cost $150,000 and call for the construction of a central kitchen and dining room for white female patients and the remodeling of six white male patient wards.

TENNESSEE

New Dispensary for Chattanooga.—An appeal is being made by the leading citizens of Chattanooga for $3,000 with which to establish a free medical dispensary. It is believed that the amount will be subscribed in time to permit the dispensary to be opened about September 1.

Personal.—In the case of Luther Chambers against Dr. Albert T. Ingalls, Chattanooga, in which damages for $25,000 were claimed on account of alleged malpractice, the jury on July 27, returned a verdict exonerating Dr. Ingalls.——Dr. Samuel H. Hodge, Knoxville, who has been in Serbia since November last, has returned home.

CANADA

University News.—Toronto University is now recruiting for its third overseas company.——McGill University has enrolled its third overseas company and is overmanned to the extent of fifty. Application will be made to enrol a fourth company immediately.

Hospital News.—The officers and employees of the Hospital for the Insane, Hamilton, Ont., have contributed a machine gun for the use of Canadians. With the first contingent fifteen employees went to the front, and during the past month sixteen more have volunteered.——The Saskatchewan Overseas Hospital will consist of the following personnel: a lieutenant-colonel, two majors, four captains or subalterns, a quartermaster, a warrant officer, eighty noncommissioned officers and men, one matron, ten sisters and sixteen staff nurses. The medical council as the represenative body of the medical profession has the organization in hand and the cost will be $40,000. It is expected that the provincial government will give liberally. It will have a capacity of 200 beds. There will be ten physicians and surgeons.

Personal.—Dr. Malcolm A. Carmichael, Strassburg, Sask., who was recently operated on for appendicitis in the Regina General Hospital, is recovering.——Dr. Arthur S. Gorrell, Regina, who recently underwent a severe operation, has recovered and resumed practice.——Dr. Kidd, medical superintendent of the Hospital for the Insane, Cobourg, Ont., has left to join the Queen's University base hospital staff in England.——Dr. Royal Lee, Ganonoque, Ont., who was taking a course in the Holy Name Hospital, Brooklyn, N. Y., met with a serious accident resulting in concussion of the brain while rushing in an automobile to attend an emergency call.——Dr. Robert S. Thornton, Deloraine, Man., a prominent member of the Dominion Medical Council, was elected to the Manitoba legislature in the recent provincial elections. Dr. Thornton has joined the new Norris government and will administer the department of education.

Canadian Public Health Association.—Owing to the outbreak of the war last year the annual meeting of the Canadian Public Health Association, which was to be held in Port Arthur and Fort William, was canceled. It has been decided by the executive that a meeting will be held this year in Toronto, on September 3 and 4. A program relative to preventive medicine in the exigencies of wartime is being arranged; and in addition papers and discussions will be presented on the usual subjects. There are to be symposiums on housing and on mental defectives and care of the feebleminded.

GENERAL

Mississippi Valley Tuberculosis Meeting.—The annual Mississippi Valley Conference on Tuberculosis will be held September 29 and 30, and October 1, at the Claypool Hotel, Indianapolis. October 1 is the day set for the disease prevention day pageant.

Standardization of Methods.—The National Association for the Study and Prevention of Tuberculosis has appointed a committee of three to investigate into and adopt standard dispensary methods for use through the country. This committee consists of Drs. James Alexander Miller, New York City; William Charles White, Pittsburgh, and George T. Palmer, Springfield, Ill.

Bequests and Donations.—The following bequests and donations have recently been announced:

Hospital for Sick Children, Toronto, Ont., a block of buildings in Colborne, Ont., by the will of Mr. Daniel L. Simmons of that place.

Medical Society of South Carolina and their successors as supervisors of the Riverside Infirmary, Charleston, for the establishment of a memorial to the late Joseph Thompson, from $60,000 to $80,000, by the will of the late Mrs. Rosa Thompson.

S. R. Smith Infirmary, Staten Island, N. Y., $30,000, by the will of Sarah J. Farrar.

St. Luke's Hospital, New York City, $7,500, by the will of Mrs. Augustus L. Jonas.

The Conditions in Mexico.—Economic conditions in Mexico as reported by Mr. C. J. O'Connor, the representative of the American Red Cross in Mexico City, are distressing. The amount of food necessary for an individual per day costs at present nearly $10 Mexican, while the laborer's wage is $0.75 Mexican. The volume of business and manufacturing is steadily decreasing and the only processes at work are said to be destructive.——The civilians in Saltillo are reported to be eating donkey flesh and cactus. No corn or beans can be purchased at any price.——The American Red Cross has now $6,000 worth of groceries en route from New Orleans to Vera Cruz designed for the use of needy Americans in Mexico City.——Much suffering is reported from Guadalajara. The prices of food are prohibitive. Corn, which under normal conditions costs from 4 to 6 cents per liter is now costing from 25 to 40 cents, and beans which ordinarily cost 6 to 8 cents Mexican per liter, now cost from 40 to 60 cents.

Another Confidence Game? American Supply Company.—A physician in Benton Harbor, Mich., who prefers not to have his name mentioned because, as he says, he does not want to be regarded as "an easy mark," writes:

"A man giving his name as C. A. Lewis seems to have been working a confidence game on doctors through this section. He claims to be selling membership in the American Supply Company, of Cincinnati, the holders of which will receive auto supplies at wholesale cost plus 5 per cent., f. o. b. Cincinnati. He collects $7.50 and says catalog will be along in a few days. But the catalog does not come, and a letter to the American Supply Co. of Cincinnati is returned 'unclaimed.' The individual is about 35 years old, 5 feet 10 inches to 5 feet 11 inches in height, weight about 175 pounds, quiet and business-like in his demeanor. As I recollect him, his hair is brown, general appearance slightly approaching the blonde type."

An investigation by a representative fails to reveal the American Supply Company in Cincinnati. Inquiries were made of the Cincinnati Automobile Club and of other automobile and business firms, without locating such a company. The proposition of doing business on a 5 per cent. margin should be sufficient to make one suspicious.

FOREIGN

Suspension of Prague and Vienna Exchanges.—We learn from the *Berliner klinische Wochenschrift* that the *Prager medizinische Wochenschrift,* after forty years of honorable existence as the representative of the German medical men in Bohemia and the organ of the medical faculty of the University of Prague, has suspended publication, it is hoped only temporarily. The *Allgemeine Wiener medizinische Zeitung,* now in its sixtieth year, has also stopped publication.

Fewer Cases of Lead Poisoning in England.—It is noted in the *Supplement to Commerce Reports,* No. 19, July 26, that through careful supervision and under the special rules of the home office, lead poisoning has diminished. According to the report of the departmental committee, 5,299 persons (3,371 males and 1,928 females) were engaged in 1907 as lead workers under the earthenware and china rules in North Staffordshire. In 1906 there were 97 cases of lead poisoning; in 1907, 82 cases; in 1908, 91 cases; in 1909, 49 cases; in 1910, 63 cases; in 1911, 78 cases; in 1912, 74 cases; in 1913, 55 cases, and in 1914, 23 cases. In 1913 there were 14 deaths attributed to lead poisoning. Deaths from lead poisoning in 1914, with occupations, were: potter's miller's carter, 1; potter's dippers, 2; house painters, 2; potter's places, 3; colliery laborer (formerly color mixer), 1; occupation not stated, 1. The actual certified causes of these deaths were as follows: acute lead poisoning, brought about by his employment; chronic lead poisoning 16 years, chronic interstitial nephritis, uremic convulsions; chronic nephritis, set up by deceased working in lead as house painter; chronic nephritis, through lead poisoning accelerated by tuberculosis; primary plumbism and secondary consumption; plumbism, convulsions and heart failure; hemorrhage of the brain, set up by working in lead; chronic kidney disease, set up by deceased working in lead; meningitis, accelerated by lead poisoning and kidney disease caused by lead poisoning.

WAR NOTES

Red Cross Shipment.—The American Red Cross shipped, August 7, to the Belgian Red Cross at LaPanne, Belgium, from New York on the *Espagne*, 4,400 pounds of hospital supplies, including 400 pounds of chloroform and three cases of children's clothing.

The Minnesota Unit for Paris.—The corps of surgeons and nurses which is planning to go to Paris for a three months' term of duty at the American Ambulance, is expected to be ready to assume its duties in Paris, January 1, next, instead of April 1, as originally planned.

News From the Chicago Unit.—The Chicago unit with the British expeditionary force has been located at Etaples, France. The hospital, which is known as the Twenty-Third General Military Hospital, British expeditionary force, France, contains 1,040 beds and is thoroughly equipped. The unit went into service at the hospital on July 7 and on the first night three train loads of wounded soldiers were received. The surgical cases are mostly shrapnel wounds and compound fractures.

Mortality Among the German Wounded in the Home Hospitals.—The *Medizinische Klinik* of July 18 cites the statistics from the hospitals in the home zone showing the steady improvement in the latest results accomplished. The mortality has declined from 3 to 1.4 per cent. while the number of men discharged as able to resume their military duties has increased from 84.8 per cent. in August, 1914, to 91.2 per cent., April, 1915. The average for the nine months was respectively 1.9 and 88.5 per cent. The figures are really a little higher than this, as a number who were still disabled when leaving the hospital have resumed their places at the front since.

Exchange of Captured French and German Physicians.—The *Deutsche medizinische Wochenschrift* announces that an arrangement has been made between the German and French governments for the release at the same time of captured physicians, chaplains, pharmacists, sanitary orderlies, nurses and bearers, with the exception of those that are temporarily detained for the care of the sick, the wounded and the prisoners of their own nationality. In a previous issue the *Wochenschrift* urged the necessity at times for detaining the captured medical men and nurses as the sick and wounded have confidence in their compatriots speaking their own tongue, while this leaves the German medical force free to attend to their own people.

The Australian Medical Profession in the Army.—The *Medical Journal of Australia,* of June 26, states that about 28 per cent. of the medical profession of Australia are serving in the front at present. The requirements at present are, reenforcements for the general hospitals, convalescent depots in England, field ambulances and equipment of eighteen hospital ships with four medical officers on duty on each. It is also announced that the defense department expects to organize another general hospital. The medical profession of this great colony deserves credit for its liberal response to the request for help sent by the mother country. This reduces the proportion of physicians to population from 1:2,000 to 1:2,722.

Council on Welfare Work for the Maimed in the War.—The *Magistrat* of the city of Berlin has appointed a committee of eight to confer with the municipal authorities in regard to measures for ameliorating the condition of the maimed in war. The council consists of Professors Borchardt and Brentano (surgery); G. Klemperer and Kuttner (internal diseases); Cohn and Friedemann (orthopedics); Liepmann and L. Jacobsohn (nervous affections); Fehr (ophthalmology); Claus (ear), and Ritter (teeth).

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ended Aug. 7, 1915, lists the following contributions:

Marwick, Mitchell, Peat & Co., Chartered Accountants, three audits of the Treasurer's accounts, March 20, May 30 and June 20, 1915.	
Dr. E. W. Smith, Meriden, Conn.	$ 10.00
Receipts for the week ending August 7	$ 10.00
Previously reported receipts	7,769.84
Total Receipts	$7,779.84
Previously reported receipts:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
353 standard boxes of food at 2.28	804.84
Total disbursements	7,310.04
Balance	$ 469.80

F. F. Simpson, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

LONDON LETTER

London, July 30, 1915.

The War

THE TOTAL CASUALTIES

The total number of casualties among the British forces in all the fields of operation is now 330,995, of which 9,106 are naval and 321,889 are military. The total is made up of 61,384 killed, 196,620 wounded, and 63,885 missing. In my previous letter the casualties were given up to the end of May, and amounted to 271,616; thus, in the succeeding seven weeks, 59,379 have been added. Comparison with some previous campaigns will show the enormous scale on which life and limb are now being sacrificed. In the Crimean War the British losses were 2,755 killed and 12,094 wounded. In the Franco-German War of 1870-1871, the Germans had 17,570 killed and 96,189 wounded. In the Russo-Turkish War of 1877, the Russians lost 32,780 killed and had 71,268 wounded. In the South African War there were 5,256 killed and 26,286 wounded.

THE BRITISH MEDICAL ASSOCIATION AND THE SUPPLY OF MEDICAL MEN FOR THE ARMY

In consequence of the war, the annual scientific meeting of the British Medical Association will not be held. The annual meeting of the representatives of divisions for the discussion of medicopolitical questions is now taking place. One of the subjects considered is the supplementing of the supply of physicians for the army. A committee was formed to cooperate with the War Office to regulate the supply, and endeavor to insure that the needs of the civilian population would not be neglected. The point insisted on was that the committee should safeguard the interests of men leaving their practices and see that their civil interests suffered as little as possible.

Professional Secrecy

The unsatisfactory condition of the law in regard to professional secrecy was pointed out by me a short time ago (The Journal, March 27, 1915, p. 1088). In the case of a woman who died after criminal abortion, the judge animadverted on the fact that not one of the three physicians who attended her in succession communicated with the police. When it was known that she was likely to die, this should have been done in order that her evidence might have been taken by a magistrate. The *Lancet* in a leading article dissented from this view, and said that the keeping of a patient's secret, whether guilty or not, was a point of professional honor. All the physician should do was to endeavor to obtain the patient's consent to reveal the criminal. Moreover, a celebrated criminal judge, the late Lord Brampton, expressed a diametrically opposite opinion to the judge in the present case. In the absence of the

only effectual remedy for this chaotic state of affairs—proper legislation—an attempt has been made by medical bodies to deal with the question. The council of the British Medical Association appointed the chairman of the representative meetings, the chairman of council and the deputy chairman of the Central Ethical Committee to confer with the lord chief justice on the subject of professional secrecy. The deputation was received by the lord chief justice, the attorney-general, the public prosecutor and other legal authorities. As a result of this conference the council ascertained that the authorities desire that information should be given to them by physicians in attendance on a woman suffering from abortion produced artificially, subject to the limitations that he was of the opinion that it had been induced by a third party other than the patient, and that the patient was likely to die. The council was given to understand that whereas lawyers have an absolute privilege of protection in regard to statements made to them in their professional capacity involving matters of criminal import or otherwise, no other class of persons is accorded such legal protection by state authority or act of parliament, although in the case of ministers of religion, such protection is universally observed and recognized by custom in the courts. There is no such universally recognized protection attaching to physicians in respect of statements made to them by a patient; in fact, there is a considerable conflict of authority on the subject. The council had been advised that no obligation rests on a physician to disclose the confidences of his patient without her consent, and suggested that if the state desires to set up such an obligation, it should at the very least preface such an endeavor by affording to the practitioner protection from any legal consequences that may result from his action. Without any desire to claim the right to refuse to make such disclosures in obedience to the order of a court of justice, the council, after hearing the report of the deputation received by the lord chief justice, decided to adhere to the following resolutions which it had previously passed. 1. That the physician should not under any circumstances disclose voluntarily, without the patient's consent, information which he has obtained from that patient in the exercise of his professional duties. 2. That the state has no right to claim that an obligation rests on a physician to disclose voluntarily information which he has obtained in the exercise of his professional duties.

The subject subsequently was discussed by the representatives of divisions of the association at their annual meeting, and the attitude of the council was endorsed. The solicitor of the association said he had known members of the medical profession who had absolutely refused to divulge statements made to them. He himself had advised them to refuse to divulge the information, even to the point of being threatened with imprisonment for contempt of court. He had known cases adjourned for the purpose of allowing the medical witness to "come to his senses," as it was termed. In the end, the medical witness had not "come to his senses," and no committal had taken place. In the United States the medical profession could plead privilege in regard to the disclosure of these matters. In France it was practically an indictable offense to disclose such matters at all. The medical profession in this country stood on a quite different footing, although that ought not to be so. For himself, he thought the profession was entitled to protection. One of the representatives said that those responsible for prosecutions and for obtaining convictions in criminal cases seemed to be making a big attempt to use the medical profession as an amateur unpaid branch of the detective service. If physicians allowed themselves to be so used by the legal authorities, women would not go to them but to quacks and midwives. As a citizen he was prepared to do all he could for the conviction of criminals, but he did not intend, whatever the law might do or say in an attempt to persuade him, to betray professional confidence. He hoped that the profession would stand solid against that aggression on its rights and privileges. Thus the attempt of the British Medical Association to deal with the anomalous position of the profession by conference with the legal authorities has only made matters worse. At the conference the lord chief justice intimated that if any fresh rule were contemplated, it would be best to have this done by legislation, which, of course, is the only proper method.

The subject next came before the Royal College of Physicians, who adopted the following resolutions: 1. A moral obligation rests on every physician to respect the confidences of his patient, and without her consent he is not justified in disclosing information obtained in the course of his professional attendance on her. 2. Every physician who is convinced that criminal abortion has been practiced should urge his patient, especially when she is likely to die, to make a statement which may be taken as evidence against the person who has performed the operation, provided her chances of recovery are not thereby prejudiced. 3. In the event of her refusal, he is under no legal obligation to take further action. 4. Before taking any action which may lead to legal proceedings, a physician will be wise to obtain the best medical and legal advice, both to insure that the patient's statement may have value as legal evidence, and to safeguard his own interests, since there is no certainty that he will be protected against subsequent litigation.

Thus there is the widest divergence between the demands of the highest legal authorities and what our leading medical journal and medical bodies regard as the duty of the physician.

BERLIN LETTER

BERLIN, July 13, 1915.

Results of Treatment in the German Hospitals

In view of the appearance of a further official report dealing with the results of the treatment of the wounded at home hospitals, I wish to make some additions to my previous letter. Of each hundred soldiers dismissed from these hospitals in August, 1914, 84.8 were classified as fit for service, and 12.2 as being either unfit or given a furlough. Of the latter, a certain percentage surely will again be fit for service. Three per cent. died. For each month since then, the results estimated on the same basis are as follows:

	Fit for Service	Unfit	Died
September, 1914	88.1	9.1	2.7
October, 1914	88.9	8.7	2.4
November, 1914	87.3	10.6	2.1
December, 1914	87.8	10.5	1.7
January, 1915	88.7	9.9	1.4
February, 1915	88.6	10.0	1.3
March, 1915	88.9	9.05	1.6
April, 1915	91.2	7.4	1.4

Taking the report as a whole, the averages are as follows: fit for service, 88.5; unfit, or on furlough, 9.6; died, 1.9. Special attention should be directed to the fact that the percentage of fit for service has increased steadily, whereas the mortality percentage has decreased. In the Franco-Prussian War (1870-1871) the statistics based on the reports of all hospitals, abroad as well as at home, showed that 88.93 per cent. were returned to the front fit for service, whereas 11.07 per cent. died. The total number of wounded was 116,821, or 14.8 per cent. of the entire army. Of these wounded, 17,215, or 2.2 per cent. of the total fighting strength, died on the field of battle; 11,023, or 1.4 per cent., died later, and 88,543, or 11.2 per cent., were again made fit for duty. In the American Civil War the total number of wounded was 328,293, or 60.3 per cent. of the total fighting strength. Of this number, 44,238 (8.1 per cent.) died on the field of battle, whereas 34,849 (6.4 per cent.) died later. The percentage of those killed as contrasted with those wounded was 24.1. Of those receiving surgical care, 87.73 per cent. were restored to health, and 12.27 per cent. died. In the present war, the percentage of killed will probably be very much greater than in the previous wars because, judging from reports received, the number of wounds caused by the artillery is much greater than formerly. In the Franco-Prussian War the number of wounded, among the German troops was: by rifles, 89 per cent.; by cannon, 8.2 per cent., and a very small percentage of wounds by sidearms. Among the French troops, 70 per cent. of those killed died as a result of rifle bullets, and 25 per cent. as the result of artillery fire.

Instruction of the Deaf

The city of Berlin has made provision for the instruction of schoolchildren suffering from a high grade of incurable deafness and who, therefore, are unable to follow the routine courses of instruction. During the past few years, certain regulations have been laid down for this class of pupils which meet the medical as well as the educational requirements of the day. The scattered classes throughout the city were gathered together and placed in groups, each comprising six classes of the ordinary school. For each of these schools, a definite plan of instruction has been outlined, probably the first of its kind, to become effective next October. The principal object of these schools is to restore the social status of the deaf so that they can again mingle

with their fellows, and to give them the same educational training offered in the common schools of Berlin. These children are instructed in articulation, lip reading and audition so as to awaken in the pupil a sense of security and the consciousness that, in spite of his affliction, he can, by close application and hard work, become a useful and respected member of society. Following the example of Berlin, several other of the large cities in Germany have arranged for similar classes for the instruction of the deaf.

PARIS LETTER

Paris, July 22, 1915.

The War

THE SOLDIER'S DIET

Professor Landouzy read a paper on this subject before the Académie de médecine. The soldier's diet seems to Landouzy to be too arbitrarily and uniformly regulated. He would especially like to see use made of natural wine, which would help in the war against alcohol. A bottle of wine represents 400 calories, costs from 30 to 40 centimes (6 to 8 cents) and replaces a quantity of meat representing the value of 2 francs (40 cents). The soldier's meat ration is amply sufficient, if not excessive. Moreover, it is indispensable that his height and weight, and the character of his duty be taken into account in establishing the proper ration for him. One would not give the same ration to a foot soldier of small stature as to a cuirassier.

THE NEUROLOGY OF WAR

The *Revue neurologique* has just devoted a special number to papers on the neurology of war: analysis of works published in French medical periodicals and a summary of the most important communications made to the principal scientific societies of France on the clinical consequences of traumatisms of the brain, the spinal cord and the nerves, psychopathic troubles connected with present events and the surgical operations and therapeutic procedures called for in such cases.

THE REPATRIATION OF THE MEMBERS OF THE MEDICAL SERVICE

Last week 600 French physicians, pharmacists and nurses arrived in Lyons by special train returning from Germany. The convoy included also an English physician, Dr. Brown, physician on board of the *Mahory*, which was torpedoed by a German submarine May 7 last at Zeebrugge. Dr. Lapasset, director of the medical service of the region, received the captives in the name of the government.

CLASSIFICATION OF WOUNDS AND INFIRMITIES ENTITLING THE SUBJECT TO RETIREMENT PENSION OR TO TEMPORARY RELIEF

According to the law with regard to military pensions, the right to a retiring pension depends on (1) the incurability of the wounds or infirmities, and (2) such a serious degree of the wounds or infirmities that the patient is unable to earn his subsistence, his capacity for work being reduced at least 60 per cent. But in addition to such incurable lesions, there are many others which are susceptible of ultimate improvement and which are not covered by the regulations in force. Hence the physicians whose duty it is to pass on applications for a pension have either to ignore their natural sentiments of humanity or to fail in making a strict application of the rules. A recent decree has modified conditions by instituting eight classes of relief pensions corresponding to reductions in the capacity for work equal to 10, 20, 30, 40, 50, 60, 80 and 100 per cent. of the normal capacity. Thus, infirmities, the incurability of which is not medically certain at the time of examination, will be compensated in a more equitable manner. In cases of serious functional troubles which may improve with time, experts will no longer be tempted to give an irrevocable pension prematurely, since, in the graduated series of relief pensions, they can find degrees corresponding to the various grades of incapacity. Hereafter the immediate consequences of fractures, nervous or articular lesions, the serious functional troubles of traumatic hysteria and the curable cases of tuberculosis can be given equitable compensation without irrevocably involving the future and, on the other hand, without compelling the experts, as formerly, to compensate a temporarily considerable degree of probably curable functional incapacity by an insufficient indemnity corresponding to a maximum reduction of 30 per cent. of the capacity for work, the highest grade of the renewable relief pensions under the old regulations.

The scale of valuation of the seriousness of wounds and infirmities has not yet been published. Meanwhile, the medical experts are invited to refer as much as possible, for a scale of reduction of earning capacity, to the figures established under the law of 1898 on industrial accidents. The military legislation, unlike the civil legislation, however, takes no account of professions.

Incurable wounds or diseases may justify either the retirement pension or the permanent relief pension according to the degree of seriousness. Infirmities regarded as definitely incurable which produce a reduction of earning capacity amounting to from 60 to 100 per cent. are the only ones which entitle the sufferer to the retirement pension. Infirmities regarded as definitely incurable but entailing a reduction of earning capacity of from 10 to 50 per cent., on the other hand, justify the granting only of a permanent relief pension.

For infirmities which do not seem to be incurable, relief pensions are awarded for two years, and may be repeatedly renewed for the same period.

The following is the scale of renewable relief pensions in francs for European soldiers (smaller sums are awarded for the soldiers of Algeria-Tunis, Indo-China, Madagascar and East Africa):

Grades	Degree of Incapacity (Per Cent. of Reduction)							
	1st (100%)	2d (80%)	3d (60%)	4th (50%)	5th (40%)	6th (30%)	7th (20%)	8th (10%)
Chief Adjutant	1,800	1,400	1,100	910	730	550	368	184
Adjutant	1,690	1,300	1,000	832	666	500	334	168
Aspirant	1,625	1,250	950	791	633	475	318	159
Sergeant-Major	1,560	1,200	900	750	600	450	300	150
Sergeant	1,430	1,100	800	666	533	400	268	134
Corporal	1,170	900	700	582	466	350	234	118
Soldier	975	750	600	500	400	300	200	100

A THESIS PRESENTED DURING WAR TIME

A rather uncommon occurrence was the presentation before the Faculté de médecine de Paris a few days ago, by M. Perrin of Grenoble, of his thesis for the doctor's degree. The young candidate, who was an auxiliary physician in an infantry regiment, had been decorated with the military medal and the cross of war, having received honorable mention in the order of the day. Professor Landouzy, dean of the Faculté de médecine, although he was not on the jury, put on his professorial red robe to do honor to the candidate. "I have taken my place with my colleagues," he said to the candidate, "less to congratulate you on your worth than to do honor in your person to all the French physicians, great and small, who, on the firing line, in the ambulances and in the hospitals, are doing their duty so valiantly. . . . In 1870, peril lurked in the hospital for us because the admirable discoveries of science had not yet given us the means of averting epidemics of typhus, typhoid fever and cholera. It is in the first-aid posts and in the trenches that you are exposed, and unfortunately the tribute that you pay is no less than that of other days. From the plains of the Yser to the crests of the Vosges, sixty young auxiliary physicians have already fallen, and almost 1,000 military physicians have sacrificed their lives to our ideal of peace and liberty."

It is interesting to note that the subject of Dr. Perrin's thesis was the treatment of wounds of the thigh; he himself had been wounded in the thigh by many fragments of a *grosse marmite*. As he had been cared for at the American hospital at Neuilly, Professor Hartmann, who was a member of the jury, took occasion to speak in praise of this establishment, where American surgeons have rendered such great services to the wounded of France.

THE FRENCH RELIEF FUND AND THE "JOURNÉE FRANÇAISE" IN ENGLAND

For several months the French Relief Fund has cooperated with our Comité du Secours National in relieving the distress of civilian victims of the war, and has already expended several hundred thousand francs. In order to render still more efficacious aid, on the French national holiday there was organized in England a celebration of the "day of the French flag." The amount of the receipts is not yet known exactly, but for London alone it amounts to 750,000 francs ($150,000).

PROHIBITION OF ALCOHOLIC DRINKS IN THE ARMY

An order of General Galliéni, military governor of Paris, forbidding the sale of alcoholic drinks to soldiers garrisoning the defenses of Paris, has just been published. Now when the physical and moral energy of soldiers ought to be carried to their highest degree of intensity, the order

explains, it is important that the campaign against alcohol, which destroys both, should be carried on without faltering. Hence it is forbidden to sell alcohol and alcoholic drinks (absinthe, vermuth, bitters, apéritifs, liqueurs, etc.) to soldiers of any grades. Liquor sellers will have their establishments closed temporarily for the first offense and permanently for the second offense.

DEATH OF DR. CHAILLOU

Dr. Chaillou of the Pasteur Institute of Paris, one of the most distinguished collaborators of Dr. Roux, has just met a glorious death on the field of battle. He was the head of an army corps ambulance and has been mentioned in an order of the day in the following terms: "He requested and obtained the perilous commission of policing (rendering sanitary) a battlefield near the trenches of the enemy. He was killed during the night while he was accomplishing his mission."

The Academy of Medicine and the Campaign Against Alcoholism

In its session of July 13, the Académie de médecine adopted the conclusions of the report of Prof. Gilbert Ballet on the measures to be taken against alcoholism: (1) prohibition of the sale of brandies containing more than 50 per cent. of alcohol by volume; (2) prohibition of the manufacture, the circulation and the sale of all liqueurs and aromatic wines containing more than 23 per cent. of alcohol (such drinks ought not to contain, moreover, more than 0.5 gm. of essence per liter; still liqueurs containing more than 300 gm. of sugar per liter may be tolerated up to 30 per cent. of alcohol, since this clause concerns especially apéritifs, and liqueurs or dessert wines); (3) prohibition of the employment, in giving aroma to spirituous drinks, of chemical products, plants or essences including among their normal constituents thujone (essence of absinthe), benzoic aldehyd and salicylic ether and aldehyd; (4) establishment of a high surtax on every drink, whatever its nature, which exceeds 15 per cent. of alcohol.

The academy, moreover, expressed the hope that, while awaiting legislation to reduce the number of drinking places, the public authorities will take the necessary police measures to close the very numerous clandestine drinking places which exist. Finally, the academy passed the resolution introduced by Dr. Vaillard, medical inspector-general of the army, that the order prohibiting the sale of alcohol in the army zone be continued and, if necessary, strengthened.

Marriages

FELIX ARNOLD IRMEN, M.D., U. S. I. S., Randlett, Utah, to Miss Anna Louise Holmberg of Washington, D. C., at Denver, June 7.

PRESLY E. WERLEIN, M.D., Mountain View, San José, Calif., to Miss Sarah Louise Richard of Melville, La., at San José, July 21.

MORRIS D. COHEN, M.D., Bisbee, Ariz., to Miss Harriet Helen Schwarz of Rochester, N. Y., at El Paso, Tex., July 25.

INGLIS FOLGER FROST, M.D., Miraj, India, to Miss Barbara Brewster of New York City, at Oyster Bay, L. I., July 28.

FRANCIS BERNARD HART, M.D., Jamaica, L. I., to Miss Natalie Theodora Howard of Brooklyn, Dec. 14, 1914.

HERBERT EMILE CHAUVIN, M.D., to Miss Gladys Eulalie Ross, both of Brentwood, L. I., N. Y., July 22.

ESSEX SYLVESTER CRAVEN, M.D., Port Arthur, Tex., to Miss Ruby C. Lawrence of Palestine, Tex., July 28.

JOHN LEWIS RIGGLES, M.D., to Miss Caroline Naomi Honodel, both of Washington, D. C., June 30.

WILLIAM HAROLD CADMUS, M.D., to Miss Emma Josephine Rogers, both of Rochester, N. Y., August 2.

WALTER C. TAYLOR, M.D., Springfield, Ohio, to Miss Rena Loise Snyder of Wyoming, Ohio, July 27.

HERBERT HARLAN HARRIS, M.D., Anderson, S. C., to Miss Nelle Smith of Beardstown, Ill., July 24.

FRANK EUGENE BALDWIN, M.D., Peoria, Ill., to Miss Margaret Lockwood of Chicago, July 28.

THOMAS A. JUDGE, M.D., Milwaukee, Wis., to Miss Florence Wagner of Mitchell, S. D., July 26.

GEORGE A. DOWNS, M.D., to Miss Marie Selling, both of Spokane, Wash., July 24.

Deaths

Olin Frisbie Harvey, M.D. University of Pennsylvania, Philadelphia, 1873; aged 68; a Fellow of the American Medical Association; once president of the Luzerne County Medical Society and vice president of the Lehigh Valley Medical Association; consulting surgeon to Mercy Hospital, Wilkes-Barre, Pa.; surgeon and obstetrician to the Wilkes-Barre City Hospital and trustee of the Danville (Pa.) State Hospital; for ten years major and surgeon of the Ninth Infantry, Pa. N. G., retiring in 1891; during the Spanish-American War, examining surgeon for the Army; from 1876 to 1880, physician to the Luzerne County Prison; for six years a member, one year president and two years secretary of the Wilkes-Barre Board of Education; died at his summer home at Harvey's Lake, Pa., July 25.

David Streett, M.D. College of Physicians and Surgeons, Baltimore, 1878; aged 60; a Fellow of the American Medical Association; president of the Medical and Surgical Society of Baltimore and Baltimore Medical Society, and vice president of the Medical and Chirurgical Faculty of Maryland; professor of principles and practice of medicine in the University of Maryland, Baltimore, and dean of the Baltimore Medical College for twenty-five years until its merger; formerly a trustee of the Maryland General Hospital; died in St. Agnes' Hospital, Baltimore, July 30, after an operation for disease of the intestines.

Thomas Lyon Hazzard, M.D. University of Pennsylvania, Philadelphia, 1881; aged 60; a member of the Medical Society of the State of Pennsylvania, Association of Military Surgeons of the United States and of the American Proctologic Society; professor of proctology in the University of Pittsburgh; rectal surgeon to the Allegheny General Hospital; formerly major surgeon of the Eighteenth Infantry, Pa. N. G., and for several years police surgeon of Allegheny; died at his home in Northside, Pittsburgh, July 29, from heart disease.

Frederick Duvall Caruthers, M.D. University of Maryland, Baltimore, 1892; aged 44; formerly a Fellow of the American Medical Association; formerly professor of genito-urinary surgery in the Maryland Medical College; visiting surgeon to the Franklin Square Hospital, Baltimore; at one time assistant physician to the Spring Grove State Hospital; resident physician at Bay View Asylum and coroner of the northeastern district of Baltimore; died at his home, July 27, from disease of the stomach.

B. E. Ward (license, Oklahoma, act of 1908), aged 66; of Purdy, Okla.; who had been under treatment in the State Hospital, Norman, until three years ago, and who, while insane, killed his wife, was taken from the Cleveland County Jail at Norman, May 9, by twelve masked men and hanged to a tree two miles south of Norman.

Beverly Stephen Nourse, M.D. Cooper Medical College, San Francisco, 1896; aged 48; for several years physician to the State Prison, Folsom, Calif.; and later local physician at San Francisco and Sacramento for the Southern Pacific System; died at the home of his uncle in Sacramento, July 23, from cerebral hemorrhage.

Charles L. Kinnaman, M.D. University of Wooster, Ohio, 1878; aged 63; a member of the Cleveland Academy of Medicine; formerly physician to Wayne County, Ohio; for many years local surgeon of the New York, Pennsylvania and Ohio Road at New Salem, Ohio; died at the home of his daughter in Cleveland, July 24.

Arthur A. McClendon, M.D. University of Louisville, Ky., 1893; Tulane University, New Orleans, 1898; aged 44; a Fellow of the American Medical Association and a member of the Mississippi Valley Medical Association; local surgeon of the Iron Mountain System at Marianna, Ark.; died at his home in Marianna, July 24.

Charles A. Crampton, M.D. George Washington University, Washington, 1884; formerly chief of the Division of Chemistry in the Internal Revenue Bureau of the Treasury Department, Washington, D. C.; and later a resident of Somerset, Md.; died in the George Washington Hospital, Washington, July 26.

Aloysius J. Driessel, M.D. Wisconsin College of Physicians and Surgeons, Milwaukee, 1906; aged 33; a member of the State Medical Society of Wisconsin and for five years a practitioner of West Bend, Wis.; died in the Riverside Sanitarium, Milwaukee, July 27, from cerebral hemorrhage.

Columbus D. Bonner, M.D. Western Reserve University, Cleveland, 1888; aged 57; for many years a practitioner of Union County, Ohio, but for the last four months a resident of Waldo, Ohio; died in the Protestant Hospital, Columbus, July 24, a day after an operation for intestinal obstruction.

Robert Allison Brown, M.D. Missouri Medical College, St. Louis, 1876; Bellevue Hospital Medical College, 1883; Medical College of Ohio, Cincinnati, 1884; aged 58; a member of the Illinois State Medical Society; died at his home in Humrick, Ill., July 21, from nephritis.

Charles Francis Preston Burchmore, M.D. College of Physicians and Surgeons, Boston, 1893; aged 56; surgeon to the Suffolk Hospital and Dispensary, Boston, and surgeon to the Ancient and Honorable Artillery Company of Boston; died at his home in Winthrop, Mass., July 27.

Samuel Henry Melcher, M.D. Dartmouth Medical School, Hanover, N. H., 1851; aged 86; for many years a resident of Chicago; surgeon with the rank of colonel during the Civil War; blind for twenty years; died at the home of his daughter in Chicago, August 1.

Charles A. Sternberg, M.D. Bellevue Hospital Medical College, 1884; aged 54; a member of the Medical Society of the State of New York; for two years city physician of Gloversville, N. Y.; died at his home in that place, July 28, from cerebral hemorrhage.

James Goldlust, M.D. New York University, New York City, 1894; aged 48; a member of the Medical Society of the State of New York and physician to the Mt. Sinai Dispensary; a pianist of marked ability; died at his home in New York City, July 27.

William Roy Elgin, M.D. Hospital College of Medicine, Louisville, 1904; aged 33; local physician of the Yazoo and Mississippi Valley Railroad at Ruleville, Miss.; fell from a window of the Monteleone Hotel, New Orleans, July 26, and was instantly killed.

Charles Harvey Shattuck, M.D. Dartmouth Medical School, Hanover, N. H., 1881; aged 57; who owned and conducted several drug stores in Everett, Andover and Ballardvale, Mass.; died at his home in Malden, Mass., July 26.

Amos Carroll Conley, M.D. Medical School of the Valley of Virginia, Winchester, Va., 1858; aged 76; formerly of Boone, Iowa, but of late years a resident of Tunnelton, W. Va.; died at his home, April 1, from chronic bronchitis.

Samuel Harvey Wollerton, M.D. University of Pennsylvania, Philadelphia, 1880; aged 55; for twenty-five years a practitioner of New York City; died at the home of his brother in Scranton, Pa., July 26, from pneumonia.

Cortland Kierman Hand, M.D. College of Physicians and Surgeons in the City of New York, 1914; aged 24; an intern in St. Vincent's Hospital, New York City; died at his home in Mt. Vernon, N. Y., July 30, from heart disease.

George Washington Reichard, M.D. Eclectic Medical Institute, Cincinnati, 1878; aged 61; a member of the Ohio State Medical Association; died at his home in Springfield, Ohio, July 27, from cerebral hemorrhage.

Adolfo Martinallo, M.D. Royal University of Turin, Italy, 1900; aged 39; for ten years a practitioner of Butte, Mont.; a lieutenant in the medical corps of the Italian army; died in Vico, Italy, early in July.

Frank Hanson Harrison, M.D. College of Physicians and Surgeons in the City of New York, 1882; aged 60; of New York City; died in Bellevue Hospital, New York City, July 23, from tuberculosis.

William Hampton Price (license, North Carolina), aged 50; a practitioner of North Carolina for thirty years; died at his home in Matthews, July 19, from disease of the throat.

Edward Sumners, M.D. Hahnemann Medical College, Chicago, 1904; aged 37; died at his home in Shirley, Ill., July 16, from cerebral hemorrhage.

Andrew Krumling (license, Michigan, years of practice, 1900), aged 77; of Blissfield, Mich.; died in the Kalamazoo State Hospital, July 23.

John M. Heinimann, M.D. University of California, San Francisco, 1877; aged 59; died at his home in Fruitvale, Calif., July 21.

William M. Bryant, M.D. Jefferson Medical College, 1858; aged 79; died at his home in Canton Bend, Wilcox, Ala., March 22.

Azro Patterson Willits (license, Illinois, 1881), aged 65; died at his home in Keithsburg, Ill., July 17.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

ARTICLES REFUSED RECOGNITION

Report of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's actions on articles refused recognition which were not deemed of sufficient importance to require lengthy reports.

Uricsol

Uricsol is marketed by the Uricsol Chemical Company, formerly of Los Angeles, now of Boston. Regarding its composition only vague statements are made. In an advertising pamphlet it is promised that the formula will be sent to physicians on request. Such a request from a physician elicited the following statement:

"URICSOL is a non-irritating, alkaline solution, containing Lithium Citrate, Acid Citric and Potassium Nitrate, together with a saline laxative in the form of Glycero Sodium Phosphate, with Vegetable Tonics added."

The Association Laboratory has made an examination of Uricsol to determine its composition and reports as follows:

LABORATORY REPORT

A trade package purchased in March, 1915, from a wholesale drug house was labeled:

"Uricsol Rheumatic Remedy, Uric Acid Solvent, Kidney and Liver Stimulant, Manufactured by the Uricsol Chemical Co., Los Angeles, Cal."

This package was wrapped in a circular entitled "The Great California Remedy—Uricsol." The preparation is a viscid, slightly turbid light brown liquid, with a faintly aromatic odor and a salty, bitter taste. The diluted solution is acid in reaction toward litmus and phenolphthalein and alkaline toward methyl orange.

Qualitative tests showed a presence of phosphate, citrate, nitrate, sodium, glycerin, and a small amount of lithium in aqueous solution. Besides these a small amount of some organic, nonalkaloidal substance was found, which from its bitter taste suggested gentian. From the qualitative tests it appeared that the phosphate was the predominating ingredient and accordingly a phosphate determination was made. The results, calculated to sodium phosphate, U. S. P., indicated the presence of 64.20 gm. per 100 c.c., held in solution by citric acid and sodium nitrate.

Uricsol evidently is a solution containing a large amount of sodium phosphate with small amounts of lithium, nitrate, citric acid and glycerin with probably some vegetable extract.

In general Uricsol is similar to the once widely exploited proprietary "Melachol," which has been frequently imitated. A preparation, essentially identical, is in the United States Pharmacopeia, under the title "Compound Solution of Sodium Phosphate."

The Uricsol Chemical Company calls its preparation

". . . the latest word in the treatment of Rheumatism and that allied group of ailments which is caused by an excess of Uric Acid."

Hay fever, bronchial asthma and neuritis are conditions in which it is recommended. The claim is made that

"Uricsol quickly controls Vasomotor Rhinitis and eliminates such conditions from the system." "In fact, it will correct FAULTY METABOLISM."

To a few practitioners of an older generation the pharmacologic basis of a remedy for rheumatism was sufficiently defined by saying that it increased the solubility of uric acid or affected it in some way. This theory is obsolete; there is not, and never was, any reliable evidence on which to base the theory that rheumatism is in any way caused by uric acid. The exploitation of Uricsol as a "uric acid solvent" is merely another illustration of the way in which nostrum manufacturers play on disproved theories. Of course the claim that sodium phosphate has any particular

power to control vasomotor rhinitis, hay fever, asthma, and to correct faulty metabolism is foolish.

To summarize: Uricsol is a mixture of well-known drugs marketed with false claims as to therapeutic action, with misleading and meaningless statements as to composition and under a name which invites uncritical prescribing. Uricsol is held ineligible to inclusion in New and Nonofficial Remedies.

Duodenin, Armour

Duodenin, Armour (Armour & Co., Chicago), supplied in 1 grain and 2 grain tablets, is said to be prepared from the glandular or epithelial layer and mucous lining of the hog duodenum and to contain the maximum amount of secretin and enterokinase in stable form. Armour & Co. claim that the secretin in Duodenin has not been submitted to boiling or precipitation processes or otherwise exposed to possible changes by hydrolysis, and that the administration of the combination of secretin and enterokinase found in Duodenin, Armour, increases the flow of pancreatic juices and at the same time activates the proteolytic enzyme to a maximum. This claim is based on the hypothesis that gastric digestion does not destroy the secretin and enterokinase said to be present in the preparation. The following recommendations for use are made:

"Duodenin (Armour) is recommended in the treatment of intestinal disorders where an increased flow of pancreatic, hepatic and intestinal secretion is desired. It is of specific value in proteid digestion on the theory that secretin and enterokinase stimulate the pancreas and activate its secretion."

Discussing the claims the referee of the Committee on Pharmacology reported to the Council that apparently no investigations have ever shown the existence of conditions in which there is an absence or an insufficient amount of enterokinase and that the existence of such conditions is improbable. He reported further that all adequately controlled physiologic experiments so far reported show (Starling, Matsuo) that pancreatic secretin given by mouth or directly into the intestine, is not absorbed in active form, and that no evidence is available to show that conditions exist in which there is a deficiency of secretin or enterokinase. He held that Duodenin, Armour, should not be considered further until evidence has been submitted to show that there are conditions in which secretin or enterokinase is absent and that these substances may be utilized by the organism if administered. As all that is known concerning these hormones tends to discredit the assumption that their administration is of use, he recommended that in the absence of any scientific evidence of its therapeutic value, Duodenin, Armour, be not admitted to New and Nonofficial Remedies.

The Council adopted the report of the referee.

Jubol

The following ridiculous statements are addressed, not to the laity, but to the medical profession:

DO YOU SUFFER FROM Constipation—Hemorrhoids—Enteritis—Mucous discharge — Pituita — Acidity of the stomach—Vertigo — Sick Headache — Disturbed Sleep — Insomnia —Sallow Complexion— Coated Tongue— Offensive breath— Fatigue and depression — Boils — Pimples?

"ONE of these symptoms alone shows that there is defective or insufficient function of the intestines, even if the stools are regular.

"Excrements remain too long in the intestine and set up fermentation. The harmful poisons and ptomains which they produce are re-absorbed by the blood and poison the whole system.

"The Intestines must be cleared and re-educated with JUBOL.

"Jubolise your Intestines."

Jubol tablets are sold in the United States by Geo. J. Wallau, Inc., New York, and are said to be prepared by J. L. Chatelain, Paris, France. The following incomplete and nonquantitative "formula" is furnished:

" . . . compounded chiefly [!] of Agar-Agar, Biliary Extracts and pure Extracts from all the intestinal Glands."

It is asserted that

"The tablets are coated with a protective covering in order that they may act on the intestine only."

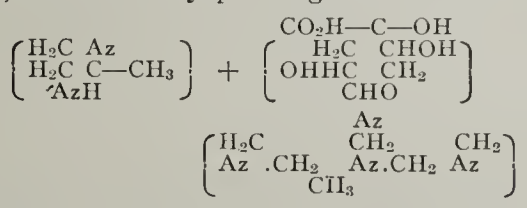
The tablets contained in a regular-size trade package, obtained direct from the agent, readily separated into two halves and disintegrated within a few minutes when agitated with water. It is thus evident that, under ordinary conditions, the intestinal ferments in Jubol (if they are present, as claimed) would be destroyed during their passage through the stomach. In direct tests, however, practically no tryptic activity was demonstrated.

The composition of Jubol is not declared; grossly unwarranted and incorrect claims are made for its therapeutic actions; the name does not indicate the alleged ingredients and so much of the composition as is declared indicates an unscientific mixture. The Council decided that Jubol should be held ineligible for New and Nonofficial Remedies, and that this report should be published.

Urodonal

Urodonal is said to be "produced in the laboratory of J. L. Chatelain," Paris, France. It is marketed in this country by Geo. J. Wallau, Inc., New York.

The preparation is claimed to be a chemical compound, and the advertising matter furnishes a "formula," which consists of the formulas of lysidin, sidonal and hexamethylenamin, connected by plus signs:



That the substance is a chemical compound is highly improbable, and no evidence has been submitted to substantiate the claim. On the contrary, in the following statement the phrase "based on" is a virtual admission that the preparation is merely a mixture:

"Urodonal . . . is a granular effervescent preparation based on methylglyoxalidine [Lysidine], quinate of diethylene-diamine [Sidonal] and hexamethylene-tetramine [Formin, urotropinè]."

Mystery is added by the mention of undefined "special products" in the following:

"The fact of combining these two salts [lysidin and sidonal] in Urodonal, in strictly determined proportions and in the presence of special products, gives this preparation very considerable power in dissolving uric acid."

These contradictory statements of composition conflict with Rule 1.

Urodonal is marketed in typical "patent medicine" style: the name "Urodonal" is blown in the bottle and the label contains a list of "Indications," including rheumatism, gout and gravel (Rule 4). That this form of marketing has introduced it to the public is suggested by the following in an advertising circular:

" . . . Urodonal is now popular—even classic—throughout the world, where thousands of doctors and millions of patients agree in asserting that 'Urodonal is to rheumatism what quinine is to fever.' "

There are also other indications that the mixture is to be exploited to the laity. For instance, the U. S. distributor sends out a portrait of Sarah Bernhardt bearing the legend:

"I am positive that URODONAL preserves youth's freshness with clearness and strength to brain and heart. I have taken it for two years with the greatest benefit. Sarah Bernhardt."

A circular advises this mixture

"For all who suffer from Arthritis, Rheumatism, Arterio-Sclerosis, Renal and Bilious Lithiasis, Headache, Gout, Gravel, Lumbago, Sciatic Pains, Neuralgia and all uric acid troubles."

"In fact, Urodonal is five times more active than piperazine, and thirty-seven times more active than lithia. We are, therefore, entitled to say that no other eliminator of uric acid can be compared with it."

"Being 37 *times more active than lithia,* it clears the heart valves of any sandy substances which may clog them, and checks the atheromatous degeneration of the blood vessels."

These extracts indicate sufficiently the extravagant tone of the advertising (Rule 6): None of the ingredients are notably active in dissolving uric acid when administered by mouth. None produce any marked increase of uric acid elimination. No intelligent physician would use a uric acid solvent for "bilious lithiasis"; and their usefulness in the other conditions is open to doubt, to put it mildly.

Although the preparation is a simple mixture, the name does not indicate the components, but inclines to therapeutic suggestion (Rule 8).

Nothing is to be gained by combining several drugs which are useless, severally, for the purpose intended, as in the present case (Rule 10).

Urodonal is marketed under inconsistent statements of composition and with exaggerated therapeutic claims; the name is nondescriptive and the mixture is unscientific. The Council decided that the preparation should be declared ineligible for conflict with Rules 1, 4, 6, 8 and 10 and that this report should be published.

OIL-OF-SALT

A "First-Aid" Fraud

C. A. Mosso, 2253 Warren Avenue, Chicago, exploits a nostrum "Oil-of-Salt," claimed to be "a product of salt and oils" and an "infallible destroyer of all systemic poisons." "We have always been careful," says Mosso, "not to give the impression that Mosso's Oil-of-Salt is in any manner a product of drugs or chemicals."

Mosso's philosophy of health and disease is a simple one: All diseases are but "systemic poisons" in the body: Oil-of-Salt destroys all poisons; *ergo*, Oil-of-Salt cures all diseases.

"All of our ailments are caused from some poison contracted in devious ways. . . ."

"Mosso's Oil-of-Salt will remove any and all kinds of systemic poison from the human body . . . and when this is done perfect health is the natural result."

"Mosso's Oil-of-Salt is proclaimed to be the most wonderful curative agency known. . . ."

Mosso's conception of physiology, anatomy and pathology is in keeping with his knowledge of pharmacology. Diabetes, he tells us, is "commonly called Bright's disease," while "a formation of stone or calculus substance" comprises "what is known as gravel or Gall Stones."

"Hay-fever, Rheumatism, Neuralgia, Skin troubles such as Salt-rheum, Eczema, Pimples, etc. Piles of all kinds, Indigestion, Diarrhea, Nervousness, Female Weakness and prostatic trouble; all of which can be restored to perfect order by the use of Mosso's Oil-of-Salt."

The favorite method of introducing this fraudulent nostrum seems to be that of sending to those in charge of manufacturing plants a printed letter reading, in part, as follows:

"Gentlemen:—If you will allow me to place in the hands of your First Aid Department my system in the line of a First Aid to the Injured, I will guarantee that no workman need lay idle for over thirty minutes, after the treatment has been applied, from any of the ordinary accidents that occur in their daily work, also that they will not suffer from any pain after said time, and there will never be any bad effects from the wounds.

"The wounds I speak of are as follows: Cuts, Burns, Strains, Crushed Feet and Hands, also all Poisonous Wounds as those caused from Rusty Nails, Copper, Brass, Lead, Zinc, etc. No Blood Poison can ever take place in any case where The First Aid is used.

"You need have no fear of death from the following troubles, and relief can be obtained in from thirty to sixty minutes, namely: Ptomaine Poisoning, Internal Hemorrhage of any kind, Colic, Bloody Disentary [*sic*] and all dangerous afflictions that assail mankind in their daily life."



Photographic reproductions of the labels of "Mosso's Oil-of-Salt" and of "First-Aid Treatment" which is said to be the later name of the Mosso fraud.

One would imagine that it would not take medical knowledge to recognize the absurdity and fraudulence of the claims made in this letter. Apparently, however, factory foremen and superintendents are not infrequently misled by the specious promises made for this product. Several manufacturing concerns have written to THE JOURNAL asking for information regarding the composition and probable value of Mosso's Oil-of-Salt and, as a result, an analysis was made of the preparation. The chemists' report from the laboratory of the American Medical Association follows:

CHEMISTS' REPORT

Mosso's Oil-of-Salt is a yellow oily mixture possessing an aromatic odor, resembling a mixture of turpentine, camphor and sassafras, and possessing a strong burning taste. It is inflammable, and burns with a luminous smoky flame.

When distilled with steam it leaves a yellow oily liquid devoid of aromatic odor, but possessing an odor and taste indicating linseed oil. Qualitative tests and the iodin absorption number further identify the oil as linseed oil. The volatile portion which was carried over by the steam was a colorless oily mixture and possessed the same characteristic odor as Oil-of-Salt. This mixture was completely volatile on the steam bath and was inflammable.

Quantitatively the linseed oil was determined by removing the volatile constituents by steam, and extracting the linseed oil by chloroform and evaporating the chloroformic solution in a weighed dish. After evaporation of the chloroform the oil was allowed to dry in a desiccator. After a short time the weight began to increase, this no doubt being due to oxidation. The weight of oil found by this method may be taken as a close approximation of the actual content of oil; the presence of about 63 per cent. linseed oil was indicated. By heating a weighed sample of Oil-of-Salt on a boiling water-bath until the characteristic aromatic odor of the preparation had disappeared a residue amounting to 64.5 per cent. was left. This approximate determination indicates the non-volatile oil (linseed) content to be about 63 to 64 per cent.

An aqueous extract of Oil-of-Salt is acid in reaction to litmus, methyl orange, phenolphthalein and dimethylaminoazobenzene and contains chlorid, showing the presence of free hydrochloric acid. A portion was extracted with water until the extracts no longer were acid to methyl orange and the combined extract titrated with normal alkali. This showed the presence of 0.16 per cent. free hydrochloric acid. After titration the solution was made acid by nitric acid and the chlorid precipitated as silver chlorid. By this method a chlorid content equivalent to 0.17 per cent. hydrochloric acid was indicated. An alcoholic solution of Oil-of-Salt titrated with normal alkali in the presence of phenolphthalein indicator showed the presence of 0.17 per cent. free hydrochloric acid.

These determinations agree as to the free hydrochloric acid content. A total chlorid determination made after fusing with Hunter's fusion mixture showed a chlorid content of 0.51 per cent. equivalent to 0.52 per cent. hydrochloric acid. An alcoholic extract of Oil-of-Salt, made until evaporation of some of the alcohol showed no more of the volatile oils, was fused with Hunter's mixture and the chlorid determined; 0.489 chlorid equivalent to 0.49 per cent. hydrochloric acid was found. This compared with the total chlorid content indicates that the part of the mixture containing the chlorid is soluble in alcohol, viz., the volatile oils.

In general it may be concluded that Oil-of-Salt is a mixture consisting of about ⅔ linseed oil with ⅓ of a mixture of essential oils including turpentine, camphor and sassafras, containing total chlorids equivalent to 0.52 per cent. hydrochloric acid, ⅓ of which is present as free hydrochloric acid.

Here, again, we have illustrated the reason for the frantic opposition on the part of "patent medicine" manufacturers to every demand for publicity of composition. The most ignorant of workmen could hardly be fooled into believing that a mixture of linseed oil with small amounts of oils of turpentine, camphor and sassafras, a pinch of salt and a trace of muriatic acid could produce the results that Mosso claims for his "Oil-of-Salt." No intelligent human being, in fact, could be convinced that such a mixture would "place you and those you employ beyond all danger or premature Death and Suffering from any of the accidents that occur in your works." With the mystery that surrounds a secret mixture like Oil-of-Salt, however, any claim, no matter how preposterous will be accepted by a certain number of people. After carefully analyzing the product and considering the claims made for it, the verdict must be that Mosso's Oil-of-Salt is an impudent fraud.

The latest information regarding Oil-of-Salt indicates that it is being exploited under the name, "First Aid Treatment," and sold by the Pan-Alert Laboratories, 607 Marquette Building, Chicago.

Correspondence

Serbian Appreciation of American Assistance — Conditions in Southwest Macedonia

To the Editor:—The enclosed translation of an editorial in the Monastir *Daily Press* of July 6, 1915, may be of interest to your readers. The article is of value in the fact that it shows the appreciation of the Serbians of American assistance. It is of little value for the estimate it has placed on the work of myself and colleagues. It does us far too much credit. The warm weather has done much more toward eradicating typhus than our own efforts. Incidentally, typhus is well under control and does not exist in more than half a dozen places in Serbia, and in these places not to an alarming extent.

Enclosed also are memoranda of a report of conditions among the inhabitants of Southwest Macedonia.

B. W. CALDWELL, M.D., Bitolji (Monastir), Serbia.

[COMMENT.—Dr. B. W. Caldwell is the hospital administrator connected with the American Red Cross Sanitary Commission in Serbia. He was formerly superintendent of the Santo Tomas Hospital, Ancon, C. Z., and went to Serbia with the commission which was headed by Dr. Richard P. Strong. The following are the enclosures, the first being the editorial referred to, and the second, a communication describing conditions in Southwest Macedonia. Bitolji (Monastir), Serbia, which under the Turkish régime was the second city of Macedonia, with 80,000 inhabitants, has since the Balkan Wars diminished to about 40,000.—ED.]

SERBIA AND AMERICA

Among the many benefits which the present war has brought to Serbia, one of the chief is the sympathy and friendship of the cultured nations, great as well as small.

This sympathy and this friendship, together with the very manifest friendship of the glorious French nation and the traditional protection and support of great and powerful Russia, form the surest guarantee of the future of that Greater Serbia whose formation is only a question of time.

Never has Serbia experienced such great manifestation of sympathy among the allied powers as today, such praise of the unexampled bravery of her armies, the wise policy of her statesmen, and the justice of her administration. The numerous offers of moral and material support tendered to Serbia from the beginning of the war to the present, by both her allies and the ever-ready neutral powers, are the best evidence of this.

Of the neutral nations which, during the latter part of last year, beginning immediately after the defeat of the Austrian army, hastened at once to the aid of our heroes and refugees, among the first was (we acknowledge this with especial satisfaction) the great and renowned American nation.

It is known to every one how many and how great have been the services rendered by the first American Mission to our wounded and how it has served us with financial aid as well as with sanitary materials and field supplies even up to the present time.

As we write this there are found in Serbia several American units which are working as earnestly and conscientiously for the improvement of health conditions as though for their own native land.

One of these units came to Bitolji (Monastir) about six weeks ago under the leadership of Dr. Caldwell. The remaining members of the unit are Dr. Schmidt, Colonel Gayle and Engineer Hazelhurst.

Immediately on the arrival of the unit, they opened a dispensary where the poor of the city are examined and treated free of cost, which is an inestimable boon to the people of Bitolji.

At the same time, the capable and energetic Dr. Caldwell has undertaken the cleaning of the city so that for the first time Bitolji is without typhus and malaria. The devotion and energy which Dr. Caldwell and his colleagues have brought to bear on this work is marvelous, and we deem it a duty and a privilege to make public acknowledgment of these facts and to express to Dr. Caldwell and his colleagues our gratitude for their conscientious and beneficial work, and at the same time beg that these, our feelings, may be communicated to their noble countrymen.

MEMORANDUM OF CONDITIONS AMONG DESTITUTE REFUGEE AND OTHER INHABITANTS OF BITOLJI (MONASTIR) AND SOUTHWEST MACEDONIA

I am advised by the president of the council at Bitolji that there are at this time 600 Christian families averaging five persons to each family who are destitute and almost entirely dependent on state and local aid for bread on which to live. There is being furnished to these families or to a large part of them, by the municipality of Bitolji, a small and entirely inadequate ration of flour, or in some cases the equivalent in money for their support. The fathers, or providing members of these families, are at the frontier, or have been killed in battle or died of disease, or are sick in hospital. The families are in extreme want, reaching in many instances to the starvation stage, and have no means of providing food for themselves by work or begging, and are dependent on the meager aid given them by the authorities.

For the present the Serbian government has assigned a sum of money, about 15,000 dinars ($2,100), to relieve the suffering of these people. The allowance of bread or flour or money is too small to keep them from a state bordering on starvation, but it serves a useful purpose in relieving the urgent needs of a number of these people. This supply of money, it is thought, will last for about two months, and the municipal authorities feel quite sure that it will be supplemented by a further advance from the Serbian government when the present funds are exhausted.

While the present warm weather continues, this class of destitutes will be able to manage to live on their meager allowances, with a little assistance from outside sources. With the approach of winter, however, the amount of aid now furnished will in no way be sufficient, and the material suffering, which is now so emphatically apparent among them, will be much greater. The close housing which the inclement weather will compel will breed pestilence and disease, and in their exhausted physical state, death will add its horrors to the sufferings of these people. Clothing, fuel and sufficient food must be provided in order to enable them to gather strength for the winter months, and it should be provided without delay, if disease and a fearful attendant mortality is to be prevented. The clothing these people now possess is not sufficient to keep them warm were the weather colder, and it does not afford the necessary change for personal cleanliness and health. In addition to the foregoing class, there are in Bitolji 7,000, Mussulmans, about half of whom are children and infants, who are in a decidedly worse condition, and to whom little or no state aid is extended. The only source of food is derived from the charity of more fortunate persons of their faith, and the bounty of charitable institutions and societies from abroad, chief among which is the British Bible Lands Missionary Society, whose bounty is dispensed through the English Consul at Bitolji, Mr. Greig, and a similar charity extended by the American missionary, Rev. W. P. Clarke and his wife. Through funds furnished Mr. Greig by the Bible Lands Missionary Society, these people, to the small number of 214 families, about one-seventh of the total number, receive a ration of one loaf or oke (2 8/10 pounds) of bread per day for each adult, and half an oke for each child, and on this food these people are absolutely dependent and have been for weeks. Their suffering and starvation is real, and were it not for this small allowance, supplemented by gathering grasses and herbs from the fields, all but the most hardy of them would have died long since.

The children live on bread alone, and many of them go all day long without any food save what they are able to beg, which is little enough. They have not known the taste of meat for months. Infants are starving for lack of nourishment. The poor emaciated mother is unable to provide either the milk from her breasts or money to purchase cow's milk. There is little tinned milk available. These children linger along starving, until in many instances acute disease attacks, and mercifully ends their sufferings in death.

Even with the little ration doled out by the municipality, the mothers cannot provide enough for their children. The ration is in most cases issued in flour, a handful being given to each mother. The amount is hardly enough to make into bread, and an incident occurred recently when a mother took her flour home and, to add to the bulk of her loaf of bread, mixed ashes with the flour and baked it. This was given to the children that night, and the following day two of them died. Another incident occurred, in which a mother of five children sent them to bed hungry, having had nothing to eat all day. The eldest complained most bitterly, and plaintively asked, "What kind of mother are you to send us to bed without bread?" The mother left her house and at the late hour of night begged from neighbor to neighbor for bread for her starving children. Such instances are by no means exceptional, and misery and starvation are the rule. These people have sold everything movable and salable for food. The tiles from the roof, the surplus furniture, bed clothing and kitchen utensils, and so have lived from day to day, until this source of revenue has been exhausted and they have nothing left. What will be their fate when winter comes is beyond any imagination, unless sufficient, systematic aid is given them. Sanitation is difficult even under favorable surroundings. It is impossible among such a large number of people, where food, clothing, fuel and the barest of life's necessities are completely lacking. These people have no physical resistance, and among them disease and contagion will breed disease and contagion, until every house that shelters one of them will become a pest house and threaten the entire people with its pestilence. They suffered a heavy mortality the past winter and spring, when conditions of living were somewhat better, and they had not reached their present state of physical exhaustion, and it will be necessary to provide proper and sufficient food to these unfortunates, if even a greater mortality among them is to be avoided with the approach of the winter months.

Fortunately housing will prove a simple problem, and will solve itself. Bitolji is half deserted, and many Mussulmans, owners of property, who have moved away, permit the people of their faith to live on their vacated premises. But food, clothing and fuel should be provided without delay, and an organized charity be effected, to prevent this destitution.

Arrangements are being made to take over the municipal hospital at Bitolji, subject to the approval of the American Sanitary Commission. This hospital will be opened and operated for the civil poor alone. It has a capacity of 100 beds, and with 3,000 hospital days each month no little good can be accomplished by it. In addition to providing shelter and treatment for the civil poor, a free dispensary can be maintained for outside patients. All the foregoing applies to the city of Bitolji alone with its 35,000 inhabitants, one out of every three of whom are destitute.

In Ochrida, Debra and other villages of this prefecture the suffering and want are more intense, although the number in each of these villages is much smaller. People, especially children and infants, are dying of starvation, and scenes of emaciation like those pictured in the China famine are by no means uncommon in the smaller settlements. Frightful as it may seem to be, it is no less true that starvation is running a very close race with disease in causing the heavy mortality which these people bave experienced. B. W. Caldwell, M.D.

Transparency of Abdominal Walls at Term

To the Editor:—In The Journal, July 31, 1915, p. 465, there is an abstract from a German obstetric and gynecologic journal. The article in question is by one Ahlfeld, and in this abstract the following sentence occurs:

In one woman [at term, he means] the walls [uterine] were so transparent that the different parts of the uterus, the ovaries and tubes could be inspected with ease, and several graphic tracings were taken of the *child's breathing* [italics mine].

This gives me pause. I am prepared to concede almost anything to German efficiency. When I read that they were raiding the atmosphere for nitrogen, my hat was off to the achievement of the German scientist; but when I read that the German babies abstract oxygen from the amniotic fluid in utero, I feel like saying to the Allies, "Come on boys, call off the dogs; put out the fire, and let's go home; it's no use." Or maybe the illustrious Teuton has discovered that the German fetus is equipped with gills. This assumption in a way seems plausible, for at times I am unable to tell if the Teuton is fish, or flesh, or fowl. Now I may be displaying British stupidity, but honestly, Doctor, do German babies breathe in utero, and if so, how?

W. W. Jarrell, M.D., Thomasville, Ga.

[Comment.—Ahlfeld's words in the original are: "Durch die verdünnten Bauchdecken sah man . . . die Nabelschnur liegend. Sehr schön waren die Atembewegungen des Kindes zu verfolgen, wie wenn das Kind unter einer leichten Decke läge." The fetal movements which later become the respiration movements of the child, are what he means. He refers to this in the first paragraph of the article, saying, "Während meiner Tätigkeit als Assistent und als Leiter einer Frauenklinik habe ich der äusseren Untersuchung Schwangerer und Gebärender ein ganz besonderes Interesse zugewendet; um so mehr, nachdem ich auf die eigentümlichen fötalen Bewegungen aufmerksam wurde, die sich später als kindliche Atembewegungen herausstellten, und oft stundenlang Besichtigung des Leibes und Beobachtungen der Vorgänge innerhalb desselben vornehmen musste." However, it would have been decidedly better if "Atembewegungen" had been translated "breathing movements."—Ed.]

Boston Park Shows

To the Editor:—A new educational method has been introduced with success this summer in Boston. The problem of how to reach a large number of the population who seldom read, if they read at all, has been met with considerable success by what may be called "teaching with fun."

A committee was formed composed of representatives of the Antituberculosis Society, Boston Young Men's Christian Association and Young Men's Christian Union, the Women's Municipal League, Massachusetts Child Labor Committee, Milk and Baby Hygiene Association, Massachusetts Society for the Prevention of Cruelty to Animals, and the Poster Campaign Committee of the Associated Charities. These societies, united by their common interest in civic betterment and public health, cooperated in organizing and supporting the following plan: Each society subscribed $25 and guaranteed another $25 if necessary to meet the expenses. An active executive committee was formed. The plan was to lay out a program of moving picture shows, together with phonographic music, to be given five evenings in each week for a period of six weeks or more in the pleasure parks in different parts of the city. A program committee obtained interesting pictures and selected moving picture films which were hired; the program being varied every night. The committee secured the cooperation of some of the city departments, such as the Park Commission, and from private firms obtained the use of phonograph and records, and an automobile truck to transport the whole show. It was necessary to hire an operator and a manager who obtained the necessary permissions and saw that everything was ready and in place and made all immediate arrangements.

The programs were carefully arranged to give entertainment, and every third or fourth film or picture was educational.

It was estimated that during the first ten nights 60,000 people saw these shows. The shows began at 8:15 and lasted about two hours. Most of the people remained to see the whole performance and showed great enthusiasm at certain pictures, such as the weighing of a baby in a milk station.

The possibilities of public education appear to be very great through this form of entertainment. Since ignorance of hygiene and public health matters is one of the greatest difficulties which the physician meets today, we commend this form of education to the attention of the medical profession. A. B. Emmons, 2d, M.D., Boston.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

RHEUMATISM

To the Editor:—What is the generally accepted opinion at present as to the cause of rheumatism, or what is rheumatism?

C. W. Ritter, M.D., McLean, Ill.

Answer.—The term "rheumatism" is perhaps the most loosely and carelessly used of medical words. It has been applied to such a varied array of human complaints that unless qualified by some descriptive term it may be said to have no meaning at all.

One of the most common diseases to which "rheumatism" is applied is acute articular rheumatism or "rheumatic fever." This is a fairly well-defined clinical entity, characterized by its occurrence usually in the young, its prolonged course, migratory invasion of joints, fever, sweating, etc. Even in this disease, the term "rheumatism" is expanded so as to describe some of the special features of the disease as well as the disease itself; for example, "cerebral rheumatism" and "cardiac rheumatism," by which are meant certain complications involving the brain or heart, arising from the infection, and not directly related to changes in the joints.

Multiple lesions of joints occur in certain of the infectious diseases. Gonorrheal rheumatism and scarlatinal rheumatism express the superficial similarity of these processes to the form of joint disease named. The more exact terms "gonococcal arthritis," "periostitis" or "streptococcal arthritis" should, of course, now be used.

Other forms of multiple arthritis, more recently shown to be due to localization of micro-organisms resident in some focus of infection in the body, present clinical pictures which pass by slight grades of extent and severity of symptoms from those very similar to acute rheumatic fever to the more chronic deforming arthritides which hitherto have been placed in the heterogeneous collection called arthritis deformans, or rheumatoid arthritis.

In all of these, the use of the word "rheumatism" adds nothing but confusion, and the conditions might better be described as acute or chronic arthritis, prefixing a more specific anatomic or bacteriologic title when such is possible. In extenuation of these uses of the word "rheumatism," we must in justice admit that many lesions of joints were first recognized clinically as associated with certain diseased conditions of other parts of the body (scarlatinal "rheumatism"), and that it is only by our more recently acquired knowledge of pathology and bacteriology that we are enabled to make more cleancut etiologic distinctions.

"Rheumatism" calls up in the minds of most of us various concepts associated with joint lesions, such as swelling, redness, heat, pain, disability, etc. Almost any diseased state presenting one of these features as the prominent sign or

symptom has at some time or other had the term "rheumatism" applied to it.

Pain is frequent in various types of arthritis; "rheumatism," therefore, has been made to stretch a few points further, to cover any unexplained pain in almost any part of the body, with the result that rheumatism of the heart is substituted for angina pectoris; muscular rheumatism may include anything from pleurisy to the myositis of trichiniasis, rheumatism of the bones may be due in reality to osteomyelitis, tabes dorsalis or fracture.

The latter misuses of "rheumatism" are obviously dependent, not on legitimate lack of knowledge of etiology of arthritis, but to carelessness and ignorance of clinical medicine. We need not continue further through the long list of misapplications of "rheumatism."

A more careful use of words, including "rheumatism." means a better understanding of pathology and clinical medicine, and hence a more successful therapy. This has recently been emphasized by McCrae in his address on "The Use of Words" (THE JOURNAL, July 10, 1915, p. 135).

If now we restrict the question "What is rheumatism?" to an inquiry as to the etiology of arthritis and allied disorders, we may briefly summarize our knowledge of their causes.

The recent studies of Rosenow and others tend to confirm the finding of Poynton and Paine that acute rheumatic fever is caused by a streptococcus (*Streptococcus rheumaticus*). This organism has been isolated from the blood and from affected joints when appropriate cultural methods have been employed. The arthritides associated with infectious diseases are commonly caused by invasion of joints by the associated organisms (gonococcus, streptococcus, tubercle bacillus, etc.). The large group of acute and chronic arthritides associated with focal infections are caused by the localization in joints of the bacteria occurring in the local foci (for example, streptococci and certain bacilli). These invasions of joints may be repeated, and, depending on peculiarities of joint tissue, individual resistance and trauma of use, give rise to more or less extensive anatomic changes, so that the joints finally present the picture we recognize as arthritis deformans. As already hinted, arthritis deformans has been in the past a sort of medical rag-bag in which were placed those chronic cases in which progressive deformity of joints and absence of apparent etiology were the prominent features. Many of these we now recognize to be the result of chronic infections; others, particularly in the aged, may be related to disturbances in blood supply, and a constantly dwindling minority are still (but doubtfully) classified as "metabolic" in origin.

Other types of joint lesions, such as those associated with trauma, gout or with nervous diseases (Charcot's joint of tabes), are encountered less frequently.

The painful areas in muscles (myositis), and various lesions in the skin (erythema nodosum, etc.) which are seen in connection with the arthritides are often due to bacterial embolism occurring in the same way as that of the joints.

ARTICLES ON VAGINAL DISCHARGES—RECIPROCAL RELATIONS OF OREGON

To the Editor:—1. Please give me a list of references to recent articles on vaginal discharges, especially those dealing with bacteriology and therapeutics.

2. Please state the reciprocity relations between Oregon with Illinois and Wisconsin.

J. R. NEWMAN, M.D., Madison, Wis.

ANSWER.—1. The following is a list of references to recent articles on this subject:

Liepmann, W.: Advantages of Dry Treatment of Leukorrhea, *Therap. Monatsh.*, December, 1910; abstr., THE JOURNAL, Feb. 11, 1911, p. 467.

Gottschalk, S.: Causes and Treatment of Leukorrhea, *Deutsch. med. Wchnschr.*, Feb. 6, 1913.

Koch, J. A.: Dry Treatment of Leukorrhea and Cervical Erosions, *Illinois Med. Jour.*, December, 1913.

Theilhaber, A.: Causes and Treatment of Idiopathic Uterine Hemorrhage and Leukorrhea, *Arch. f. Gynäk.*, 1914, cii, No. 1; abstr., THE JOURNAL, March 21, 1914, p. 972.

Curtis, A. H.: Etiology and Bacteriology of Leukorrhea, *Surg., Gynec. and Obst.*, March, 1914; abstr., THE JOURNAL, March 28, 1914, p. 1050.

Curtis, A. H.: Pathology and Treatment of Chronic Leukorrhea, *Surg., Gynec. and Obst.*, July, 1914; abstr., THE JOURNAL, Aug. 8, 1914, p. 511.

McMorrow, F.: Vaginal Discharge, *New York State Jour. Med.*, July, 1914; abstr., THE JOURNAL, Aug. 15, 1914, p. 608.

Field, T. S.: Pathologic Vaginal Discharges, *Florida Med. Assn. Jour.*, December, 1914.

2. Oregon does not have reciprocal relations with Illinois or Wisconsin.

Book Notices

RADIOGRAPHY, X-RAY THERAPEUTICS AND RADIUM THERAPY. By Robert Knox, M.D., M.R.C.S., L.R.C.P., Hon. Radiographer, King's College Hospital, London. Cloth. Price, 25 shillings net. Pp. 406, with 246 illustrations. London: A. & C. Black, 1915.

In this work the author has made a full review and a satisfactory statement of the subjects indicated in his title. The largest part of the work, 250 pages, is devoted to roentgenography. The whole subject is considered in great detail, from apparatus to the most difficult points in diagnostic technic. Particularly to be commended in this part of the work are the many plates illustrating the various subjects which are studied in roentgenographic diagnosis. These illustrations are so numerous and so well printed as to make a veritable atlas of roentgenography. Roentgen-ray therapy is given nearly eighty pages. It is not considered with such thoroughness as roentgenography, but the author has given a good exposition of the subject, fairly complete, temperate and honest. Particularly useful is the first chapter on the effect of the Roentgen ray on healthy and diseased tissues. Nearly sixty pages are given to radium therapy. The subject is briefly considered, but with sufficient fulness to give the reader a satisfactory grasp of the technic and of the field of usefulness of the method. The volume is a fine example of book work. A heavy glazed paper is used so that the many illustrations come out beautifully. The print is so large and clear that the reading of the book is a physical pleasure. Both author and publisher are to be complimented on the volume.

THE CARE OF THE BABY. A Manual for Mothers and Nurses, Containing Practical Directions for the Management of Infancy and Childhood in Health and in Disease. By J. P. Crozer Griffith, M.D., Professor of Pediatrics in the University of Pennsylvania. Sixth edition. Cloth. Price, $1.50 net. Pp. 463, with 101 illustrations. Philadelphia: W. B. Saunders Company, 1915.

This book is known to physicians by repeated issues since 1895. The sixth edition is fully revised and rewritten to meet the most up-to-date principles in the care of the expectant mother, infants and young children. The author anticipates the eager questions of the anxious mother, with many simple practical suggestions. In the chapter on "Exercise and training," without direct reference, the author recognizes the influence of the freudians, and cautions against ghost stories and grim as well as Grimm's fairy tales. To write a chapter on the sick baby for those not medically trained is obviously a difficult task. Much of the material in this section, because of its technical nature, might well be omitted without serious injury to the ultimate purpose of the book. The appendix contains numerous practical formulas and directions for physical therapy.

OCCUPATIONAL AFFECTIONS OF THE SKIN. A Brief Account of the Trade Processes and Agents Which Give Rise to Them. By R. Prosser White, M.D., M.R.C.S., Senior Physician, Royal Albert Edward Infirmary. Cloth. Price, $2 net. Pp. 165. New York: Paul B. Hoeber, 1915.

The author's effort in this work has been to collect in readily accessible form the knowledge which we possess of the damages caused to the skin by the irritants used in various occupations. He states in his very modest preface that the origin of the work was his own necessities; it is not often that a man meets his own needs better than the author must have done in this book. He has brought together an enormous amount of information concerning skin diseases produced by occupational causes, and neither the author nor any one else who consults it will be likely to find anything lacking which he wants to know on this subject. The work might, indeed, have well been entitled, "A Consideration of the Dermatoses Produced by External Irritants"; for it covers not only the usual occupational dermatoses, but also the dermatoses due to poisonous plants, and many of those due to parasites. There is no other book on the same subject in the English language. White's book not only is valuable to dermatologists, but also is one which may be consulted

with profit by any one concerned with the subject of occupational diseases in general. The author is to be congratulated on the production of a book which, small though it is, puts the profession under obligation to him.

Trauma und Psychose mit besonderer Berücksichtigung der Unfallbegutachtung. Von Prof. Dr. Hans Berger, Oberarzt der Psychiatrischen Universitätsklinik. Paper. Price, 6 marks. Pp. 208. Berlin: Julius Springer, 1915.

The groundwork of this study is a careful analysis of 378 cases of psychic disturbance or mental disease following, for the most part, vocational accidents. Dealing as it does with the effects of such accidents, the influence of trauma on the development of psychoses in children before the end of school time is not considered. Those cases are considered, however, which, although due to trauma, did not come under the accident compensation law and are, therefore, not influenced by claims for damages, as such cases frequently give a clearer insight into the traumatic origin of many psychoses. Epilepsy is given separate consideration, as it does not belong, strictly speaking, to the psychoses. In the first part the author discusses the general proposition of psychoses following trauma. He disagrees with Schlager and Krafft-Ebing, who hold that psychoses following head injuries have characteristics which distinguish them as traumatic, but thinks that a head injury may be, but not necessarily is, a causative factor in almost any form of mental disturbance. In the special part he takes up the various psychoses in their relation to trauma, including those following lightning and electric injuries, and carbon monoxid and other forms of poisoning. A well-selected bibliography follows each chapter, and a rather complete index closes the work. It is an interesting exposition of the question from the point of view of the mental specialist.

Miscellany

The Link of Medicine

AN ENGLISH COMMENT ON THE CHICAGO WAR UNIT

We announce in another column the arrival in England from the United States of a complete medico-military unit, known as the Chicago Unit, comprising the full medical and nursing organization for a general hospital of 1,040 beds. The establishment consists of thirty-two medical men (physicians, surgeons, specialists, a radiographer and a pathologist) and a nursing staff of seventy-five women, including the matron. The unit has been recognized by the War Office. Every one of our readers will admit with gratitude the practical sympathy of a splendid sort which is thus displayed by the United States, while we understand that similar units may be expected to arrive from America, taking their departure from other great cities, and animated with the same quick and deep desire to minimize as far as possible the horrors of war. From a private communication which we have received from one of the staff of the Chicago Unit, it is easy to guess that there will be no dearth of applicants in other American centers for what will necessarily be very hard and perhaps dangerous work. The medical men and nurses of the Chicago Unit were selected from several hundreds of applicants, every man's post could have been filled at least six or seven times, and a brisk competition prevailed among candidates for the nursing staff. The same rivalry will hold good elsewhere. And here we may add that a generous citizen of Chicago has personally offered to meet the large difference in pay between the salaries of military nurses in the British army and the salaries of nurses in the United States, where, as is well known, skilled assistance of every kind is rated at a higher figure than prevails with us in this country. We are certain that the American nurses did not need money as an incentive, but it is equally certain that some of the most experienced of them could not have undertaken to volunteer unless the pecuniary footing of their employment had been made sure.

Medicine is here proving itself a real link between nations. When we get down to the simple fact of a man in pain, in sickness, and perchance in peril of his life, the differences that exist between one country or state and another, arising out of political conventions, trading regulations, unhealed quarrels or injudicious speeches, may, we see, disappear altogether, and the action of the United States displays this medical spirit splendidly. We must not forget that the war is practically a world war, and that its results now give rise to very serious mental and material trouble to the United States, the only first-class power still remaining neutral. While the greater part of the inhabitants of the United States, though maintaining political neutrality, are known to see eye to eye with the Allies in the rights of the quarrel, there is still a section among them who hold a different view, and who make the satisfaction that comes from complete unanimity very hard to obtain. Again, the trade of America is embarrassed and her financial position is complicated in many directions by a struggle in whose origin she at any rate had no part. Because of all this the European war is a subject of painful anxiety on the part of the inhabitants of the United States, and their action in helping our armies in the field by providing hospitals in accordance with the recognized military pattern, to be placed under the control of the War Office, is one for which we must be very grateful. Nor must we forget to express appreciation of the fact that among American surgeons and physicians who have come to the help of our sick and wounded are some who have left lucrative practices and important positions on hospital staffs or in connection with universities in order to lend their aid in the hour of need. This alone would show that the medical impulse is at the bottom of their action; the citizens of the United States are not taking sides so much with the Allies against the Germans as with the sufferers against the triple alliance of disease, privation and injury.—*Lancet,* London, July 3, 1915.

Medicolegal

Power of Assistant Superintendent to Employ Physician for Injured Employee

(Ward vs. J. Samuels & Bro., Inc. (R. I.), 93 Atl. R. 649)

The Supreme Court of Rhode Island approves of a judgment in favor of the plaintiff, a physician, for the full amount of his claim for services rendered in the treatment of a boy who, while in the employ of the defendant, was severely injured on one of the elevators in its store. The defendant's assistant superintendent notified the plaintiff, and sent the boy to his office. The plaintiff continued the treatment of the boy until he was cured, making charges for his services against the defendant on his books of account. The assistant superintendent had been instructed to immediately summon and employ a physician in case of injury to an employee or a customer in the store, but authority to bind the defendant for more than first aid was denied. Still the jury was warranted in finding from the testimony, the court says; that in other cases in which the plaintiff had given more than first aid attention to injured employees, he had charged his entire services against the defendant; though subsequently, in certain cases, if not in all but one, on the request of the defendant's superintendent, he made out another bill for the services against a mutual benefit association which had for its purpose some benefit to the employees of the defendant, which latter bill had been paid; yet he had rendered the services on account of the defendant, on what he had a right to believe was its request. As a general rule, the superintendent of a mercantile corporation has not implied authority to bind it to pay for the services of a physician whom such superintendent has called to attend an employee of the corporation who has been injured in the course of his employment. But this court has also held that, in case of the employment, by an unauthorized agent of a corporation, of

a physician to attend one of its servants who has been injured in the course of his service, without restriction as to the extent of the medical attendance to be given by said physician, the corporation, after notice of such employment, by its conduct and by its silence, may be held to have ratified the acts of its agent, or to be stopped from denying the agent's authority. Here it appeared that the assistant superintendent was the agent of the defendant especially empowered to attend to employees injured in the store, and to engage physicians for their treatment to a limited extent at least. In these circumstances notice to him with reference to the business thus delegated to him, including notice regarding the conduct and the claims of physicians so employed by him, must be held to constitute notice to the defendant. According to the testimony of the plaintiff and his witnesses, although the facts were denied by the assistant superintendent, the latter knew that the plaintiff had taken the boy's case with the expectation of treating him as long as medical attention should be required; that the plaintiff was continuing such treatment, and, further, that in the circumstances the plaintiff would probably regard the treatment as rendered on account of the defendant and to be charged to it. These facts being known by its responsible agent, having the duty to act on them himself or to report them to the defendant, it became the legal duty of the defendant to apprise early the plaintiff of the true condition of affairs, to explain the extent of the authority of the assistant superintendent and the limit that it intended to place on its own liability. If, in these circumstances, the assistant superintendent and the defendant remained silent, the defendant is not to be permitted to deny its liability.

Manslaughter in an Attempt to Perform a Surgical Operation

(People vs. Hunt (Cal.), 147 Pac. R. 476)

The District Court of Appeal of California, First District, affirms a conviction of the defendant, an osteopath, of manslaughter, the Supreme Court of the state denying him a rehearing. The District Court of Appeal says that the evidence showed that the defendant was called to see a married woman who was suffering after having some days before been thrown from a motorcycle and being about five months advanced in pregnancy. He told the woman's sister that he was not the doctor for the case, but that a surgeon should be called in. An ineffective effort was made to secure the attendance of one or more regular physicians, when, on the sister's insistence, the defendant said that he would do what he could, went away and returned with a valise and, after asking for hot water and towels, was alone with the patient half an hour, after which he went in search of a physician. The latter had the woman taken to a hospital, where, with another physician, she was found suffering from internal injuries which could be reached only by abdominal incision, which being made, exposed the fact that a shockingly unskilful operation had been attempted for the manifest purpose of procuring an abortion, but in the course of which vital organs had been so severed and injured that it was not likely the patient could survive, and she in fact died within the next two days from the effects of the operation which the defendant had attempted to perform. It was error to instruct the jury as the trial court did. The right of persons to perform or attempt to perform surgical operations on others, in the honest and reasonable belief that such operations are necessary in order to save the life of those needing such ministrations, is not confined to those who are licensed by the state to perform surgical operations of the nature of that attempted in this case. Any person actuated by the reasonable belief, based on the circumstances, that such an operation is necessary to save life, and who acts with due caution and circumspection in the performance of such operation, cannot be held guilty of manslaughter. But the evidence affirmatively and indisputably showed that the defendant, in his attempted performance of the operation in question, acted with a shocking degree of unskilfulness, evincing an almost incredible ignorance of surgery and anatomy, and utterly wanting in those elements of skill, caution and circumspection which the law requires and which should invariably attend on such an operation. These being the undisputed facts and uncontradicted proofs in the case, the errors of the court in giving the instructions to which the defendant objected became immaterial; and this for the reason that in any event it would have been the duty of the jury to find the defendant guilty of manslaughter, and for the jury to have failed to perform this duty in this case would have clearly amounted to a miscarriage of justice.

Arresting or Restraining Insane Persons

(Bisgaard vs. Duvall (Ia.), 151 N. W. R. 1051)

The Supreme Court of Iowa reverses a judgment for $2,000 damages recovered by the plaintiff for alleged false arrest. The court says that the defendant had employed the plaintiff and had communication concerning him with the physician member of the board of insane commissioners of the county, who caused his arrest. The mere fact that the defendant pointed out the plaintiff to the officer who went to arrest him and expressed the opinion that he should be arrested did not make him liable if the person who made the arrest did so on his own motion or at the instigation of another. The singular thing about this record was that when the defendant offered to show what the physician said to the defendant about reporting the plaintiff's condition, as indicating his mental condition, and as to what he reported to and said to the physician just prior to the plaintiff's arrest, the trial court sustained objections to questions calling for this information, on the ground that it was hearsay, immaterial and irrelevant. Manifestly these rulings were erroneous and highly prejudicial, as they went to the very vitals of the case. The most that could be said for it was that it showed that, at the physician's request, the defendant truthfully reported conditions as he found them, and that the physician on his own motion, and without any request or indication from the defendant that he wished him to do so, had the sheriff of the county arrest the plaintiff. Under such a showing, no recovery could be had under the law. An insane person stands on a different plane from that of a criminal; and for his own good, as well as for the protection of the community, he may often be restrained by any person, especially by one having an interest in him, or by one whose safety may depend on his detention, may be taken in charge without a warrant. The restraint of an insane person or of a person claimed to be insane is not designed as a punishment for an act done. It is well established that an insane person, without any adjudication, may lawfully be restrained of his liberty for his own benefit, either because it is necessary to protect him against a tendency to suicide, or to stray away from those who would care for him, or to protect others from his assaults, or other depredations, or because proper medical treatment requires it. Of course, all such arrests or restraints must be reasonable and in good faith; and instructions to the jury as to such restraints should be carefully guarded. But it is manifestly erroneous to say, as the trial court did in this case, that an insane person cannot be taken into custody or restrained in any other way than on a warrant issued as prescribed by law.

Society Proceedings

COMING MEETINGS

Amer. Assn. of Obstetricians and Gynecologists, Pittsburgh, Sept. 14-16.
American Electro-Therapeutic Association, Atlantic City, Sept. 14-16.
American Public Health Association, Rochester, N. Y., Sept. 7-10.
American Roentgen Ray Society, Atlantic City, Sept. 22-25.
Association of Military Surgeons of the U. S., Washington, Sept. 13-15.
Indiana State Medical Association, Indianapolis, Sept. 23-24.
Kentucky State Medical Association, Louisville, Sept. 21-23.
Michigan State Medical Society, Grand Rapids, Sept. 1-2.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Missouri Valley Medical Society, Des Moines, Sept. 23-24.
New Mexico Medical Society, E. Las Vegas, Sept. 6-8.
Oregon State Medical Association, Portland, Sept. 9-10.
Pennsylvania State Medical Society, Philadelphia, Sept. 20-23.
Utah State Medical Association, Salt Lake City, Sept. 28-29.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

July, XVIII, No. 1, pp. 1-144

1 On Proportions, Development and Attachment of Tectorial Membrane. I. Hardesty, New Orleans.
2 Effects of Acute and Chronic Inanition on Relative Weights of Various Organs and Systems of Adult Albino Rats. C. M. Jackson, Minneapolis.
3 Development of Neuromuscular Spindle in Extrinsic Eye Muscles of Pig. A. C. Sutton, Baltimore.

American Journal of Diseases of Children, Chicago

August, X, No. 2, pp. 77-152

4 *Some Studies on Sugar in Infant Feeding. L. Porter, San Francisco, and C. H. Dunn, Boston.
5 Pyloric Hypertrophy in New Born Infants. F. L. Wachenheim, New York.
6 *Studies in Bronchial Glands. W. W. Howell, Boston.
7 *Acute Nonepidemic Inflammation of Sublingual Glands in Children; an Affection of Unknown Origin. H. Neuhof, New York.
8 *Protective Therapy for Mumps. A. F. Hess, New York.
9 Parapharyngeal Abscess as Distinguished from Retropharyngeal and Peritonsillar Abscesses. H. Heiman, New York.

4. **Infant Feeding.**—The urines of a group of infants in the Boston Infants' Hospital, who were suffering from what would be known in Europe as "balance disturbance," but which in the nomenclature of the Boston school is called "chronic indigestion," were tested by Porter and Dunn. Eighteen of these babies were investigated; none of them were of the premature type such as Aschenheim found to have intestines more permeable to sugar than those of older nurslings. The first tests were all made while the children were receiving what was considered a normal amount of sugar advisable for their individual peculiarities. Later, attempts were made on a number of the cases to find the limit of physiologic tolerance for the sugars. The reagent used in the determinations was the one recommended by Folin as the most sensitive to reducing bodies.

Sixteen of the eighteen patients showed reducing bodies in some tests before the treatment with picric acid. Eight showed a loss of reducing power after shaking with picric acid. Three patients showed appreciable amounts of reduction constantly in all samples of urine after the picric acid treatment. One of these had an eczema corresponding in type to the exudative diathesis of the Czerny school, but in spite of the fact that this patient received as much as 120 gm. of lactose, 15 per cent. of his intake per day while he was receiving 4 per cent. of fat at the same time, there was never enough sugar in the urine to be assured by any of the usual quantitative methods and coincidently the skin condition improved steadily under local treatment. The other two patients of this group were suffering from rather extreme malnutrition. Of the 105 samples of urine, 58 showed reducing powers to Folin's solution before shaking with picric acid. Of these 58, 27 lost their reducing power after such treatment. Of the eighteen patients, excepting the three referred to above, none showed reducing bodies every day, and in no instance did there seem to be any relation between the amounts of sugar ingested and the presence of these bodies as they were found in the urine with minimum intake, and were frequently absent following the highest ingestion.

None of the cases tested were of the severest type of malnutrition. One or two of the patients were babies having no gastro-intestinal disturbance. One presented a case of congenital obliteration of the bile ducts. The majority were babies who had presented difficult feeding cases in the outpatient clinic, and had been sent into the hospital to be straightened out. None showed any marked intolerance for any of the food elements. The majority were comparatively mild cases of fat intolerance, showing indigestion and excessive fat in the stools when the fat was increased. No case known to show a marked intolerance of carbohydrate was tried. Symptoms of intolerance developed eventually in twelve of the sixteen cases. Three patients were taken home, and one patient died, before the experiment was completed. It seems to the authors that the idea of sugar injuries and sugar intoxication has possibly kept clinicians from the use of large amounts of soluble carbohydrate in certain cases, particularly with those unable to take a quantity of fat sufficient to meet their nutritive requirements.

6. **Studies in Bronchial Glands.**—In order to determine the frequency of chronic adenitis of the bronchial glands in infancy and childhood, the reliability of the signs, and the possible pathology of the gland, Howell examined the glands, during the past year, in all cases coming under his care, no matter for what reason. Out of a total of 505 children examined in the school there were 112 with positive D'Espine at or below the third dorsal. Of the positive cases 96 were at the ages of 6, 7 and 8 years from a total of 297 cases at these ages. The remaining 16 positive cases were at the ages of 9, 10, 11 and 12 years. For some reason, positive D'Espine was very much more frequent in the younger half, 36 per cent. as against 8 per cent. The most common defects at the younger age were carious teeth, adenoids and tonsils and if such patients had chains of enlarged glands down the neck, showed positive D'Espine.

Most of the younger children were in good condition, might have a cough but showed no malnutrition or anemia. Some of them were undernourished and anemic, and beside a positive D'Espine showed interscapular dulness or a slightly dull apex. The older groups, sixteen in all, gave a different picture. Ten undernourished, anemic children had interscapular dulness and dulness at one apex; three no dulness but were anemic and undernourished; three in good condition had carious teeth and glands in the neck; no case in either group with so-called active tuberculosis, meaning with active pulmonary signs. Among the younger half there were 27 with a history of definite exposure to tuberculosis and among these were found the cases with positive D'Espine, dulness and malnutrition. In the older half, in the 13 cases with D'Espine, dulness and malnutrition there was a history of exposure in every case. The other three showed merely a positive D'Espine without dulness or malnutrition, and gave no history of exposure. Hence Howell believes that a positive D'Espine with interscapular dulness means thickening at the roots of the lungs, secondary to a process in the lungs which in infancy means tuberculosis, and, in older children, if accompanied by malnutrition and anemia, is probably tuberculosis.

7. **Nonepidemic Sublingual Inflammation.**—A group of cases of sublingual gland inflammation in otherwise healthy children is presented by Neuhof, differing in clinical picture and in etiology from the hitherto described acute nonepidemic lesions of these glands. The usual causes of acute inflammation of the sublingual glands are not in evidence. The characteristic features are: Sudden onset of sublingual and median submental swelling with mild febrile manifestations; scattered red spots in the mucous membrane over the sublingual swelling, interpreted as inflamed orifices of the sublingual ducts; rapid increase in size, often to grotesque proportions, of the moderately painful submental swelling, frequently accompanied by pronounced reddening of the overlying skin; early recession of the sublingual swelling, contrasting with persistence of the submental tumor for one to three weeks; fever slight and general condition good throughout the course; no complications, sequelae, or recurrences.

8. **Prevention of Mumps.**—Twenty children were given protective injections by Hess. They were, for the most part, children who had entered the hospital before the age of 1 year. Naturally, none were injected who had had mumps in the course of the epidemic of the winter of 1912-1913 and who had acquired immunity in this way. Whole blood was used and was injected at once intramuscularly. The donors from three groups: The first includes children, four in number, who were just recovering from mumps; the second comprises ten children who had recovered from the disease about ten days previously; there is a third group, composed

of six children who had had mumps one or two years before. It should be added that the results of the treatment in the last group cannot be considered convincing, in that three must be entirely left out of consideration, as they did not happen to come in contact with active cases of the disease, and because the other three had been in the institution but six weeks. There were no disagreeable manifestations following the injections—neither a rise of temperature nor local reaction. The epidemic was so widespread that only three of the children under treatment did not come into contact with the disease. There are therefore seventeen who must be regarded as having been not only susceptible, but also exposed to mumps. It is therefore striking to note that among these seventeen, none contracted the disease. In the wards in which the children were not protected by injection, fully one-third, or even one-half, came down with the disease.

Arizona Medical Journal, Phoenix

June, III, No. 6, pp. 4-9

10 Symptomless Appendicitis. E. B. Palmer, Phoenix.

Arkansas Medical Society Journal, Little Rock

July, XII, No. 2, pp. 35-60

11 Cancer of Uterus. J. G. Eberle, Fort Smith.
12 Organization of National and Local Forces in Campaign Against Cancer. C. E. Lakeman, New York.
13 Importance of Sanitation. E. C. Meyers, Fort Smith.
14 Public Health from Economic Standpoint. H. Thibault, Scott.

Boston Medical and Surgical Journal

July 29, CLXXIII, No. 5, pp. 151-186

15 Work and Aims of Massachusetts State Department of Health. A. J. McLaughlin, Boston.
16 *Lobar Pneumonia. F. T. Lord, Boston.
17 Infant Mortality. J. L. Morse, Boston.
18 *Control of Typhoid. M. W. Richardson, Boston.
19 *Preventable Heart Disease. R. I. Lee, Cambridge.
20 Tuberculosis. A. K. Stone, Boston.
21 Syphilis. A. Post, Boston.
22 Contagious Diseases. E. R. Kelley, Boston.
23 Spotted Fever of Rocky Mountains. G. F. Pope, Winnemucca, Nev.

16. **Lobar Pneumonia.**—The following recommendations briefly outline the measures which Lord believes may be expected to diminish the incidence of pneumonia: 1. Education of the public concerning the manner in which respiratory infections take place and the means of avoiding them. 2. Closer supervision of the acute respiratory infections, such as ordinary "colds," so-called influenza, bronchitis and sore throats and isolation of the more severe types of these simpler infections when possible. 3. Closer supervision of patients with pneumonia by: (*a*) making pneumonia a reportable disease, (*b*) isolation of patients with pneumonia. 4. Avoidance of overcrowding and the regulation of housing conditions. 5. The diminution of dust in cities. 6. Immunization of those exposed in times of epidemics.

18. **Control of Typhoid.**—The most effective slogan for the immediate future in the prevention of typhoid, in Richardson's opinion, must be "Wash your hands before handling food, whether it be for yourself or for other people's use."

19. **Preventable Heart Disease.**—Lee emphasizes that most heart disease is due to an antecedent infection. The prevention of heart disease is the prevention of infection. While it is true that certain infections like the tonsillitis-rheumatic fever symptoms-complex group and syphilis are particularly associated with cardiac disease, yet logically every infection may be regarded as a possible carrier of damage to the heart. There does not seem to be adequate appreciation of the possible sequelae of infections, particularly rheumatic fever. Continued supervision after infections is important in order that an early endocarditis may be detected and the resulting damage be minimized. At present the development of medical inspection and supervision of schoolchildren seems the next step.

California State Journal of Medicine, San Francisco

July, XIII, No. 7, pp. 251-292

24 Treatment of Infection. S. Bunnell, San Francisco.
25 Use of Lane Plates in Fractures; Report of Forty-Eight Operations. F. R. Fairchild, Woodland.
26 Gas Bacillus Infection. G. M. Barrett, San Francisco.
27 Progress of Ophthalmology in Year 1914. H. Barkan, San Francisco.
28 Suggestions of Biliary Tract Surgery for General Practitioner. F. W. Birtch, San Francisco.
29 Studies in Gastric Secretions. R. Pollock, San Diego.
30 Routine Examination of Cerebrospinal Fluid in Suspected Syphilis of Nervous System. T. G. Inman, San Francisco.
31 Autonomic Reflexes from Digestive Tract. H. B. Reynolds, Palo Alto.
32 Ring to Ring Incision for Herniorrhaphy. H. M. Sherman, San Francisco.
33 Pertussis. W. W. Bchlow, San Francisco.
34 Urobilin Test in Malaria. J. R. Snyder, Sacramento.
35 Astragalectomy for Tuberculosis of Tarsus. L. W. Ely, San Francisco.

Canadian Medical Association Journal, Toronto

July, V, No. 7, pp. 565-660

36 Relation of Anatomic Structure and of Antagonism Between Organs to Disease. H. Oertel, Montreal.
37 Parenteral Digestion and Immunity. J. G. Adami, Montreal.
38 Phenomena of Anaphylaxis and Allergy and Their Relationship to Immunity. F. B. Gurd, Montreal.
39 Prophylactic Use of Bacterial Vaccines. L. J. Rhea, Montreal.
40 Therapeutic Employment of Vaccines. J. C. Meakins, Montreal.
41 Fat Metabolism and Its Relation to Acidosis. V. H. Mottram, Montreal.
42 Case of Hemorrhagic Chickenpox. D. G. Campbell, Montreal.

Journal of Experimental Medicine, Lancaster, Pa.

August, XXII, No. 2, pp. 123-268

43 Heart Muscle in Pneumonia. L. H. Newburgh and W. T. Porter, Boston.
44 *Serum Ferments and Antiferment After Feeding. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
45 *Serum Ferments and Antiferments During Trypsin Shock. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
46 *Immunologic Relations of Rous Chicken Sarcoma. W. H. Woglom, New York.
47 Castration Exerts no Influence on Growth of Transplanted or Spontaneous Tumors in Mice and Rats. J. S. Hilario, New York.
48 *Inflammatory Reactions in Rabbits with Severe Leukopenia. W. E. Camp and E. A. Baumgartner, Minneapolis.
49 *Artificial Production in Mammalian Plasma of Substances Inhibitory to Growth of Cells. A. J. Walton, London.
50 *Lymphocyte in Natural and Induced Resistance to Transplanted Cancer. J. B. Murphy and J. J. Morton, New York.
51 *Numerical Laws Governing Rate of Excretion of Urea and Chlorids in Man. F. C. McLean, New York.
52 *Extirpation of Pineal Body. W. E. Dandy, Baltimore.
53 *Concentration of Protective Bodies in Antipneumococcus Serum. Specific Precipitate Extracts. H. T. Chickering, New York.

44. **Serum Ferments and Antiferment After Feeding.**—According to the authors, an increase in noncoagulable nitrogen of the serum can be determined after feeding, reaching a maximum in about six hours. This increase is greatest in the portal blood and is partially due to an increase in amino-acids. There is no increase in proteoses. There is usually a progressive decrease in serum protease, reaching a minimum after from five to seven hours. The portal blood may show an unaltered or an increased amount of protease. The serum antiferment shows a slight increase, but is subject to considerable fluctuation. The serum lipase (esterase) shows a slight increase, reaching a maximum after three hours. The hepatic blood usually contains the lowest concentration of lipase.

45. **Serum Ferments and Antiferment during Trypsin Shock.**—The experiments conducted by the authors have demonstrated that when active trypsin solutions are injected into the blood stream an intoxication results, manifested by marked gastro-intestinal irritation, a rise of temperature, with a primary leukopenia, followed by a leukocytosis. There is usually an immediate rise in serum protease and serum esterase, together with a lengthening of the coagulation time, which in some instances may lead to a complete inhibition of coagulation. In many ways the picture is not dissimilar to anaphylactic shock. In the latter condition there is associated, however, a marked increase in the noncoagulable nitrogen of the serum, representing protein split products, and in so far differing from the effect with trypsin. The antiferment usually shows a distinct drop in titer, with a recovery following in from four to twenty-four hours. The noncoagulable nitrogen shows no constant alteration, but is never greatly changed in amount. Inactivated preparations were in some respects followed by symptoms similar to those following the injection of the active preparation. Subcutaneous and gastric absorption was practically without effect. Intestinal absorption was followed by an increase

in serum protease without evidence of intoxication, or by typical symptoms of acute poisoning. The leukocyte curve bears no constant relation to the serum protease or lipase.

46. **Immunologic Relations of Rous Chicken Sarcoma.**—The injection of chicken embryo extracts, in amounts of from 1 to 10 c.c., Woglom says, confers no resistance against the Rous chicken sarcoma, when this is inoculated from five to one hundred days after the preliminary treatment.

48. **Inflammatory Reactions in Rabbits.**—The object of the investigation made by Camp and Baumgartner was to study the local reaction to injury in animals in which a severe leukopenia had been produced experimentally. Congestion of blood vessels and marked edema may occur in rabbits with a severe leukopenia. These two phenomena are, therefore, independent of the leukocytes. When the leukocyte count is below 1,000, croton oil and heat produce no leukocytic exudate in the tissues of the ear, and carmin produces no exudate in the muscles. In rabbits with severe leukopenia there are apparently no antibacterial bodies present. Benzol does not destroy the leukocytes in an abscess.

49. **Artificial Production of Inhibitory Substances.**—Active immunity to the growth of tissue was obtained by Walton by intraperitoneal injections of tissue emulsions. This immunity was of short duration and was followed by an anti-immunity. The immunity varied for individual tissues both in extent and in the time of onset. The immunity was not specific in so far that it was not more marked for the tissue similar to that forming the emulsion.

50. **Lymphoid Activity.**—The facts as they stand out from the experiments made by Murphy and Morton are (1) that a marked lymphocytosis arises after inoculation with cancer in both the naturally immune animals and in the animals with induced immunity; and (2) when the lymphocytosis is prevented by a previous exposure of the animal to Roentgen ray the resistant state is abolished. All the evidence points, therefore, toward the lymphocyte as a necessary factor in the immunity processes, and the finding offers a probable explanation of the results of Apolant who found that it was more difficult to render splenectomized animals immune to cancer than intact ones. The refractory state to transplanted cancer, induced by the subcutaneous injection of defibrinated blood, was accompanied in every case by a definite lymphoid crisis in the blood. The rise of lymphocytes is not present during the interval between the immunizing injection and the cancer inoculation but comes on sharply within twenty-four hours of the introduction of the cancer graft. In control animals in which the graft leads to a definite take there is no such lymphoid response, but in instances of natural immunity, the phenomenon is similiar to that seen in artificially induced immunity, though the period of rise is often delayed for several days or a week. The lymphoid crisis is not merely an accompanying factor in the immune period; it is essential to the process. This is demonstrated by the fact that destruction of the lymphocytes by Roentgen ray is accompanied by the loss of natural or induced resistance to the growth of inoculated cancer. The polymorphonuclear cells show a tendency to increase in the animals with growing tumors, but further study will be necessary before any conclusions regarding them can be drawn.

51. **Laws Governing Rate of Excretion in Man.**—The excretion of urea and of chlorids in the normal individual, McLean says, is carried out according to definite laws, capable of numerical expression. The rate of excretion of urea and of sodium chlorid is determined by the concentration in the blood, the rate of water output, and indirectly by the weight of the individual. The threshold of sodium chlorid excretion is practically constant at about 5.62 gm. of sodium chlorid per liter of plasma. Slight variations in the threshold occur in normal individuals. The rate of excretion of urea under the conditions found at any time can be measured directly in terms of the normal by an index of urea excretion.

52. **Extirpation of Pineal Body.**—The pineal was reached by Dandy from in front through the third ventricle rather than from behind. In this way the extensive bleeding consequent to liberation of the vein of Galen is obviated, and the operation can be performed almost bloodlessly. This is accomplished by dividing the splenium of the corpus callosum in the midline for a distance of about 2 cm. from its posterior terminus. This exposes the transparent roof of the third ventricle which is distended by the contained cerebrospinal fluid. A large anemic area is visible in the midline of the roof of the ventricle, between the two small veins of Galen. This is perforated and the opening enlarged backward to the origin of the vena Galena magna by releasing the blades of the forceps. The entire third ventricle is thus brought in full view and the pineal body is readily seen under the origin of this vein, in the median quadrigeminal groove. The pineal body can easily be grasped in the jaws of the cupped biting forceps and completely removed. Following the removal of the pineal Dandy observed no sexual precocity or indolence, no adiposity or emaciation, no somatic or mental precocity or retardation. His experiments seem to have yielded nothing to sustain the view that the pineal gland has an active endocrine function of importance either in the very young or adult dogs. The pineal is apparently not essential to life and seems to have no influence on the animal's well being.

53. **Protective Bodies in Antipneumococcus Serum.**—The protective substances contained in specific precipitates from antipneumococcus serum Chickering found can be extracted by suitable chemical and physical agents, dilute sodium carbonate at 42 C. being especially advantageous as an extractive agent. The resulting water-clear extracts, when made up to the original volume of the serum used for precipitation, protect animals almost as well as does the whole serum. The bacterial extracts used in precipitating the protective substances from the serum act specifically; that is, a bacterial extract of pneumococcus of Type I removes the protective substances from Type I immune serum only. In a polyvalent serum of Type I and Type II, the protective substance of each type may be removed independently of each other by the successive addition of the homologous antigens. Extracts of specific serum precipitates contain only one-fiftieth to one-sixtieth of the protein in the original serum, and about one-half the protein of the whole precipitate. Extracts contain not only protective substances but agglutinins and precipitins. Extracts and whole precipitates not only confer passive immunity but stimulate the production of active immunity to pneumococcus infection in rabbits and mice.

Journal of Outdoor Life, New York

July, XII, No. 7, pp. 212-242

54 Decline of Nightcaps. C. S. Brooks, Cleveland.
55 Infectiousness of Tuberculosis. H. M. Biggs, Albany.
56 Useful Order of "I. W. W." G. T. Palmer, Springfield, Ill.
57 Public Health Values—Few Modern Sanitary Fallacies. D. B. Armstrong, New York.
58 Cooperation of Public Health Nurse in Detection and Control of Tuberculosis. E. L. Foley, Chicago.
59 Standards of Diagnosis and Medical Care in Tuberculosis Clinics. W. J. Denno, New York

Kansas Medical Society Journal, Topeka

July, XV, No. 7, pp. 203-234

60 Cancer Question. C. C. Nesselrode, Kansas City.
61 Recurrence of Cancer After Operation. J. C. McClintock, Topeka.
62 Prevalence of Cancer. S. G. Dixon, Philadelphia.
63 Present Status of Cancer Research. L. Loeb, Philadelphia.
64 Early Diagnosis of Cancer. W. L. Rodman, Philadelphia.

Lancet-Clinic, Cincinnati

July 17, CXIV, No. 3, pp. 53-72

65 Use of Quinin and Urea Hydrochlorid in Sciatica and Allied Conditions; Report of Cases. H. A. Cables, East St. Louis, Ill.
66 Report of Roentgen-Ray Treatment of Menorrhagia and Uterine Fibroids. S. Lange, Cincinnati.
67 Fraud and Misrepresentation. A. Seaton, Indianapolis.
68 Physical Manifestations of Dementia Praecox. B. Holmes, Chicago.

July 24, No. 4, pp. 73-92

69 Angina Pectoris. A. F. Beifeld, Chicago.
70 Multiple Benign Cystic Epithelioma; Report of Four Cases. J. W. Miller, Cincinnati.
71 Case of Ectopic Ureter. E. Ries, Chicago.
72 Efficient Health Administration. H. B. Wood, Topeka, Kan.

Medical Record, New York

July 31, LXXXVIII, No. 5, pp. 173-214

73 Water in Prevention and Cure of Tuberculosis. S. A. Knopf, New York.
74 Study in Blood Counts in Relation to Vaccine Therapy. J. Head, Philadelphia.
75 Provision for War Cripples in Germany. D. C. McMurtrie, New York.
76 Some Suggestions Concerning Treatment of Gastro-Intestinal Symptoms of Pellagra. G. M. Niles, Atlanta, Ga.
77 Delirium. E. L. Hunt, New York.
78 Fulguration in Gonorrheal Folliculitis. G. K. Swinburne, New York.
79 Fetid Bronchitis. B. Robinson, New York.

Missouri State Medical Association Journal, St. Louis

July, XII, No. 7, pp. 299-352

80 Economics of Practice of Medicine. H. C. Shuttee, West Plains.
81 Truth and Tuberculosis. E. S. Bullock, Silver City, N. W.
82 Treatment of Tabes Dorsalis. A. L. Skoog, Kansas City.
83 Chromaffin System and Glands of Internal Secretion. J. Sundwall, Lawrence.
84 Factors in Removal of Tonsils. J. S. Weaver, Kansas City.
85 Accurate and Rapid Estimation of Sugar in Urine. E. B. Knerr, Kansas City.

Modern Hospital, St. Louis

July, V, No. 1, pp. 1-70

86 Mount St. Mary's Hospital at Niagara Falls, N. Y. M. Cherubim, New York.
87 Simplification and Standardization of Surgical Technic in Hospitals. W. L. Babcock, Detroit.
88 Grenfell's Wonderful Works in Labrador. S. E. Demarest.
89 Advantages of Cooperative Purchase of Supplies for State Hospitals Through Central Committee. A. P. Herring, Baltimore.
90 Old Building Transformed into Venereal Hospital. H. Wright, Cleveland.
91 Plea for Simplified Laboratory Report for Hospitals. H. T. Child, Kankakee, Ill.
92 Meat Extracts, Proprietary Preparations and Beef, Wine and Iron. J. P. Street, New Haven, Conn.
93 Officer of Day—System of Hospital Management. J. R. Hicks, New York.
94 Little Things That Are Big Things in Hospital Management. R. J. Wilson, New York.
95 Care of Cases of Mental Disease in General Hospitals. H. M. Hurd, Baltimore.
96 Staff Organization. R. E. Castelaw, Kansas City, Mo.
97 Training School. J. L. Baer, Chicago.

New York Medical Journal

July 31, CII, No. 5, pp. 221-272

98 Total Transverse Lesions of Spinal Cord. J. H. Lloyd, Philadelphia.
99 Renal Tuberculosis with Occlusion of Ureter. E. F. Kilbane, New York.
100 Visceral Stasis, Mechanical Obstructions and Their Effects Relievable by Rational Measures. J. M. Taylor, Philadelphia.
101 Acanthosis Nigricans; Report of Case. W. Frick, Kansas City, Mo.
102 Cancer of Uterus. H. Schmitz, Chicago.
103 General Faradization (Bergonié) in Treatment of Obesity and Other Pathologic Conditions. H. F. Wolf, New York.
104 Psychotherapy. O. Lerch, New Orleans.
105 Hernia in Chronic Insane. J. A. Jackson, Philadelphia.
106 Sex Discussion. L. A. Stone, Memphis, Tenn.
107 What Shall We Do with Sing Sing Prison? C. D. Bles, New York.

Northwest Medicine, Seattle, Wash.

July, VII, No. 7, pp. 205-238

108 Recent Advances in Our Knowledge of Carcinoma. J. E. Else, Portland, Ore.
109 Early Diagnosis of Cancer. C. J. Brobeck, Tacoma.
110 Some Clinical Aspects of Cancer of Stomach. G. F. Koehler, Portland, Ore.
111 Treatment of Cancer. W. B. McCreery, Tacoma.
112 Treatment of Inoperable Cancer. S. P. Beebe, New York.
113 Present Status of Serum, Bacterin and Vaccine Therapy. J. L. McDonald, Boise, Idaho.
114 Surgery of Hand. J. T. Mason, Seattle.
115 Nasal Septum. J. B. Roth, Portland, Ore.
116 Therapeutic Value of Cortical Substance of Kidney; Report of Case. L. Ricen, Portland, Ore.
117 Some Points of Technic in Abdominal Wound Closure. J. A. Pettit, Portland, Ore.

Ohio State Medical Journal, Columbus

July, XI, No. 7, pp. 421-480

118 Cancer: What We Know About It and What We Can Do for It. F. C. Wood, New York.
119 Cysts of Prostate; Report of Case. W. E. Lower, Cleveland.
120 Diagnosis of Cancer of Rectum and Sigmoid Flexure. W. Teachnor, Columbus.
121 Surgical Shibboleths. J. Ransohoff, Cincinnati.

Philippine Journal of Science, Manila

January, X, No. 1, pp. 1-97

122 *Cholera Carriers in Relation to Cholera Control. E. L. Munson, U. S. Army.
123 *Cholera Carriers. O. Schöbl, Manila.
124 Development of Eggs of Ascaris Lumbricoides. L. D. Wharton, Manila.
125 *Occurrence of Bacillus Coli Communis in Peripheral Blood of Man During Life. E. H. Ruediger, Manila.
126 *Preparation of Tetanus Antitoxin. E. H. Ruediger, Manila.
127 Cesarean Section in Philippine Islands. F. Calderon, Manila.
128 Case of Obstructed Labor and Cesarean Section. R. B. Woodward, U. S. Navy.
129 Adenocarcinoma of Cecum, Complicated by Intussusception. R. M. Thornburgh, Manila.
130 *Two Compounds of Emetin Which May be of Service in Treatment of Entamebiasis. A. G. DuMez, Manila.
131 Treatment of Infantile Beriberi with Extract of Tiqui-Tiqui (Rice Polishings). J. Albert, Manila.

122. **Cholera Carriers in Relation to Cholera Control.**—It is emphasized by Munson that in effectively combating a cholera infection the use of laboratory facilities in the making of bacteriologic diagnosis on a large scale is absolutely essential. The recent outbreak in Manila was spread chiefly by personal contact. Cases were isolated so promptly as to do little harm. Lack of the use of toilet paper, certain habits in the use of the toilet, infected fingers and eating with the hands food taken from a common dish were the channels through which the infection chiefly passed from the carrier to another person. Public water supplies and articles of food could be eliminated as channels of infection and flies played an entirely insignificant part in its spread. One of the most apparent lessons learned relates to the possible period of latent infection in cholera and its bearing on the period of incubation and quarantine heretofore accepted for health work. The five-day period usually accepted for incubation and quarantine ordinarily will suffice for the control of infection in the majority of cases; but such a period does not hold good in a very considerable number of instances, which sheds much light on cholera situations not otherwise readily explainable. For example, one carrier, who died of cholera, might have traveled halfway around the world, scattering his infection broadcast during his eighteen-day period as a carrier, and died of true cholera in a place many thousands of miles from any other source of infection. The prompt eradication of a general cholera infection, therefore, includes the detection and isolation of carriers.

123. **Cholera Carriers.**—Of thirty-nine gallbladers examined by Schöbl for the presence of the cholera vibrio, three showed macroscopic lesions. In two instances hydrops cystitis fellea was found; that is, distended gallbladder containing mucous bile of light-amber color and flaky sediment. When stirred, the bile assumed a milky appearance. One gallbladder was rather small; the wall was evidently thickened, and the contents were of a rather dark color. On microscopic examination the epithelium was found desquamated, the blood vessels distended, and the mucous membrane showed a high degree of round-cell infiltration. Blood corpuscles were found free in the lumen of the gallbladder. The cystic duct showed like changes, but the epithelium was not desquamated altogether. Pure cultures of the cholera vibrio were obtained from all three specimens. The cholera vibrio was found seventeen times in the thirty-nine gallbladders.

125. **Bacillus Coli Communis in Blood of Man.**—During routine bacteriologic examinations of blood at the Philippine General Hospital, four cases of blood infection by *Bacillus coli communis* came under Ruediger's observation. Two of the cases proved fatal and two ended in recovery.

126. **Preparation of Tetanus Antitoxin.**—Ruediger states that a suitable strain of the bacillus of tetanus will usually produce potent toxin when grown in nearly neutral glucose broth under hydrogen. The acidity of the broth will rise to more than 2 per cent. normal acid, and it should be neutralized with sodium hydrate before it is injected into the horse. Potent tetanus toxin was obtained by the method described by Hall. By this method the acid is continuously neutralized by the magnesium carbonate present. Horses

differ greatly in the power of producing tetanus antitoxin. Of eight horses reported by Ruediger one produced 150 units per c.c. of serum, two produced 300 units per c.c. of serum, one produced 350 units per c.c., and in the serum of one the antitoxin rose to 400 units per c.c. Three horses produced 500 or more units of tetanus antitoxin per c.c. of serum. The antitoxin curve reached its highest mark in from six to nine months after the beginning of immunization.

130. **Emetin in Treatment of Endamebiasis.**—Emetin mercuric iodid was prepared by DuMez by precipitating an acidified aqueous solution of emetin hydrochlorid with Mayer's reagent, collecting and washing the precipitate with water, and drying in the air at a temperature below 50 C. The samples used for analysis were dried over sulphuric acid. The composition of the resulting precipitate was found to vary with the concentration of the solution. The procedure in the preparation of emetin bismuthous iodid was similiar in all respects to that followed in the preparation of emetin mercuric iodid, except that Dragendorff's instead of Mayer's reagent was employed in forming the precipitate. Here, also, the composition of the precipitate was found to vary with the concentration of the solution. DuMez believes that emetin mercuric iodid should be decomposed in the stomach to a slight extent only. On coming in contact with the alkaline secretions of the intestines, the compound will likely be decomposed with the formation of emetin; finally, as the free base and a salt of mercury which will eventually be converted in part into the albuminate, in which condition it enters the circulation. Therefore one should expect the combined action of both emetin and mercury compound on the entamebas. Insoluble salts of bismuth are converted into bismuth sulphid after passing the pylorus. In all probability the reaction is slow and takes place as the compound is being spread out over the walls of the intestine. Emetin will probably be liberated slowly at the seat of the trouble. The author suggests that the comparatively poor results obtained from the administration of emetin by mouth are probably due to its too rapid absorption and elimination. These two compounds can be given in doses representing 0.03 gm. of emetin hydroiodid without causing vomiting and without any apparent nausea; but vomiting does occur when either of them is given in large doses.

Providence Medical Journal

May, XVI, No. 3, pp. 145-186

132 Indications and Contraindications for Abdominal Cesarean Section. R. McPherson, New York.
133 Colloidal Gold Reaction. F. J. Farnell, Providence.
134 Erythema Multiforme. H. W. Kimball, Providence.

July, No. 4, pp. 187-236

135 Some Conditions Affecting Practice of Medicine in City of Providence. S. A. Welch, Providence.
136 Acute Intussusception in Infants. F. V. Hussey, Providence.
137 Prolongation of Human Life. H. S. Bernstein, Albany, N. Y.
138 Old Medical School in Brown University. F. P. Gorham, Providence.

Public Health Journal, Toronto

July, VI, No. 7, pp. 309-362

139 Administration of Toronto Department of Public Health. H. L. Brittain, Toronto.
140 Death Rate of British Columbia. W. G. Home, Edinburgh.
141 Tuberculosis Problems from Public Health Standpoint. D. A. Craig, London, Ontario.
142 Early Diagnosis of Tuberculosis. D. Townsend, River Glade, New Brunswick.

Wisconsin Medical Journal, Milwaukee

July, XIV, No. 2, pp. 35-76

143 Contraindications to Use of Knife in Treatment of Skin Cancers of Face. A. Drexel, Milwaukee.
144 Epithelioma of Eyelids; Six Cases Treated by Roentgen Rays S. G. Higgins, Milwaukee.
145 Colles' Fracture. O. Fiedler, Sheboygan.
146 Fractures in Region of Elbow. W. E. Fairfield, Green Bay.
147 Thyroid in Pregnancy. K. W. Doege, Marshfield.
148 Analysis of Obesity with Outline of Treatment. L. E. Axtell, Marinette.
149 *Effect of Heat and Cold on Larvae of Trichinella Spiralis. H. N. Winn, Madison.

149. **Effect of Heat and Cold on Larvae of Trichinella Spiralis.**—The results of Winn's experiments suggest the possibility that refrigeration may be substituted for microscopic inspection, with a much smaller cost and a higher degree of efficiency, to all pork products prepared under government supervision and in the larger packing houses. Contrary to the accepted view, cold of about 17.8 C. over a number of days effectually destroys the life of the encysted larvae. In case of any pork products prepared at home, or which might for any reason be suspicious, heating the meat to a temperature of 55 C. (131 F.) for a period of fifteen minutes for each pound, to insure that the meat would reach that temperature all through, would effectually safeguard the consumer from any danger of trichinosis.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, London

June, IX, No. 2, pp. 213-348

1 *Gangosa in New Guinea and Its Etiology. A. Breinl.
2 Theileria Tachyglossi (n. sp.) Blood Parasite of Tachyglossus Aculeatus. H. Priestley.
3 Investigation into Causes of Prevalence of Enteric Fever in Kingston, Jamaica; with Special Reference to Question of Unrecognized Carriers. H. H. Scott.
4 Occurrence and Prevalence of Diseases in British New Guinea. A. Breinl.
5 Insect Flagellates and Evolution of Disease. H. B. Fantham.

1. **Gangosa in New Guinea and Its Etiology.**—Case histories describing a few typical cases out of many examined are cited by Breinl to prove that gangosa, or rhinopharyngitis mutilans is a definite morbid entity, and can be differentiated from other diseases causing similar lesions, such as syphilis, lupus and leprosy. It is a very chronic but very rarely fatal complaint. A great number of the patients recover without specific treatment, mostly however, after the morbid process has brought about extensive destruction of the face. As the etiology of the disease is unknown, material was collected for microscopic examination. Special attention was paid to the early lesions with a view of finding a possible parasite in the edema fluid, obtained by pricking the skin over the lesion with a needle in the same way as serum would be obtained from a leprous nodule. The specimens were stained with Giemsa's stain. In the edema fluid of five early and two later cases, in addition to a small number of red and white corpuscles, small bodies were found resembling yeast cells. The majority of them occurred free, only a small number was contained in leukocytes. From their morphologic appearance there is no doubt in Breinl's mind that the cells are to be considered as parasites belonging to the genus Cryptococcus of the family Saccharomycetes. The characteristic features of Cryptococcus is the reproduction by budding only and the absence of endospores and ascospores. Breinl gives to this organism the name *C. mutilans*.

British Journal of Tuberculosis, London

July, IX, No. 3, pp. 111-170

6 *Housing and Tuberculosis. A. M. Williamson.
7 Reflections on Tuberculosis and Tuberculin. E. S. Bullock.

6. **Housing and Tuberculosis.**—Williamson summarizes his paper as follows: Pulmonary tuberculosis is a disease which in 70 or 80 per cent. of cases occurs in houses of three rooms and under; the number of cases is larger in two-roomed houses than in three; larger in houses of one room than in two; and the number of cases of tuberculous disease increases almost in direct proportion to the number of small houses in any district or ward of a city. Since the year 1882 the number of deaths from tuberculosis has shown a rapid and steady decrease; and a like statement applies to the general death rate and the death rate from other forms of infectious disease. This decrease has been taking place quite apart from, and irrespective of, any special effort to deal with the condition other than the preventive measures which have been carried out in the ordinary march of public-health administration. The establishment of sanatoria and dispensaries, while useful aids in carrying on a general crusade against this form of disease, are not of themselves likely to be attended by markedly beneficial results in the absence of other definite preventive measures. Preventive measures

center largely in the housing question, and irrespective of cost, there is an urgent need, in the light of our present-day knowledge, of dealing more effectively than has heretofore been the case with congested areas, dense foci of population and insanitary dwellings.

British Medical Journal, London

July 17, II, No. 2846, pp. 81-124

8 British Health Resorts in Peace and War. R. F. Fox.
9 Diagnosis, Prognosis and Treatment of Nerve and Muscle Injuries Resulting from Gunshot Wounds. F. Hernaman-Johnson.
10 Suggestions for Those Interested in War Depots at Home. J. Hossack.
11 Latent Dysentery and Intestinal Parasitism in Sarawak, Borneo. W. L. Christie.
12 Elastic Tissue Enigma. W. Ewart.
13 Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. D. Bruce.

Glasgow Medical Journal

July, LXXXIV, No. 1, pp. 1-80

14 Simple Peptic Ulcer and Malignant Disease of Stomach. W. MacLennan.
15 Vincent's Angina. J. Harper.

Journal of Royal Naval Medical Service, London

July, I, No. 3, pp. 227-372

16 Report on Wounded in Action between "Sydney" and "Emden." L. Darby.
17 Syphilis in Navy. J. S. Dudding.
18 Bacteriologic Examination of Contacts with Cerebrospinal Fever and Their Treatment. H. C. Whiteside.
19 Epidemic Cerebrospinal Meningitis; Report on Thirty-One Cases. B. S. Robson and A. L. P. Gould.
20 Simple and Safe Somnoform or Ethylchlorid Inhaler for Minor Operations. R. W. Hornabrook.
21 Paint Poisoning. A. R. Bankart.
22 Epidemic of Influenza in Island of St. Kilda. R. W. B. Hall.

Lancet, London

July 17, II, No. 4794, pp. 109-160

23 Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. D. Bruce.
24 *Breast Feeding; Some Functional Requirements of Gland and of Infant. H. K. Waller.
25 Binet-Simon Method and Intelligence of Adult Prisoners. M. H. Smith.
26 What Tests in Childhood are Best Calculated to Throw Light on Capacities of Mental Defectives for Future Work? W. A. Potts.
27 Three Cases of Complete Rupture of Uterus During Labor Treated by Abdominal Hysterectomy. J. F. R. Seheult.
28 Sigmoid Tortuosity of Internal Carotid Artery and Its Relation to Tonsil and Pharynx. A. G. T. Fisher.

24. **Breast Feeding.**—Waller deprecates the failure to pay enough regard to the periodic character of the breast secretion. For its establishment all that seems necessary is the regular stimulation of suckling with a sufficient interval between the infant's meals. If this be observed the woman will become aware of a sensation which is variously described as a rushing, tearing, or painful stabbing in the breasts, known as the "draught" and experienced as soon as the child's mouth is applied to the nipple. In some the breasts can be observed to swell and become tense when a few moments earlier they were flaccid and apparently empty. There is in all probability a contractile muscular element in the occurrence, but there is also an undoubted secretory activity, for milk runs spontaneously from the nipple. In cases in which the periodicity is firmly established the engorgement may even occur at the appointed time without the breast being stimulated by suckling; the flow lasts for a few minutes and then ceases. The experience of the "draught" early in lactation is undoubtedly helped by the strong suction of a healthy child. But it can quite well be demonstrated when the baby is weakly and premature, provided the proper requirements, to be mentioned later, are borne in mind. Its maintenance throughout the course of lactation is perhaps the surest sign that breast feeding has been normally carried out, and this is reflected in the almost invariable progress of the infants so fed. Conversely, in all cases in which a child has taken the breast for a few weeks and the "draught" is only felt occasionally or not at all, suspicion should be roused that the regimen is not satisfactory. Until this is regulated to meet the physiologic requirements of the gland, Waller believes the opinion should be withheld that successful breast feeding is not feasible.

He also believes that the custom of urging women to feed their infants at two-hourly intervals nine or ten times during the twenty-four hours is responsible for weaning in an enormous number of cases. A month is about the limit of time for which a woman can endure the two-hourly imposition, and when about then the signs of ailing are obvious, the breast milk is blamed rather than the rule which has been responsible for the trouble. In seemingly contradictory cases in which the child is thriving, a careful inquiry will usually discover that, though the rule was carried out at first, the sheer impossibility of obedience has led to its fracture, and a far longer period has been allowed to elapse between the feedings. In the case of the obedient it will be found that the "draught" which was felt regularly during the first few weeks became less and less noticed and the reflex overflow from one breast which normally occurs when the other is taken by the child has ceased. The infant is restless and dissatisfied, cries at the breast, and even refuses to suckle, the stools are infrequent, and the weight is stationary.

Practitioner, London

July, XCV, No. 1, pp. 1-144

29 Impotence in Men. W. Harris.
30 Sterility in Women — Survey. H. Macnaughton-Jones.
31 Medicolegal Aspects of Impotency in Sexes. J. Glaister.
32 Correct Life History of Fistula-in-Ano. I. Back.
33 Inflammatory Disease of Maxillary Antrum — Its Diagnosis and Treatment. G. S. Hett and N. S. Finzi.
34 Case of Paralysis of Diaphragm, Probably Post Diphtheritic. W. Downie.
35 Rodent Ulcer, Its Nature and Some Methods of Treatment. E. G. Little.
36 Orthopedic Surgery. A. H. Tubby.
37 Two Cases of Phlegmonous Duodenitis. K. Black.
38 Recent Work in Tropical Diseases. R. T. Hewlett.
39 Poisoning by Datura and Hyoscyamus. A. Ismael.
40 Treatment of Tropical Ulcers. S. Vassallo.

Bulletin de l'Académie de Médecine, Paris

July 28, 1914, LXXII, No. 29, pp. 63-102

41 Transmission of Tuberculosis Occurs Almost Exclusively by Sputum Dust. P. Chaussé and Letulle.
42 Urology and Mineral Metabolism with Cancer. A. Robin.
43 Antityphoid Vaccination in the Pregnant. G. Valmale and Vayssière.
44 Cesarean Section; Twenty-Nine Cases. G. Lepage.
45 "Physiologic Titration" of Drugs of Vegetable Origin is Not Always Reliable. A. Richaud.
46 Invasion of Lymphatics by Leishman Parasites. E. Jeanselme and Langeron.
47 Active Hyperemia in Treatment of Chronic Joint Disease. Abbé Gendron and P. Bouchet.

June 29, LXXIII, No. 26, pp. 743-797

48 *Heteroplastic Grafts to Close Gaps in Skull. (Réparation des pertes osseuses craniennes dans les plaies de guerre. Greffes hétéroplastiques.) P. Reynier.
49 *Efficacy of Antimeningococcus Serum Demonstrated Anew in Prevailing Epidemic of Cerebrospinal Meningitis. A. Netter.
50 The Wine Ration of the French Soldiers. E. Vidal.
51 *Typhoid in the Vaccinated. H. Bourges.

48. **Heteroplastic Operations on the Skull.**—Reynier has found a few cases on record in which a large gap in the skull was closed by a plate of bone taken from a dog or other animal, but in none of them is the ultimate outcome known although the results were eminently satisfactory at first. He reports a case from his own service in which he repaired an extensive breach in the skull from a shell wound by implanting a piece of bone taken from the scapula of a rabbit, with its periosteum. It was cut to fit the gap and the periosteum of the patch was sutured to that of the skull around. The outcome to date has been perfect.

49. **Serotherapy of Meningitis.**—Netter has applied antimeningococcus serotherapy in 226 cases of cerebrospinal meningitis since 1907. The mortality for which the meningococcus was responsible was only 12.5 per cent.; before the introduction of the serum it was 48.5 per cent. in the sporadic cases and 83.3 per cent. in the epidemic form. The efficacy of the serum, he says, is shown not only in the reduction of the mortality but in the attenuation of the symptoms, the rapid recovery and the rarity of complications.

51. **Typhoid Fever in the Vaccinated.**—Bourges relates that among 550 typhoid patients at Brest in the last two years, fifty-three had been vaccinated against typhoid. The typhoid was mild or medium in all but five, but these men had it in a grave and fatal form. Three of them had been inoculated four times, one three times, and one once only. Excluding this latter case as inadequately vaccinated, and excluding two others in which superposed infection was chiefly responsible for the fatality, this leaves only two deaths from the typhoid. The mortality among the nonvaccinated reached 15.2 per cent.

Presse Médicale, Paris

July 8, XXIII, No. 31, pp. 245-252

52 Syndromes from Wounds of Peripheral Nerves. II. (Les lésions des gros troncs nerveux des membres par projectiles de guerre. Les différents syndromes cliniques et les indications opératoires.) Dejerine and J. Mouzon.

Archiv für Verdauungs-Krankheiten, Berlin

June, XXI, No. 3, pp. 179-253

53 The Sphincter-Like Mechanism in Upper Esophagus. (Die Verschlussvorrichtung am Beginn der Speiseröhre. J. Schreiber.
54 *Technic for Reliable Findings as to Acidity in Stomach Content. (Soll die quantitative Aziditätsbestimmung im filtrierten oder im unfiltrierten Mageninhalt vorgenommen werden?) F. Seidl.
55 Syphilis of the Stomach. M. Einhorn.
56 Certain Physiologic and Psychologic Factors to be Observed in Esophagoscopy and Study of the Stomach. W. Sternberg.

54. **Technic for Tests of Gastric Acidity.**—Seidl writes from the outpatient department for stomach and bowel disease at the Vienna general hospital, to describe the results of his study of gastric acidity. It has demonstrated that the nonfiltered stomach content after a test breakfast shows a higher acid percentage than the filtrate. The gastric mucus is able to bind considerable alkali, and if there is much mucus the filtrate had better be taken to determine the acidity. Under other conditions, he advises to determine the acidity in the unfiltered, thoroughly stirred up stomach content. If there is a large amount of fluid this can be decanted after settling, and the acidity be determined in the well-stirred-up sediment.

Berliner klinische Wochenschrift

June 21, LII, No. 25, pp. 653-676

57 *Treatment of Lupus and Secondary Tuberculous Skin Lesions. P. G. Unna.
58 *Epidemiology of Typhus. (Fleckfieber.) Jürgens.
59 *Raising Prematurely Born Infants in the Home. (Aufzucht von Frühgeburten in der offenen Säuglingspflege.) J. Cassel.
60 Repeated Occurrence of Infectious Parapneumonic Streptococcus Empyema. Tykociner.
61 Is Eclampsia Result of Toxic Action of Decomposing Albumin? R. Schröder.

June 28, No. 26, pp. 677-704

62 *Serotherapy and Vaccine Therapy of Typhoid and Immunity. F. Meyer and E. F. Altstaedt.
63 Agglutination in Those Vaccinated Against Typhoid. (Verwertbarkeit der Widal'schen Reaktion bei Schutzgeimpften.) L. Dünner.
64 *Serum Anaphylaxis and Its Prevention. W. Koch.
65 Mobilization of Stiff Fingers and Joints in the Wounded. A. Laqueur and F. Roesky.
66 *Magnesium Glycerophosphate More Effectual and Less Toxic Than the Sulphate in Treatment of Tetanus. G. Zuelzer.

57. **Treatment of Lupus.**—Unna remarks that recurring nodules after a supposed cure, or small lupus lesions that have been treated on a mistaken diagnosis, may not require the modern expensive and tedious courses of physical measures. Any physician is liable to be called on to treat such cases, and the simple remedies, salicylic acid, zinc chlorid and creosote, are accessible to all and are the best. The "green lupus salve" has proved its usefulness for nineteen years. The formula for it is as follows:

Salicylic acid
Antimony chlorid solution.....āā 2 parts
Extract of cannabis
Creosote .....āā 4 parts
Lanolin .....8 parts

(The antimony chlorid solution is a 33.3 per cent. solution of antimony trichlorid in 12,5 per cent. hydrochloric acid, called in Germany Liq. stibii chlorati.) The above formula can be modified at need to the following:

Salicylic acid
Zinc chlorid .....āā 2 parts
Opium
Creosote .....āā 4 parts
Lanolin ..... 8 parts

The larger lupus patches are kept covered with this until they heal over. A thin sheet of rubber tissue or adhesive plaster is applied over it and the dressing does not have to be changed oftener than once or twice a week.

He adds that the most promptly acting and the best of all methods of treating lupus is by cauterizing the patches, painting them all once or twice with a mixture of equal parts of lactic acid and the antimony chlorid solution. As soon as the skin shows signs of inflammation—generally the next day—this is healed with a zinc sulphur paste. (The formula for the latter was given May 1, 1915, p. 1533.) The procedure is then repeated until all traces of the lupus have disappeared. When these drugs cannot be procured, a good substitute is made as follows. It has the advantage of the pain-reducing remedy, creosote, 3 parts of which are used to 1 part each of salicylic acid and mercuric chlorid in 20 parts collodion. This caustic collodion is applied to a patch not quite so large as a silver dollar. When oozing occurs, the zinc-sulphur paste is applied, and while this part of the patch is healing, a fresh part is painted with the collodion.

The curative principle in all the above is the cooperative action of a caustic and a macerating substance to cure the primary lupus affection. The tuberculous affections which develop secondary to tuberculous disease in glands or joints are mostly benign cold abscesses. Evacuation does not ensure against recurrence and the region is left still pathologic. Unna lauds the favorable influence in such cases of a salve soap rubbed thoroughly into the skin of the region. His formula is:

Potassium hydroxid ..... 84 parts
Cod liver oil.....500 parts
Distilled water .....475 parts
Alcohol q. s. (about 20 parts)

The proportion of cod liver oil is so large that not all is saponified, and thus it protects the skin against irritation. The patient rubs the salve soap on his hand, then dips the hand in water and rubs the soap into the skin as it foams. After repeating this four or five times all the soap is rubbed into the skin. The effect is soon apparent, and often renders operative measures unnecessary. He declares that all tuberculous affections are very favorably influenced by the above cod liver oil potassium soap, even tuberculous periostitis and tendon sheath processes, bone processes close to the skin, and all forms of tuberculous glands and skin lesions. The odor of cod liver oil is slight and easily masked with a little lavender or citronella oil added to the finished soap. It is a good plan to give cod liver oil internally at the same time.

58. **Typhus.**—Jürgens comments on the remarkably sudden outbreak of typhus in the concentration camp in his charge. In the course of a few days a number of cases developed suggesting influenza or typhoid, but the trouble proved to be typhus and hundreds came down with it. The German physicians and orderlies were withdrawn but a number were already infected and some died. The proportion of persons affected was far above that with any other epidemics that have been encountered in Germany, and the disease attacked those who had not been in direct contact with the sick or even close to them. The epidemic kept up as long as there was any one left to take it. No one seemed immune, and the disease did not vary in its severity during the course of the epidemic. The rôle of lice in the transmission of the disease was abundantly proved again and again. Not one of the physicians or orderlies in the vermin-free typhus ward contracted the disease during their four months' service there. But when part of the same personnel entered the vermin-infested wards, to superintend the disinfection, two came down at once with the disease. Jürgens consequently devoted his energies to exterminating lice, and describes, with illus-

trations, the arrangement of the buildings, etc., for this purpose. No further cases of typhus developed among the prisoners although no attempt at isolation of the sick was made.

Even if vermin get in again, there is no fear of typhus now, as the lice can find no infectious material to transmit. He says that nearly all the Russian physicians in camp contracted the disease notwithstanding their precautions. No lice could be found on a number of medical men and attendants who contracted typhus; the insects must have been left behind. Jürgens adds that it is not settled yet whether the infection is conveyed by the bite of a louse or by mere contact of the vermin with the skin. Early recognition of the typhus in the first case or cases is the main point in prophylaxis. In conclusion Jürgens emphasizes that the prevention of epidemics is possible if the physician depends on himself and does not rely on general isolation and disinfection measures. The importance of the physician's task is not lowered but has been completed and modified by the progress of medical science.

59. **The Prematurely Born.**—Cassel discusses the care of the prematurely born in the home. The child must be protected as much against overheating as against chilling, and, equally important, against infections. The mother must be instructed in the best way to accomplish this, and to draw the milk for the child and keep her breasts secreting properly. He has had 42 cases of this kind in his charge at an "infant consultation station." Eight of the infants were less than a week old; 21 less than two weeks; 9 less than three, and 3 less than five. The weight of 9 was from 1,270 to 1,500 gm.; of 16, from 1,500 to 1,800, and of 17, from 1,810 to 2,000 gm. The 13 exclusively breast-fed children all thrived well, but numbers of the artificially fed had more or less disturbance and 7 died, one from hydrocephalus, the others from gastro-intestinal trouble. The children seemed to thrive best on fat-poor milk mixtures: skimmed milk, the so-called *Magermilch*, which mothers can easily prepare; buttermilk and albumin milk. Starch and sugar must be given very scantily at first. Infections are less common in the family than in institutions, and rachitis and convulsions are also less frequent. He never encountered them in a severe form, but anemia is almost constant and often keeps up into the second or third year. In conclusion he mentions that this year closes the tenth year of the infant consultation station in his charge, and he expatiates on the enormous amount of good it has done in saving babies and in disseminating knowledge as to the care of infants. The city of Berlin appropriates over $125,000 every year for this form of infant welfare work.

62. **Vaccine Therapy of Typhoid.**—Meyer analyzes his experiences in sixty-two severe cases of typhoid in which vaccine treatment was applied. They seem to demonstrate that intravenous injection of a sensitized vaccine in the later stages of typhoid promotes immunization. He calls especial attention to the benefit from vaccine therapy applied immediately after defervescence as a means to ward off consecutive trouble and relapses.

64. **Prevention of Serum Anaphylaxis.**—Koch relates that the preliminary subcutaneous injection of 5 c.c. of antitoxin a few hours before the regular dose does not always ward off serum anaphylaxis. He reports the sudden death of a child of 6, with scarlet fever and diphtheria, at once after injection of antistreptococcus serum, after a preliminary small injection. The child had been injected with diphtheria antitoxin the third and sixth days of his illness, and the intravenous antistreptococcus serum injection was given the twentieth day. Nothing could be found to explain the sudden fatality but anaphylactic shock, except that the child was debilitated, its resisting powers at a low ebb. In such cases serotherapy should be applied with special caution. It is possible, Koch remarks in conclusion, that it would be wiser to leave an interval of twenty-four hours between the preliminary and the main injection of serum.

66. **Magnesium Glycerophosphate in Treatment of Tetanus.**—Zuelzer states that the glycerophosphate seems to have the efficacy of the sulphate without its dangers. Glycerophosphoric acid is a cleavage product of lecithin and hence seems better adapted for the purpose than the sulphate. It acts immediately, and the severest spasms rapidly subside under it, while in the moderately severe cases 10 c.c. of a 25 per cent. solution every three or four hours kept the convulsions under control and the patient free from nearly all pain. He has thus given for days at a time six or eight injections of 10 c.c. of a 25 per cent. solution without the least harm to the patient. Under this dose there is no noticeable change in the pulse. Tests on animals showed that the glycerophosphate caused only a slight drop in the blood pressure, compared to the considerable drop under magnesium sulphate.

Centralblatt für die Grenzgebiete der Med. und Chir., Jena

June, XIX, No. 1-2, pp. 1-192. Last indexed May 1, p. 1534

67 *Operative Treatment of Sciatica. (Ischias.) W. Schoppe.
68 *Jejunal and Gastrojejunal Ulcer After Gastro-Enterostomy. V. Lieblein.
69 *Diagnostic Importance of Urobilinuria for Surgery. J. Feldner.
70 *Ovarian Transplantation. W. Benthin.

67. **Operative Treatment of Sciatica.**—Schoppe reviews thirty-five articles on this subject and discusses the technic and results of severing the nerve, exposing and stretching it, Bardenheuer's "nervinsarkokleisis," neurolysis, Hölscher's and Stoffel's methods and "hersage." The uncertainty in regard to the action of these procedures, the danger with some of them, and the progress realized in nonoperative methods, especially by systematic injection treatment, have combined to throw the surgical methods into the discard. The future will decide whether or not this includes neurolysis and Stoffel's technic. The aim should be to render all surgical measures unnecessary. The details of the published cases of stretching of the exposed nerve are tabulated, the whole article filling sixty-three pages. This operative stretching not only failed to benefit, but entailed serious and permanent injury in certain cases.

68. **Peptic Ulcer.**—Lieblein gives summaries from the literature of 79 cases of certain jejunal ulcers and 50 cases of gastrojejunal ulceration, also of 9 additional cases, only casually mentioned, of 5 probable but not certain cases although an operation was performed, and 12 probable nonoperative cases. Each of the cases is discussed in turn, nearly 100 pages being devoted to the subject and the views of various writers on the etiology of peptic ulcer. In prophylaxis it would seem advisable to select the technic which has never been followed by a jejunal ulcer, that is, plastic operations on the pylorus and gastroduodenostomy. These operations best restore approximately physiologic conditions. We know, however, that plastic operations on the pylorus are not being done any more, and that gastroduodenostomy is peculiarly difficult of execution and in some cases cannot be done at all. It never would be the operation of choice for benign stomach affections. Consequently ordinary gastro-enterostomy is still the best routine method. The posterior gastro-enterostomy is safest, done with a short afferent loop. It is important further to refrain from mechanical trauma disturbing the circulation in the region in suturing or fastening the loop.

He insists that all protheses should be rejected in joining the stomach and intestine together because, when such are used, the gastro-enterostomy wound can heal only by granulation. The opening should also be made as wide as possible. Extremely important further is the internal treatment afterward by proper dieting, to irritate and injure the abdominal wound as little as possible. The diet must also have the hyperacidity in view, refraining from all substances known to increase gastric secretion. Dujarière urges refraining from alcohol in any form, and restricting the eating of meat, fish and eggs. Paterson also advises against the use of meat in any form for six months or until examination shows that the acidity is normal.

69. **Diagnostic Importance of Urobilinuria for Surgery.**—Analysis of forty-nine articles on urobilinuria shows that it is of such frequent occurrence that no far-reaching

conclusions can be drawn from it alone. But in combination with other symptoms it becomes instructive, especially when it accompanies jaundice or an abdominal tumor or apoplexy. Its mere presence as a factor in certain syndromes, or its absence, is significant. The aldehyd test for urobilinuria is so simple and easy that surgeons can readily apply it; in important cases its findings can be confirmed by the fluorescence test or duodenal tube. Urobilinuria from polycholia can thus be differentiated from the urobilinuria of cholangitis.

Surgeons have paid little heed hitherto to the diagnostic importance of urobilinuria, but time has shown that they are the ones to decide the matter. Feldner reviews the evidence to date as to the origin of urobilin. When there is abnormal destruction of blood corpuscles, urobilinuria is a symptom of relative insufficiency on the part of the liver. The liver is sound but is unable to cope with the excessive demands on it from the results of the hemolytic process. The source of origin of urobilin seems to be exclusively the flora of reducing bacteria, either in the intestines, as under normal conditions, or in the liver in pathologic cases. The urobilin formed in the intestines is taken up into the portal vein and thence into the liver, where it is passed along in the form of bilirubin if the liver is equal to its task. If not, urobilinuria results, but the urobilin is not formed in the liver.

Urobilinuria therefore indicates one of three things, (1) abnormal bacterial action with resulting inflammation either in the intestines or bile apparatus; (2) hemolytic conditions causing the liver to be so swamped with work that it cannot attend to it all and hence relative insufficiency results, or (3) the liver may be diseased so that it is unable to take care of even the normal amount of urobilin reaching it. For instance, with complete obstruction of the hepatic or common bile duct, bilirubin appears in the urine as a sign of the bile being backed up into the blood, but there is not a trace of urobilinuria, as no bile gets into the intestines. As soon as the gallstone passes along and leaves the passage free, the backed up bile pours into the bowel and more urobilin is produced than the liver can manage. The excess is thrown off in the urine. In case the duct becomes obstructed again, there is again no trace of urobilin in the urine. This alternation of positive and negative findings in the urine is important testimony against cancer as the cause of obstruction in the bile passages.

Gallstones in the gallbladder do not entail urobilinuria until inflammation develops, and then it is pronounced. It is of great diagnostic importance here as it warns early of cholecystitis and cholangitis developing as a complication of typhoid, for example, and masked by the typhoid. The onset of infection in the bile apparatus is thus revealed by suddenly appearing urobilinuria. It is also valuable in revealing malignant metastasis in the liver, as neither gastric ulcer nor cancer induce it, not even with profuse hemorrhages, but it appears at once in an intense form if the liver becomes involved. Cirrhosis of the liver is also generally accompanied by intense urobilinuria and all affections of this organ injure its cells until they lose their avidity for urobilin.

Urobilinuria is also a consequence and sign of extravasation of blood; it was always pronounced in Feldner's cases of cerebral hemorrhage. It suggests that decompressive operations are contraindicated in dubious cases. Subcutaneous hemorrhages or hemorrhage into the stomach or bowels do not induce urobilinuria and neither does fever in itself. The liver disturbance that usually accompanies fever is responsible for the urobilinuria observed. As a sign of liver insufficiency, urobilinuria may afford useful information as to the resisting powers in contemplating an operation, especially with chloroform, which is peculiarly toxic for the liver.

Urobilinuria is also of great importance in anemias, as we know that if abnormal hemolysis is responsible for the anemia it must be treated by splenectomy, as tonics for the bone marrow, arsenic, etc., do not reach the cause of the anemia. In anemia of the chlorosis type there is not a trace of urobilinuria as there is so little blood formed. But in anemia from hemolysis, of the pernicious anemia type, urobilinuria is documentary evidence of the justification for splenectomy. The latter acts in two ways in cases of cirrhosis of the liver, both by checking the decimation of the blood corpuscles and by arresting the fatal process of further destruction of the liver parenchyma. Both of these pathogenic constituents of the hemolytic cirrhosis process induce pronounced urobilinuria, and hence it is particularly intense in these conditions. When catarrhal jaundice is accompanied by urobilinuria it suggests impending acute yellow atrophy; this develops from the interplay of hemolysis and autolysis of liver cells, and splenectomy rescues the liver; Eppinger has reported a successful case in which signs of acute yellow atrophy were already apparent. With this disease the liver is destroyed so utterly that no bile is produced and hence there is no urobilinuria. All diseases in which there is a hemolytic factor are generally accompanied by enlargement of the spleen and liver. With all tumors in the upper abdomen, consequently, tests for urobilinuria will disclose whether or not it is a question of the spleen-liver vicious circle to be broken up by splenectomy.

70. **Ovary Grafting.**—Benthin announces the conclusion from his study of the literature on transplantation of ovaries—seventy-three articles—that experience has justified the principle and given satisfactory results. Success depends in homoplastic grafting on the immediate transference of organs, as this has much to do with their nourishment later. For hemorrhage in the elderly, he thinks that hysterectomy or Roentgen exposures are better than ovarian grafting. It is still a question whether the latter has any promise in treatment of osteomalacia; other glands with an internal secretion may be involved as well as the ovaries. The main field for ovary implants is in prevention and treatment of the phenomena of the premature menopause. It must not be forgotten, however, that organ therapy has made such progress that deficit phenomena are growing rarer and less severe, at least in older women.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 3, XLV, No. 27, pp. 833-864

71 Experiences in Military Surgery. (Kriegschirurgische Erfahrungen und Beobachtungen.) H. Matti. Commenced in No. 25.

July 10, No. 28, pp. 865-896

72 Plasma Cells in Various Organs in Infectious Diseases. R. Hagiwara.

73 War and Medical Bibliography: The Medical Literature of the Four Years Including the Franco-Prussian War. M. Roch.

Deutsche medizinische Wochenschrift, Berlin

Aug. 27, 1914, XL, No. 35, pp. 1681-1704

74 Extra-Uterine Pregnancy. (Behandlung der ektopischen Schwangerschaft.) P. Jung.

75 Value of Wassermann Reaction. M. Rohde.

76 Amusia and Aphasia. O. Goebel.

77 Trauma of Skull and Lumbar Puncture. Hosemann.

78 Operative Cure of Fissure in Upper Bladder. (Blasenspalten.) L. Schliep.

79 Magnesium Sulphate in Tetanus. A. Falk.

80 Vaccination Against Typhoid and Cholera. W. Fornet.

June 24, XLI, No. 26, pp. 757-784

81 Treatment of Nervous Disturbances in Soldiers. (Lazarettbeschäftigung und Militärnervenheilstätte.) R. Wollenberg.

82 *Typhoid in Soldiers. P. Jacob.

83 Welfare Work for Blinded Soldiers. (Kriegsblindenfürsorge.) E. Krückmann. Concluded in No. 27.

84 *Evacuation of Stomach and Intestines in Condition of Atony. (Zur Frage der Magen- und Darmentleerung bei atonischen Zuständen.) H. Gross.

85 Improved Technic for Roentgen Tubes. (Das Glühventil nach Koch.) G. Holzknecht.

86 Technic for Plaster Orthopedic "Traps." (Gipsattrappe.) L. Mayer.

82. **Differentiation and Complications of Typhoid.**—Jacob and others have obtained positive results in 90 to 95 per cent. of all the cases of typhoid in which a beef-gall culture medium was inoculated with a few c.c. of the patient's blood. This differential method is particularly

reliable, as the findings are positive from the first day of the fever and until a few days before defervescence, and the test requires only from fifteen to thirty hours. About 5 c.c. of the culture medium (Endo or Drigalski-Conradi) are placed in a test tube and allowed to harden. Then 1.5 or 2 c.c. of sterilized beef gall is added to the second tube. On addition of 2 or 3 c.c. of blood from a typhoid patient to a tube thus prepared, the characteristic colonies can be seen in the tube in ten or fifteen hours, and, a few hours later, agglutination will confirm the diagnosis. The eosinophils disappear from the blood during the course of typhoid but begin to reappear as recovery progresses, finally representing 5 or 7 per cent. of the total leukocyte count. In his experience with 300 cases of typhoid in soldiers he found in a number of instances that it caused an old long-latent tuberculous or other focus to flare up anew. Pneumonia is so common as a complication of typhoid that he declares his conviction that 20 or 30 per cent. of all the deaths from typhoid are in reality due to pneumonia.

The fact should be more generally appreciated that typhoid is not a disease of the bowels. It is a general toxic disease involving the entire organism. The more this is realized and treatment applied accordingly, the better the results. Among the other practical points which he emphasizes is that vaccination against typhoid had better be done all on one side, for instance, the three injections made on the left side always, leaving the right side for inoculation against cholera, just as vaccination against smallpox is always applied to the arm. By this means we can know just where the man stands in regard to preventive vaccination. The men's statements about this were often vague and conflicting.

84. **Treatment of Atony of the Stomach and Intestines.**—Gross was disappointed at the results of the retention stomach tube introduced through the nose, according to Westermann's technic. Its introduction was distressing and the effect far from realizing expectations. So he resumed his practice of making a fistula into the stomach for siphon drainage which has always answered the purpose well in the thirty-five cases of peritonitis in which he has applied it, and also as a preliminary measure in acute pancreatitis, perforated empyema of the gallbladder, gunshot wounds, and mechanical ileus, a total of forty-seven laparotomy cases. The incision is made under local anesthesia on the median line or below the left costal arch. A small area of the serosa of the stomach is fastened with five to seven running stitches of fine silk to the parietal peritoneum, the stomach is incised, and a stout 1 cm. wide tube is introduced for 5 or 8 cm. into the organ, the tube connected with a vessel on the floor for siphon drainage. This draws up into the stomach fecal matters in the intestine farther along, so that the method clears out not only the stomach but part of the bowels. If the tube gets clogged it can be cleared by rinsing it from without. The patient can drink at once as much as he wishes. The psychic influence of this is very important for the thirst-tormented patient. The fluid rinses out toxic matters from both stomach and upper bowel. The effect of the siphon drainage from the stomach is more far-reaching than from a fistula into the bowel. The latter is sometimes required with mechanical hindrances, adhesions, etc., and may advantageously supplement the stomach fistula. He leaves the tube in the stomach until the bowels move and sometimes longer, closing it at times. The incision afterward is closed merely with adhesive plaster. In conclusion Gross declares that he can cordially commend this method of treatment to general practitioners from an experience of considerably over 200 cases in which he has made a simple gastric fistula.

Internat. Monatsschr. f. Anat. u. Physiol., Leipzig and Chicago

XXXI, Nos. 10-12, pp. 437-560. Last indexed April 10, p. 1279

87 *Functioning of the Pancreas and Its Relation to the Pathogenesis of Diabetes. A. Visentini.
88 *The Physiologic Destruction of Erythrocytes in Birds. P. Kyes.
89 Heat-Coagulation of Muscles of Northern and Southern Frogs. R. Hopkins and G. Mann (Tulane).

87. **The Pancreas and Diabetes.**—Visentini's article was awarded the Warren triennial prize at Boston in 1913. It fills over 100 pages and is accompanied by seven double-page plates, some of them colored. Its motto is da Vinci's, "Knowledge is the daughter of experience," and it is based on analysis of the literature on the subject and extensive personal experiments on twenty-seven dogs at the institute for pathologic anatomy at the University of Pavia. The final outcome confirms anew and apparently conclusively that the islands of Langerhans and these alone among the elements of the pancreas control the metabolism of carbohydrates in the animal organism.

88. **Phagocytosis of Red Corpuscles in Spleen and Liver.**—Kyes says that he noticed in the course of experimental research that certain fixed-tissue cells in the spleen and liver were constantly incorporating red blood corpuscles as a physiologic process. He gives the technic for the differential histologic method with which he apparently demonstrated this hemophagic action in the spleen and liver of the reptiles, amphibia and mammals examined under normal conditions. His attention was first called to it in the course of other research on healthy pigeons. A colored plate shows the various steps of the process.

Medizinische Klinik, Berlin

June 20, XI, No. 25, pp. 687-714

90 Trauma and Appendicitis. E. Schepelmann.
91 *Relations Between Somatic and Mental Disease. (Beziehungen zwischen körperlichen Erkrankungen und Geistesstörungen.) J. Enge. Concluded in No. 26.
92 Differential Diagnosis of Typhus. (Fleckfieber.) H. Wagener.
93 High Fatality of Abdominal Wounds, and Immediate Operative Treatment. (Zur Statistik der Bauchschüsse.) F. Rost. (Indikationen zur Laparotomie im Felde.) O. Strauss.
94 Treatment of Placenta Praevia by General Practitioner. P. Rissmann.
95 Guard to Protect the Hand Against Infection in Turning Faucets, Knobs and Keys. (Ein Infektionsschutzschlüssel.) A. Sawicki.
96 Dysentery. (Klinische Beobachtungen über Ruhr.) K. Schütze.

June 27, No. 26, pp. 715-740

97 Experimental and Clinical Research on Passage of Toxin and Antitoxin in Tetanus. (Die "Fibrillentheorie" und andere Fragen der Toxin- und Antitoxinwanderung beim Tetanus.) L. Aschoff. Concluded in No. 27.
98 Morbid Conditions in Internal Organs from Chronic Alcoholism and Their Influence on Fitness for Active Service. (Veränderungen an den inneren Organen infolge von chronischem Alkoholismus und ihren Einfluss auf die Felddienstfähigkeit.) G. Hoppe-Seyler.
99 Treatment of Wounds in War. (Kriegschirurgische Erfahrungen.) H. Oppenheim.
100 Remarkable Case of Nontropical Elephantiasis; Kondoleon's Operation. J. Strasser.
101 Symptomatology of Vaccination Against Typhoid. (Typhusschutzimpfung.) J. Löwy.
102 Reduction of Toxicity of Salvarsan by Dissolving in Serum. (Herabsetzung der Giftigkeit des Salvarsans durch Auflösung im Serum.) W. Roick.
103 Rabbit Typhoid Bacilli Carriers Cured by Tincture of Iodin Internally. O. Löwy.

91. **Relations Between Mental and Physical Disease.**—Enge relates that at necropsy of 248 insane patients he found physical affections responsible for the death in 80 per cent. The discovery of the intimate connection between bodily disease and mental disturbances he regards as a great achievement of modern psychiatry. The most familiar type of it is the initial delirium of typhoid; this may even mask completely the physical manifestations at first. He has had a number of persons brought to the detention hospital as insane who proved to be merely coming down with typhoid. The possibility of this should always be borne in mind when insanity develops suddenly, especially in the young. Typhoid with this early mania has proved fatal in 40 or 50 per cent. of such cases in his experience. In many cases of mental disturbance in the course of pneumonia, anthrax, erysipelas and influenza, the specific microorganism induces a meningitis or encephalitis in the same way as in typhoid, which explains the clinical phenomena. More common than this, however, is the action of the disease toxin on the central and peripheral nervous system. In other cases the acute infectious disease is not the direct cause but merely throws down barriers and allows other elements a chance to work. The resulting brain trouble

is then quite independent of the somatic affection and the prognosis is usually less favorable.

Hypostatic and aspiration pneumonia formed 26.61 per cent. of the mortality at the Lübeck insane asylum during the last sixteen years. Sometimes the mental trouble seems to subside wholly or in part during or after some acute infection, such as erysipelas or typhoid, but in his experience the benefit has always been transient. Certain forms of mental disease, melancholia, stupor and dementia, seem to predispose to tuberculosis, and it develops in a severe form. This is easily explained by the lack of exercise, the shallow breathing and sluggish metabolism in such insane persons. The mental disease is the primary trouble. Some years tuberculosis formed over 40 per cent. of the total mortality in the asylum. He discusses the connection between constitutional diseases and mental disturbances, especially syphilis and cancer. In sixteen years at the Lübeck asylum cancer was responsible for only 3.44 per cent. of the mortality among the men and 5.82 per cent. among the women. In 248 cadavers from the asylum he found chronic nephritis in 45, pyelonephrosis in 4, fat degeneration in 7 and amyloid kidney in one case. Liver affections were quite rare and the gallbladder was found diseased only in 4 men and 14 women.

Morbid conditions in the heart were evident in 73.38 per cent. of the 248 cadavers. Strecker found pathologic changes in the heart in 61.7 per cent. of the men and 42.7 of the women in 1,000 cadavers from the Dalldorf insane asylum, and only 27 and 23 per cent. respectively in 1,000 cadavers of the noninsane. Acute and chronic psychoses entail irregular and defective eating and the secondary digestive disturbances aggravate the psychosis in turn. He reiterates in conclusion that there is nothing in clinical experience to sustain the assumption that psychoses can be induced by gynecologic affections. There is no evidence further that gynecologic disease is more prevalent among the insane than among others. Enge found the uterus or the ovaries or both diseased in only 7 of the 248 cadavers. In the puerperal psychoses, infectious processes play the greater rôle. In these and in the psychoses following the menopause, the cause is not to be sought in the changes in the genital sphere but in the general involution processes. In short, the roots of mental affections spread far beyond the confines of psychiatry.

Münchener medizinische Wochenschrift, Vienna

June 22, LXII, No. 25, pp. 837-872

104 Improved Tube for Roentgen Work. (Die gasfreie Röntgenröhre nach J. E. Lilienfeld. Erprobung und Anpassung ihres Betriebes an die praktischen Zwecke.) Holzknecht and others.
105 Rapid Transformation of Rabies Virus from "Street" to "Fixed" Form. A. Beham.
106 Potable Water Supply in West Flanders and Poland. Fürth and v. Scheurlen.
107 *Influencing the Circulation in the Skull by Twisting the Head Around. (Gestaltveränderungen einer Hirnwunde, durch Kopfdrehung hervorgerufen; Sternokleidostellung.) O. Muck.
108 Improvised Craniometer. (Einfache Projektion der Gehirnzentren auf die Schädeloberfläche ohne Kraniometer.) H. Matti.
109 *Consequences of Heat Stroke. (Folgezustände des Hitzschlags.) A. Bittorf.
110 Cholera. A. Weisskopf and H. Herschmann.
111 Apparatus for Mobilization of Stiff Joints. W. Engelhard, A. Nussbaum, S. Gara and J. P. Köhler.
112 Improvised Protheses. (Interimsprothesen.) A. Angerer.
113 Duration of Pregnancy. O. Möglich.

107. Modification of Circulation Inside Skull by Twisting the Head.—Muck calls attention to the change in the circulation of the brain when the head, held straight, is twisted around to the side. This compresses the internal jugular vein on that side while it expands the vein on the other side. His attention was called to it anew recently by the changes observed in the bleeding and secretions of gaping wounds in the skull when the head held vertically was twisted around over the shoulder. He was able to obtain sphygmographic tracings showing the modification in the circulation on both sides, one reduced and one augmented, especially with wounds of the skull with unopened meninges.

109. Consequences of Heat Stroke.—Bittorf has had a number of men under supervision for almost a year since they had heat stroke last August. He also has had a number of patients who had been sent back from the front on account of heat stroke. During the first few days the men complained mostly of headache and languor, with sometimes nervous tachypnea and weak voice. Then a few days later, the majority developed severe hysteric convulsions. True epilepsy was never observed, but the hysteric convulsions kept up, and not one is entirely free from them to date although the last one was discharged from medical oversight in April, 1915, as capable of garrison duty, and has improved since. There can be no doubt, he says, of the hysteric character of the rapid breathing and rapid pulse, abasia, astasia, stuttering, disturbances in gait and tetanoid attacks. One man has had tachycardia of 140, even in repose, unmodified during the nine months to date. Bittorf states explicitly that there can be no question of imitation in his cases, but all the severer forms of heat stroke were followed by hysteric sequels. A pronounced inherited nervous predisposition was evident in only one case; the man's mother was known to have suffered much from headache. No inherited taint could be determined in any other case. The relatively unfavorable prognosis is remarkable, he adds. In the one case with complete recovery—the abasia and stuttering finally subsiding—the patient was a volunteer soldier and Ph. D. As the prognosis is thus so unfavorable, the prophylaxis is doubly important.

Zeitschrift für Tuberkulose, Berlin

June, XXIV, No. 2, pp. 81-160. Last indexed July 24, p. 368

114 Importance of Cooperation of the Patient in the Cure. (Dic cur hic.) G. Liebe.
115 Mechanical Predisposition for and Origin of Tuberculous Apical Disease. (Entstehung der tuberkulösen Lungenspitzenphthise.) C. Hart.
116 Tubercle Bacilli Not Often Found in the Blood with Pulmonary Tuberculosis. L. Brown, F. H. Heise and S. A. Petroff (Saranac Lake).
117 *Heliotherapy in Denmark. K. Schäffer.
118 Tuberculosis in Relation to the Eye, Ear, Nose and Throat. G. H. Kress (Los Angeles).

117. Sunlight in Treatment of Tuberculosis.—Schäffer relates that, at the instigation of Finsen, at the Vejlefjord sanatorium in Denmark sunbaths were introduced into the routine treatment of bone and lung tuberculosis as long ago as 1902. In the course of the years since, 364 patients have been given systematic heliotherapy, taking a total of 6,500 regular sunbaths. The duration is only five or ten minutes at first, gradually increasing to an hour. The other measures left no time for longer than this. The men's bath is from 12 to 1, the women's from 1 to 2 p. m.; a physician always takes the bath with the men and a nurse with the women. The method was never applied to patients with a tendency to hemoptysis or progressing pulmonary lesions. Of the 364 patients, 20 per cent. were in the first stage, 33 per cent. in the second and 46 per cent. in the third. No by-effects were noted except that some of the patients felt fatigued after the first baths, and that a few developed erythema to such a degree that the course had to be interrupted. No direct influence on the lung process was ever apparent, but now and then certain symptoms seemed to improve and the patients enjoyed the baths and seemed to feel refreshed after them. In some cases—three typical ones are described—the sunbaths seemed to be the prominent factor in the rapid and pronounced improvement. One young man in particular had had fever for a year, with bilateral pleurisy and swollen mediastinal glands. Under the heliotherapy the fever subsided in a month and the general health notably improved, when no measures before had induced any benefit. Another patient was a young man in the second stage of pulmonary tuberculosis with sequels of pleurisy. The pleuritic dullness disappeared almost completely in three months under the sunbaths, and this cannot be a mere casual coincidence. Recently the sanatorium has had halls equipped for artificial heliotherapy so as to be independent of the Denmark weather.

Zentralblatt für Chirurgie, Leipzig

June 26, XLII, No. 26, pp. 457-472

119 Silver Adhesive Plaster for Dressing Wounds. (Zur Frage der kriegschirurgischen Wundbehandlung.) C. Laucnstein.
120 Superiority of Silver Foil for Dressing Wounds. (Weitere Erfahrungen über die Verwendung von Silberplättchen in der Chirurgie.) M. Vogel.

Zentralblatt für Gynäkologie, Leipzig

June 26, XXXIX, No. 26, pp. 441-456

121 *Cure of Chronic Posterior Parametritis by Automatic Colpeurynter Massage Plus Fixation of the Round Ligaments. S. Holz.

121. **Automatic Massage in Chronic Inflammation in the Pouch of Douglas.**—Holz has the woman wear a ball in the posterior vagina. The ball is introduced empty and then filled with water, stopping just short of causing pain by distention. It is worn from one to three days, then removed, cleaned and replaced. As the woman breathes there is a gentle massage of the region and the results have been extremely good in his experience.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 20, XXXVI, No. 49, pp. 769-784

122 *Excision and Suture for Anal Fistula. G. Fantozzi.
123 Successful Removal of Hypernephroma from Otherwise Healthy Man of 48. G. Baglioni.

122. **Anal Fistula.**—The technic is described with which Fantozzi excised and sutured an anal fistula in fourteen cases, all but one healing by primary intention. The time required is shorter than by other methods of treatment, and no after treatment is necessary, the cure being complete and permanent in thirteen days at longest. Quénu and Hartmann say that five or six weeks are required to cure an anal fistula and Arsonneau had only fifteen cured among sixty treated by his method and from twenty to thirty-three days were required.

Policlinico, Rome

June 27, XXII, No. 26, pp. 853-892

124 *Differentiation of Blue Disease; Three Cases. (Il sintoma ascoltatorio del Bonardi per la diagnosi di pervieta del setto interventricolare cardiaco.) F. Giugni and E. Giovannini.

July 4, No. 27, pp. 893-924

125 Aspiration of Urine Through the Urethra in Acute Total Retention of Urine. F. de Meo.
126 The Roentgen Ray Truck in Military Service. (L'automobile radiologico nei servizi in guerra.) F. Ghilarducci.

124. **Opening in the Interventricular Septum.**—Giugni calls attention to the value of the auscultation findings in diagnosis of this congenital anomaly. Bonardi described as pathognomonic a systolic murmur synchronous with the murmur and rough transverse fremitus at the third costal cartilage. The murmur in question spreads upward from the clinical focus of the aorta and a little to the right, to the subclavicular fossa, and is still appreciable in the carotid, subclavian, and axillary arteries and their minor ramifications. It is the classic murmur with stenosis of the aorta, both clinical and anatomic. The maximum or starting point of the systolic murmur is at the body of the sternum at the point of attachment of the third left costal cartilage. It spreads obliquely upward toward the right margin of the sternum, then into the right second interspace and thence, below the clavicle, to the carotids. In Giugni's two cases he was unable to trace it into the subclavian or axillary arteries. At the same time another murmur was heard on the left side, deeper and of an almost musical tone. Both were systolic, synchronous, and of arterial origin, one originating in the stenosis of the pulmonary artery, the other from the passage of the blood from the hypertrophic right ventricle into the left and its propagation onward along the aorta. When there is some lesion of the pulmonary artery reducing its lumen, the interventricular septum does not close up as normally, the gap left being in the nature of a compensation for and necessary consequence of the anomaly in the pulmonary artery. The laws of propagation of sound can be traced in the spread of the resulting murmurs, as Giugni explains in detail. The two cases he describes were in children of about 3 and 13. Giovannini's patient was a woman of 38, and the clinical signs demonstrated unequivocally that the lumen of the pulmonary artery was abnormally small, while there was also a communication between the ventricles. The compensatory hypertrophy of the ventricles permitted almost normal functioning of the heart except under the influence of fatigue or emotions when serious attacks of dyspnea and distress in the heart region developed. The patient has been pregnant six times but abortion or premature delivery had been the outcome in five, although there was nothing except the circulatory disturbances to explain these miscarriages. Her attacks sometimes ended with hemoptysis, which Giovannini regards as a safety valve and not to be combated. She has one apparently healthy daughter, 10 years old.

Semana Medica, Buenos Aires

June 10, XXII, No. 23, pp. 719-746

127 *Simple Method for Extracting Foreign Bodies in the Esophagus. E. Ferreyra.
128 Cystic Transformation of Strangulated Omentocele. M. R. Moreno.
129 Technic for Procuring Specimens of Water, Urine, Milk and Sputum for Examination. B. S. Ondarra.

127. **Foreign Bodies in the Esophagus.**—Ferreyra uses a urethra catheter, No. 16 or 18, and half a yard of coarse silk, No. 3 or 4. He lubricates the catheter profusely with petrolatum, and introduces it gently into the esophagus three or four times. This mobilizes the foreign body, arrests the spasm and lubricates the passages. Then he winds the silk, previously moistened, around the lower third of the catheter, that is, for about 10 cm. from the tip. The catheter and silk are then lubricated anew, and it is introduced again into the esophagus, very gently. When it is felt that the tip of the sound has passed the foreign body, he twists the catheter until he feels a slight resistance and then draws it out, having the head bent forward a little, and still keeping his forefinger in the larynx. The foreign body generally comes out at the first attempt; if not, he repeats the procedure until it does.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

May 1, I, No. 18, pp. 1503-1586

130 Study of Stomach and Duodenum Functioning by Means of Duodenal Sound and Thread. B. Sybrandy.
131 Occult Blood in the Stools. (Het aantoonen van bloed in de ontlasting.) I. Snapper.

June 12, No. 24, pp. 2051-2118

132 *Circumscribed Meningitis; Diagnosis and Treatment. (Plaatselijke hersenvliesaandoening.) C. T. van Valkenburg.
133 Physiology of the Lacrymal Apparatus. (Bijdrage tot de kennis der physiologie der traanwegen.) C. E. Benjamins and G. F. Rochat.
134 The Benzidin Test for Occult Blood in Stools and Urine. (De benzidineproef voor bloedonderzoek in ontlasting en urine.) J. W. M. Indemans.

132. **Circumscribed Meningitis.**—Van Valkenburg reports four cases of this kind to illustrate the difficulty sometimes encountered in locating the exact site of the lesion. Even when there has been no local hemorrhage at the point where some injury befell the skull, there may be cicatricial changes enough to cause serious motor and sensory disturbance. There was a history of trauma only in one of his cases. In another a number of patches of calcification were found on the pia mater. Some were as large as a ten cent piece (Netherlands). They had grown to the surface of the brain and no attempt was made to remove them. Intervention was restricted to ligating some of the abnormally numerous and congested vessels. Prompt and regular improvement of the right paralysis followed, but local spasms in the right leg, arm, hand and face still occur often. Before the operation the man of 34 had had twenty-one general convulsions in the course of two years, but there have been none during the nine months since. The fundus findings are normal; before the operation there were signs of papillitis of the optic nerve. In this case there was a history of a blow on the head from a hammer, eight years before the first convulsions; no trauma was known in the

other cases, but the clinical picture was about the same in all. It seems evident from these cases and the others on record, that with motor or sensory phenomena suggesting a lesion in the anterior or posterior central convolution, the site is liable to be deep in or under the area of the cortex involved if the symptoms are persisting. If the symptoms are slight or are severe only after an epileptiform attack, then the lesion may be merely in the vicinity of the centers involved, or it may be outside the brain, located merely above the centers. On the other hand, with signs of papillitis of the optic nerve, with or without hemorrhages, and long before there is question of choked disk, and without other signs indicating abnormal pressure on the brain, an infectious process or abscess may be assumed.

Russkiy Vrach, Petrograd

Jan. 3, XIV, No. 1, pp. 1-24

135 Relations Between the Thyroid and the Sexual Glands. A. N. Mazikin.
136 Innervation of the Isolated Heart of Dog and Rabbit. N. G. Ponirovsky.
137 *Large Concrement in the Stomach. A. P. Grinenko.

Jan. 10, No. 2, pp. 25-48

138 Treatment of Relapsing Fever. B. P. Varipaieff.
139 Influence of Chloroform General Anesthesia on the Red Corpuscles. A. Z. Bilina and V. A. Shishoff. Commenced in No. 1.
140 Disorders of Female Pelvic Organs in Diabetes. N. K. Gogoberidze. Commenced in No. 1.
141 *Pathologic Anatomy and Symptomatology of Whooping Cough. M. V. Shiperovich.

Jan. 17, No. 3, pp. 49-72

142 Organization of the Care for the Wounded and Sick Soldiers. L. B. Bertenson.
143 Antiferment in Exudates and Transudates. J. A. Kudrin. Commenced in No. 2.
144 *Radium Treatment of Cancer. V. A. Polubinsky.

Jan. 24, No. 4, pp. 73-96

145 *Iodin Test for Functional Capacity of the Kidneys. M. N. Erofieva and V. A. Degtyareva. Commenced in No. 3.
146 *Umbilical Cord to Patch Gap in Dura. V. A. Perimoff.
147 Treatment of Wounded Joints in Field Ambulance. L. A. Rosen.
148 Varnish as Aid in Treatment of Wounds in War. I. A. Golanitzky.

137. Large Concrement in the Stomach.—Grinenko reports a case of a shellac concrement in the stomach, as large as a man's fist. Such stones are hard to diagnose as they may simulate a pyloric cancer, an omentum tumor, a floating kidney, or a tumor of the transverse colon. The only subjective symptom was pain in the epigastric region. The Roentgen findings differ from those usually found with a gastric cancer. The concrement consisted of shellac and was due to drinking varnish on account of its alcohol content. The alcohol was absorbed, leaving the shellac as a hard mass.

141. **Clinical Forms of Whooping Cough.**—Shiperovich reports four cases of whooping cough with unusual clinical manifestations. In one there were acute emphysema of the lungs, emphysema of the entire skin of the body, head and extremities and pneumothorax, the case terminating fatally from rupture of some alveoli in the lungs. In the second case the attacks of coughing were followed by unconsciousness; necropsy showed hemorrhagic encephalitis and pulmonary edema. In the third case the unconsciousness, clonic convulsions and glycosuria were probably caused by capillary hemorrhage in the fourth ventricle. The glycosuria disappeared afterward, and the patient recovered. In the fourth case, bloody tears showed during the cough. They contained numerous lymphocytes. This child also recovered.

144. **Radium Treatment of Cancer of the Uterus.**—The radium gave good results in the hands of Polubinsky. In 23 cases, 9 gave complete recovery; of these, 2 were operable cases, and 7 inoperable. In the remaining 14 cases a complication developed in one, namely, a rectovaginal fistula. In 6 there was a relapse after temporary improvement. No benefit was apparent in 3 cases; one patient died during the treatment. The others gave dubious results or the outcome is not known. The cases of apparently complete cure were under observation for from eight to twelve months from the beginning of treatment.

145. **Iodin Test for Functional Capacity of the Kidneys.**—Erofieva studied the elimination of iodin by the kidneys and salivary glands in healthy persons and in patients with acute or chronic nephritis. In 8 healthy persons the duration of elimination of iodin in the urine ranged from twenty and one-half hours to forty-nine hours; in the saliva, from twenty-three to thirty hours. That is to say that the urine was eliminating this substance fully nineteen hours longer than the saliva. Just the opposite was observed in nephritis; in 27 cases of acute and chronic nephritis, the presence of iodin in the urine could be determined during twenty-three up to one hundred and nineteen hours, while in the saliva the findings were positive from twenty-eight to one hundred and eighty-nine hours. In the urine of healthy persons, the iodin appears in the urine from twenty to fifty-three minutes after taking 0.5 gm. potassium iodid; in the saliva, from three to twenty-six minutes. In nephritis it appears in the urine in about fifteen minutes to two hours and forty minutes, and in from four to twenty-nine minutes in the saliva. It is evident that the duration of iodin elimination by the kidneys does not indicate the condition of the renal epithelium, since other organs, such as the salivary glands, participate in the same function and the iodin may be found for a longer period in the saliva than in the urine.

146. **Umbilical Cord in Plastic Surgery for Dura Defects.**—To cover defects in the dura mater various kinds of tissues have been used, fascia, fat, skin and peritoneum, but as they all form adhesions to the brain tissue proper, when the pia is injured, Perimoff determined experimentally on dogs the value of the umbilical cord for this purpose. The cord was taken from the lying-in hospital, from seventy minutes to eighty-five minutes elapsing between the time of severing the umbilical cord and its transplantation. An opening in the skull, dura and pia was made, the cord slit in the middle and the everted smooth surface was fitted into the opening toward the brain and sutured to the edges of the bone. Then the skin and bone flap was turned over back into place and sutured. Of the three dogs one died, one was killed a month later, and the other two months after the operation. The transplanted tissue did not adhere to the brain tissue in any instance. It looked macroscopically like a normal dura, and microscopically like connective tissue covered in places with foci of round cell infiltration.

Norsk Magazin for Lægevidenskaben, Christiania

July, LXXVI, No. 7, pp. 857-888

149 *Sacral Anesthesia. P. Bull.
150 Angioma of the Choroid in Youth of 17. S. Hagen.
151 Plastic Operation for Adamantoma in Lower Jaw. S. Widerøe.
152 Management of Transverse Presentation. (Om tverleiets behandling.) Drejer.

149. **Sacral Anesthesia.**—Bull applies this term to injection of a local anesthetic into the sacral canal, the same technic which Cathelin calls "epidural" and Läwen "extradural" anesthesia. Läwen in 1910 began the systematic application of Cathelin's epidural technic (1901), and Bull has applied it sixty-four times, the patients ten women and forty-six men. He injected through the dorsal hiatus 20 c.c. of a 2 per cent. solution of novocain plus epinephrin. The result was ideal in 47 cases but in 15.6 per cent. of the cases no anesthesia was induced. In the 54 cases with positive results no complications were noted in 46; in 2 there was slight bleeding from the sacral canal and in 6 transient pallor, vertigo, clamminess, palpitations and rapid pulse. These symptoms occurred so immediately after the injection and subsided so rapidly that they can scarcely be ascribed to absorption of the drug. The fully anesthetized region included the anus and lower rectum, perineum, urethra and lower part of the prostate, the scrotum but not its contents, as the latter are innervated from the lumbar segment of the spinal cord, the external genitals and vagina, and the penis. He gives a number of illustrations to show the exact technic. Läwen advises against the use of the sacral method for the elderly, but Bull found it particularly advantageous for them. The obese, the very nervous, the hysteric and children do not take local anesthesia of any kind well.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, NO. 8 CHICAGO, ILLINOIS AUGUST 21, 1915

BENIGN LESIONS OF THE STOMACH AND DUODENUM

THE CHOICE OF SURGICAL PROCEDURE WITH SPECIAL REFERENCE TO LATE RESULTS *

CHARLES H. PECK, M.D.

NEW YORK

The surgical treatment of benign lesions of the stomach and duodenum is one of the most important problems of abdominal surgery. The brilliant work of contemporary surgeons has demonstrated that such lesions are curable, in the majority of instances, by properly selected surgical procedures, and that restoration to health may be perfect and permanent. That this happy result fails of achievement in some instances places a burden of heavy responsibility on one who, in case of failure, must review his procedure, and determine whether the fault lies in any error of judgment in selecting the mode of treatment, or failure in the execution of some point in technic.

A brief review, therefore, of the methods in vogue for the treatment of these lesions, seems not amiss; for while much in the line of standardization has been accomplished, much remains to be done. It is not my intention to give even a brief historical review of the surgery of benign lesions of the stomach and duodenum. All honor is due to the able and brilliant pioneers in this field who have blazed the trail, and the limitations of space will not permit of an attempt to do them justice. To the active surgeons of our own time, however, history will give credit for the work which has put surgery on a sound and practical basis, and has made safe and a matter of routine, operations which, a few brief years ago, were hazardous in the extreme and uncertain of outcome.

Here, again, I must beg indulgence if in mentioning the Mayos, Ochsner, Murphy, Rodman, Deaver, Finney — names inseparably connected with the most valuable advances in stomach surgery — I omit many others who well deserve mention on this honor roll. To Weir belongs the credit of being the first to call attention to the occurrence and probable frequency of duodenal ulcer years before its great importance was clearly recognized.

While lesions of the stomach and duodenum have much in common, and much confusion of reports and of symptoms has existed in the past, duodenal ulcer now occupies a position of its own and is recognized as the most common and, in many ways, the most important lesion of the upper gastro-intestinal tract. Of its occurrence, pathology, and symptoms I shall say nothing, as these features have been exhaustively discussed. The vital question, after all, after the diagnosis has been made, the abdomen opened, and the lesion demonstrated, is: What shall be the choice of operative procedure to cure the disease and effect a permanent restoration of the patient to health?

It is difficult to appreciate what the past few years have done for the surgery of benign lesions of the stomach and duodenum. In analyzing the case records of the past five years at the Roosevelt Hospital, one is impressed by the increasing confidence with which the various benign lesions are approached surgically, and the more definite rules of procedure which have been gradually evolved.

I shall speak chiefly of procedures which have actually been used in this series of cases, and the results which have been a matter of personal observation. A study of our records shows that simple gastro-enterostomy has been the routine treatment of chronic ulcer of the duodenum, and that pyloric exclusion or excision of the ulcer has rarely been resorted to.

While much has been written for and against it, gastro-enterostomy still remains the operation of choice, either with or without some form of pyloric exclusion, and I shall consider whether the late results of this operation justify this choice. A preliminary word as to the reason why this seemingly inadequate procedure is capable of effecting a cure of the disease.

The two theories most commonly advanced are drainage and chemical effect. It is my opinion that both are factors, and that they are to some extent interdependent.

Certain it is that the clinical result in a goodly percentage of cases of uncomplicated chronic duodenal ulcer is most gratifying, especially the late results. Cannon and Blake[1] demonstrated by animal experimentation in 1905 that a gastro-enterostomy opening would in time close if the pylorus remained patent, and from their results the conclusion has been drawn that this would occur in the human body, as a rule, when gastro-enterostomy was done without pyloric occlusion.

The late results in our series may be of some interest, therefore, as bearing on the question of permanency of the artificial opening and the cure of this condition by simple gastro-enterostomy without pyloric exclusion.

I have collected a number of roentgenographic late observations, some of them more than four years after gastro-enterostomy, which seem to prove that this reasoning is fallacious, for the majority of the gastro-enterostomy openings are functionating in spite of a pylorus known to be patent and not occluded at the time of operation.

* Chairman's address, read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Cannon and Blake: Ann. Surg., 1905, xli, 686.

The fact that the patency of the stoma is accompanied by relatively rapid emptying of the stomach, and that these cases show a perfect clinical cure, would seem to support the view that drainage is an important element in the cure of these cases.

One hundred and thirty-four patients with gastric and duodenal ulcer have been operated on by the surgical staff of the hospital since Jan. 1, 1910. A definite macroscopic lesion was demonstrated in every case of the series, and in all but one, some definite surgical procedure was undertaken for its relief.

The cases were distributed as follows:

Chronic duodenal ulcer	74
Chronic gastric ulcer	24
Gastric ulcer with hour-glass stomach	6
Perforated duodenal ulcer (acute)	17
Perforated gastric ulcer (acute)	13
Total	134

The operative procedures employed were:

Simple gastro-enterostomy for	
Chronic duodenal ulcer	72
Chronic gastric ulcer	13
Hour-glass stomach	1
Perforated duodenal ulcer	12
Perforated gastric ulcer	4
Total	102
Gastro-enterostomy with excision of ulcer for	
Chronic gastric ulcer	3
Chronic duodenal ulcer (pylorectomy)	1
Gastro-enterostomy with pyloric exclusion (secondary) for	
Chronic duodenal ulcer	1
Gastro-enterostomy with cautery puncture for	
Chronic gastric ulcer	1
Gastro-enterostomy with gastroplasty for	
Hour-glass stomach	1
Total	7
Excision of ulcer without gastro-enterostomy for	
Gastric ulcer	2
Partial gastrectomy for	
Gastric ulcer	3
Transgastric resection for	
Gastric ulcer	1
Suture of perforation without gastro-enterostomy for	
Perforated duodenal ulcer	5
Perforated gastric ulcer	9
Gastrogastrostomy for	
Hour-glass stomach	1
Gastroplasty for	
Hour-glass stomach	3
Exploratory celiotomy for	
Chronic gastric ulcer	1
Total	25

It will be seen, therefore, that gastro-enterostomy alone was performed 102 times; and, combined with some form of excision of the ulcer or other surgical procedure, except partial gastrectomy, 7 times; that is, it was the essential part of the operation in 109 cases. In the remaining 25 cases a number of different procedures were employed.

CHRONIC DUODENAL ULCER

We will consider first the results obtained in the chronic duodenal ulcers, 74 in number (72 of which were treated by simple gastro-enterostomy). Six of the patients died following operation — a mortality of 8.1 per cent. It should be remembered that this is the mortality in an unselected group of cases treated in a general service by a number of different operators, but as we are especially interested in the late results in the patients who survived, I shall not dwell on the causes of operative deaths.

Two of the remaining 68 patients died subsequently, too soon to estimate operative results — one of pulmonary tuberculosis, lighted up by the operation; one of pneumonia shortly after leaving the hospital. One patient met accidental death by drowning three and a half years after operation, having been completely cured of his gastric symptoms in the meantime.

Of the 65 remaining cases, we have been able to trace all but 7.

Fifty-eight cases are available, therefore, for a study of late results, and of these 51 patients are completely cured and free from their former gastric symptoms. Five are improved, but still have pain and indigestion at times, and two are unimproved. Of the total number of patients operated on, therefore, 68.9 per cent. are cured, and if one reckons from the number of cases actually traced, 88 per cent. have good results and 12 per cent. poor results.

Let us turn for a moment to the results of other clinics: Küttner,[2] from a study of 1,100 cases of surgical conditions of the stomach and duodenum treated in the past seven years, says that the permanent results of gastro-enterostomy for ulcer of the stomach and duodenum, including those in the vicinity of the pylorus, or at a distance from it, were extremely favorable. He gives 65 per cent. of complete cures and 20 per cent. of very essential improvement. He includes in his study, cases of active ulcer, pyloric stenosis and hourglass stomach. He also states that the functioning of the stoma was determined by late roentgenoscopy, and that it was excellent except in a few cases, which gave also unfavorable clinical results. He believes positively that gastro-enterostomy functionates in the presence of an open pylorus, and states that the findings in animal experimentation do not apply to man. His reexamination caused great doubt in his mind as to whether artificial constriction of the pylorus actually yielded better results than simple gastro-enterostomy.

He noted that in three cases of hemorrhage after operation, only one followed simple gastro-enterostomy, the other two following total pyloric exclusion, and concludes with the statement that simple gastro-enterostomy is one of the most beneficial operations known to surgery.

I have quoted Küttner somewhat fully because of the great amount of material from which his conclusions were drawn; his recognized standing as one of the ablest surgeons on the continent, and because his views express so well our own conclusions, both as to the permanency of a properly constructed gastro-enterostomy opening in the presence of a patent pylorus, and as to the favorable clinical results of simple gastro-enterostomy. Küttner attributes the favorable remote results in gastro-enterostomy to the excellent functioning of the gastro-enterostomy opening, and considers the essential feature the rapid evacuation of the stomach; which was always a marked feature in our own late roentgenoscopies.

Hartmann,[3] in an able summary of the subject presented before the last meeting of the International Surgical Society in New York, states that the widespread belief that the gastro-enterostomy opening is functionless in the presence of a permeable pylorus, and usually undergoes cicatricial closure, is a fallacy, and gives the results both of animal experimentation and roentgenoscopies to prove that when the opening

2. Küttner: Arch. f. klin. Chir., 1914, cv, 789.
3. Hartmann: Ann. Surg., 1914, lix, 835.

is at the pyloric antrum and not at the fundus, it remains permeable and functionates whether the pylorus is patent or not.

There has been a tendency by some surgeons to belittle this drainage feature, and to attribute all beneficial results to chemical changes in gastric secretions. While this undoubtedly is a factor, late gastric analyses have failed to establish very marked changes in the acidity of gastric chemistry, and such benefit as may be attributed to the chemical changes is more probably due to the fact that acid secretions remain in the stomach a shorter time and in smaller amount, than that the chemical character of the secretions is greatly changed. Also, in the case of duodenal ulcer, the gastric contents, instead of being projected in spurts directly against the ulcerated surface, leave the stomach chiefly via the stoma.

Brun[4] believes that the best results follow gastro-enterostomy at or near the pyloric antrum rather than at the fundus, and speaks especially of the "motor unrest" of a stomach with a gastro-enterostomy opening far to the left, and also in the presence of artificial closure of the pylorus, due to the constant effort of the stomach to overcome the obstruction. He believes that gastro-enterostomy properly placed gives excellent results in ulcer, and that the proper place is at or near the pyloric antrum, where the stomach normally propels the food for evacuation.

Von Eiselsberg[5] favors his method of pyloric exclusion in pyloric or duodenal ulcer, but his series, up to the time of the report (thirty-six cases) showed no better results than simple gastro-enterostomy.

Sherren[6] speaks strongly in favor of simple gastro-enterostomy for duodenal ulcer, and does not believe in excluding the pylorus. Kocher[7] also favors simple gastro-enterostomy, and believes that pyloric exclusion is not only inadvisable, but probably harmful. Pessimistic views are not wanting, on the other hand, Jianu[8] and Zweig[9] believing that the results of gastro-enterostomy are mediocre. Our feeling in regard to pyloric exclusion is based more on reports or, rather, absence of reports which would seem to prove its desirability, than on our own experience, which is practically nil. In the one case in our series (Case 1033) the patient had recurring pain and hemorrhage after pyloric exclusion, just as he had had after gastro-enterostomy, while a high percentage of the simple gastro-enterostomies have been completely cured.

In one case only of duodenal ulcer, pylorectomy was performed for multiple ulcers of the chronic perforating type, as sharp hemorrhage had occurred, and recurrence was feared. This patient, operated on only four months ago, is quite well and relieved of distressing symptoms of long standing.

For nonperforating, chronic duodenal ulcer, therefore, we believe that simple gastro-enterostomy is an effective and safe procedure, and should be the operation of choice; that there is no evidence that the addition of pyloric exclusion will give better results; that a properly constructed stoma will functionate and remain patent for years in spite of an open pylorus, and that the drainage feature of a functionating gastro-enterostomy opening is an important factor in effecting and maintaining cure of the ulcer.

4. Brun, H.: Deutsch. Ztschr. f. Chir., 1915, cxxxii, 566.
5. Von Eiselsberg: Surg. Gynec. and Obst., 1914, xix, 555.
6. Sherren: Surg., Gynec. and Obst., 1914, xix, 564.
7. Kocher: Deutsch. Ztschr. f. Chir., 1912, cxvi, 183.
8. Jianu: Wien. klin. Wchnschr., 1910, cxvi, 1223.
9. Zweig: Arch. f. Verdauungskr., 1913, xix, 740.

As in no case of this series has the patient been treated by Finney's method of pyloroplasty, I am not able to comment on this procedure from actual observations, but appreciate the arguments in its favor so well presented by Finney[10] in his recent report of results in one hundred cases.

I am also unable to comment on the occurrence of jejunal ulcer as a late complication following gastro-enterostomy, as no case of this lesion has occurred in our series, or, at least, none have been recognized.

CHRONIC GASTRIC ULCER

Our feeling in regard to simple gastro-enterostomy in gastric ulcer at a distance from the pylorus has been somewhat different. The well-known tendency of these ulcers to undergo malignant degeneration, together with the fact that a greater percentage fail to heal after simple gastro-enterostomy, has made us feel the desirability of excising such ulcers when it could safely be done.

Clairmont's statistics from von Eiselsberg's clinic[5] illustrate well the less favorable results, though many operators take a much more optimistic view, notably Sherren,[6] whose late results in a long series of unexcised gastric ulcers failed to show a single case in which carcinoma had developed.

Our series includes thirty cases of gastric ulcer, in six of which there was hour-glass contraction. The operative procedures were distributed as follows:

Simple gastro-enterostomy	13
Local excision with gastro-enterostomy	3
Local excision without gastro-enterostomy	2
Partial gastrectomy	3
Cautery puncture with gastro-enterostomy	1
Transgastric resection	1
Gastrogastrostomy (hour-glass)	1
Gastroplasty (hour-glass)	4
Gastro-enterostomy (hour-glass)	1
Exploratory celiotomy	1
Total cases	30

Six cases of hour-glass stomach are included in the series. One gastrogastrostomy patient is well, four and one-half years after operation, and a recent roentgenogram shows rapid emptying of the cardiac pouch, and a good functioning of the artificial stoma. One patient with gastro-enterostomy in the cardiac pouch soon returned without relief of symptoms, and was later lost track of. In four recent cases the patients are relieved of symptoms to date: three were treated by gastroplasty alone, one by gastroplasty with gastro-enterostomy.

Of the thirteen patients with gastric ulcers treated by simple gastro-enterostomy, two died following operation, and two subsequently; one was unimproved, and developed carcinoma a year later; one with an extensive ulcer of the lesser curvature, showed only a moderate improvement one year later and seven are entirely cured of symptoms at intervals of from five and a half years to seven months.

In the two cases of excision of ulcer of the lesser curvature without gastro-enterostomy, one patient is perfectly well two and a half years later; the other continued to have symptoms, and returned three years later with extreme cachexia and probably carcinoma.

In the three cases of local excision of the ulcer with gastro-enterostomy, one patient died after operation following secondary operation for persistent vomiting;

10. Finney: Surg., Gynec. and Obst., 1914, xviii, 273.

the other two patients—recent cases—are completely relieved of symptoms after a smooth operative recovery.

In the three cases of partial gastrectomy (Billroth No. 2) two patients are completely relieved of symptoms at two years, ten months, and three years, three months, respectively. One patient, in a difficult case of an ulcer near the cardia, died following the operation. One patient, treated by Balfour's method of cautery puncture and gastro-enterostomy, is quite well after six weeks, and in one case of transgastric resection the patient is well after three months.

Our results in this series of thirty cases of chronic gastric ulcers and their sequelae, therefore, are much less favorable than those in the duodenal group, and the series is too short, and many of the cases too recent, to make our deductions of much value.

The higher mortality of simple gastro-enterostomy in gastric ulcer was due more to the pathologic condition present than to the operative procedure, one of the two immediate deaths being in a cachectic old man with a huge ulcer of the posterior wall, and extreme cachexia, in whom I made the ill-advised attempt at operative relief by performing anterior gastro-enterostomy. The case should have been considered inoperable. Death occurred on the third day from postoperative pneumonia.

The other two deaths in the series occurred, one after local excision of the ulcer with gastro-enterostomy, the other after a difficult partial gastrectomy. Two patients died subsequently: one a year later, apparently cured of his gastric symptoms; one from pneumonia shortly after leaving the hospital.

In two cases of the series the patients developed carcinoma later, one after simple gastro-enterostomy for ulcer near the pylorus, the other after local excision of the ulcer of the lesser curvature, without gastro-enterostomy.

In seventeen of the cases the patients are well and quite relieved of symptoms, though of this number five were operated on too recently to be classed as permanently cured.

To summarize our conclusions, therefore, in regard to the treatment of chronic gastric ulcer, we believe that when the ulcer is at or near the pylorus, pylorectomy (Rodman's operation) is probably the ideal procedure; when on the lesser curvature, in the pyloric or middle third, local excision, with or without gastro-enterostomy; cautery puncture (Balfour) either with or without gastro-enterostomy; transgastric resection, or partial gastrectomy (Billroth No. 2, or Polya's method) are the procedures from which to choose, that is, some method of excision of the ulcer rather than simple gastro-enterostomy.

Of these various methods we believe that local excision, combined with gastro-enterostomy, is probably the method of choice. Local excision without gastro-enterostomy shortens the lesser curvature and causes some distortion of the stomach, and probably interferes with its normal peristalsis and propulsion of food through the pylorus. We believe, therefore, that an added gastro-enterostomy at the pyloric antrum will give better drainage and probably better clinical results.

When the ulcer is on the lesser curvature, so near the cardia that excision would be difficult and hazardous, cautery puncture, with or without gastro-enterostomy, is a valuable addition to the possible methods of procedure.

Transgastric resection is spoken of very favorably by von Eiselsberg[5] and by Kummell;[11] and in my one case of this procedure, I was much pleased both with the immediate results and the complete relief of symptoms. The case is too recent to have late results of value as yet.

When, as was the case in two of our simple gastro-enterostomies, the ulcer is too extensive to allow of resection, gastro-enterostomy can at best be considered only a palliative measure. In one of these cases, already referred to, the patient died immediately; the other showed little, if any improvement at the end of a year.

In regard to transgastric resection, Kummell[11] reports eighteen cases with two operative deaths, and speaks of it as a severe operation, remarkably well tolerated, and suitable for ulcers situated in the middle of the stomach. In nine of these cases which were followed the patients were entirely well and able to work. Von Eiselsberg[5] reports twelve cases with four deaths, and is also favorably impressed with the results of this operation. It is, however, a severe procedure, the mortality of which will probably be higher than that of local excision, with or without gastro-enterostomy.

PERFORATED DUODENAL AND GASTRIC ULCER

There were seventeen cases of acute perforated duodenal ulcer in the series, with two operative deaths, one due to subphrenic abscess and one to postoperative pneumonia. In one of the fatal cases gastro-enterostomy was performed, and was not drained (death from pneumonia). In the other, the perforation was sutured; drainage was used and no gastro-enterostomy was done (death on the twenty-second day from subphrenic abscess). No patient died of extension of the peritonitis. Primary gastro-enterostomy was performed in twelve of the seventeen cases. Two patients died subsequently, shortly after leaving the hospital; one of hemorrhage, one of pulmonary tuberculosis.

In the thirteen remaining cases, seven patients are cured and free from symptoms; three after four years, one after three years, three more than two years. Five are improved, but have more or less indigestion and pain, and one is untraced. Of the five patients who still suffer from pain and indigestion, four had primary gastro-enterostomy performed, and one a simple suture of the perforation. Of the cured patients five had gastro-enterostomy and two did not. Conclusions as to the effect of gastro-enterostomy on the permanent cure of symptoms in this group, therefore, are not of much value. It would seem fair to assume, however, that primary gastro-enterostomy in properly selected cases does not greatly increase the immediate mortality, and that it should increase the prospects of ultimate cure. None of the cases of this series, treated by simple suture without gastro-enterostomy, however, have required secondary operations for pyloric stenosis.

In the thirteen cases of acute perforated gastric ulcer, six patients died following operations, all with extensive generalized peritonitis, one having pneumonia, one subphrenic abscess, and one delirium tremens in addition to the peritonitis. Gastro-enterostomy was performed in five of the seven patients who recovered, but not in any of the fatal cases.

In acute perforation of gastric or duodenal ulcer, the choice of procedure is limited to the consideration

11. Kummell: Centralbl. d. ges. Chir. u. Grenzgeb., 1914, v, 743.

of drainage, the means of cleansing the peritoneal cavity, and the question whether or not primary gastro-enterostomy should be added to closure of the perforation.

The peritoneal cavity can best be cleansed by simple sponging and the use of suction apparatus; with the least possible traumatizing of peritoneal surfaces. Flushing with large quantities of salt solution is effective and safe if properly done, and is especially useful if there has been much escape of gastric contents through large perforations, especially of solid food particles. We flush much less frequently since the employment of suction apparatus has become a routine procedure.

Drainage may be safely omitted if the closure of the perforation is secure, and the cleansing of the peritoneum satisfactory. It should be employed if the friable inflamed tissue surrounding the perforation renders secure suture impossible; or if a localized abscess has formed. Drainage of pelvis or flanks is rarely necessary.

Primary gastro-enterostomy may be safely performed in many cases of acute perforation, especially of duodenal ulcer. It should not be performed if the condition of the patient or the extent of the peritonitis is such that the operative risk will be greatly increased.

Late roentgenoscopies have been made in twenty-eight cases of simple gastro-enterostomy, in all of which the pylorus was patent and not excluded, twenty-two cases showing excellent function of the stoma and good clinical result. Two show imperfect function with clinical improvement, but some persistence of gastric symptoms, three years and six months, and two years two months after operation. One fails to show an open stoma but the patient is free from clinical symptoms two years after operation. Another patient was well for about three years, but for the past eighteen months has had a return of symptoms and his stoma has apparently closed, four and a half years after operation.

Two patients are unimproved, one showing a functionating stoma, but also a penetrating unhealed ulcer (three years and nine months after operation); the other a closed or strictured stoma and probably an unhealed ulcer, one year after operation.

Of the six cases showing imperfect results, four were of acute perforating duodenal ulcers, and two of chronic duodenal ulcers.

Of the twenty-two cases showing a functionating gastro-enterostomy opening and a clinical cure, nineteen were of chronic duodenal ulcers; two of acute perforating duodenal ulcers, and one of acute perforating gastric ulcer. The time after operation at which the roentgenoscopies in these twenty-two cases were taken was as follows:

1 case	5 years, 1 month
3 cases	4 to 4½ years
5 cases	3 to 4 years.
5 cases	2-3 years
7 cases	1-2 years.
1 case	7 months

These findings would seem to justify the conclusion that in a good percentage of cases, a properly constructed gastro-enterostomy opening will continue to functionate in spite of a patent pylorus, and that a functionating stoma is usually accompanied by a clinical cure of ulcer symptoms. That closure or narrowing of the opening occurs in some cases is not disputed.

CHRONIC DEAFNESS

THE PRESENT STATUS OF ITS TREATMENT*

D. HAROLD WALKER, M.D.
BOSTON

In all the history of preventive medicine and public health, there never was a time so full of general protection of the sick and well, the weak and the afflicted, as the present. The appreciation of the necessity for the segregation of the mentally deficient, the protection of the public from those afflicted with tuberculosis and other infectious diseases, must, in time, diminish much suffering and many human ills. Prevention of inherited tendencies and bettered conditions of living are causing enormous improvement in the coming generations. All these efforts have their effect on the special senses, as indicated by the attempt to lessen ophthalmia neonatorum, the care and education of the blind and the deaf mute. Such advances in certain lines emphasize the necessity of the recognition of another class of defectives; a class, which, unfortunately, is growing. Methods of relief for this class have proved most unsatisfactory. I refer to the thousands of people who are gradually and insidiously becoming deaf; whose efficiency is lessened proportionately as the hearing lessens, and, most serious of all, whose mental activity becomes diminished, owing to the elimination of the sound of the human voice and the loss of human intercourse. A man must hear to live.

The great number of persons afflicted with deafness, especially in young and middle life, brings up the subject of the economic loss due to lessened efficiency. Holt, in an article on physical economics read before the American Otological Society, by a mathematical formula finds that the adjustment for damages for the total loss of hearing of one ear, in a man 46 years old, receiving $2 a day, is about $1,700. The question of the value of the sense of hearing is an important one, and is not mentioned in the usual accident insurance policies. One may be compensated for injuries, if such injury happens to be included in the schedule of indemnities, but loss of hearing in one or both ears is apparently considered unimportant.

Our modern life is one of ceaseless activity; strain on the nervous system is constant, and the organs of special sense, the eye and ear, are overworked. The eye receives immediate attention at the first suggestion of trouble, but the ear, on the contrary, does its work as best it may, and not until the accidental discovery that the tick of the watch or the family clock cannot be heard, or a tinnitus occurs, does the owner trouble to investigate. It is true we possess more hearing than we need in our present life. In colonial days we depended on acute hearing to enable us to hunt the deer and discover the prowling Indian; but now all that seems necessary is to be able to hear the telephone bell, and the satanic blast of the motor horn. Even the "movies" have eliminated the necessity of the spoken word on the stage. Lowered standards of hearing due to nervous fatigue and the noise of the city present a serious problem. Wittmaack and Siebenmann found by experiment that constant noise for a given length of time caused atrophy of that portion of the organ of Corti, corresponding to the location of the tone perception.

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

The development of the ear, from the simplest otic sac of the mollusk to the human ear, has resulted from necessity and environment. In the deep sea animals, the vesicle is immediately under the surface, with a differentiated and highly organized end organ. In some, there is a deficiency in the bony lamina, and the vibrations are transmitted through the skin. In others, as the cray fish, the sea water replaces the endolymph of the higher animals and the ductus endolymphaticus opens on the external surface. When life becomes more motile, semicircular canals are developed, first two and then three. In the amphibia, as the crocodile, a means of accommodation is necessary; therefore the middle ear, ossicles and eustachian tube are developed. With this newly formed apparatus come the conditions and environment which cause the greatest amount of deafness.

Theories as to the cause of interference with the normal function of hearing are many. Whether one accepts the Helmholtz theory of the ossicular chain being the means of the transmitting sound waves, or those of Mach and Zimmermann does not matter. One believes that the waves pass through the drum membrane, thence to the round window; the other insists that bone conduction is more important, and that the middle-ear apparatus is for the purpose of accommodation and any variation in labyrinthine pressure.

We know that the ordinary form of deafness is due to congestion, and from this condition an entire train of symptoms results. The thickened mucosa interferes with the free transmission of sound waves through the middle ear. Closure of the eustachian tube causes a disturbance of labyrinthine equilibrium and interference with the accommodation for lower tones. If this condition becomes more or less permanent, a chronic spasm of the tensor tympani muscle follows. The result is one which might be expected, namely, the formation of fibrous tissue, which is the last stage of all recurrent or constant congestion, whether the conditions exist in the liver, kidney or middle ear. This is the condition commonly known as chronic catarrh of the middle ear. A great many terms have been applied to the various stages, from the serous condition following a simple head cold to the adhesive type of the most advanced form. It is one and the same thing; an insidious and certain change. The future maintenance of our standard of hearing depends on the education of the public to the realization that good hearing is as important as good sight. Our duty, therefore, is to prevent deafness in the coming generation, and to alleviate the afflicted by general and local measures.

One of the most important predisposing factors in early life is the belief that a child cannot live too much in the open. In our strenuous climate of the east, much harm results from the modern method of putting babies and small children out of doors to sleep, in all kinds of weather. If, for past generations, we were accustomed to live in the open for the entire twenty-four hours, no harm would follow, but sleeping in the damp cold winds of the winter and spending the waking period in a room generally overheated, establishes conditions most favorable for trouble in the future. The child often lies on its back, with its head low; a position which favors mouth breathing, congestion of the turbinates, development of adenoid tissue and infection of the eustachian tube by gravity. I have often noticed in a certain hospital where children are obliged to remain in the recumbent position because of orthopedic apparatus, that the number of aural affections is very large, unquestionably due to the unnatural position.

As soon as possible the child should be examined by a competent aurist, and any obstructions to free normal breathing eliminated. This applies especially to removal of adenoid tissue and is of the greatest importance when it is necessary to correct uneven teeth. Operations on spurs and deviations of the septum should be postponed, if possible, until the nose has become more fully developed. The results of the examination of one thousand schoolchildren, made about ten years ago, were most instructive. In practically every case, the relation between physical condition and mental efficiency was remarkable. Children with defective respiration, and nasopharyngeal obstruction, suffered from diminished hearing, and showed a corresponding low degree of scholarship. On this examination was based the Massachusetts state law providing for annual tests of hearing as well as eyesight.

In treatment of the adult deaf, it is necessary to recognize the mentally depressed condition of the average patient, and to encourage him as much as possible, at the same time telling him the facts. The usual chronic form of deafness cannot be cured, and afflicted persons should be told so in a tactful manner. They should be encouraged to go among their fellow men and to use their ears. The tendency of the deaf person is to hibernate; to consider himself a nuisance to his friends. This worry only makes a bad matter worse. Inasmuch as congestion plays the important rôle in the cause of deafness one should first attempt to remove such condition. Constipation is the rule, and is generally marked. The effect on the congestion of the turbinates and nasopharynx is well recognized. It is likely that the absorption of toxins also affects the cochlea and auditory nerve. Motoring has become so general that a "motor ear" is of common occurrence. This condition is caused by the abnormal speed through the air, and from the irritation of dust. The old-fashioned idea of putting cotton in the external meatus is a good one. It prevents cooling of the warm air in the external meatus and thus wards off neuralgia. The use of a simple oil in the nose before going out, and a plain saline wash, after returning, is good.

Ill effects from sleeping in the open in all kinds of weather are as marked in the adult as in the child. Persons who at night have the extreme fresh-air habit, often are obliged to spend their days in close offices, or in badly ventilated and overheated rooms; they wonder why the nose is usually closed and breathing difficult. When one sleeps the circulation is at its lowest ebb. The body is recumbent, and during respiration the nasal mucous membrane and the turbinal tissue hypertrophy in order to warm the abnormally cold damp air. After a time the swelling becomes permanent, and a chronic passive congestion and a hypertrophic rhinitis result. We should have plenty of fresh air, but it is not necessary to sleep in a wind to get it. The head should be protected from drafts and a pillow used. Our forefathers used pillows, and high ones too; it is to be remembered they had fine figures and flat backs.

Another cause of congestion to be overcome is the use of tobacco. There is no question but that it is a great factor in the decrease of hearing, not from the absorption of toxic agents alone, but from the local

irritation of the heat and volatile substances in the smoke. Alcohol, too, should be eliminated. It is, of course, difficult to persuade the average man to give up the habits of years, but the facts should be explained to him fully, and he must take his choice. Diet and exercise should be prescribed just as carefully as though a heart or a kidney were involved. The occupation of the patient should receive attention, whether his environment can be improved and predisposing factors to deafness overcome.

In the local treatment the attempt should be made to deplete the mucous membrane of the nose and pharynx, to remove points of contact in the nose and to cure absolutely any and all accessory sinus disease. So many able writers have dwelt on these conditions, that it is only necessary to mention a few special points. Contact between the septum and a turbinate may not cause a congestion, but a reflex spasm of the tensor tympani muscle. The retraction of the drum might be due largely to such an action rather than to a closure of the eustachian tube alone. It is a well-known clinical fact that monaural deafness often improves after such contact is removed. One should not destroy turbinal tissue if it is possible to deplete by mild applications or other means. This is especially true in young women. In later life when an atrophy naturally occurs, the apparently excessive turbinal tissue is needed.

Yankauer has conferred a great benefit on otology by reinstating the use of the bougie, which had been to some extent discarded. The treatment is greatly facilitated by his system of graded sizes and method of application. This form of treatment gives more relief than others at our disposal. The time-honored inflation has its place, but the danger of its abuse is great, and the direct benefit only transient. After the use of the air bag or catheter, while the drum membrane remains tense, there may be an increased clearness of the hearing, due to the slight improvement in accommodation and the relief of the excessive intralabyrinthine pressure. It has never seemed possible to exert any appreciable effect on the strong tensor tympani muscle, which after all is an important cause of the retraction, or on an ankylosis. If the middle ear needs air the trouble is in the tube or the nasopharynx, and the cause should be treated. If the eustachian tube is patent, then inflation to any great extent must destroy what little accommodation still exists. It too often occurs that the aurist does not know what else to do. He inflates and continues to inflate, with no appreciable improvement in the hearing. The practice of some aurists of teaching the patient to inflate by the Valsalva method, or of prescribing the use of the air bag at home, is likely to do more harm than good.

Bougieing, with the application of astringents, and attention to the nasopharynx, should be continued until all possible improvement in hearing is obtained. In the more advanced form of deafness the fibrous stage is reached. Hypertrophy has given place to atrophy. The eustachian tube and nasopharynx are negative; the hearing does not vary with the weather but does vary with physical fatigue and worry. The drum membrane may be retracted and thickened, and the degree of deafness is most marked. This is the hopeless stage, the damage has been done and help is almost impossible. Deafness in this class of cases is due to fixation of the stapes and thickening of the membrane of the round window. A most discouraging factor is the possibility of an atrophy of the organ of Corti and other cochlear changes, as shown by Manasse. Whether these changes are due to long continued increase in the labyrinthine pressure or to disuse, is not known. One can see how impossible it is to improve such cases. Fibrous tissue cannot be changed by any known method.

The fact that the treatment of the chronically deaf is so discouraging, and the realization of the great increase in the number of those slightly "hard of hearing," lead to the investigation of the various methods of electric treatment. The customary form is the high frequency, applied with different kinds of electrodes. This current was tried on a few patients, and while there seemed to be an improvement it was not permanent, the effect being that of a nerve tonic, which did not reach the cause. The problem was to stimulate the atrophied and disused intratympanic and tubal muscles, with the hope that not only some latent accommodation might be awakened but also that a slight effect upon adhesions might be produced. The sinusoidal current was selected. This current is an alternating current, but differing in that the increase from neutral to its maximum and to neutral again, is very slow and gradual. It does not tetanize a muscle by rapidity of alternations as in a galvanic, but causes actual muscular contractions, as in normal exercise. The number of movements per minute and the length of time necessary for treatment, will have to be determined by experience.

A fair number of patients were treated by this method, from the moderately affected to the very deaf. The results were encouraging, not that there was a marked change in the actual hearing distance, but an increase in the acuity and more ease in the differentiation of words. The reason for mentioning this form of current in the treatment of deafness is largely theoretical, in the hope that some may be interested to investigate its merits further. Any addition to our present unsatisfactory armamentarium should be welcomed.

390 Commonwealth Avenue.

ABSTRACT OF DISCUSSION

DR. H. B. GRAHAM, San Francisco: Undoubtedly the treatment of all these patients depends entirely on the pathology, as Dr. Walker has brought out. The work of Siebenmann and Wittmark is directed along the line of grouping them in such a way that we can say what will be the prognosis. The work of Siebenmann that I saw in Boston certainly was fascinating. He gathered together a number of ears of rabbits, placed them in kettles and subjected them to different sounds, and then studied the process of degeneration in the cells of the labyrinth. It is remarkable the results he got with a very small amount of trauma over a short period of time, showing us that undoubtedly human beings who are subjected to these unnecessary noises are subject to degenerative processes in the labyrinth itself from which they do not recover. Anything that we can do as a preventive measure in the line of quieting a part of these noises around us undoubtedly will help in the prolongation of the use of the ear for us.

DR. HARRY L. POLLOCK, Chicago: I was somewhat disappointed that the doctor did not give us the treatment. During the last year I have undertaken to study these nonsuppurative cases of chronic deafness in which nerve degeneration has been excluded, and also cases of otosclerosis. In the beginning these cases of chronic deafness are usually brought about by some irritation of the nose and nasopharynx, and after the removal of adenoids, tonsils, spurs, etc., we may find that the condition was too far

advanced to allow improvement of the condition of the hearing. I find that advanced cases that come to the otologist practically all come with an open tube. The main trouble in these cases is on account of the bands and adhesions that occur in the middle ear. Duel found that the negative galvanic current would dilate the tube in these cases in which the tube was occluded or stenosed; with the apparatus devised by him the application of the negative current with the positive in the hand would dilate the tube and give good results. A few years later Yankauer gave us tubes and brushes for the middle ear. We tried this method and obtained results, but they did not reach the trouble in the middle ear. Knowing the affinity of the positive electrode for iodin, I figured if I could get iodin into the middle ear I could absorb these bands and get a return of hearing. So I had an ear speculum made, attached to the negative pole. I used a copper bougie electrode through a eustachian catheter. Into the speculum connected with the negative pole I placed a saturated solution of potassium iodid, and turning on the current very gently I found I could draw the released iodin to the middle ear. The results, however, were not very startling. I am still working with it and expect next year to give a report on these cases.

Dr. Henry Horn, San Francisco: In spite of the fact that chronic catarrhal deafness is the most common condition which we have to treat, we will never come to any definite conclusions until we can correlate the results of many different observers. You all know the extremely unsatisfactory results that were obtained by the use of fibrolysin in the treatment of middle ear conditions. There were various reasons for the failures, but theoretically it seemed as if the idea might be of value. The following treatment has proved rather satisfactory in my hands. I have used in six cases a bismuth salt of fibrolysin and eliminating the mental element to the patient and myself, I can safely say that there seems to be something in the use of this preparation, given over long periods, which improves tinnitus and the hearing.

Dr. D. Harold Walker, Boston: My chief reason for bringing the paper before the section was to suggest a method I am trying now, the sinusoidal current. While I am not prepared to give conclusive results, I hope that some of you will be interested in it. Thirteen or fourteen out of twenty cases have been improved as far as their hearing more distinctly is concerned. Some patients who are just deaf enough to miss a word here and there have been made more comfortable.

"Patent Medicines" and Infectious Diseases.—An epidemic of diphtheria in Ottawa, Canada, recently was believed by the board of health to have been fostered by the use by the public of a "patent medicine" called "Diphtherine," advertised as a cure for diphtheria. In this epidemic, 414 cases occurred in six months. In commenting on this, the *Canadian Medical Association Journal* (July, 1915) says that the sale of "patent medicines" professing to cure infectious diseases should be prohibited by law, and that the use of such a nostrum for the cure of infectious diseases must inevitably result indirectly in the spread of such diseases. Laws are made for the reporting of infectious diseases, but the duty of making such report is laid on the physician who discovers such infections. It is said that the chief value of a "patent medicine" in the eyes of the layman lies in the fact that it enables him to dispense with a physician, and therein lies their viciousness with reference to the infectious diseases, even though they contain no dangerous ingredients. Though the latter may be insured by government regulations, when the use of such nostrums endangers the health of the community at large, this is not sufficient; the evil effects of the use of such nostrums as "Diphtherine" in defeating the laws aiming at the protection of the public by control of infectious diseases must be taken into account. The promoters of "Diphtherine" even have the assurance to undertake to instruct the public how to diagnose this deadly disease, diphtheria.

SUBINFECTION FROM FOCI IN THE PELVIS AND ABDOMEN *

HORACE G. WETHERILL, M.D.
DENVER

Much detailed study, both clinical and bacteriologic, has resulted in establishing many important facts relating to general infections of mouth and tonsil origin, while little, very little, appears to have been given to like pathologic processes of pelvic and abdominal origin.

Perhaps an exception may be made of acute general infections, such as follow mechanically induced abortions, gonorrhea, etc., though there is still much to be learned about their bacteriology and routes of diffusion; the phenomena of arrest in the lymph nodes and in certain organs like the liver and spleen, and the vital processes by which such infections are combated and immunity is established.

Chronic infections from local foci in the pelvis and abdomen, or as Adami prefers to call them, subinfections (and toxemias caused by toxic products liberated by the death of the organism), have failed to receive the attention their importance merits.

Sir Arbuthnot Lane has drawn the attention of the medical world to what he calls autointoxication of intestinal origin, and he aims to cure the condition through a total extirpation of the colon. His work and conclusions, however, appear to have been based in the main on clinical data with what, in this generation of laboratory requirements, would seem to be insufficient checking with systematic bacteriologic investigations of the primary source of the disease or of the carriers of the "toxin"; the blood and lymph and the vessels and organs through which they pass.

Lane's reasoning and results have, therefore, failed to convince many surgeons that the hazardous operations he advocates are justifiable for the relief of the various, often trivial, and far too numerous diseases and symptoms he cites as curable by short circuiting and colectomy and, happily, humanity has been spared the indiscriminate adoption of a practice which would inevitably be disastrous if generally accepted and applied.

Of this Adami says, "It is, I hold, too grave a responsibility to assume, this of starting an epidemic of operative surgery purely upon an empirical basis, on a foundation that is not established upon uncontrovertible fact."

The acceptance of Lane's theories as to the causes of many of the diseases he attributes to colonic stasis implies the acceptance of the theory of the permeability of the normal colon by pathogenic organisms; a theory which would appear to have been clearly disproved by Neisser, who asserts that "the importance of the intestine as a portal of entrance for bacteria has been greatly exaggerated." He further says, "It has been shown that under certain *pathologic conditions* some bacteria may enter the blood stream through the intestinal wall as, for instance, anthrax, tubercle bacilli, typhoid bacilli and some of the colon group. Some authors have assumed that such a passage of bacteria through the intestinal wall may take place under normal conditions or when there are only slight changes, such as venous congestion. Attempts have

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

been made to explain many diseases whose etiology was not clear in this way." Neisser reviews the literature and gives a bibliography of seventy-five titles. He describes experiments of his own, which show that under normal conditions bacteria do not pass through the intestinal wall either into the blood or lymph circulation. In contrast with Nocard's results, he found that after bacteria were given to animals, both the chyle and the mesenteric glands were completely sterile. He found also that the chyle has no bactericidal qualities.

As gynecologic and abdominal surgeons we are more often and more directly interested in the invasion and diffusion of pathogenic bacteria through damaged tissues such as may be found following more or less acute inflammatory processes involving the fallopian tubes, the appendix, the stomach and duodenum, and the gallbladder. During the process of recovery such infections are accompanied by partial immunization on the part of the patient, a reduced virulence on the part of the pathogenic organism and by an effort on the part of the surrounding tissues to isolate, encapsulate or encyst the local focus of the disease.

This encapsulation, if ultimately accomplished, is brought about through a quarantine fibrosis by the adjacent tissues, but before this quarantine fibrosis is complete, and indeed to some extent afterward, there are leaks, and many organisms escape into the circulation, and there is in consequence a more or less prolonged period during which such pathogenic bacteria are taken up by the blood and lymph vessels and are carried to other portions of the body to form new foci by metastasis or to create new lesions in the tissues about certain terminal vessels, as in the heart, kidneys, brain, gallbladder, stomach and duodenum.

In the light of what is now known of general systemic infections from foci in the mouth and tonsils, every gynecologist and abdominal surgeon of wide experience can look back over his past work and recall a vast number of instances in which he has been able to cure such chronic, or subinfections, by the removal of some old focus in the pelvis or abdomen. The removal of old tubo-ovarian abscesses, a "chronic appendix," a thickened, contracted or strawberry gallbladder, has been followed by a restoration of general health and well being. With the analogy of the infections from the mouth and tonsils an open book before us it seems quite clear where and how the illness of our patients may have originated. We must not, however, be content with inferences and deductions from comparisons. We must know and we must know with the certainty that can come only through the bacteriologic study of specimens removed at operation, and of the blood and the lymph glands of such patients. The bacteriologist must work with the surgeon and the surgeon must work with the bacteriologist to solve these problems.

Billings enumerates the common systemic results of focal infection as follows:

1. Chronic arthritis as one of the most common.
2. Nephritis, both acute and chronic.
3. Cardiovascular degenerations.
4. Chronic neuritis and myalgia.

He cites among other local foci of infection, chronic ulcers of the gastro-intestinal tract, chronic appendicitis, cholecystitis and cholangeitis, and the genito-urinary tract. He says of chronic catarrhal appendicitis that it may produce not only the local discomforts, including disturbance of the functions of the digestive organs, but it may also be a focal source of systemic infection with the damage done chiefly to the cardiovascular apparatus.

It was such a case as the preceding paragraph refers to that recently attracted my attention anew to this subject and inspired this paper. I venture to give a brief history of the case.

The young man had long been a patient of Dr. S. G. Bonney. Dr. Bonney had seen him through several severe attacks of diffused systemic infection of primary tonsillar origin with severe local manifestations in the heart, pleura, kidneys and appendix. A detailed history as to his early cardiac complications may be found fully set forth in Bonney's "Pulmonary Tuberculosis and Its Complications," pages 499, 500, 501. The transcript of the history of this case as given to me by Dr. Bonney for this paper is as follows:

A tonsillectomy was recommended for a delicate child of 8 years with a history of repeated attacks of acute tonsillitis. The operation was done while visiting in another state, but on return to Colorado it was found that the tonsillar tissue had been but partially removed. The operation was in no sense a success, for subsequent acute attacks took place. When 10 years of age the first serious systemic complication was experienced.

During the ensuing few years he experienced several acute illnesses characterized by fever, pain in the joints, dilatation of the heart with endocardial murmurs and rapid pulse, these attacks occasionally being preceded by a mild tonsillar infection. Three years ago it was decided to have the tonsils thoroughly enucleated under a general anesthetic, notwithstanding the fact that the heart at that time was not in an entirely satisfactory condition, the pulse being rapid even when at rest and the heart murmurs persisting. There was also a slight nephritic involvement as evidenced by a trace of albumin with hyaline and granular casts. He was kept in bed for several months after the operation, following which the albumin disappeared, as well as the casts, and the evidences of kidney irritation have never returned.

In April, 1912, he went to Kentucky and Tennessee, remaining one year and two months, apparently in a very satisfactory condition, but in March, 1913, again experienced an acute illness reported to have been characterized by acute pains in several of the joints suggesting what had been previously regarded as acute articular rheumatism (undoubtedly an acute infectious arthritis). He remained in bed from March until June in the South, developing in the meantime an acute pleurisy with effusion *and a very severe appendicitis which was regarded as inoperable on account of his heart trouble.*

He was brought home in June, 1913, apparently hopelessly ill. There was great prostration and emaciation with daily fever of 101 to 102, marked dyspnea, dilatation of the heart and a double mitral murmur. He remained in bed for many months, I should judge at least six, the chief features of treatment being absolute and complete rest, and efforts to promote elimination in every possible way, together with supporting measures, careful attention to diet and stimulation.

He made a very satisfactory improvement and was finally able to be about without noticeable shortness of breath until an acute attack of appendicitis developed in the summer of 1914. Immediate operation was performed by Dr. Wetherill and the subsequent course has been satisfactory beyond measure. He has never had an ill day since. There has taken place a very substantial gain in weight, the pulse is uniformly slow and of good character, the color of the face is better than for ten years, there is no shortness of breath even on considerable exercise, there is no dilatation of the heart. There still exists a faint but distinct endocardial murmur with satisfactory compensation of the cardiac insufficiency.

My operation for the removal of his appendix was done July 26, 1914. The patient was then 18 years old. The attack was so severe that immediate operation was deemed imperative notwithstanding the bad condition of the heart. Every preparation was made for rapid work and the anesthetic was carefully given. The appendix was found gangrenous and covered with lymph. It was enveloped in a mass of old adhesions made up of the omentum and other adjacent tissues. Following my practice in such cases, no intraperitoneal drainage was used, but an ample drain was placed through the superficial tissues down to the peritoneum. The patient made an exceptionally smooth operative recovery and, as stated by Dr. Bonney, had been in excellent health since. Taking the history of the case and the findings at the operation together, it is probable that this old focus about the appendix was responsible for maintaining the systemic intoxication and infection.

Such an endocarditis as was present in this instance, originating through systemic infection from a focus which provided constant though minute doses of pathogenic organisms, and which is at once improved after the removal of the source of the infection, leads one to speculate whether most of such remote lesions are not truly embolic in origin.

If possible it must be determined also whether in such a case as this, for example, the infection of the appendix was primary in the appendix or whether it was due to, or coincident with the early attacks of tonsillitis for which the tonsils were removed and to which the early cardiac symptoms were attributed, or whether the infection of the appendix was secondary and possibly embolic from the tonsil focus.

It now seems highly probable that the transfer of many pathologic processes from one part of the body to another, which we have called metastases, are in truth a conveyance of the causal agent—the pathogenic bacteria—through the blood vessels, with their arrest in clumps or as individual organisms in the terminal vessels and the tissues surrounding them, constituting infective capillary emboli such as are found in pyemia and so-called ulcerative endocarditis from the *Streptococcus viridans.*

In confirmation of this theory Rosenow has demonstrated that the reason why acute rheumatic endocarditis originated only in youth is purely anatomical. The typical verrucose endocarditis of acute rheumatism is, he claims, of embolic origin and can be induced by inoculating half grown rabbits with streptococci of a grade of virulence closely allied to that which in older rabbits will induce myositis. Why the older rabbits do not suffer from endocarditis is because the heart valves have become nonvascular, the fine arterioles present in early life in the proximal two thirds of the cusps undergoing obliteration.[1]

In all probability similar vascular changes explain the incidence and location of rheumatoid changes at different life periods.

The application of such facts as are here set forth to the common types of neglected sources of infection in the pelvis and abdomen, must of necessity awaken all of us to a fuller realization of the possibilities of such local foci as causes of some of the subtle and intractable constitutional conditions presented by many of our patients.

The practical result of such application will be that no investigation of one of these cases of chronic systemic infection can be regarded as complete till all possible sources of focal infection have been investigated, which will include with the mouth and tonsils all other lymphoid masses, such as the appendix; and in adults, the genito-urinary organs, including the seminal vesicles, the gallbladder and the stomach and duodenum.

E. C. Rosenow has experimentally produced ulcers of the stomach in rabbits and in dogs by the intravenous injection of certain strains of streptococci. He has made cultures from gastric ulcers in man, and in two of these ulcers he has found streptococci, taking them from the depths of the ulcer, which leads him to believe in the possibility of such ulcers being infectious in origin. In the animals in which these organisms produced ulceration of the stomach the most common associated lesion was a cholecystitis and beginning gallstone formation.

As gynecologic and abdominal surgeons we must be interested in this pathologic problem in all of its aspects for it is now quite certain that infections may be carried by the blood to the pelvic and abdominal viscera from focal infections in remote parts of the body, as the mouth and tonsils, and, on the other hand, it is equally certain that general systemic infections with embolic lesions all over the body may originate from local foci, more or less chronic or latent in character, in the abdomen.

Rosenow has recently conducted a series of experiments which appear to prove that appendicitis is very often the result of a secondary hematogenous infection from a distant focus like the tonsil.

This conclusion would seemingly be confirmed by the almost epidemic character of acute appendicitis during periods of prevalence of influenza, tonsillitis and grip, so that clinical confirmation of his theory of the etiology of the disease may perhaps be conceded.

The acceptance of this theory of the origin and mode of transmission of infecting organisms from the throat to the appendix by an embolic process and their lodgment and multiplication in the lymphoid tissue of the appendix, for which they may possess a sort of elective affinity, is not in the least incompatible with the contention of this paper, that is, that such a new secondary focus, once established in or about the appendix, may, if not dealt with surgically, be a source of serious and widespread systemic infection; as apparently happened in the instance quoted in this paper.

Lubarsch's most recent studies show that micro-organisms may lead a latent life for a long time until trauma or inflammatory hyperemia makes it possible for them to produce a typical disease. A great number of infectious diseases are of endogenous origin, that is, the micro-organisms were present in the body for a long time before the outbreak of the disease.

Latent, encysted and encapsulated focal infections such as are commonly found about the appendix and fallopian tubes are not to be regarded as free from danger even if no new activity occurs about the seat of the infection.

The clinical histories of such cases are rich with evidence that points to definite damage to remote organs, and to symptoms associated with the circulatory, renal, muscular, nervous and digestive systems which may be attributed to minute though constant hematogenous infections and intoxications from such foci, and which are cured by the removal of the supposedly latent or encysted and partially quarantined focus. One need only suggest to this section a review

1. Adami: Colorado Medicine, February, 1914, p. 47.

of our rich experience with the innumerable ills of those women on whom we have operated for old pelvic mixed infections, which were primarily due to the invasion of the oviducts by the gonococcus or streptococcus, followed by colon bacilli and other groups of organisms which have availed themselves of the damaged tissues to gain a foothold. Such patients may not be cured of old organic lesions, of arthritic changes, of established nephritis, etc., but the constant and persistent subinfection may be arrested and further organic changes may be prevented. You have seen many such patients gain weight, lose their pasty complexions and grow rosy and improve in general nutrition and good health after operation. The same improvement may be seen following the removal of an old infected appendix or gallbladder, even though the disease in those organs be secondary to a primary focus in the tonsils or elsewhere.

An acceptance of Rosenow's conclusions as to the hematogenous origin of many if not most of the infections of the appendix leads to the query whether any of the abdominal and pelvic foci from which systemic infections may arise are primary portals of entry, excepting, of course, those of the genital tract.

With hematogenous infections of the kidneys we have long been familiar and we are quite prepared to accept the theory of hematogenous origin for infections of the gallbladder, stomach and duodenum. Foreign bodies in the appendix, though rarely present, may make it vulnerable to the colon bacillus and other intestinal organisms, but its lymphoid elements certainly predispose it to selection when the blood is carrying to it and through it pathogenic organisms from another source.

If then, with the exception of the genital tract, we concede that infecting foci within the abdomen may in many if not in most instances be secondary to some other (primary) focus, a broader and more comprehensive study of such cases is imposed on us.

More thorough and more complete physical examinations must be made to exclude all other possible sources of disease, careful blood studies and cultures are required and the cooperation of other clinicians and of laboratory experts is necessary, for while the elimination of a secondary abdominal or pelvic focus may be accomplished by operation, the primary portal of entry, if one still exists, must be found and eliminated also.

Taking Billings' enumeration of the common systemic results of focal infections of mouth and tonsil origin, and comparing them with such systemic symptoms as may be clinically attributed to foci in the pelvis and abdomen, we find all of them to be common sequelae of such abdominal and pelvic foci. The subacute and chronic arthritis of gonorrheal and streptococcic origin is common, nephritis and cardiovascular degenerations are frequent and chronic neuritis and myalgias are the habitual and stereotyped complaints of those patients, especially women, who come seeking relief from old pelvic and abdominal infections.

That we as clinicians and as abdominal surgeons must accept the analogy and give greater attention to this phase of the work in our chosen field, that we must acquire a new pathologic conception of the origin and distribution of many such infections, and that we must work in closer cooperation with the bacteriologists and internists will now be quite clear to us all.

More frequent and more exact cultures from foci of infection found in the pelvis and abdomen and more frequent and more exact blood cultures must be made.

Acting on the suggestion of Rosenow we must cooperate with the bacteriologists in an effort to confirm our clinical convictions. The days of surgical empiricism and speculation have passed. Every pathologic theory and belief must be submitted to the acid test of proof.

310 Metropolitan Building.

ABSTRACT OF DISCUSSION

DR. CARL H. DAVIS, Chicago: During the past two years Dr. Rosenow and I have been working on ovaries in connection with the work which he had done before in the other lines of focal infection. Our results at present are not correlated for publication, but will be published some time this summer. Some of the cases have been extremely interesting.

One patient, an unmarried woman of about 35, had been operated on some five years previously by Dr. Webster. One ovary was removed and the other ovary resected. A short time after the operation she began to have symptoms even more severe than before the operation. Last year she came back for a second operation and the remaining ovary was removed. Cultures from this ovary gave a pure culture of streptococci in large numbers, and following the operation she had complete relief from the symptoms. Another case shows the probability of a hematogenous infection. It was that of an 18-year-old girl who had marked pelvic pains with a congenital malformation. The cervix was not connected with the vagina and was only connected with the body of the uterus by a fibrous band; yet she had a pure culture of streptococci. Another case worked out more recently, and one in which we will be unable to judge of the results at the present time, was a patient of Dr. Billings. This patient has arthritis, and the teeth and the tonsils and all the other sources had been carefully studied and eliminated. She was operated on by Dr. Webster because of some pelvic condition and an ovary removed. This ovary was studied and a pure culture of streptococci obtained in large numbers. Experimentally Dr. Rosenow was able to pass it through the blood of an animal and produce results in the ovaries of the animal tested.

DR. ALFRED B. SPALDING, San Francisco: Dr. Wetherill suggests to the abdominal surgeon a subject well worthy of consideration. Focal infections, however, work both ways. An infection of a tonsil or the teeth will at times complicate an abdominal infection. A particularly bad streptococcus infection of the tonsil brought this subject very forcibly to my attention some months ago by losing a patient from an acute streptococcus infection of the abdomen following an operation for prolapse of the uterus. The patient was operated on the day after coming to the hospital.

At necropsy there was found a pure streptococcus infection of the bladder, which caused the death of the patient. In reviewing the history it was found that this patient suffered from an attack of tonsillitis some weeks before. She had following this a slight attack of cystitis, which was treated by her physician, and apparently cured. She then came to San Francisco on account of her prolapsed condition. Unfortunately, her history of recent tonsil infection was overlooked.

Mental Laziness.—"Mental laziness" is an easily acquired habit for the tired busy practitioner, and some stimulus is needed to arouse him from his intellectual hebetude; success in practice mitigates too often the pride in exact thought and his ambition may even reach the stage of "getting by" with his professional duties, and declining to become interested in the definite problems that may present themselves.—Everett A. Bates, M.D., *Boston Med. and Surg. Jour.*

THE HOSPITAL INTERN YEAR AS A REQUIREMENT FOR MEDICAL LICENSURE

JAMES EWING, M.D.
Professor of Pathology, Cornell University Medical College
NEW YORK

In 1890, I was among those who took the first required course in pathology in the first required third year at the New York College of Physicians and Surgeons. Previous to that time, the medical curriculum consisted of two years of systematic lectures on the five "big" subjects, together with brief discussions of various minor topics. The introduction of a third year permitted the addition of several new laboratory and clinical demonstration courses. We were nervously tried out in a chemical laboratory reviewing many of the test-tube reactions which most of the college graduates had studied under far better auspices as sophomores. Additions were made to the lectures in physics, but this subterfuge did not suppress the indignation which most of the students felt against didactic drilling in this laboratory subject.

In physiology we strained our eyes from a back row of hard benches at half dissected calves, dogs and cats, purporting to demonstrate the mechanisms of the living body. Pharmacologic preparations were lazily passed around the class to the dreary hum of endless didactic lectures compiled from books on materia medica. There were 250 of us and at least one drug for each, but a pharmacologic laboratory demonstration had not been heard of. Many students never attended lectures, and some openly declared it was not worth while. Copies of the lecture notes commanded a ready market.

Not the least depressing influence was the shocking illiteracy of not a few of the lecturers, which was in striking contrast with the dignity, force and careful preparation of a few distinguished men who labored in vain to teach medicine by precept. The only serious instruction was purchased outside among a group of quiz-masters who had brought the art of cramming to the very zenith of perfection.

The third year had long been talked about, and when it came it was immediately packed full of subjects that had been clamoring for recognition. The class of '91 profited immensely by required courses in physical diagnosis, bedside clinics, obstetric work and close-range demonstrations in some of the specialties. We felt, and the faculty believed, that at graduation we were in a comparative sense real doctors.

But it soon became apparent that if any real knowledge of the medical sciences was to be gained by the student, the didactic lecture had to be replaced by laboratory demonstrations. Bacteriology had been completely overlooked in the new curriculum. This science was regarded as wholly ornamental to the practitioner, but the idea having taken root that the student must know something about the etiology of disease, bacteriology had to be squeezed in somewhere. Finally the clinical departments made more and more urgent demands on the laboratories for systematic help in the laboratory diagnosis of disease, which threatened to convert science departments into mere clinical adjuncts. In 1897, I had the pleasure of organizing a course of clinical microscopy which temporarily satisfied these demands and divested the course in pathology of the honor of analyzing blood, urine and sputum. With increasing efforts to really cover the accepted list of essentials, the curriculum was now full to the bursting point, and the inevitable fourth year was soon added.

With its advent came the first serious effort to train the undergraduate to recognize and treat disease in the living, and the success attending this effort in the last fifteen years has been the most notable achievement in medical education in America. After passing through many phases and experiments, clinical teaching has apparently settled on the system of clinical clerkships in an active hospital as the most efficient method of training practitioners. In adopting the plan, the university medical schools have endeavored to assume full responsibility of making this fourth year a period of systematic instruction and not a trial term of service to a hospital.

During all this long period of the development of clinical instruction, laboratory educators have looked on with approval or given their active cooperation. While recognizing certain defects in the clinical clerk system from the point of view of efficiency and concentration, the prime necessity of making students reasonably competent to recognize and treat disease has outweighed every other consideration.

Yet laboratory teachers have long felt that there is a growing disproportion between the student's real acquaintance with disease and his facility to arrive quickly at a diagnosis of the sick and to apply stated remedies. They have felt that the training of a practitioner is a life work and not a function of curriculums, and they believe that the value of clinical experience after a certain time depends wholly on the breadth of theoretical knowledge of disease. They observe with dismay the contempt which the average graduate shows for anything he cannot see with his eyes, hear with his ears, or do with his fingers.

While watching the remarkable development of many new branches of medical science, as bacteriology, chemical pathology, immunology, and the immense additions to our knowledge of hygiene and preventive medicine, they have said rather little of the genuine demand of these subjects for recognition in the curriculum. They marvel at the scope of such a program as that of the Fifteenth Congress of Hygiene and Demography, while observing that practical medicine is becoming largely a system of therapeutics. They have long cherished the hope that the foregoing and many other subjects which belong in the training of an educated physician might sometime find a place in our educational schemes, but it has been fully recognized that that time can come only when a fifth year is added to the medical curriculum.

It is with astonishment, therefore, that many laboratory and other medical educators have observed the sudden development of a scheme to add a fifth and wholly clinical year to the curriculum without any consideration of the needs of medical education as a whole. It is difficult to say just how this movement originated. It was for a time discussed in the Council on Medical Education of the American Medical Association but was not endorsed by that body. It has gained much headway in the West, and the state of Pennsylvania has already been induced to adopt the requirement of one year's residence in a hospital as a condition of medical licensure. It is certain that no general discussion of the plan by representative schools of the country has ever taken place. A circular of

information issued by the Committee on Pedagogics of the Association of American Medical Colleges in 1914 revealed a curious conglomeration of opinion, including complete endorsement, feeble acquiescence, total unfamiliarity, curt disregard, and forceful disapproval. It is now clear that the adoption of the scheme was hasty and imperfectly considered, but since we are told that the fifth clinical year is coming to stay, it is time to consider carefully its merits and demerits.

I myself believe that the general adoption of a fifth clinical year, as it has been established in certain localities, is not for the best interests of medical education and would create a serious menace from which the American profession would find it difficult to recover.

1. From the educational standpoint it is a tactical blunder for university trustees to relinquish their control of any part of medical education. The states have entrusted to them this function. They have made enormous outlays to meet the responsibility, and the states, unless ill advised, will not repudiate the contract. Yet few schools can provide clinical instruction by their own officers for their own purposes in their own hospitals. Assuming that outside hospitals are of a high order of efficiency, the university school should not turn over to any merely affiliated organization the finishing process in medical training.

2. To place the student at the service of a hospital with definite routine duties to perform in the interests of the hospital is to introduce an unsound educational principle. This difficulty will not appeal to the practical man, but it has been considered by medical educators. The University of Chicago has devised a fifth hospital year as far as possible in the interests of the student, but I fear that even such a carefully guarded practical course cannot be made as effective as a well planned course of genuine advanced university instruction freed from the necessary restraints and accidental interruptions of hospital routine.

3. We have thus far assumed that hospitals are ideal places for conducting medical education; but they are not, and much remains to be done before they can be made such. The hospital is conducted for the benefit of the patient, and it has taken a long campaign to secure the admission of students to most wards. With rare exceptions, the discipline of hospital life is far removed from the careful adjustment of means to ends that dominates university education. On this account, many would admit that a compulsory fifth year should be attempted only in university hospitals; but the adoption of the scheme cannot contemplate any such restriction. It involves consigning some students to some hospitals where the training is quite as likely to harm as to benefit. In Pennsylvania this dilemma has been boldly met by an energetic effort to standardize the hospitals of the state. This is not a small undertaking, and the acknowledgment of its necessity demonstrates the blunder of hasty action in adopting the compulsory clinical year. The hospitals should be made fit before the students are forced into them. It might also appear that much meddlesome interference with the sound development of many struggling institutions, created for local needs, may be exercised by a hospital inspector who arbitrarily demands that every institution receiving interns should provide pathologic laboratories and maternity services. It may very well be better for many institutions to contract for outside pathologic talent, while the best interests of obstetrics are unquestionably served by special obstetric hospitals. The Pennsylvania plan of standardization of hospitals conflicts with the proper development of medical specialties.

4. The surrender of the fifth year to hospitals places undesirable influence in the hands of hospital attendants who cannot qualify for positions on a university faculty. It is not so long since control of a clinical service could purchase a place on a university faculty. It is unnecessary to rehearse the long chapter of medical politics which surrounded the period when prominent hospital attendants controlled medical faculties; but those who have lived through that time do not want to return to the old régime.

5. It is proposed that those students who do not intend to practice medicine may substitute a fifth year in some laboratory. They may do so now, but it is quite clear that if the license to practice depends on a fifth clinical year, it will be much more difficult to induce men to enter laboratory careers. Few students are willing at the outset to abandon the right to practice medicine. The small proportion who might engage in a fifth laboratory year and furnish recruits for the medical sciences will be compelled from a reasonable regard to their natural privileges to decide to take the extra clinical year, after which they will be much less inclined to go back to the laboratory. This highly unfortunate result appears to many laboratory teachers as one of the most serious objections to the compulsory clinical year. Additional difficulties arise if the student desires to pursue postgraduate instruction in another state or another country.

6. It is urged that from 50 to 100 per cent. of the graduates of many schools already take a fifth or a sixth clinical year, so that the requirement of this service will work no hardship. To the same extent it will accomplish no good. More men will take hospital training when their means and time permit and their judgment approves, and when the attractions of hospitals increase; but all the arguments that are raised against prolonging the period of professional training tell with special force against the compulsory practical fifth year.

7. The chief objection to the fifth clinical year lies in the excessive emphasis it places on clinical training and the relative subordination visited on the fundamental sciences and on general medical knowledge. The scheme does not provide for relief for the crowded curriculums of the first three years. It ignores the demands for more thorough instruction in the central sciences of anatomy, chemistry, physiology, bacteriology and pathology. In none of these branches, except perhaps anatomy, are instructors satisfied that students now secure a genuine grasp of the subject. Courses in pathology, especially those limited to the second year, cannot hope to cover adequately the fields of pathologic anatomy, histopathology and pathogenesis. Pathologic anatomy is nearly a lost art, and although it forms the foundation stone of internal medicine, few internists and fewer surgeons are reasonably familiar with what disease does in the body. The student's glimpse of the immense and significant field of histopathology shortly fades and leaves a void which befogs the practitioner throughout his entire career. Even in the laboratories it is becoming more and more difficult to obtain expert

interpretation of histologic changes. The discussion of the pathogenesis of diseases often leads directly into speculation, but the competent medical speculation of today leads to the substantiated body of medical knowledge of tomorrow, and without it medical progress comes to a standstill. Not many medical students become sufficiently acquainted with medical literature to engage successfully in speculation.

The fifth clinical year makes no provision for substantial courses in chemical pathology, immunology, hygiene, preventive medicine, forensic medicine or other specialties, although all these departments have long been waiting patiently for recognition. In some institutions, it is true, courses are given in these subjects, but so far as I can learn, it is at the expense of more important departments.

In other words, the fifth clinical year is planned to develop practical training at the expense of medical knowledge. The issue is clearly before us. Shall the medical school undertake to train practitioners thoroughly or to educate physicians? There could be no clearer demonstration of the necessity of correct principles in the control of educational movements. If the central principle of the medical school is to train practitioners, then the fifth clinical year should be adopted. It will certainly tend to produce that result, and with a modicum of medical knowledge the student will be so familiar with the exigencies of the sick room that he will be able to meet the ordinary demands of practice from the moment of graduation. That he will be able to meet all the demands made of the educated physician is, however, quite unlikely. It is impossible to train physicians in any such sense. They must gain experience from life-long labor, and grow from their own resources.

It is the function of the medical school to turn out broadly educated physicians who are thoroughly grounded in the knowledge of disease and who will find in this knowledge resources enabling them to profit by their experience as practitioners.

It has been stated that we do not want to train scientists. There is little danger of doing so. We urge the adequate teaching of physiology and pathology because such knowledge makes better practitioners, not because it may make scientists.

It may be highly important to know what the best practitioners are now doing in hospitals, but it is far more important to have some experience in solving a medical problem by one's own resources. The best practice may not always be the present vogue, and improvements in practice do not come from the imitator but from the investigator. I have been assured by many that a fifth year spent in clinical or laboratory research would be of far greater value to the student than a year of routine hospital service. A thorough acquaintance with the literature of one disease or of one aspect of a disease would establish a critical standpoint by which the student could judge the work of his colleagues and the current contributions of the day. A year spent in such work would save the young practitioner from becoming a ready prey to every new medical conceit, and add to his qualifications a competent critical judgment. It is for this reason and not for the object of training scientists that a broad knowledge of the medical sciences is an essential part of the training of practitioners.

Will practitioners as a class, however, consent to be thus summarily excluded from the realm of scientific pursuits? Will they be content meekly to receive orders what to do and report results? Unfortunately this is just the condition in which most practitioners find themselves—resourceless in the face of clinical problems. The pursuit of clinical problems is falling more and more into the hands of laboratory men, and this tendency will be accelerated by any further undue extension of clinical training. If clinicians are not to be scientists, then the progress of medicine must depend on the laboratories while the practitioners treat the sick in the time-honored fashion.

On the contrary, the powerful movement for clinical research in this country indicates that the young practitioners will not consent to be excluded from the science of medicine. They will not agree that the object of medical education is to train practitioners and not scientists. As long ago as 1846, Philip von Walter wrote, "Woe to that hospital where unscientific men work." The fifth clinical year in the service of a hospital is hardly adapted to the scientific training of clinicians. A fifth year spent on clinical problems with expert assistance would accomplish much more in this direction.

Much depends on one's conception of the function of the medical profession in the community. Those who would limit the activities of the physician to the care of the sick would reduce medicine to a system of therapeutics and even of applied therapeutics. The fifth clinical year commits us to that view, and just here lies its chief danger. As a system of applied therapeutics, medicine comes into competition with the medical cults, with results not always favorable to medicine.

It is a matter of record that when any irregular therapeutic system persistently demands the legal right to practice, it eventually receives its license. Legislatures composed of intelligent laymen are finding it difficult to detect great distinctions between regular and irregular systems of therapeutics and some legislatures have been unable to find any distinction whatever. Hence optometrists and osteopaths are practicing medicine and other cults may soon be doing so. If medicine is to keep out of company with the cults, it must not rest its claims solely on the treatment of the sick, but must meet its increasing responsibilities to medical science. It must turn out educated physicians. It must support the medical sciences by emphasizing their importance to the student choosing a career.

Medical curriculums must give a reasonable place to every department of medical knowledge, and be prepared to receive every new branch of medical activity that presents itself. The plan of introducing a fifth purely clinical year has failed to consider these paramount obligations of medicine, and therefore in its present form it does not accord with the best interests of medicine.

It should be remembered that the fifth year is the last year that can reasonably be added to the medical course. When it is added, the plan should embrace a readjustment of the entire schedule and a recognition of the demands of many branches of medical knowledge which are now presented inadequately or not at all. The dominant principle in constructing the plan should be the broadest possible education of physicians who may be able to serve the community in any medical capacity, and not alone the training of practitioners to treat the sick.

INTESTINAL OBSTRUCTION *

ALEXIUS McGLANNAN, M.D.
BALTIMORE

Although aseptic surgery has revolutionized the mortality statistics of acute intra-abdominal diseases in general, the death rate of intestinal obstruction remains almost as high as it was thirty years ago. In the series of 276 cases studied for this report, the mortality was 45.7 per cent. In 161 cases the obstruction occurred in the small intestine, 75 of these patients dying (46.6 per cent.). Seventy-five were cases of large intestine obstructions and have a mortality rate of 44 per cent. In 40 cases the exact position of the obstruction was not given, although it is probable that it was in the small intestine. In the jejunum the obstruction proved fatal in 52 per cent. of the cases.

Much experimental work has been done in the effort to determine the cause of death in intestinal obstruction. This experimental work indicates that the secretion of the duodenal mucous membrane is involved in the production of the essential fatal factor. Hartwell and Hoguet[1] in their experiments show that dehydration is an important element in the fatal outcome of intestinal obstruction, and that in the absence of damage to the mucous membrane of the bowel, this dehydration becomes the most important factor. In pathologic obstruction of the human intestine, met in clinical work, a thoroughly intact mucous membrane is never seen. Early effects of an acute obstruction are manifested in the altered nutrition of the bowel. This is brought about by the interference with the circulation in the wall of the distended coil of intestine proximal to the point of obstruction. The slow onset of toxemia and its slight degree in a chronic obstruction, may be due to the development of a resistant epithelium with the compensatory hypertrophy occurring in the loop of bowel above the obstruction; or it may be the result of the gradual development of a vicarious function of resistance by another organ.

The original experiments of Draper[2] pointed out in a conclusive manner the existence of a toxic material in the duodenal contents. His later work has confirmed this. Furthermore, the experiments in which obstructed animals were fed minced ileum, indicate the existence of a normal detoxicating function on the part of the epithelium of the lower ileum.

Whipple, Stone and Bernheim[3] have experimented with duodenal obstructions and have proved that if the epithelium be destroyed before the duodenum is obstructed the fatal outcome is avoided.

If the contents of the obstructed duodenum of a susceptible animal be injected into the circulation of an animal of the same species[4] symptoms analogous to those of obstruction occur — vomiting, great prostration with lowered blood pressure, congestion of the kidneys, etc. If the dose of toxin is not overwhelming, the symptoms may be combated by maintaining a supply of fluid by means of hypodermic infusion, and stimulating the failing heart. Epinephrin has been found most valuable for this latter purpose.

The antagonism between epinephrin and the depressing action of the toxin is of interest, because it has been shown that acetylcholin acts as a physiologic antagonist to the suprarenal secretion. Cholin derivatives are prominent in all parts of the body and are easily decomposed, freeing the cholin portion of their molecule. This substance, when hydrolized, yields in turn neurin and muscarin, both depressing poisons, causing vomiting, lowered blood pressure, kidney irritation, etc. Cholin itself belongs to the vagotonic group of drugs, and taken into the body it causes an increased secretion of intestinal juices. One of the striking symptoms of intestinal obstruction is the immense amount of material secreted in the obstructed loops.

All of these facts point to the absorption of a chemical compound of the cholin group of substances, as the underlying essential cause of death in intestinal obstruction.

Toxemia is the real cause of the high mortality of intestinal obstruction as compared with other abdominal diseases. In the present series the causes of death in the fatal cases were the following: toxemia, 75 per cent.; peritonitis, 12 per cent.; postoperative shock, 5 per cent.; miscellaneous, 8 per cent.

Among these 127 cases there were 20 in which the bowel was gangrenous; 14 of these patients died of toxemia, 3 of peritonitis, and 3 others, fifteen, twenty and twenty-six days, respectively, after operation, from pneumonia, tuberculosis and embolism.

The toxemia is combated with great difficulty. Not only are its immediate effects on the heart and vasomotor system dangerous, but secondary effects on the kidneys, liver and other important organs add to the possibilities for disaster. Early recognition and prompt treatment of intestinal obstruction, before the toxemia has developed, offer the only hope we have at present for reducing the high mortality rate. In the present series of cases the average duration of symptoms before operation, in the cured jejunal obstructions, was one and two-thirds days; in the fatal jejunal cases, two and five-sixths days; in the ileum cases the average duration of the cured was three and one-third days, of the fatal, six days. Both sets of cases include some in which the obstruction was probably incomplete. This is especially true of the jejunal series, in one of which death from toxemia occurred although the complete obstruction was relieved in less than four hours after the onset of symptoms, while in another the patient survived, although the operation was performed on the third day. The statistics, however, agree with the acknowledged rule that the higher the obstruction the more rapidly fatal the outcome.

In a previous communication[5] I have discussed the clinical course and symptoms of intestinal obstruction, as occurring in three stages — the stage of onset, of compensation and of toxemia. These stages do not represent any definite period of time, a patient may pass within twenty-four hours through all three and die of toxemia. Gangrene may complicate either the compensatory effort or be present with the toxemia.

In the stage of onset the symptoms are pain, which is usually intermittent and crampy, but may be continuous, nausea and vomiting, with or without constipation or diarrhea. These symptoms come on suddenly and without regard to the ingestion of food.

---

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Hartwell and Hoguet: Am. Jour. Med. Sc., March, 1912, p. 357.
2. Draper, J. W.: Experimental Intestinal Obstruction, THE JOURNAL A. M. A., Oct. 21, 1911, p. 1338.
3. Whipple, Stone and Bernheim, Jour. Exper. Med., 1913, xvii, 307.
4. Animals of different species react in divergent ways to the toxin of obstructed intestine. Cats are quite resistant, while dogs, like human beings are extremely susceptible.
5. McGlannan, Alexius: Intestinal Obstruction, THE JOURNAL A. M. A., March 8, 1913, p. 733.

When the bowels move, either spontaneously or as the result of an enema, the pain is not relieved by this action.

Lavage of the stomach may empty that organ of food, gastric secretion or duodenal contents, but without permanently relieving the pain. If, therefore, a patient is suddenly seized with abdominal pain, and an effectual enema combined with gastric lavage does not bring relief from the pain, a diagnosis of acute intestinal obstruction should be made and operation promptly performed.

If there is any hesitation about operating on such slight symptoms, a second lavage should be done after an hour. The presence of duodenal material in the washings at this time, makes the diagnosis certain and operation imperative. In eighteen cases operation was performed during the stage of onset, the diagnosis being made on these symptoms. In every case a mechanical obstruction was found and relieved and all these patients recovered.

In the second stage we have persistent pain, distention, a visible and palpable spastic coil of intestine, visible peristalsis with ladder pattern, local tenderness, etc. In this stage we frequently have gangrene of the bowel and a localized peritonitis at the seat of obstruction. In the third stage the toxemia overshadows the other complications which may be present and becomes the most urgent indication for treatment.

I shall not attempt a discussion of the general pathology and etiology of acute intestinal obstruction as a whole, but shall limit this portion of the paper to a consideration of the postoperative varieties. Of the 276 cases studied, there were 63 in which a previous operation was the etiologic factor. Forty-three patients recovered and 20 died. Of the successful cases 16 followed operation for appendicitis (14 drainage and 2 uncomplicated appendectomies). Twelve were sequelae of various gynecologic operations, and 15 of miscellaneous intra-abdominal operations. Among the fatal cases, there were 9 after appendectomy, all drainage operations, 4 gynecologic and 7 miscellaneous operations. The average duration at the time of operation of the cases resulting in recovery was two and one-eighth days, of the fatal ones, three and one-third days. In sixteen of the fatal cases the patients were operated on in the stage of toxemia.

Nearly 40 per cent. of the postoperative obstructions and 10 per cent. of all cases in this series, follow drainage operations for appendicitis. This is a potent argument in favor of early operation for appendicitis at a time when no drainage is required. Had these patients been operated on thus early, all would have been spared a second operation as a result of which 9 died. About one third of the gynecologic patients had been operated on for inflammatory lesions. In the remaining cases the obstruction was due to involvement of an intestinal coil in the adhesions of some surface left uncovered by peritoneum at the original operation.

Prompt operation in appendicitis and careful covering of surfaces in all abdominal operations, therefore, will afford efficient prophylaxis against postoperative obstruction.

Operative methods will vary with the stage of the disease at which the operation is performed. In the first stage, when there are no complications, the surgeon need only relieve the obstruction. This may be limited to the simple division of the band, or may require a resection and anastomosis for removal of a tumor. Covering in of raw surfaces, or fixation of a particular loop of intestine may become necessary in certain forms of obstruction. In the second stage gangrene of the intestine may complicate the problem. Here the operation performed varies widely with the extent of the gangrene and especially with the general condition of the patient. Practically always these patients are beginning to show signs of toxemia, some have peritonitis, while others have general disease of the vascular system. Almost always they are poor subjects for prolonged operation. Resection and anastomosis is the ideal operation, but often some expedient must be utilized. In the 29 gangrenous cases resection and anastomosis was performed 8 times with 6 recoveries. In 2 of the cases with recovery and one of the fatal cases an enterostomy was made above the anastomosis. Excision of the gangrenous area, leaving the ends of both segments open outside the wound, was done in 12 cases, 10 of which were fatal. A similar procedure with the addition of an anastomosis preliminary to the excision was carried out 4 times, all fatal. The gangrenous loop was extruded in 5 cases. In 4 of these an enterostomy was made above the gangrenous area, one patient recovering.

In the third stage enterostomy may be the only operation that the condition of the patient will justify. At present it appears that enterostomy should be added to any operation done in this stage. Enterostomy either alone or in combination with another operation was performed in 92 cases of this series; 38 of these patients recovered and 54 died. Of the toxic cases without gangrene, enterostomy was done in 77 per cent. of the cases with recovery and in but 41 per cent. of the fatal cases. It is therefore evident that emptying the obstructed loop of bowel has a decided influence on the toxemia, and that enterostomy should be done in all toxic cases, either alone or in combination with other operations, according to the general condition of the patient.

To sum up: The treatment of intestinal obstruction varies with the stage of the disease. Toxemia is the cause of death and is the important factor to be combated in the treatment. In the absence of toxemia the operative procedures are directed toward the removal of the obstructing cause and repair of any damage done the intestinal wall. When toxemia has developed, measures must be devised for combating it, regardless of what may be done in direct attack on the obstruction. These measures are: First, enterostomy for the purpose of relieving the body of material which appears to be the source of the toxemia; second, supplying a large quantity of water, best by hypodermoclysis, in order that dehydration shall not take place, and to stimulate excretion; third, injection of epinephrin intravenously or with the subcutaneous water, to counteract the effect of the toxin on the heart and the blood pressure.[6]

Toxemia is the constant fatal factor in intestinal obstruction. This explains the slight effect of aseptic surgery on the mortality statistics of the disease. At present we have no certain detoxicating or antitoxic

6. The epinephrin solution should be given as follows: After the subcutaneous water is flowing freely, the needle of a hypodermic syringe containing the epinephrin is inserted through the rubber tubing of the transfusion apparatus near the point at which this joins the transfusion needle, and the epinephrin injected into the flowing stream of water. In this way it is carried into the circulation in a fairly concentrated solution without great local reaction.

agent, and what slight improvement has been made in the results of treatment must be attributed to earlier intervention. Recognition of the disease in its early stage before the toxemia has developed and prompt operation in this early stage offer the only hope for reducing the high mortality rate of acute intestinal obstruction.

114 West Franklin Street.

ABSTRACT OF DISCUSSION

DR. JOHN WILLIAM DRAPER, New York: We have studied intestinal obstruction from the experimental standpoint for more than ten years and there are certain factors which have come to a focus so definitely as to warrant their presentation clinically. In the first place, I feel that we owe a great deal to Dr. McGlannan's very careful clinical study of this long series of cases. It is the only series in which this has been done, and after all, it is the clinical study combined with the experimental which ultimately will give us the information that we require to save the lives of acutely obstructed patients. First in importance is the aboral portion of the colon. It has a far-reaching bearing on therapeusis. In all of the experimental animals dying from acute intestinal obstruction, the only pathologic lesion demonstrable morphologically was an acute inflammatory condition of the terminal colon. That is almost analogous to the condition seen after the giving of a lethal dose of toxins—for instance, diphtheria—and it suggests very strongly that whatever the toxin may be, the colon plays a very important part in its elimination. This function, however, is restricted to the aboral portion of the colon, if morphologic evidence is to be depended on.

The next point is dehydration, of which the essayist has spoken. Dehydration has been brought to your attention prominently by certain investigators of obstruction who thought that if enough water were introduced into the economy, death would not ensue. There is great variation in individual resistance to toxins, and their dilution by water naturally lengthens life. In the series of experiments we made about two years ago, we showed conclusively by the use of pilocarpin and other drugs that a much greater degree of dehydration might be produced than could be found in animals dying of acute obstructions, yet those animals were perfectly comfortable and showed no clinical signs of sickness whatever. Dehydration is therefore but a small factor in obstructive death. Finally, we have completed another series of experiments, which, while not so conclusive as those previously reported, show amply, in our belief, that the source of the toxin is autogenous rather than bacterial. They coincide peculiarly with the results obtained by feeding kidney tissue after double nephrectomy. The method, briefly, is to feed homologous epithelium of jejunum and ileum to duodenally obstructed animals. While this does not prevent death, it certainly prolongs life. I wish to go on record as believing that these experiments, in conjunction with the studies of Dr. McGlannan, show that the cause of death is not a subinfection of bacterial origin, but rather a true autotoxemia, the unknown poison arising from a perversion in function of the intestinal glands.

DR. A. MCGLANNAN, Baltimore: In closing I should like to explain my use of the term dehydration in outlining the treatment. I have used it improperly, I see now. I am familiar with the experiments of Dr. Draper, in which the dehydration of animals was produced by salivation, pilocarpin, and so on, and agree with him that the cause of death in obstruction is something much more subtle, and that it is not simple dehydration. I would say, therefore, supply water to dilute toxins. The feeding of the mucous membrane from the bowel below the duodenum is of tremendous interest. My practical experience with it has been none at all. I am hoping to be able to use it in acute intestinal obstruction in the toxic stage, because it may counteract the toxemia, the most important factor to be combated.

MENTAL AND PHYSICAL SURVEY OF SUPPOSEDLY NORMAL CHILDREN *

LANGLEY PORTER, M.D.
A. HUFFAKER, M.D.
AND
A. RITTER, PH.D.
SAN FRANCISCO

The following data are presented to the section as a study of a number of presumably healthy children and while, because of their social origin, we may not be able to apply our findings to the children of the community in general, at least the presence of so much abnormality in a group supposed to be healthy suggests that routine examinations of all children might reveal many physical conditions that would be the better for treatment.

In August, 1913, a special clinic was established at Leland Stanford Junior University Department of Pediatrics for the older children under the care of the Children's Agency of the Associated Charities, who are boarded in foster homes. The children in this group are all over 2½ years of age, as the babies are cared for at the agency baby clinic by Drs. Holsclaw and Rude.

Most of these children are placed in care of the agency through the juvenile court because of the illness, intemperance, immorality or neglect of their parents. The agency places them immediately in carefully selected private homes and keeps them under close supervision. As soon as possible after a child is received it is brought to us for a complete physical and mental examination. The agency tries to have every child under its care examined at least once a year, oftener if it seems necessary.

This clinic is held every Friday afternoon and five or six children are examined each week. The agency worker brings with her a brief written report of the child's family and medical history so far as known. Each child is given a thorough physical examination, a Binet mental and a Healy psychologic test, the blood is taken for a Wassermann test and a von Pirquet reaction is done.

Since August, 1913, 195 children have been examined at this clinic. Thirty-five of these children returned to the clinic several times for treatment or further observation.

Of these children 55 per cent. were in need of dental attention; 53 per cent. had diseased or hypertrophied tonsils; one half of these have since had their tonsils removed; eight were referred to the eye clinic (glasses, keratitis, conjunctivitis); nine were referred to the skin clinic (scabies, eczema); seven were referred to the ear clinic (one mastoid opened); fifteen were found to be tuberculous and were immediately placed under treatment; twelve presented what English observers have denominated the pretuberculous state. Only four have had positive Wassermann reactions. The records of the von Pirquet tests are incomplete so are not reported here.

Psychologic examinations are in progress and have been made on 119 of these cases. The classification adopted divides the children into those whose mentality is normal, retarded, borderline, morons and

* Read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

imbeciles. Normals are those who answer to the Binet and psychologic test for their chronologic age or above, and whose responsibility and discrimination are in accord with their age. In the group of retarded children we place those which do not test up fully to age, but whose environment or health conditions may be responsible for their temporary retardation; such cases must be sharply differentiated from the feebleminded group, as no greater crime can be committed against a child and the community than carelessly and hastily to class retarded children as incurably feebleminded. In our classification, borderline cases are those which are not normal, although they may be normal intellectually, whose environment is bad, whose training often is vicious and whose mental equilibrium is limited during the developing period, especially between pubescence and adolescence; most delinquents fall into this class and many children of this group can be prevented from developing into criminals and the wayward type by early recognition of their physical and mental makeup, followed by careful supervision and guidance. Morons are such high-grade feebleminded as never at any age acquire a mental age greater than 10 years; and imbeciles are of such low grade mentality that the mental capacity never exceeds that of a normal child of 7 years. Particular stress is laid on the search for anomalies of internal secretion but none have been discovered in this series.

Following this classification we have found that the absolutely normal children comprise almost 66.5 per cent.; the retarded about 23 per cent.; the borderline cases about 7 per cent.; the morons four of the 119 cases, or 3 per cent., and one imbecile was found, making 0.8 per cent.

To our mind the important outcome of the mental survey of these children is the discovery of the retarded group, and the bringing to bear on its individuals the best moral and intellectual training obtainable applied after a study of the individual's needs and his weaknesses. We hope that after we have followed these cases for some years we may be able to report on the effective handling of such a group.

On the physical side the most interesting single fact observed was the high proportion of children who showed evidence of involvement of the tracheobronchial lymph glands, while only five cases showed the usual symptoms of involvement of the lung with tuberculosis; eighteen children gave evidence of involvement of the mediastinal gland as shown by physical examination and confirmed by roentgenograms. Opportunity was taken to study the D'Espine sign, the Korányi sign and the Ewart sign. Ewart's sign of paraspinal dulness was first described by that author in 1909, as pathognomonic changes in mediastinal contents and we found it to be of some value as an indication of large involvements of mediastinal glands. Von Korányi, in 1897, published a study of tones produced by percussion on the normal spine and the changes in the tones produced by disease. His plan was elaborate in detail but the important contributions were that normally there is a dulness to percussion over the first, second and third dorsal vertebrae, rarely over the fourth, with resonance of increasing degree to the twelfth. He pointed out that dulness on percussion over the fourth, fifth and sixth spines, especially, and those below it, indicated pathologic involvement of the mediastinal tissues, most often of the tracheobronchial glands. Von Korányi's percussion has been a routine of Stanford clinic since 1907, and we believe that it has proved of great value in aiding us to diagnose early tuberculosis of the tracheobronchial glands.

Our attention was not called to D'Espine's sign until 1912, since when we have studied it. D'Espine describes it as an echoed whisper following a spoken word heard in the stethoscope placed over the seventh cervical and first or second dorsal spine. Our experience with this sign has not led us to attach great value to it as an aid in the diagnosis of early involvement of the tracheobronchial nodes, although the phenomenon undoubtedly always is present when the enlargement is extreme and Ewart's paravertebral dulness present. During the investigation of D'Espine's sign we were led to study the whispered pectoriloquy over the spine and we have found that it runs quite parallel with the dulness found in well-developed cases of mediastinal involvement, but that it is a much earlier and more delicate sign than any other yet brought to our notice. We have found it in an area exceeding that of the dulness on many occasions and in some we have found only normal dulness with the whispered voice clearly transmitted through the fifth, sixth, seventh and even eighth dorsal vertebrae. In no case has a roentgenogram of a chest which has shown this acoustic phenomenon failed to reveal marked infiltration of the roots of the lungs and apparent enlargement of the tracheobronchial lymph glands. The study of this pectoriloquy and its relation to disease of the mediastinum has been done almost entirely by Dr. A. B. Huffaker. We are not of those who believe that every involvement of the tracheobronchial lymph nodes is essentially tuberculous; we have found the condition in whooping cough and acute respiratory disorders during the stage of infection and for some time after only to see it disappear at a later date, so we feel that while every case which shows Korányic dulness and whispered pectoriloquy below the third dorsal vertebra should be roentgenographed, we do not feel that even the visible evidence so furnished is proof that tuberculosis has caused the pathologic process, nor can we feel always that a positive skin test to tuberculin makes such a picture pathognomonic. As for the D'Espine sign as described by the originator, we feel that it is valuable only when the mediastinal involvement is extreme.

Besides evidence of tuberculosis in the chest this group supplied one tuberculous spine; two other cases of bone tuberculosis; three of cervical tuberculous adenitis and two healed tuberculosis cases.

We are surprised, especially considering the family histories of many of the children in this series, at the low proportion of positive Wassermann reactions, and also at the few children who needed to be fitted with glasses—five cases. Ear complications, considering the large number of adenoids and diseased tonsils reported, were surprisingly low. The condition of the teeth of the children was found to be extremely bad and yet in spite of this there is very little anemia and practically no digestive disturbance. An intensive study of the dental conditions and the results on the health of these children is being prepared for presentation later.

The two outstanding facts that arise from this study are first, that 33.5 per cent. of a group of children older than 2½ years showed some mental retardation,

and second, in their physical examinations, it was found that 9 per cent. showed evidence of tracheobronchial adenopathy which would be interpreted as tuberculous by many clinicians and which was probably tuberculous in a large proportion of the cases. These children have been put out of doors and given the approved hygienic treatment for tuberculosis. Although we do not feel that all of them were tuberculous we have been afraid to omit such care and oversight as was due them if they were.

240 Stockton Street—1739 Pine Street.

ABSTRACT OF DISCUSSION

DR. C. G. GRULEE, Chicago: The percussion of the spine for tuberculous lymph nodes is especially valuable in young babies, in which one cannot get the finer pectoriloquy. One can use percussion in babies and have it confirmed by the Roentgen ray. As to the tracheobronchial lymph nodes clearing up, this sometimes takes place much too rapidly for one to regard the condition as tuberculous. In young children in whom it seems probable that there are enlarged tracheobronchial lymph nodes, we may get no shadow from the enlarged glands; we can only see those that lie to the right, but if they lie behind and to the left we cannot see them. As to the Wassermann reaction, I am afraid we are inclined to put too much stress on it. I have seen a number of cases in which the Wassermann was negative and the child had syphilis. One such instance occurred in a baby which was brought to me with the typical florid eruption of syphilis and the mother and father both gave a negative Wassermann. I saw another case in the baby of a wet-nurse in which the Wassermann was negative in both mother and child, although the latter had a typical congenital syphilis.

DR. EMMA MERRITT, San Francisco: I have heard about the tracheobronchial glands for many years, but that what we find out about them by the radiograph is so very different from what we formerly knew I am not so certain. Bearing on this I wish to say that about thirty years ago in Paris Jules Simon in *Les Infants Malades* made the statement in reference to the tracheobronchial glands that in whooping cough there was adenopathy, an enlargement of the tracheobronchial lymph glands. It seems that these old observers, though they did not have the helps in clinical diagnosis that we have today, made some very correct observations by necropsy, by percussion and by auscultation, and from their knowledge and experience in those days they found that the tracheobronchial glands could become enlarged during whooping cough and remain large for a number of months afterward, and that such a condition was probably not tuberculous.

DR. A. HUFFAKER, of San Francisco: I wish to speak for a moment on the technic of bringing out the whispered pectoriloquy mentioned by Dr. Porter. The most favorable position for this is to have the child sit on one stool with its feet resting on a lower rung of a second stool, the body being bent forward with the elbows resting on the thighs. This relaxes the spinal muscles. For spinal percussion begin then to percuss at about the eighth dorsal vertebra, where normally there is full resonance, and continue upward until the resonance becomes less. Over the upper three or four dorsal spines the percussion note is normally less resonant than over those lower down. To examine for the whispered pectoriloquy, have the patient, maintaining the same position of the body as that above outlined, pronounce the whispered words, ninety-nine. He should be coached a little to secure the proper degree of loudness. Then listen with the stethoscope over the seventh cervical vertebra as the child whispers these words, in response to their being whispered by the auscultator. A loud tracheal sound will be audible at that point. Continue auscultating downward over each succeeding spine until this tracheal sound is lost. This will mark the point to which the whispered pectoriloquy extends. In the examination of a series of 200 or more cases, we found that it extended as low as the fifth or sixth dorsal vertebra in some seventeen or eighteen cases. We had Roentgen-ray plates made of these patients, and in each one there were found evidences of some enlargement of the mediastinal glands. We thought this result was striking enough to justify a report of these cases.

DR. H. M. MCCLANAHAN, Omaha: I would like to ask Dr. Porter if he found any relation between diseased tonsils and chorea and rheumatism and cases of retarded development. What was the subsequent history or rule after the removal of adenoids, and what did they have to do with retarded development?

DR. J. A. COLLIVER, Los Angeles: I made a similar analysis of twenty-four or twenty-five hundred Juvenile Court cases, and while I did not go into some details as far as Dr. Porter, my results correspond very closely with his. One interesting point not mentioned in his paper was that at about puberty I found a basal heart murmur in about 20 per cent. of the cases. When I examined these same patients one, two and three years afterward, I found 75 per cent. of the murmurs had disappeared. I would like to ask Dr. Porter if he has made any effort to correct the defects which he has found, and what were the results of such correction on the moral development? In December, 1909, I presented a paper before the Southern California Medical Association, and showed that the correction of physical defects helped in decreasing the amount of juvenile delinquency by lengthening the periodicity of crime. Before the Southern California Dental Association I also presented a paper on "Does the Abnormal Condition of the Teeth Contribute to Juvenile Delinquency?" The conclusion of the paper and discussion were that they did, both directly and indirectly.

DR. L. PORTER, San Francisco: Dr. Grulee mentioned the insufficiency of whispered pectoriloquy in young children. It is more difficult to get it between infancy and the runabout age than it is in young babies. Babies can always be made to cry and the crying voice is as valuable as the whispered voice and one can learn as much from the transmission of the crying sound as from the whisper of the older children. I agree with what was said with reference to the Wassermann reaction and syphilis; a negative Wassermann does not mean the absence of syphilis. I have had a number of patients who were given salvarsan, and it was interesting to see the Wassermann reaction develop after the administration of the salvarsan. It seems that the antibody of the patient on which the Wassermann reaction depends, is unlocked by the salvarsan. Recently I have been working with Dr. Zinsser doing Wassermann tests on different parts of the genital tract of the mother after the placenta has been removed, and we have found the Wassermann reaction positive in the placenta and negative in the cord, and we have found a positive reaction in the cord when the baby showed a negative reaction. We must regard the Wassermann as an empiric reaction. All the reactions, the von Pirquet and similar tests, must be used simply as so much evidence in regard to the case under consideration in which the doctor acts as the judicial referee. We spoke of the whispered voice below the area of dulness where the sound becomes as perfectly clear as at the child's mouth; there is a swishing sound somewhat mixed up, but it is not changed and can be heard where disease is present. We only recorded the presence of basic heart conditions; the accidental murmurs were not reported as in children between the ages of 7 and 15 years of age; accidental murmurs were not considered as evidence of heart disease. We have not undertaken as yet any extensive therapeutic measures for the correction of the defects. In answer to Dr. McClanahan's question I would say that we found no rheumatism and no chorea in this series of cases. The nutrition of the child is an important matter and will be improved in a large number of cases after the removal of deep tonsils. There are patients and even physicians who cannot be persuaded to have buried tonsils removed, even when the child has enlarged glands running

down into the neck. If these buried tonsils are removed we find that an improvement in nutrition and in the general physical condition soon follows, and hence the removal of buried tonsils is an important matter. As to the question with reference to the effects of adenoids on the development or retardation of the children, we noticed the greatest retardation in the cases in which the adenoids interfered with hearing.

RUMINATION IN INFANCY

AUGUST STRAUCH, M.D.
Attending Physician at the Cook County Hospital, Children's Department; Associate in Medicine (Pediatrics) Rush Medical College
CHICAGO

That rumination in young children after the first year of life is not very rare, might be inferred from the collection by Wirtz of 32 cases reported in medical literature; cases in which the anomaly, though present in adults, had begun during childhood. In fact, according to the study of Johannessen, the majority of the cases of rumination begin between the ages of 10 and 20 years, or perhaps somewhat earlier, according to Wirtz, and rarely in adult life. Though mention of childhood as the time of the onset of rumination is repeatedly to be found in the literature, detailed reports of *direct* observations of rumination in children themselves, especially in the first year of life, are very infrequent. There exist merely short, cursory notes on eleven cases of ruminant infants (Wirtz); and minute reports published by Hermine Maas, Pouliot-Moricheau, Wirtz, Lust,[1] Meyerhofer, Bruening,[2] Peiser, Aschenheim[3] and Lehnardt.

In view of the scanty number of publications on this subject, and since my observation may bring the pathogenesis of rumination nearer our understanding, and also because speedy improvement was effected by a simple procedure, I wish to submit the following case history.

Libby S., Jewish, third child, born middle of September, 1914, seemed quite well for the first five weeks, till she began to vomit violently after every nursing, the breast being offered at two-hour intervals. A competent physician reduced the nursing and also gave water, but this too was persistently thrown up. No treatment influenced the vomiting, which was so persistent that no food was kept down. The baby cried much, her stools were frequent and mostly green. The body weight, which at birth was about 6½ pounds, increased for a short period and then diminished. In the family history an interesting fact was established: the first baby from the third week of life had suffered likewise from violent and persistent vomiting, later with rumination so marked that its relatives commented on it. This first baby became very emaciated and died when 11 weeks old. At the beginning of December the mother noticed that my patient (Libby) "chewed" the regurgitated milk. On December 15 the baby was admitted to the Presbyterian Hospital, where the diagnosis of pylorospasm and rumination was made. Her body weight was 7 pounds 1 ounce. She not only vomited soon after feeding, but also ruminated, that is, she regurgitated a part of her food, "chewed on it," swallowed it again, after which the regurgitation reappeared with chewing and swallowing in succession. The pillow was often found wet by vomitus; after feeding the epigastrium bulged and very faint peristaltic waves could sometimes be discerned across it.

The body weight increased in the subsequent thirty days to 8 pounds one-half ounce, then declined slowly but continuously. Two roentgenograms were taken on Dec. 16, 1914, one-half and one and one-half hours after the administration of bismuth in 2½ ounces of milk. The first picture gave evidence of only a small amount of bismuth in the small intestines (Grulee); the second picture showed still a shadow in the region of the stomach about two thirds as large as in the first picture, and a large amount of bismuth in the small intestines. In the course of the hospital treatment various methods were tried, as lavage, gavage, breast milk, albumin milk, gruels, malt soup and barley water, but conditions did not improve; the baby became atrophic. She was discharged from the Presbyterian Hospital and was immediately transferred to the Cook County Hospital, Feb. 15, 1915, at which time the following conditions were noted:

The patient is an atrophic, quiet, 5-months-old girl, with a senile, wrinkled, pale face. The body weight is 7 pounds 12 ounces. She takes food with good appetite, but soon regurgitates and ruminates. After feeding bulging of the stomach can be observed through the very thin abdominal wall; the lower half of the abdomen is sunken.

To give a detailed, comprehensive picture of the process of rumination I present the following observations:

April 12: The baby drank 5 ounces of milk-water mixture from the bottle within twelve minutes, finishing at 9:40 a. m. At 9:50 with a slight momentary contraction of the abdominal press, perhaps also of the diaphragm, but without any sign of nausea or discomfort, the baby regurgitated milk into the oral cavity and then ruminated. The ruminating movements consisted of rhythmic movements of the lower jaw downward and upward with the frequency of 70 to 75 each in the minute. During the downward movement of the mandible the tongue lay on the floor of the mouth, its anterior part extending somewhat over the lower lip, and forming by an upward curving of the edges a deep longitudinal groove which also extended over the root of the tongue, here being especially excavated. The mouth was widely opened. During the upward movement of the jaw the tongue was lifted also by active contraction against the palate, apparently in its posterior part first, and thus the groove was obliterated and the dorsum of the tongue became somewhat convex. The tip of the tongue was not withdrawn but remained between the lips, a small space remaining open between the tongue and the upper lip, which permitted the continuous observation of the very striking movements of the tongue during all these phases of the ruminatory act. There was no real chewing, since neither lips nor jaws were closed during the act. It rather was the imitation of bottle suckling. During rumination milk welled up, filling the mouth cavity partially or completely, then the next moment it more or less disappeared into the esophagus, to reappear at once in varying quantities. However, it is probable that the actual swallowing of a part or even the whole followed mostly after a number of chewing movements. At one moment the mouth and throat was empty or almost so, at the next the mouth was filled again. Sixty-eight chewing movements were counted before the baby suddenly ceased to ruminate.

After a pause of two minutes another series of similar ruminatory movements occurred, in which about one-half ounce of milk was spilled, coming also through the nose during a violent regurgitation. After 105 chewing movements rumination stopped suddenly with audible swallowing. The baby's head was held in a face-upward position to prevent an undue spilling of milk and this fact accounted for the loss of no greater quantity. The baby showed no distress; the face wore a quiet satisfied expression as though nothing unusual was occurring. The abdomen throughout the ruminating remained relaxed, with the exception of the usual initial strain of the abdominal wall. At 10:03 the baby was given (*experimenti causa*) 1 ounce of milk mixture, which was drunk in six minutes. There followed immediately afterward 15 rumination movements in which only the posterior part of the oral cavity was filled; swallowing followed

1. Lust: Monatschr. f. Kinderh., 1911, No. 6.
2. Bruening: Arch. f. Kinderh., 1913, No. 60, p. 116.
3. Aschenheim: Ztschr. f. Kinderh., 1913, No. 8, p. 161.

apparently only at the end of the act; there was no spilling. At 10:22 1 ounce of water was given; at 10:28 rumination of 10 or 12 movements with appearance of fine milk coagula was noted; about one-half teaspoonful spilled over. At 10:39 52 ruminations, occasionally accompanied by a gurgling sound occurred; several times the milk disappeared entirely but immediately welled up in various quantities into the mouth. Rumination ceased suddenly with a single cough impulse. At 10:45 62 movements, often accompanied with a gurgling sound were noted. The baby's face was always calm and content, respiration being free through nose. Rumination suddenly ceased with a single cough impulse.

At 10:50 25 ruminations occurred with only a small quantity of milk in the posterior part of the mouth; at 10:52 there were 29 movements; at 10:55 rumination for one minute continuously; occasional gargling and gurgling sounds; no overflowing. At 10:58 rumination for fifty-five seconds was noted. The fluid brought up was more wheylike. Often the full quantity of fluid disappeared suddenly downward and reappeared the next moment. At 11:06 there was continuous rumination for 125 seconds. At 11:10 there were 30 movements with very small quantities of whey, containing air bubbles, in the back of the oral cavity, often with a gurgling sound. At 11:12 again there was rumination, likewise at 11:14. At 11:17 rumination was continuous for two minutes. At 11:20 there was rumination for seventy seconds; at 11:23 for forty seconds; at 11:30 for 105 seconds continuously with no spilling. Afterward no more ruminating occurred.

At 2 p. m. the baby drank 5 ounces of water, finishing at 2:30. Rumination followed at 2:32, 2:37 and 2:42 p. m About one-half ounce *in toto* was spilled. Observation was discontinued.

The next day (April 13) I began observation at 10:50 a. m., when the child drank from the bottle 5 ounces of milk-water mixture within ten minutes. Immediately afterward 6 ruminatory movements were noted; the next minute, 28, followed at once by 117; after a pause of one minute 7 movements occurred, then in quick succession 20, 42, 174 and 8 ruminatory movements. The attack of 174 movements ended with a single cough impulse. During the last rumination overspilling occurred. At 11:30 there was ruminating of wheylike fluid. Immediately afterward a series of 96 movements, at 11:35 of 58, occurred; at 11:36 and 11:40 again there was rumination.

April 15 the child was given 5 ounces of milk-water mixture with bismuth subcarbonate for roentgenoscopy; thereafter vomiting occurred only once and rumination twice with only three movements.

The vomiting, regurgitating, ruminating and overspilling occurred in the first two hours following, perhaps, every feeding, and the pillow was generally found wet; especially in the lateral position of the head the greater amounts of the stomach content were lost by overspilling.

The number of the regurgitations, that throw the milk into the mouth cavity during the rumination, the number of the ruminatory movements and the number and duration of the single attacks varied greatly. Occasionally only a few drops of milk were "chewed" in the posterior part of the oral cavity two or three times. Sometimes, especially immediately after feeding, the baby would eject milk in a gush and lose at once a great quantity, 1 ounce or more, with only two or three abortive ruminatory movements or without any. At other times no milk would be lost during even prolonged ruminating. Occasionally the baby made a few rudimentary rumination movements with empty mouth cavity. During sleep no rumination occurred.

Whenever during rumination the nostrils were compressed and nose breathing thus made impossible, the child would immediately swallow in order to get air through the mouth and would stop ruminating entirely. This observation led to the successful application of nose obstruction for therapeutic purposes. Repeated examinations of the regurgitated matter never revealed free hydrochloric acid. Lavage performed regularly during the first week after admission to the Cook County Hospital, before the feeding in four-hour intervals, brought up only clear water or perhaps a few curds or some mucus. Roentgenoscopy on three different days about the middle of April, immediately after ingestion of a barium or bismuth meal, showed immediate passage of the food into the duodenum and jejunum, with no abnormality in the size or position of the stomach. The stools were of varying character, mostly more or less dyspeptic and contained mucus until improvement took place in the second half of April.

In the course of the treatment at the Cook County Hospital, various foods were tried, as milk-barley-water mixtures in different proportions, fat-free milk in short or long intervals, without noticeable influence on the vomiting, regurgitation and rumination. In fact, they appeared rather regularly during the two hours or so following feeding, but were perhaps less frequent and less marked after gruel-feeding.

The body weight dropped gradually from the initial 7 pounds 12 ounces to 6 pounds 3 ounces on April 19. This loss is explainable by the loss of food through spilling, by the dyspepsia and by parenteral infections (grip). Under the albumin milk and hydrochloric acid the baby's weight increased afterward rapidly in spite of acute bronchitis, and reached 8 pounds 6 ounces on May 12. The stools improved, the baby looked much better, became alert and smiled. The rumination was stopped almost entirely by regularly obstructing nose breathing for two hours after every feeding; this was begun on April 26. The regurgitating then subsided gradually and ceased practically within two weeks. About the middle of May the baby contracted measles and was taken to the Hospital for Infectious Diseases, where she died May 21. No postmortem was made.

COMMENT AND THEORY OF PATHOGENESIS

The diagnosis of rumination offers no difficulty as the distinction from other allied affections is to be made at first sight, since ructus, vomiting and simple regurgitation, occurring also in my case, are very different. The characteristic of ruminating is repeated "chewing" and swallowing of the food habitually regurgitated without effort or nausea, perhaps with a sensation of satisfaction. No real "chewing" movements were to be observed in my case, but movements rather resembling bottle suckling, and this seems to me quite natural, since at this age suckling movements are found as the physiologic reflex automatism, while chewing, strictly speaking, is only acquired later when solid or half-solid food is ingested.

The great interest of this case, as similarly in the two observations of Aschenheim, lies in the fact that rumination occurred in connection with pylorospasm symptoms which may have a pathogenic importance. Clinical observations seem to support the view that pylorospasm and habitual vomiting belong to one natural group, varying mainly in the extent and severity of the nervous disturbance, the basis probably being a neuropathic state, a constitutional nervous overirritability, which is shown in disturbances of the reflex mechanism governing the stomach, and which, if of minor degree leads only to the common "spitting up" of infants.

The assumption of a development of a pathologic "Bedingungsreflex" (conditional reflex) in the sense of Czerny and Ibrahim, originating from a somewhat physiologic reflex, seems to be justified as the origin of rumination.

A complex of motor actions that at first came into existence accidentally was frequently repeated and became intensified to a pathologic degree and firmly established in its elements, namely, during the frequent vomiting accompanying the original pylorospasm, at first the reswallowing of the regurgitated milk

occurred accidentally, especially in the face upward position, and undoubtedly the milk in the mouth as a foreign body stimulated the "chewing" movements. By frequent repetition these motor processes were established as a functional reflex act of complex elements that through facilitation gradually became so well established that the mere return of one of these elements sufficed to provoke the entire complex; stimulation of the sensory gastric nerves immediately caused explosion, in numerous repetitions, of the whole chain of ganglion cells concerned in the process of regurgitating, chewing and swallowing.

Rumination being very infrequent in comparison with habitual vomiting, we must assume the presence of a predisposition for the development of such a pathologic mechanism, very probably a neuropathic state, which admittedly plays an important rôle in the acquisition of pathologic habits, the rapid and ready fixation of other acquired motor disturbances. The occurrence of rumination in two babies of the same family in the first months of life together with the presence in both cases of gastric hyperkinesis points to family predisposition, that is, to a congenital factor.

In my case the chain of automatic motor processes was clinically initiated by a momentary strain, even though slight, of the abdominal press and perhaps also of the diaphragm; that expressed the fluid into the oral cavity, then rumination followed. During the succession of chewing, swallowing and regurgitation, etc., the abdominal wall was entirely relaxed. Evidently through frequent repetitions of vomiting the baby had acquired a high degree of ease and skill. The rumination was acquired at first accidentally a few weeks after vomiting and regurgitating had started, just as occurred in the first baby of the family.

In infants, the possibility, in some cases, of the suppression of rumination by diversion or the aggravation by excitement as in the case of Maas is in favor of the assumption of rumination being a conditional reflex. Also the prompt effect in my case on the whole motor process through an interruption of the chain in its most recently acquired link likewise adds to this assumption. This speedy improvement also militates against the supposition of an organic cause.

Rumination is a motility neurosis of the stomach that occasionally accompanies functional pylorostenosis and habitual vomiting. This fact explains a few symptoms observed in some ruminant infants, such as visible peristalsis and bulging of the stomach, atrophy, obstipation, emptiness of the small intestines, the persistency of the phenomenon and the occasionally sudden improvement. However, in a few cases (Wirtz, Lust, Bruening) there was no peristalsis and obstipation observed and in the cases of Meyerhofer the fluoroscope did not reveal any anomaly of size, position or motor action of the stomach; such facts we must not overlook. It may be in these cases, that a relative, functional insufficiency of the cardia is present, which supposition seems supported by the postmortem findings of dilatation of the lower half of the esophagus in Lust's case.

The origin of rumination in our case was due to the habitual vomiting from pylorospasm (hyperkinesis). The roentgenograms taken at the Cook County Hospital excluded an organic pylorostenosis or functional pylorospasm of any noticeable degree, undoubtedly proving the subsidence of the motor disturbance revealed by the roentgenoscopy and clinical findings at the Presbyterian Hospital a few months previously. But while thus the original pylorospasm had subsided, the rumination continued for a time. Finally it may be emphasized that our patient is a girl, since, in the adult at least, rumination is far more common among males; among the few infants reported the male sex, however, does not so markedly predominate.

AGE

No case of congenital rumination is on record; always it was acquired in the course of some gastrointestinal disturbance; but a neuropathic constitution often is said to have played an important rôle at the same time. The beginning of rumination in the six infants tabulated by Bruening was between the third and seventh month of life. Peiser observed one beginning at the age of 4 weeks. In Aschenheim's case the 5-months-old baby began to vomit during ablactation dyspepsia in the sixth week of life with symptoms of pylorospasm, and two weeks later it ruminated. In the second case vomiting began at the age of 7 months in connection with a parenteral infection likewise with symptoms of pylorospasm (visible stomach peristalsis); rumination began two weeks later. The baby in Huldschinsky's case began ruminating when about six months old.

THERAPY

A great variety of therapeutic measures especially of a dietary nature have been tried, but with uncertain success. Meyerhofer and Huldschinsky saw quick results from gruel feeding; others, as Lust, saw no therapeutic result therefrom, apart from the fact that rumination may occur so early that continuous gruel feeding is rendered impossible. Pouilot claimed a cure in his case from administration of gastric juice from the hog. Maas saw improvement from breast and buttermilk feeding with strict avoidance of excitement or irritation of the baby. In other instances a spontaneous cure took place, or rumination continued. Lavage, gavage, medication with hydrochloric acid, atropin, cocain, alkalies, bromids, etc., against the hypersensitiveness of the stomach proved disappointing. The prime purpose should be the cure by diet of the disturbance underlying the pathologic process, such as the dyspepsia, gastrospasm or pylorospasm and habitual vomiting, which account also to a great extent for the frequently observed inanition and atrophy of ruminating infants.

In my case the loss of food by overspilling, the dyspepsia, enteric catarrh and atrophy gave the main indication for the therapy. Overspilling was reduced through inclined position with sand bags to the sides of the head, to prevent the child turning its head to the side; albumin milk and hydrochloric acid improved the dyspepsia; obstruction of nose breathing as mentioned before, for two hours after every feeding, by the insertion of cotton into each nostril, was regularly effected; this forced the baby to stop ruminating and in the course of about two weeks had also strikingly lessened regurgitating. The result of this procedure was so marked, that it is to be recommended in similar cases.

4557 Broadway.

OPERATION ON THE HYPOPHYSIS ACCORDING TO HIRSCH'S METHOD

PRESENTATION OF A CASE WITH BRAIN, EYE AND OTHER SYMPTOMS *

EDWARD CECIL SEWALL, A.B., M.D.
Clinical Professor of Otology, Rhinology and Laryngology, Leland Stanford Jr. University, School of Medicine

SAN FRANCISCO

Disturbance in the hypophysis, leading as it does to pathologic conditions in the glands governing the internal secretions, produces a symptom-complex of peculiar interest to specialists in nearly every branch of medicine.

In the diagnosis, ophthalmology enjoys a definite preeminence. Involvement of the thyroid may bring forward the laryngologist and the special interest of otologists is demanded by such instances as the case described by Schultz and Fischer in which in a youthful acromegalic there were bony changes producing nearly complete deafness.

The rhinologist claims interest in the subject, however, of paramount importance. The development of the anterior lobe and the anomalies in formation lead him to interest himself in the embryology, and the fact that the best operative results have been obtained through his domain puts him on his mettle surgically.

First, then, I wish to report this case as a simple chronicle of an operation successfully performed by the Hirsch method. Hirsch has reported twenty-six cases, and altogether five or six other cases appear in the literature, one each by Sauer, Pierce and Halsted in this country; but doubtless there have been others, especially as I understand Hirsch has a new series ready to report.

Second, besides wishing to add my mite to the operative statistics, this case has been one of much interest to me and my colleagues of Stanford University medical clinics from a diagnostic standpoint.

P. N., an Italian, aged 43, married, came to the neurologic clinic of Stanford University, and later, when referred to the ear, nose and throat clinic, was recognized by me as a patient who, a number of years previous, had been under the care of Dr. A. Barkan, whose associate I was, which has enabled me to get a fairly complete history of the trouble from its inception.

The family history is negative. Patient is a man of moderate habits, was a carpenter, then a sausage maker. He has five children in good health, married; his wife has had no miscarriages. He denies venereal trouble. He had good health till eight years ago, when he began to have headaches, very severe, and evidence of brain pressure. When first seen about this time, he showed choked disks on both sides. The vision, however, was normal and there was no alteration of the visual fields. He had at times some vertigo and noises in the head, and at times some diplopia. He was given vigorous antisyphilitic treatment of mercury and potassium iodid. His condition apparently improved and he was fairly comfortable for several months.

The eye condition did not clear up, however, and the headache later returned. He then developed slight irritation of the right facial nerve, evidenced by convulsive twitchings of the right side of face and mouth. There was no loss of consciousness, but very considerable mental disturbance. No definite diagnosis could be made, but as the treatment did not influence the choked disks, a combined exploratory and decompression operation to save his sight was urged. This was refused by the patient. In lieu of operation, he was kept on vigorous antisyphilitic treatment with occasional periods of subjective improvement, but the eye condition remained the same except that the occasional transitory attacks of blindness were furnishing a tragic prognosis. In January, 1909, the right disk showed a swelling + 3.25 D. and the left + 4.0 D., and the fields, though peripherally normal, showed some central uncertainty. Ear, nose and throat and other findings were normal.

In March, 1909, the patient went to Italy for treatment. His vision was beginning to decline very slightly, but was still almost 20/20 right and left. The fields were beginning to show a slight peripheral curtailment. He was seen again in December, 1909, about two years since the beginning of his trouble. Vision was then reduced to right, sensation of light, projection fair; left, fingers in front of face, projection fair.

He was lost to sight until 1911, when he entered the eye clinic of Cooper Medical College suffering from iritis. The records show him to have been fairly well except for the eye condition, and he was again given mercurial treatment. A Wassermann taken at this time was negative. Later the spinal fluid showed positive Wassermann, Noguchi positive. Spinal pressure greatly increased. A few months later the Wassermann was again negative and has since remained so. Some doubt may be cast on this one positive Wassermann.

The patient entered the neurologic service of Stanford University, May, 1912, complaining of blindness and buzzing in the head. Dr. Schaller makes the following observations: To summarize: There were no positive findings except the report from the eye clinic, stating that he had secondary optic atrophy and evidence of old trouble probably specific in character. So in spite of a negative Wassermann, he was given mercurial treatment. He appeared off and on at the clinic until July, 1912. His appearance then suggested possible hypophysial disease. A roentgenogram taken of the skull showed distinct enlargement of the sella turcica.

His sugar tolerance was not high. He was given the extract of the anterior lobe for several months without apparent change in condition. Frequent Wassermanns were made, which were always negative. He was watched in the clinic until October, 1914. He then came complaining of great weakness, pains in head and knees, dizziness to the point of falling—"falls but does not lose consciousness."

General appearance is more than ever suggestive of a hypopituitarism; he has grown fat, with a heavy facial expression. Stereoptic roentgenograms, made by Dr. Walter Boardman, show a very considerably enlarged sella with disappearance of the right anterior clinoid process. A roentgenogram of the hands shows no other skeletal changes. He has almost completely lost sexual power.

Eye clinic report by Dr. H. Barkan, epitomized: Patient shows secondary atrophy of both optic nerves, divergence of left eye of 20°, external evidence of former iritis. Vision is reduced to light sensation, right, and hand movements, left. There is no hemianopsia.

Ear, nose and throat clinic report by Dr. Graham: There are no significant abnormalities except complete loss of sense of smell on both sides.

His behavior on the administration of sugar was determined by Dr. Addis, who reports that there was nothing definitely to suggest hypophysis disturbance; distinctly no high tolerance of sugar, no polyuria. His temperature is very slightly subnormal; the pulse very slightly increased in frequency.

There being a possibility that some abnormal condition of the hypophysis was responsible for his trouble, it was decided in consultation with Drs. Schaller and Wilbur to open the hypophysis and be guided by the findings. This was done according to Hirsch's method, Dr. Harvard McNaught assisting. On account of the lack of space, a preliminary amputation of the middle turbinates was done. One-quarter grain of morphin was administered before the operation. The parts were cocainized and an ordinary submucous resection

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

was followed by opening the sphenoid cells widely. From there the anterior wall of the sella was removed. The dura appeared full but not bulging, and was incised to form as wide a flap as possible. The gland did not bulge into the opening. This fact led us to proceed cautiously, because the picture of a growth or cyst, distending the cavity, was lacking. Consequently, the gland was entered carefully with a knife, and then with a small curet, but as the material in the spoon appeared almost creamy in consistence with no tendency to extrude into the wound, we concluded the operation without gaining enough tissue for pathologic examination. The purpose of the operation was to determine if there was a tumor mass or cyst in the sella, and we felt unwarranted in jeopardizing the patient further. He was very slightly inconvenienced by the operation, little more than by an ordinary submucous section. He entered the hospital November 20 and left November 27.

The immediate effect of the operation was relief of the weakness and general betterment in subjective condition. This improvement has now persisted for seven months. We think that the benefit can only be psychologic, but it is a comfort to feel that his way has been made smoother.

We are then still at a loss at this writing to account for all the symptoms in this case or to make definite prognosis of the outcome. We are inclined to retreat behind the scarred defenses afforded by the diagnosis "Syphilis in one of its forms." The mere fact that he had such severe and persistent intracranial symptoms and is still alive supports that contention, especially when backed up by the inflammatory condition of the eyes, the loss of sense of smell and the one positive Wassermann reaction. Also it is possible that such a growth may have later invaded the hypophysis and led to its enlargement. But in view of the findings at operation and few supporting symptoms, we do not think that is a fact.

The assumption that the trouble was primarily hypophysial is, on the other hand, opposed by a number of facts. In view of the enlarged sella and absence of the right clinoid process, the possibility of the escape of a tumor from the sella and the production of the mentioned choked disk without producing in its course disturbance of the optic nerves or tracts and leading to visual or field disturbance was considered. Such a possibility seemed doubtful. The literature does not discuss that particular point. All are agreed that choked disk is rare in hypophysial tumors, and in basal tumors. Also it is well known that tumors make their way out of the sella and produce choked disk. But the point we wanted to know in our particular case was whether there was ever a case reported in which a tumor, originating in the hypophysis, made its exit upward and produced a choked disk, or in any way produced a choked disk, without first involving the vision or the fields. I was not able to find in the literature such a case reported conclusively.

Lane Hospital.

State Responsibility in Tuberculosis.—The universality of tuberculosis establishes this disease as a federal problem, in which the obstacle of "States' Rights" should not be allowed to enter. It is essentially a problem affecting the welfare of the whole people without demarcation of state, county or municipal lines. As long as railroads carry infectious people, food, cattle and dirty mail bags, and ports of entry admit consumptive immigrants, the federal government cannot fail to be an important factor in this matter.—William Charles White, M.D., paper read before the Seattle meeting of the National Association for the Study and Prevention of Tuberculosis.

CONGENITAL SYPHILIS IN THE LIGHT OF THE WASSERMANN REACTION

DANIEL J. GLOMSET, M.D.
DES MOINES, IOWA

The Wassermann reaction has now been introduced into all civilized lands. It has been employed in millions of cases, and it is the consensus of opinion today that a positive Wassermann is practically a pathognomonic symptom of syphilis. The use of this reaction in the diagnosis and treatment of syphilis has vastly increased our knowledge concerning this protean disease. Not the least startling is the light the complement fixation test has thrown on congenital syphilis. Histologic studies and the scientific application of the Wassermann reaction have proved that many of the ideas formerly held concerning this phase of the disease were erroneous, and these brilliant advances have added much to our conception of the transmitted form of syphilis. I propose to bring out how our older ideas have been modified, and to present new facts about the latency of syphilis and its transmission into the third generation

Formerly, the terms "hereditary" and "congenital" were applied synonymously. We now know that neither syphilis nor any other infectious disease is hereditary in the true sense of the word; hence, "congenital or antepartum" are the better terms to use.

In the past, three routes of infection were thought open for the congenital transmission of syphilis, namely, through the germ cells, from the father direct to the fetus, and through the placenta. It is known today that the delicate, actively motile spirochetes rapidly disseminate themselves throughout the human tissues and readily enter the body fluids. Hence, we should also expect to find them in the semen. And Finger, Neumann, Lang, Hochsinger[1] and others have been able to produce gummas in apes and rabbits by the injection of spermatic fluid. Boardman[2] rightly states that many wives are infected from their husbands through the seminal fluid. But that the spermatozoon or ovum harboring the syphilitic germs should be able to develop seems a biologic impossibility. Similarly, it is highly improbable that spirochetes from the semen should be able to wind their way to the fetal tissue without first infecting the mother. Hence, the only route left open is transmission through the placenta.

The anatomic structure of the placenta and the physiologic relationship existing between this organ and the maternal tissue at once suggest that the placenta is the highway through which the infections are transmitted in utero. Indeed, it is definitely established that measles, smallpox, scarlet fever, typhoid fever, tuberculosis and recurrent fevers are transmitted congenitally only through this organ (Wechselmann[3]). Syphilis forms no exception; for Schaudinn,[4] Trinchese,[5] Frankl,[6] Graefenberg,[7] Bab,[8]

1. Finger, Neumann, Lang, Hochsinger: Diskussion zum Vortrage Matzenauer, Wien. klin. Wchnschr., 1903, Nos. 7-13.
2. Boardman, W. P.: Syphilitic Heredity and Congenital Syphilis, Jour. Cutan. Dis., 1914, xxxii, 545.
3. Wechselmann: Deutsch. med. Wchnschr., 1909, xxxv, 665.
4. Schaudinn, cited by Heynemann, T.: Die Bedeutung der Wassermannschen Reaktion für Geburtshilfe und Gynäkologie und die Lehre von der Vererbung der Syphilis, Prakt. Ergebn. d. Geburtsh. u. Gynäk., 1911, iii, 40.
5. Trinchese: München. med. Wchnschr., 1910, No. 11, p. 570.
6. Frankl: Beitrag zur Lehre von der Vererbung der Syphilis, Monatschr. f. Geburtsh. u. Gynäk., 1910, xxxi, 173.
7. Graefenberg: Arch. f. Gynäk., 1909, lxxxvii, 190.
8. Bab: Ztschr. f. Geburtsh. u. Gynäk., 1907, lx, 161.

and numerous others have found spirochetes in the placenta. Most observers have found the organisms only in the fetal portion of the placental tissue; but Trinchese and Hübschmann[9] have also demonstrated their presence in the maternal sinuses. Furthermore, Reitschel,[10] Bauer and Engelmann,[11] Ledermann[12] and others have found the Wassermann positive in the mothers of syphilitic children in from 75 to 100 per cent. of the cases. Bab and Reitschel hold that syphilis is transmitted through the placenta only when gross syphilitic lesions are present in this organ; but Thomsen[13] and others have shown that such changes are not necessary. Only from 33 to 60 per cent. of the placentas of syphilitic infants show gross lesions.

In regard to the time when the product of conception becomes infected, syphilitic mothers may be divided into two classes: those who are suffering from syphilis at the time of conception, and those who are infected during pregnancy. It is obvious that the activity of the infection in the mother is an important factor in determining the time when the product of conception becomes syphilitic. Thus, if the mother is suffering from a syphilitic septicemia at the time of conception, the embryo or fetus does not long escape. But in moderately active syphilis, and in the latent stage of the disease when only an occasional spirochete circulates in the blood, the chances of infection increase, for purely mechanical reasons, with the growth of the placenta. Then, too, it seems logical that the increasing stress of pregnancy renders a quiescent syphilitic focus as susceptible to a flare-up as it does in other infectious diseases. Sabin[14] states that when a mother acquires syphilis during the first five months of pregnancy, the child is almost invariably syphilitic, but that infection after that time rarely occurs. This view is not in accord with our present conception of the infectivity of syphilis. And numerous cases have been reported in which syphilis has been transmitted to the fetus in the latter half of pregnancy. Thus, Frankl reports five such cases, and Mohn[15] reports a case in which the mother was infected toward the end of pregnancy, and spirochetes occurred in the placenta. So, then, the facts at hand suggest that the majority of antepartum transmissions take place in the later part of gestation.

It has been the custom to recognize two distinct effects of syphilis on the offspring: one, the injury to the germ cell by the poisons of syphilis, giving rise to so-called syphilitic dystrophies; and the other, the true syphilitic infection. Since injuries produced to the developing ovum by the disease would be true hereditary defects, they do not come within the scope of this paper except to the extent of noting that many of these, such as syphilitic osteochondritis, Hutchinson's teeth, notched scapula and bony nodes, are directly the result of the infection. On the other hand, various deformities for which syphilis was formerly blamed, such as bicornate uterus, aplasias of the genitals, polydactylism, spina bifida and hydrocephalus, have been shown by Holt[16] and Heynemann to give negative Wassermanns. More recently, however, Stevens[17] believes that Mongolian idiocy is a hereditary defect of syphilitic origin.

Let it be clear at once that many of the factors determining the pathogenicity of any infectious disease are at present wholly unknown or only partially understood. Nevertheless, all the facts which we now possess agree perfectly with the conception so tersely stated by Osler, that, with the exception of the initial sore, all the features of the acquired form occur in the congenital. When this is thoroughly understood, many phases of congenital syphilis at once become clear. For there is no reason why the infection should not pass through a period of incubation antepartum as well as afterward. According to Vaughan,[18] this period is necessary in order that the body cells may develop specific enzymes which split the foreign protein introduced by the infection in such a fashion that substances deleterious to the life of the cells are set loose, and thus give rise to symptoms. Since infection of the fetus rarely occurs in the early period of pregnancy, and since a certain time elapses before the product of conception succumbs, we should not expect syphilis to play any important rôle in the early termination of gestation. And the evidence at hand shows that it does not; for, according to Reischig,[19] only 0.78 per cent. of aborting mothers give a positive Wassermann. But as pregnancy progresses, the chances of infection increase, and enough time is given for the development of the disease; thus, Trinchese states that from 35 to 40 per cent. of miscarriages occur in mothers giving a positive Wassermann. Syphilis is therefore a most important etiologic factor of miscarriage. For Trinchese and Graefenberg found the *Spirochaeta pallida* in from 50 to 80 per cent. of macerated fetuses; and the larger percentage of mothers of stillborn babes gives a positive Wassermann.

When infection takes place at a still later period, or when a period of latency ensues, it comes about that the accident of parturition occurs when the baby is suffering from florid secondary syphilis, as is shown by rash and rhinitis, etc. In still other cases, the baby is born prior to the onset of secondary symptoms. In the majority of these, symptoms develop in the first few months of life, but in some, later. Numerous observers, Halberstaedter, Opitz, Thomsen, Boas[20] and others, found that certain of these symptomless syphilitic babies gave a negative Wassermann. This was interpreted by Römer[21] to mean that antibodies were not produced in the very young. But his conclusions are untenable, because, in the first place, babies born with a syphilitic rash almost invariably give a positive Wassermann (Bergmann,[22] Frankl, Trinchese, Bauer, Ledermann, Thomsen).

And the reaction is always changed from a negative to a positive when the children later develop symptoms (Bauer, Bergmann, Thomsen, Boas).

9. Hübschmann: Spirochaeta pallida und Organerkrankungen bei Syphilis kongenita, Berl. klin. Wchnschr., 1906, No. 24, p. 796.
10. Reitschel, H.: Ueber den Infections modus bei den kongenitalen Syphilis, Med. Klin., 1909, No. 18, p. 658.
11. Bauer and Engelmann, cited by Reitschel (Footnote 10).
12. Ledermann, R.: Lues congenita und Serodiagnostik, Deutsch. med. Wchnschr., 1914, xl, 176.
13. Thomsen, Olaf, cited by Weehselmann (Footnote 3).
14. Sabin, Berthe: Etude de la loi de Profeta par la seroreaction de Wassermann, Ann. d. mal. vén., 1913, viii, 263.
15. Mohn, cited by Frankl (Footnote 6).
16. Holt, L. E.: Wassermann Reaction in Hereditary Syphilis, in Congenital Deformities and in Various Other Conditions in Infants, New York State Jour. Med., 1913, xiii, 466.
17. Stevens, H. C.: Mongolian Idiocy and Syphilis, THE JOURNAL A. M. A., May 15, 1915, p. 1636.
18. Vaughan, V. C.: Protein Split Products in Relation to Immunity and Disease, Philadelphia, Lea & Febiger, 1913.
19. Reischig: Statische Beobachtungen über congenitale Lues, Inaug. Diss., München, 1911.
20. Halberstaedter, Opitz, Thomsen, Boas, cited by Björkenheim, E. A.: Syphilis Sero-diagnostik mit Rücksieht auf Lues congenita, Prakt. Ergebn. d. Geburtsh. u. Gynäk., 1911, iii, 83.
21. Römer, cited by Ledermann (Footnote 12).
22. Bergmann, cited by Björkenheim (Footnote 20).

In the congenital as well as the acquired form of the disease, a small percentage passes through a shorter or longer period of latency. We are only beginning to appreciate the marked insidiousness of syphilis, for Wassermann[23] reports a patient who, after remaining symptomless for fifty years, showed complete inhibition of hemolysis. I know a man, from my own experience, who gave a positive Wassermann after remaining perfectly well for twenty-five years after infection.

One phase of the latency, which until very recently has been interpreted to mean immunity, has been passed down through generations of medical students as Colles' law, formulated in 1837. According to this law, mothers giving birth to syphilitic children could not be infected by their offspring; hence, such mothers were considered immune. This law has now been completely overthrown, for in the first place, from 75 to 100 per cent. of these apparently well mothers give a positive Wassermann, and Matzenauer,[24] Frankl, Opitz, Engelmann and others have reported cases in which these so-called immune mothers later develop syphilitic symptoms. Again, mothers of this type whose second husbands were not syphilitic have given birth to syphilitic children in their second wedlock. The last crushing blow dealt Colles' law was struck by Neisser[25] and others, who found no evidence of active or passive immunity in syphilis. Similarly, the children of Profeta's type are not immune but are latent syphilitics.

It has been known for a long time that syphilitic children may remain in a state of latency during their entire childhood, and that in a certain percentage of cases the disease becomes active during puberty. But it has hitherto been the general opinion that few, if any, of those suffering from antepartum infection of syphilis reached adult life. This conception has also been shown to be erroneous, for numerous cases of congenital syphilis have been reported in patients past the twentieth year; indeed, cases occur in which such persons have reached middle life. Warthin[26] has recently added additional proof to this extreme insidiousness of syphilis by the finding of spirochetes in persons who have been free from syphilitic symptoms for decades. He finds the organism in tissues showing only insignificant microscopic lesions or none at all. In the patients without lesions, the Wassermann is negative. This agrees perfectly with the notion now held that syphilis must be more or less active in order to produce substances inhibiting hemolysis. Warthin offers a very plausible explanation of the long period of latency, sometimes observed in this disease, by stating that the human tissues grow so accustomed to the infecting agent that the body cells and the spirochetes live in symbiosis with each other. Warthin's ideas are supported by Paris and Desmouliere,[27] who have shown that the percentages of positive Wassermanns steadily decrease with the lengthening of the period of latency.

23. Wassermann, A. von: Handbueh der Pathogenen Mikroorganismen, Jena, 1913, vii, 951.
24. Matzenauer: Die Vererbung der Syphilis, Vienna and Leipzig, 1903.
25. Neisser, cited by Bruck, C.: Immunität bei Syphilis, Handbuch der Pathogenen Mikroorganismen, Jena, 1913, vii, 1044.
26. Warthin, A. S.: Treponema Pallidum as a Symbiose of Human Tissues, reported at meeting of Am. Assn. Path. and Bacteriol., St. Louis, 1915.
27. Paris and Desmouliere: Syphilis héréditaire tardive et réaction de Wassermann, Bull. soc. franç. de dermat. et de syph., 1913, xxiv, 576.

This fact, that congenital syphilis may remain latent even past adult life, strongly suggests the possible transmission of syphilis into the third generation. Fournier[28] has reported over 100 cases in which, in his opinion, such transmission had taken place. Recently Block and Antonelli[29] have reported another instance of this type.

In conclusion, I wish to report two families in which transmission into the third generation has probably taken place.

The first family came under my observation in this way: A young, recently married couple brought their first-born to their family physician. The baby had a condition in the palms of his hands and the soles of his feet which the doctor diagnosed as pemphigus. This diagnosis greatly angered the parents, who both denied exposures. The infant was taken to another physician who concurred in the diagnosis and had a Wassermann made on the baby. It was positive and the baby died in spite of treatment. The greatly alarmed parents then came to me for examination of their blood. To my astonishment, the father's blood gave negative Wassermanns repeatedly but the mother's blood was positive. In order to clear herself, the vexed mother brought her older sister and her younger brother to me for examination. The blood of both of these inhibited hemolysis. The children then dragged their irate German father to my office, and he bruskly informed me that if I found syphilis in his blood he would kill me. The man's blood was negative. Shortly afterward the child's grandmother died from what was diagnosed gumma of the brain. Less than twenty minutes after death, a sample of her blood was obtained and that, too, was positive. The grandmother was an illegitimate child.

The positive members of the family were given two injections of salvarsan and kept under mercurial treatment for three months. Then I examined the blood of all of them; they were still positive. They were given another dose of salvarsan, and mercuric chlorid injections were continued for eighteen months. At the end of that time the blood was examined and all gave negative Wassermann reactions. A year and a half after this I again examined the blood of these persons and obtained a negative Wassermann in every one. In the meantime the mother has given birth to another child who is now over half a year old and shows no evidence of syphilis.

The second family I do not consider such convincing proof of the transmission into the third generation, for the reason that the moral character of the members is not above suspicion. The next oldest daughter of this family entered the Methodist Hospital on Dr. Bierring's service. She had an inflammation of the retina, nephritis, and was suffering from epileptic fits which recurred very frequently. I was asked to make a Wassermann, and it proved strongly positive on two occasions. Her husband gave a negative Wassermann. I then learned that her older sister was married and had had two stillbirths and a child who was born apparently healthy but died shortly after birth from what they termed "a cold in the nose." A Wassermann was obtained from her, and it completely inhibited hemolysis. Her young brother also gave a positive Wassermann, and her youngest sister, aged 16 years, was operated on by an aurist for a chronic mastoiditis. A rarefied inflammation of the bone was found which the physician, at that time, believed to be tuberculous. She more recently had trouble with the other ear. She, too, gives a positive Wassermann.

I am aware of the fact that these do not constitute infallible proofs for the transmission of syphilis into the third generation. Nevertheless, from what we now know of the insidiousness of syphilis, it seems to me that they are strongly suggestive.

311 New Masonic Temple.

28. Fournier, cited by Bab (Footnote 8).
29. Block and Antonelli, cited by Boardman (Footnote 2).

A REPORT OF FOUR CASES OF MECKEL'S DIVERTICULITIS *

GEORGE K. STRODE, M.D., PHILADELPHIA

The following cases are placed on record because they are interesting examples of a comparatively rare condition, and because they will add to the value of statistics concerning the pathology of Meckel's diverticulum:

CASE 1.—W. F., man, white, aged 32, was admitted early in the evening of Feb. 7, 1914, to the University Hospital on the surgical service of Dr. Edward Martin. The patient stated that he had been feeling quite well until the night before when, shortly after lifting a bed, he began to experience a dull aching pain in the right iliac region. The pain gradually became more severe and colicky in character, and moved toward the umbilicus. Following the onset of pain, he became quite nauseated, and vomited once. Bowels moved once. During the night he was unable to sleep because of the pain. No respiratory, cardiac, urinary or nervous symptoms could be elicited. Inquiry into his previous medical history showed that he had always suffered from transient attacks of headache, nausea and blurred vision, but that these attacks had become less frequent in the past few years. Appetite had always been good. He was never troubled with indigestion or constipation. At various times, however, he had had sharp pains in the right lower abdomen near to the umbilicus. He remembers particularly that, while employed as a freight brakeman, about six years ago, he would be seized with a severe colicky pain whenever he stood on the bumpers of the cars, where the jar was great. To relieve the pain so far as possible, he would assume a squatting posture, resting all his weight on his toes, and using his bended legs as shock absorbers. There was nothing else of importance in his medical history, and his social and family histories were negative.

Physical examination on admission was as follows: Patient is an adult male of medium build, looking older than his given age of 32. He appeared sick, had a worried and anxious countenance; lay on his back with legs flexed at right angles. Skin was warm and a little moist. Radial pulse was full, regular and of increased frequency. Tongue was covered with light brown fur. Abdomen was flat and somewhat scaphoid. There was marked boardlike rigidity over the entire right side, and some, but much less, on the left side. There was marked tenderness in the region of McBurney's point, but none posteriorly. Peristalsis was active. Further physical examination revealed nothing abnormal. Urine examination normal. On admission temperature, pulse and respiration were 100.4, 90 and 22, respectively, and blood count showed 13,600 leukocytes. The patient was operated on at once, a preoperative diagnosis of acute appendicitis having been made. The usual gridiron incision for appendectomy was used. When the peritoneum was opened, a yellowish, turbid, watery fluid was found which was under considerable pressure and lay for the most part in the pelvis. The appendix was found lying on the inner aspect of the cecum, sharply kinked on itself; it showed no evidence of an inflammatory process and did not seem to be the cause of the symptoms. The appendix was removed, and the abdomen explored. It was then that a Meckel's diverticulum was found by feeling along the inner side of the incision. After enlarging the incision by further splitting of the muscles, it was found that the diverticulum was attached at its distal extremity by a fibrous cord to the umbilicus, and that the distal ileum was twisted around the diverticulum so as partially to obstruct the ileum and probably the diverticulum—at least there was definite enlargement of the ileum proximal to the kink. The diverticulum was about 7 cm. long, the distal 2 cm. being a fibrous cord; it arose from the ileum about 45 cm. from the ileocecal juncture. There was very definite evidence of inflammation, and at one point rupture seemed imminent; no plastic exudate had yet been formed. The diverticulum was removed by the same technic as is usually employed for an appendectomy. The proximal extremity, after being divided between clamps and thoroughly cauterized, was inverted with a purse-string suture so as to constrict the ileum in no way. Virtually, the stump was inverted into itself and did not enter the intestinal lumen. To reach the distal extremity, the skin was pulled well over toward the midline, the anterior rectus sheath split, the rectus muscle retracted away from the midline and the posterior rectus sheath split. Through this newly formed opening the fibrous distal extremity of the diverticulum was clamped and cut and the diverticulum delivered. There was no bleeding from the umbilical stump. A split rubber tube and wick were placed in the pelvis and another one at the base of the appendix, for the purpose of drainage. Abdomen was closed in the usual fashion by continuous fascial sutures. Convalescence was uneventful; the patient made a perfectly satisfactory recovery, and left the hospital after three weeks' sojourn. A culture of the abdominal fluid showed the *Streptococcus pyogenes* (middle length chains).

The pathologic diagnosis was acute interstitial diverticulitis, with normal appendix.

The specimen consisted of a diverticulum measuring 5⅔ cm. in length by 1.25 cm. in diameter in each extremity and 0.625 cm. in the middle. The external surface was reddened and contained one or two points which were greenish. Cross-section showed a thickened wall. The mucosa was deeply congested and contained a quantity of inspissated blood in the lumen. The appendix measured 7.5 cm. in length, was firm in consistency and showed no gross abnormalities.

Microscopically, section of diverticulum showed marked hyperemia and cellularity of all the coats, the blood vessels being uniformly distended and some free hemorrhage occurring; the mucosa, submucosa, muscular and peritoneal walls all being the seat of round cell infiltration and occasional plasma cells. The section of appendix showed a relatively large lumen, and rather inactive mucosa and submucosa and slight fibrosis of the muscular and peritoneal coats.

Six months after discharge, the patient was enjoying excellent health and able to do his work without any inconvenience.

CASE 2.—L. E. W., woman, white, aged 27, was admitted to the gynecologic service of Dr. John G. Clark at the University Hospital, Jan. 26, 1909. She stated that she had had an acute attack of right-sided abdominal pain about three years ago. The attack lasted for only a few days, but since then she had complained of more or less general abdominal pain more marked on the right side. At times the pain is referred down the right leg. She complained a good deal of indigestion, and her bowels had always been constipated. Sleep was poor. Menses began at 13, were regular, and lasted seven or eight days. Temperature and pulse were but slightly elevated on admission. At operation a Meckel's diverticulum was found, showing evidence of a subacute inflammation. The diverticulum arose from the ileum about 30 cm. from the ileocecal junction, was about 3 cm. long and was not attached at its distal extremity. It was removed and the stump inverted. The appendix was also removed; it showed only evidence of a chronic inflammation. Incidentally the uterus, which was in acute retroflexion, was suspended after the Coffey method. This patient made a satisfactory recovery.

The pathologic diagnosis was chronic diffuse appendicitis, and diverticulitis.

The appendix was 11 cm. in length. Inner half entirely normal. In outer half the vessels appeared congested, and organ was rather white and firmer than normal. There were no constrictions or concretions. The lumen was patulous. Diverticulum was a rounded culdesac about 2 cm. in length and 2 cm. in diameter. On the tip was an epiploic appendage. At the extreme base there appeared to be a slight tendency toward a constriction. Outer surface was free of adhesions but was somewhat redder than normal. The lumen was in direct communication with the lumen of the intestine. The mucosa was slightly granular. The walls were thinner than the adjacent intestinal walls. The inner surface was somewhat suggestive of a chronic inflammation.

* Reported before the Philadelphia Pathological Society, May 13, 1915.

Sections of the appendix showed the outer two coats normal. Submucosa was fibrous. The mucosa was flattened. The glands were shallow. The glandular epithelium showed active proliferation. Many of the cells contained an excess of mucus. Surface epithelium was intact, but somewhat flattened. The stroma contained considerable free blood pigment. Some of this was found in solitary follicles. The lumen was dilated and occupied by a soft concretion. The section from the tip showed the same histologic changes without the effects of pressure.

The outer coat of the diverticulum showed no pathologic changes. The glands of mucosa were normal in number, size and shape. The glandular epithelium was comparatively normal. Here and there it contained an excess of mucus and was flattened. Some points of the stroma showed an infiltration of small round cells and free blood pigments.

Case 3.—Mrs. A., aged 36, white, was admitted to the gynecologic service of Dr. John G. Clark, at the University Hospital, April 6, 1914. The patient presented the usual symptoms of acute appendicitis, with a history of two previous attacks. The attacks were characterized by right-sided iliac pain, nausea, vomiting and localized tenderness. Temperature on admission was 101 and pulse was 100. Leukocytes 14,000. She was operated on through a large median incision. Free semipurulent fluid was present in the abdomen. Examination of the pelvis showed the left ovary to be small and reddened but evidently not the seat of the trouble. Right tube showed adhesions, evidently a chronic condition. Uterus normal. On the superior aspect of the mesentery was attached a diverticulum which sprang from the lower ileum. It was gangrenous and on the point of rupture. The diverticulum was removed, as was the appendix, right tube and ovary. Patient made an uneventful recovery.

The pathologic diagnosis was acute diverticulitis and chronic obliterative appendicitis.

The appendix was 4.5 cm. by 5 mm. Surface markedly congested, but free from adhesions. On section the lumen appeared almost obliterated.

The diverticulum was a small, thin-walled sac measuring 2 cm. in diameter and having a much congested and somewhat rough external surface.

Histologically the appendix showed that the lumen and mucosa had disappeared and had been replaced by a mass of inflammatory tissue showing a moderate amount of round cell infiltration.

The diverticulum showed on section the general appearance of the intestine; the mucosa was in part preserved, but in places it was completely destroyed and replaced by masses of inflammatory tissue. Throughout all portions of the wall were areas of intense infiltration with polynuclear leukocytes and much destruction of tissue. In other areas again were numerous, much engorged papillary blood vessels.

Case 4.—R., woman, aged 39, also from Dr. John G. Clark's service, had undergone an operation for removal of a fibroid uterus about two months before the present trouble began. She felt perfectly well in all respects until two days before admission, when she was suddenly seized with a continuous dull pain in the epigastrium. Associated with this were frequent, sharp, paroxysmal attacks of abdominal pain of short duration, which required morphin for relief. At the onset of the trouble she vomited, and the next day her stomach became absolutely unretentive. No increase in temperature or pulse rate accompanied the condition at this time. The night before admission, her abdominal pain became more general and was lancinating; vomiting was more continuous and was accompanied by a rise in temperature and a jump in the pulse to 130. Her bowels, which were normally regular, had to be moved by an enema during the first day and tended to be costive. The patient was sent to the hospital with a tentative diagnosis of postoperative intestinal obstruction. On admission the temperature, pulse and respiration were 99, 120 and 24, respectively. Examination revealed a very tender abdomen, especially just above the pubis in the midline and exaggerated peristalsis, with little or no abdominal distention. Some rigidity of the abdominal wall was present. Vaginal examination revealed some induration in Douglas' culdesac. Heart and lungs were negative. After admission she was given oleum ricini, half an ounce, which produced such violent abdominal pain that operation was resorted to at once.

A midline incision was made between the umbilicus and the pubis. When the peritoneum was opened, free fluid was found in the abdominal cavity. Inspection of the former operative area failed to reveal any adhesions; the stump of the uterus was well covered with peritoneum. Careful search, however, revealed trouble in Douglas' culdesac. A Meckel's diverticulum was adherent in this pouch. The diverticulum was 3.5 cm. in length and 2.5 cm. in diameter; it arose from the ileum about 45 cm. from the ileocecal junction, and its distal extremity, which was rounded, was adherent to the peritoneum of the culdesac. Surrounding the diverticulum was a loop of small intestine which was so twisted as to cause a partial obstruction. The diverticulum was acutely inflamed, but not perforated; the loop of intestine was very congested, swollen and inflamed. The diverticulum was clamped, ligated and inverted as an appendix usually is. The abdomen was closed without drainage. Convalescence was satisfactory, and the patient left the hospital in four weeks feeling quite well.

The specimen consisted of a pouchlike structure measuring about 3.5 cm. in length and 2.5 cm. in diameter. It was dark reddish, and the external surface was rather rough, and in places showed evidences of mutilation. The internal surface was smooth, somewhat velvety in appearance and suggested an inflamed mucosa. Walls were from 2 to 3 mm. thick, soft and pliable.

Cross-section through pouch showed a mucosa closely resembling intestinal mucosa, but was rather thin and atrophic in appearance; submucosa, circular and longitudinal muscular coats appeared about the same thickness as those in a normal intestine. Throughout all coats there was a moderately intense round cell infiltration, and in places the serosa was thickened and showed an especially marked inflammatory reaction.

COMMENT

In reviewing these four cases, it is interesting to note that the average age was 33 years and that three of the four patients were females. In Cases 1, 3 and 4 the illness was acute, and in all the diverticula were attached distally. In Case 2 the diverticulum was free, and here the symptoms and pathologic condition were comparatively mild. The attacks of pain in Case 1, which the patient experienced while employed as a freight brakeman, seem to be well explained by the findings at operation; the diverticulum and attached ileum were suspended by a cord from the umbilicus, so that sudden jarring would tend to produce kinks and strains in the intestine which might well cause pain. In Cases 1 and 4 it seems reasonable that partial obstruction was the predisposing cause of the inflammation. The involvement of Meckel's diverticulum was not suspected preoperatively in any of the cases, and, indeed this is characteristic of the condition. All four patients recovered.

Embalming.—Francis in *Public Health Reports* describes methods of embalming and what is essential to effective work. He says it is important for health officers to be acquainted with proper methods of embalming. It is said that the exact composition of the embalming fluid is of less importance than the method of injecting it, and that almost any of the fluids used will be effective if properly applied. At least six points should be used for the injection, viz., the femoral artery toward the toes, each brachial artery toward the fingers, one common carotid artery toward the head and the same artery toward the heart. The total amount of fluid injected should be 15 per cent. of the body weight. The solution devised at the Hygienic Laboratory has the following formula: Liquor formaldehydi (U. S. P.) 13.5 c.c.; sodium borate 5 gm.; water sufficient to make 100 c.c.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1915 BY THE COUNCIL ON MEDICAL EDUCATION

The tabulated statistics herewith presented are for the year ending June 30, 1915, and are based on reports received from the medical colleges or from other reliable sources. We take pleasure in acknowledging here the courtesy and cooperation of the officers of the colleges who have made the compilation of these complete statistics possible.

STATISTICS OF COLLEGES

Table 1 (pages 688-690) gives the colleges in session during 1914-15; the population of the city; the rating given to the college in the latest classification of the Council on Medical Education; the number of students, men and women, registered during the year; the number of 1915 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 707 are given essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, on pages 692-695, shows from what states the students come who were in attendance at each medical college during the session of 1914-15. The influence of the proximity of the medical school is seen in the fact that states having medical colleges contribute more students in proportion to the population than those which have no colleges. This is shown by the dark zone of figures running diagonally down the page. A comparison of this table with the large tables based on state board examinations,[1] which show the distribution of the alumni of each college, is interesting. The college which has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York, with 1,948. Illinois contributed 1,318 and Pennsylvania, 1,140. The next states, in the order of the number of students contributed, are: Ohio, 718; Massachusetts, 572; Missouri, 508; Texas, 495; North Carolina, 480, and Michigan, 452. Four states had less than 20 each, these being Arizona, 13; Wyoming, 8; New Mexico, 8, and Nevada, 4. There were 121 students from Hawaii, Porto Rico and the Philippine Islands, and 458 students from foreign countries.

In Table 3, on page 696, the students enrolled in each college are shown by classes. This permits one to see whether the attendance at each college is increasing or decreasing. The total attendance for the first year was 3,373 as compared with 4,684 freshmen last year. The second year attendance was 3,919 as compared with 3,981 last year. The enrolments for the third and fourth years, respectively, were 3,675 and 3,864 as compared with 3,807 and 3,955 last year.

1. The Journal A. M. A., April 24, 1915, p. 1402.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (matriculants) in the United States for the year ending June 30, 1915, excluding premedical, special and postgraduate students, was 14,891, a decrease of 1,611 below last year, a decrease of 2,124 below 1913, a decrease of 3,521 below 1912 and a decrease of 13,251 (47.1 per cent.) below 1904, when 28,142, the highest number of students, were enrolled. (See Tables 4 and 10.) Of the total number of students, 13,914 were in attendance at the non-sectarian (regular) colleges, 736 at the homeopathic and 241 at the eclectic colleges. The attendance at the non-sectarian colleges shows a decrease of 1,524 below that of last year, a decrease of 2,005 below 1913, and a decrease of 11,016 (44.2 per cent.) below 1903; when 24,930, the largest number of non-sectarian students, were enrolled. In the homeopathic colleges there was a decrease of 58 below the attendance of last year, a decrease of 113 below 1913 and a decrease of 1,173 (61.4 per cent.) below 1900, when 1,909, the largest number of homeopathic students, were enrolled. The eclectic colleges show a decrease of 29 below the registration of last year, a decrease of 15 below 1913, and a decrease of 773 (76.2 per cent.) below 1904, when 1,014, the largest number of eclectic students, were enrolled.

TABLE 4.—Medical College Attendance

Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1880.....	9,776	1,220	830	...	...	11,826
1890.....	13,521	1,164	719	...	...	15,404
1900.....	22,710	1,909	522	...	...	25,171
1901.....	23,846	1,683	664	80	144	26,417
1902.....	24,878	1,617	765	91	150	27,501
1903.....	24,930	1,498	848	149	190	27,615
1904.....	23,662	1,309	1,014	123	234	28,142
1905.....	24,119	1,104	578	114	232	26,147
1906.....	23,116	1,085	644	110	249	25,204
1907.....	22,303	1,039	545	97	292	24,276
1908.....	20,936	891	479	90	206	22,602
1909.....	20,554	899	413	52	227	22,145
1910.....	20,136	867	455	49	19	21,526
1911.....	18,414	890	433	49	...	19,786
1912.....	17,277	827	308	...	...	18,412
1913.....	15,919	850	256	...	...	17,015
1914.....	15,438	794	270	...	...	16,502
1915.....	13,914	736	241	...	...	14,891

The unusual decrease in the number of students this year, particularly in the non-sectarian colleges, was due to the enforcement, for the first time by

(Continued on page 691)

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City where College is Located. (Census Bureau Estimate of 1914)	Classification by Council on Medical Education*	No. of Students Registered 1914-15		Graduates 1915		Grads. with A.B., B.S. or Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1915-16		Marginal Number
				Men	Women	Men	Women				1st year	2d year	3d year	4th year		Begins 1915	Ends 1916	
	ALABAMA			114	...	57	...	4										
1	Birmingham Medical College, Birmingham (a)	166,154	B	49	...	44	...	1	...	...	...	...	...	...	.....	.....	.....	1
2	University of Alabama, School of Medicine, Mobile	55,573	A	65	...	13	...	3	53	33	165	160	160	185	Thomas H. Frazer, M.D., Acting Dean	Sept. 30	June 7	2
	ARKANSAS			75	2	19	...	1										
3	University of Arkansas, Medical Department, Little Rock	53,811	B	75	2	19	...	1	57	32	125	125	125	150	Morgan Smith, M.D., Dean	Sept. 13	May 12	3
	CALIFORNIA			483	71	77	11	30										
4	College of Medical Evangelists, Loma Linda	125	C	48	15	8	4	1	44	34	136	136	136	136	Newton Evans, M.D., President	Sept. 26	June 15	4
5	California Eclectic Medical College, Los Angeles.—E. (b)	438,914	C	12	...	2	...	...	...	...	...	...	...	...	.....	.....	.....	5
6	College of Physicians and Surgeons, Los Angeles	438,914	B	122	10	24	1	1	80	36	185	182	160	175	Charles W. Bryson, M.D., Dean	Sept. 6	June 7	6
7	Oakland College of Medicine and Surgery, Oakland	183,002	B	10	2	3	1	...	40	38	185	190	150	150	Edward N. Ewer, M.D., Registrar	Aug. 16	June 1	7
8	College of Physicians and Surgeons of San Francisco	448,502	C	58	4	6	2	1	30	36	165	160	160	185	C. O. Southard, M.D., Secretary	Sept. 13	June 8	8
9	Hahnemann Medical College of the Pacific, San Francisco.—H. (c)	448,502	B	44	1	6	1	...	...	...	...	...	...	...	.....	.....	.....	9
10	Leland Stanford Junior University, School of Med., San Francisco.	448,502	A	82	13	15	1	16	96	36	160	155	150	150	Ray Lyman Wilbur, M.D., Dean	Sept. 1	May 22	10
11	University of California Medical School, San Francisco	448,502	A	107	26	13	1	11	95	36	190	190	167	167	H. C. Moffitt, M.D., Dean	Aug. 13	May 17	11
	COLORADO			55	4	7	1	4										
12	University of Colorado, School of Medicine, Denver	245,523	A	55	4	7	1	4	83	35	75	75	75	75	Wm. P. Harlow, M.D., Dean, Boulder	Sept. 13	June 7	12
	CONNECTICUT			49	...	7	...	7										
13	Yale University, School of Medicine, New Haven	144,505	A	49	...	7	...	7	74	35	223	170	153	163	George Blumer, M.D., Dean	Sept. 30	June 21	13
	DISTRICT OF COLUMBIA			323	3	76	...	18										
14	Georgetown University, School of Medicine, Washington	353,378	A	81	...	31	...	2	91	34	165	150	150	150	George M. Kober, M.D., Dean	Sept. 24	June 13	14
15	George Washington University Medical School, Washington	353,378	A	143	2	25	...	3	86	32	163	159	153	153	W. C. Borden, M.D., Dean	Sept. 29	June 7	15
16	Howard University, School of Medicine, Washington	353,378	A	99	1	20	...	13	38	32	137	127	127	134	Edward A. Balloch, M.D., Dean	Oct. 1	June 7	16
	GEORGIA			416	...	151	...	6										
17	Atlanta Medical College, Atlanta	179,292	A	341	...	132	...	6	103	32	150	150	150	150	William S. Elkin, M.D., Dean	Sept. 27	May 31	17
18	Georgia College of Eclectic Medicine and Surgery, Atlanta.—E.	179,292	C	21	...	7	...	...	...	...	...	...	...	...	.....	.....	.....	18
19	University of Georgia, Medical Department, Augusta (d)	49,451	A	54	...	12	...	...	50	34	55	50	55	60	William H. Doughty, Jr., M.D., Dean	Sept. 15	May 31	19
	ILLINOIS			2093	120	484	21	131										
20	Bennett Medical College, Chicago	2,393,325	B	378	15	91	1	5	75	32	140	145	130	145	Maximilian Herzog, M.D., Dean	Sept. 28	May 27	20
21	Chicago College of Medicine and Surgery, Chicago	2,393,325	B	508	21	124	1	6	157	31	155	155	155	155	Fred C. Zapffe, M.D., Secretary	Oct. 4	May 27	21
22	Chicago Hospital College of Medicine, Chicago	2,393,325	C	60	...	9	...	...	85	32	130	133	115	150	.....	Oct. 4	June	22
23	Hahnemann Medical College and Hospital of Chicago.—H.	2,393,325	B	76	10	21	2	1	83	32	151	137	171	187	Joseph P. Cobb, M.D., Dean	Sept. 28	May 25	23
24	Jenner Medical College, Chicago	2,393,325	C	160	15	21	3	...	63	36	155	150	135	190	John D. MacKellar, M.D., Secretary	Sept. 6	June 14	24
25	Northwestern University Medical School, Chicago	2,393,325	A	194	...	36	...	16	135	32	190	195	190	206	Arthur R. Edwards, M.D., Dean	Oct. 5	June 6	25
26	Rush Medical College (University of Chicago)	2,393,325	A	452	35	88	6	97	301	34	185	180	180	195	John Milton Dodson, M.D., Dean	Oct. 1	June 17	26
27	University of Illinois, College of Medicine, Chicago	2,393,325	A	265	24	94	8	6	154	34	155	160	150	165	D. A. K. Steele, M.D., Dean	Sept. 30	June 14	27
	INDIANA			150	2	26	2	18										
28	Indiana University, School of Medicine, Indianapolis	259,413	A	150	2	26	2	18	131	35	100	100	130	130	Charles P. Emerson, M.D., Dean	Sept. 20	June 14	28
	IOWA			152	2	26	...	9										
29	State University of Iowa, College of Medicine, Iowa City (e)	10,987	A	142	1	23	...	9	47	34	95	85	85	95	L. W. Dean, M.D., Dean	Sept. 20	June 9	29
30	State Univ. of Iowa, College of Homeo. Med., Iowa City.—H. (e)	10,987	A	10	1	3	...	...	30	34	95	85	85	95	George Royal, M.D., Dean	Sept. 20	June 9	30
	KANSAS			98	3	13	1	13										
31	University of Kansas, School of Medicine, Rosedale (e)(f)	382,142	A	98	3	13	1	13	53	35	45	45	105	105	Melvin T. Sudler, M.D., Associate Dean	Sept. 15	June 7	31
	KENTUCKY			208	...	68	...	4										
32	University of Louisville, Medical Department, Louisville	235,114	A	208	...	68	...	4	92	32	170	170	175	180	Henry Enos Tuley, M.D. Dean	Sept. 27	June 8	32
	LOUISIANA			285	1	78	...	30										
33	Tulane University of Louisiana, School of Medicine, New Orleans	361,221	A	285	1	78	...	30	111	34	195	195	195	225	Isadore Dyer, M.D., Dean	Sept. 28	June 15	33
	MAINE			70	...	22	...	7										
34	Bowdoin Medical School, Brunswick-Portland	62,161	A	70	...	22	...	7	59	33	115	115	115	140	F. N. Whittier, M.D., Deputy Dean, Brunswick	Oct. 14	June 22	34

* From the Third Classification of Medical Colleges, revised to August 1, 1915. See page 703.

	MARYLAND			**817**	**31**	**214**	**5**	**95**										
35	College of Physicians and Surgeons of Baltimore (g)	579,590	A	140	...	57	...	...	...	...	...	...	...	...	.....	.....	.....	35
36	Johns Hopkins University, Medical Department, Baltimore	579,590	A	330	31	84	5	87	127	33	240	240	240	240	J. Whitridge Williams, M.D., Dean	Oct. 5	June 13	36
37	University of Maryland, School of Medicine, Baltimore	579,590	A	347	...	73	...	8	202	32	165	165	165	150	Arthur M. Shipley, M.D., Acting Dean	Oct. 1	May 28	37
	MASSACHUSETTS			**705**	**60**	**173**	**16**	**92**										
38	Boston University, School of Medicine, Boston.—H.	733,802	A	67	19	15	6	5	73	32	177	172	152	185	John P. Sutherland, M.D., Dean	Oct. 7	June 7	38
39	College of Physicians and Surgeons, Boston (h)	733,802	C	46	9	13	4	...	...	...	...	...	...	...	.....	.....	.....	39
40	Medical School of Harvard University, Boston	733,802	A	319	...	87	...	85	216	35	225	225	225	200	Edward H. Bradford, M.D., Dean	Sept. 27	June 22	40
41	Tufts College Medical School, Boston	733,802	A	273	32	58	6	2	134	32	155	155	155	155	Frank E. Haskins, M.D., Secretary	Sept. 29	May 29	41
	MICHIGAN			**541**	**31**	**103**	**5**	**38**										
42	University of Michigan Medical School, Ann Arbor (c)	14,948	A	280	27	39	4	37	69	35	110	100	100	110	Victor C. Vaughan, M.D., Dean	Oct. 5	June 29	42
43	University of Michigan, Homeo. Medical School, Ann Arbor.—H. (c)	14,948	A	64	4	19	1	1	21	35	110	100	100	110	W. B. Hinsdale, M.D., Dean	Oct. 5	June 29	43
44	Detroit College of Medicine and Surgery, Detroit	537,650	A	197	...	45	...	...	172	33	155	130	90	120	Joseph H. Hathaway, M.D., Secretary	Sept. 22	June 1	44
	MINNESOTA			**201**	**7**	**20**	...	**17**										
45	University of Minnesota Medical School, Minneapolis	343,466	A	201	7	20	...	17	107	35	150	150	150	150	Elias Potter Lyon, M.D., Dean	Sept. 14	June 8	45
	MISSISSIPPI			**45**	...	...	...	...										
46	University of Mississippi, Department of Medicine, Oxford (i)	2,014	A	45	...	...	...	...	14	34	S1	S3	...	...	W. S. Leathers, M.D., Dean	Sept. 17	June 1	46
	MISSOURI			**602**	**21**	**145**	**7**	**25**										
47	University of Missouri, School of Medicine, Columbia (i)	11,371	A	62	3	...	...	...	18	36	45	45	...	...	Guy L. Noyes, M.D., Acting Dean	Sept. 15	June 9	47
48	Eclectic Medical University, Kansas City.—E. (j)	376,182	C	59	6	12	3	...	25	31	150	150	150	150	.....	Sept. 13	May 6	48
49	Kansas City Hahnemann College, Kansas City.—H. (k)	376,182	C	25	4	3	1	...	...	...	...	...	...	...	.....	.....	.....	49
50	National University of Arts and Sciences, Med. Dept., St. Louis	734,667	C	123	4	38	2	2	61	34	140	135	135	135	Edward L. Cooley, M.D., Secretary	Sept. 20	June 10	50
51	St. Louis College of Physicians and Surgeons, St. Louis (l)	734,667	C	70	4	20	1	...	...	...	...	...	...	...	.....	.....	.....	51
52	St. Louis University, School of Medicine, St. Louis	734,667	A	188	...	43	...	10	128	32	140	140	140	140	Hanau W. Loeb, M.D., Dean	Oct. 1	June 1	52
53	Washington University Medical School, St. Louis	734,667	A	75	...	29	...	13	87	34	155	150	150	155	Philip A. Shaffer, Ph.D., Dean	Sept. 23	June 8	53
	NEBRASKA			**261**	**12**	**59**	**4**	**13**										
54	Lincoln Medical College, Lincoln.—E. (s)	45,643	C	24	5	4	1	...	32	33	100	100	100	100	F. L. Wilmeth, M.D., Dean	Sept. 15	May 27	54
55	John A. Creighton Medical College, Omaha	133,274	B	146	2	45	1	6	52	32	135	130	130	130	A. L. Muirhead, M.D., Dean	Sept. 1	April 29	55
56	University of Nebraska, College of Medicine, Omaha	133,274	A	91	5	10	2	7	59	34	135	130	120	120	Irving S. Cutter, M.D., Secretary	Sept. 20	June 2	56
	NEW HAMPSHIRE			**23**	...	...	...	...										
57	Dartmouth Medical School, Hanover (i)	1,340	A	23	...	...	...	...	12	36	171	180	...	...	Colin C. Stewart, Ph.D., Secretary	Sept. 23	June 21	57
	NEW YORK			**2041**	**76**	**484**	**13**	**107**										
58	Albany Medical College, Albany	102,961	A	173	...	50	...	2	109	32	160	165	145	155	Thomas Ordway, M.D., Dean	Sept. 27	June 1	58
59	University of Buffalo, Department of Medicine, Buffalo	454,112	A	177	14	51	2	2	104	33	185	180	140	140	Thomas H. McKee, M.D., Dean	Sept. 20	June 2	59
60	Columbia University, College of Phys. and Surgs., New York City.	5,333,537	A	381	...	85	...	62	223	33	255	250	250	275	Samuel W. Lambert, M.D., Dean	Sept. 29	June 7	60
61	Cornell University Medical College, New York City	5,333,537	A	115	19	17	3	20	124	34	190	185	185	200	William M. Polk, M.D., Dean	Sept. 27	June 16	61
62	Fordham University, School of Medicine, New York City	5,333,537	A	209	...	36	...	4	91	33	216	216	212	210	William P. Healy, M.D., Dean	Sept. 24	June 8	62
63	Long Island College Hospital, Brooklyn	5,333,537	A	285	...	70	...	1	113	33	205	205	200	200	Otto V. Huffman, M.D., Secretary	Sept. 20	June 1	63
64	New York Homeopathic Med. Coll. and Flower Hospital.—H.	5,333,537	B	242	...	69	...	5	70	31	165	160	150	180	Royal S. Copeland, M.D., Dean	Oct. 1	May 24	64
65	New York Medical College and Hospital for Women.—H.	5,333,537	C	....	38	...	8	...	65	33	180	175	165	180	Cornelia C. Brant, M.D., Dean	Sept. 23	June 1	65
66	University and Bellevue Hospital Medical College, New York City	5,333,537	A	364	...	93	...	1	180	34	205	200	200	225	Samuel A. Brown, M.D., Vice-Dean	Sept. 22	June 7	66
67	Syracuse University, College of Medicine, Syracuse	149,353	A	95	5	13	...	10	75	35	186	181	181	181	John L. Heffron, M.D., Dean	Sept. 21	June 14	67
	NORTH CAROLINA			**168**	**1**	**19**	...	...										
68	University of North Carolina, School of Medicine, Chapel Hill (i)	1,449	A	79	1	...	...	...	26	35	120	125	...	...	I. H. Manning, M.D., Dean	Sept. 9	May 31	68
69	North Carolina Medical College, Charlotte (m)	37,951	B	52	...	19	...	...	...	...	...	...	...	...	.....	.....	.....	69
70	Leonard Medical School, Raleigh (i)	19,883	B	11	...	...	...	...	8	30	50	50	...	...	George H. Stoddard, M.D., Dean	Sept. 29	May 12	70
71	Wake Forest College, School of Medicine, Wake Forest (i)	1,443	A	26	...	...	...	...	10	35	52	52	...	...	E. B. Earnshaw, Secretary	Sept. 7	May 19	71
	NORTH DAKATO			**17**	...	...	...	...										
72	Univ. of North Dakota, School of Med., University (Grand Forks) (i)	14,827	A	17	...	...	...	...	18	36	50	50	...	...	Harley E. French, M.D., Dean	Sept. 21	June 14	72
	OHIO			**623**	**17**	**140**	**5**	**51**										
73	Eclectic Medical College, Cincinnati.—E.	402,175	B	109	5	26	...	3	35	32	120	120	120	120	John K. Scudder, M.D., Secretary	Sept. 16	May 16	73
74	University of Cincinnati, College of Medicine	402,175	A	74	6	17	2	6	137	34	155	150	150	170	Christian R. Holmes, M.D., Dean	Sept. 28	June 10	74
75	Western Reserve University, School of Medicine, Cleveland	639,431	A	169	...	38	...	37	93	34	162	155	150	155	F. C. Waite, Ph.D., Secretary	Sept. 30	June 15	75
76	Ohio State University, College of Medicine, Columbus	204,567	A	227	4	43	1	5	101	36	150	150	150	150	William J. Means, M.D., Dean	Sept. 21	June 14	76
77	Ohio State University, College of Homeo. Med., Columbus.—H.	204,567	C	44	2	16	2	...	13	35	125	125	125	125	Claude A. Burrett, M.D., Dean	Sept. 21	June 6	77
	OKLAHOMA			**92**	**1**	**20**	...	**2**										
78	University of Oklahoma, School of Med., Norman-Oklahoma City	83,559	B	92	1	20	...	2	55	35	50	33	10	10	LeRoy Long, M.D., Dean, Oklahoma City	Sept. 21	June 8	78
	OREGON			**78**	**4**	**18**	...	**1**										
79	University of Oregon, Department of Medicine, Portland	260,601	A	78	4	18	...	1	63	32	155	150	150	61	K. A. J. Mackenzie, M.D., Dean	Oct. 1	May 31	79

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA—(Concluded)

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City where College is Located. (Census Bureau Estimate of 1914)	Classification by Council on Medical Education*	No. of Students Registered 1914-15		Graduates 1915		Grads. with A.B., B.S. or Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1915-16		Marginal Number
				Men	Women	Men	Women				1st year	2d year	3d year	4th year		Begins 1915	Ends 1916	
	PENNSYLVANIA			**1365**	**93**	**337**	**33**	**74**										
80	Hahnemann Medical College and Hospital of Philadelphia.—H.	1,657,810	A	85	...	22	...	3	80	34	185	185	175	175	W. A. Pearson, M.D., Dean.....	Sept. 27	June 1	80
81	Jefferson Medical College of Philadelphia.....	1,657,810	A	556	...	145	...	19	157	33	200	200	200	200	Ross V. Patterson, Sub Dean.....	Sept. 24	June 8	81
82	Medico-Chirurgical College of Philadelphia.....	1,657,810	A	297	...	82	...	6	109	34	185	185	185	185	Seneca Egbert, M.D., Dean.....	Sept. 24	June 9	82
83	Temple University, Department of Medicine, Philadelphia.....	1,657,810	B	53	10	21	3	7	97	34	169	167	151	151	Frank C. Hammond, M.D., Dean.....	Sept. 15	June 5	83
84	University of Pennsylvania, School of Medicine, Philadelphia.....	1,657,810	A	276	...	57	...	30	171	36	223	210	210	216	William Pepper, M.D., Dean.....	Sept. 24	June 21	84
85	Woman's Medical College of Pennsylvania, Philadelphia.....	1,657,810	A	....	78	...	30	5	57	34	187	181	183	186	Clara Marshall, M.D., Dean.....	Sept. 15	May 31	85
86	University of Pittsburgh, School of Medicine, Pittsburgh.....	564,878	A	98	5	10	...	4	94	34	265	250	250	250	Thomas S. Arbuthnot, M.D., Dean.....	Sept. 27	June 15	86
	SOUTH CAROLINA			**82**	...	**25**	...	**11**										
87	Medical College of the State of South Carolina, Charleston.....	60,121	B	82	...	25	...	11	64	32	140	140	140	140	Robert Wilson, Jr., M.D., Dean.....	Oct. 1	June 1	87
	SOUTH DAKOTA			**12**	...	...	...	...								Sept. 21	June 15	88
88	University of South Dakota, College of Medicine, Vermillion (i).....	2,187	A	12	...	...	...	...	10	35	60	60	...	...	C. P. Lommen, Dean.....			89
	TENNESSEE			**946**	**10**	**273**	**2**	**28**								.....	.....	.....	
89	Lincoln Memorial University, Medical Department, Knoxville (n)....	37,924	B	43	...	12	...	1	...	...	...	...	...	...	Herbert Thomas Brooks, M.D., Dean.....	Sept. 20	June 3	90
90	University of Tennessee, College of Medicine, Memphis (o).....	143,231	A	208	4	64	1	3	113	33	105	100	100	125	M. V. Lynk, M.D., Dean.....	Sept. 15	May 4	91
91	University of West Tennessee, College of Med. and Surg., Memphis.	143,231	C	53	...	29	...	2	20	30	55	55	55	65	George W. Hubbard, M.D., Dean.....	Sept. 7	April 20	92
92	Meharry Medical College, Nashville.....	114,899	B	348	6	71	1	12	25	30	70	70	70	80	L. E. Bureh, M.D., Dean.....	Sept. 29	June 14	93
93	Vanderbilt University, Medical Department, Nashville.....	114,899	A	294	...	97	...	10	81	34	150	150	150	175				
	TEXAS			**302**	**11**	**66**	**4**	**10**							E. H. Cary, M.D., Dean.....	Oct. 1	May 31	94
94	Baylor University, College of Medicine, Dallas.....	111,986	B	55	1	18	1	...	43	32	120	115	115	125	.....	.....	.....	95
95	Southern Methodist University, Medical Department, Dallas (p)....	111,986	B	25	...	6	...	...	...	...	...	...	...	...	Samuel A. Woodward, M.D., Dean.....	Sept. 20	June 9	96
96	Fort Worth School of Medicine, Fort Worth.....	94,494	B	43	...	11	...	1	75	34	114	113	108	125	William S. Carter, M.D., Dean.....	Oct. 1	May 31	97
97	University of Texas, Department of Medicine, Galveston.....	40,289	A	179	10	31	3	9	29	32	60	30	15	10				
	UTAH			**27**	...	...	...	...							Perry G. Snow, M.D., Dean.....	Sept. 16	June 9	98
98	University of Utah, School of Medicine, Salt Lake City (e)(i).....	109,530	A	27	...	...	...	...	20	36	70	70	...	...				
	VERMONT			**102**	...	**41**	...	**2**							H. C. Tinkham, M.D., Dean.....	Sept. 29	June 28	99
99	University of Vermont, College of Medicine, Burlington.....	21,247	A	102	...	41	...	2	41	36	145	145	145	175				
	VIRGINIA			**447**	...	**114**	...	...							Stuart McGuire, M.D., Dean.....	Sept. 21	June 6	100
100	Medical College of Virginia, Richmond.....	134,917	A	339	...	88	...	...	133	34	154	144	144	175	R. H. Whitehead, M.D., Dean.....	Sept. 16	June 14	101
101	University of Virginia, Department of Medicine, Charlottesville.....	6,765	A	108	...	26	...	10	36	36	150	140	140	140				
	WEST VIRGINIA			**16**	**3**	...	...	...							John N. Simpson, M.D., Dean.....	Sept. 13	June 14	102
102	West Virginia University, School of Medicine, Morgantown (e) (i)..	12,239	B	16	3	...	...	...	10	36	32	14	...	...				
	WISCONSIN			**215**	**6**	**44**	...	**1**							Charles R. Bardeen, M.D., Dean.....	Sept. 20	June 21	103
103	University of Wisconsin Medical School, Madison (e)(i).....	29,469	A	91	5	...	...	...	25	36	70	70	...	...	Louis F. Jermain, M.D., Dean.....	Oct. 1	June 15	104
104	Marquette University, School of Medicine, Milwaukee.....	417,054	A	124	1	44	...	1	104	34	170	170	170	195				
	CANADA			**1713**	**41**	**309**	**9**	**44**							Cecil E. Race, B.A., Registrar.....	Sept. 28	May 17	105
105	University of Alberta, Faculty of Medicine, Edmonton, Alta. (q)...	60,000	..	40	...	...	...	...	10	30	60	85	...	...	A. W. H. Lindsay, M.D., Dean.....	Sept. 8	May 4	106
106	Dalhousie University, Faculty of Medicine, Halifax, N. S. (r).....	46,619	..	65	5	11	1	1	35	32	131	124	117	117	J. C. Connell, M.D., Dean.....	Sept. 13	April 26	107
107	Queen's University, Faculty of Medicine, Kingston, Ont. (r).....	18,874	..	268	...	65	...	...	39	30	105	105	105	135	A. Primrose, M.D., Secretary.....	Sept. 28	May 27	108
108	University of Toronto, Faculty of Medicine, Toronto, Ont. (r).....	376,538	..	538	30	106	6	28	185	32	150	150	150	158	H. A. McCallum, M.D., Dean.....	Oct. 1	June 1	109
109	Western University, Faculty of Medicine, London, Ont. (r).....	46,300	..	75	...	12	...	1	55	32	125	120	120	150	John W. Seane, M.D., Registrar.....	Oct. 1	June 6	110
110	McGill University, Faculty of Medicine, Montreal, Que. (r).....	473,712	..	390	...	60	...	6	130	33	174	181	174	204	L. D. Mignault, M.D., Secretary.....	Oct. 1	June 20	111
111	Montreal School of Medicine and Surgery, Montreal, Que. (r).....	473,712	..	136	...	15	...	...	70	35	110	118	126	138	Edwin Tureot, M.D., Dean.....	Sept. 14	June 1	112
112	Laval University, Faculty of Medicine, Quebec, Que. (r).....	78,190	..	81	...	13	...	8	28	34	90	90	90	90	H. H. Chown, M.D., Dean.....	Sept. 22	May 12	113
113	University of Manitoba, Manitoba Medical College, Winnipeg (r)..	200,000	..	120	6	27	2	...	69	35	155	150	150	150				

* From the Third Classification of Medical Colleges, revised to August 1, 1915. See page 703.

(a) This school has discontinued undergraduate teaching.

(b) This college has been reported closed.

(c) Reported to have been taken over by the University of California Medical School.

(d) For non-residents of Georgia the total tuition fees each year are $150.

(e) In these states the fees given are for students of the state; for non-residents, the fees range from $10 to $30 per year additional. See descriptive matter, beginning on page 707.

(f) Population given is for Rosedale and the two Kansas Cities combined.

(g) Has merged with the University of Maryland, School of Medicine.

(h) Catalogue contains the names of 190 "matriculants and applicants," including dental students. The number of medical students in attendance is approximately as given.

(i) Gives only the work of the first two years of the medical course.

(j) Student enrolment given is that for 1913-14; graduates are those for 1915.

(k) College reported closed.

(l) Reported to have merged with the Medical Department of the National University of Arts and Sciences.

(m) Merged in 1914 with the Medical College of Virginia, where, under the terms of the agreement, the students will be taught. The North Carolina Medical College will retain a nominal existence and grant the degrees. The last class will graduate in 1917.

(n) Merged in 1914 with the College of Medicine of the University of Tennessee, where, under the terms of the agreement, the students will be taught. The Lincoln Memorial University, Medical Department, will retain a nominal existence and grant the degrees. The last class will graduate in 1917.

(o) For non-residents of state the fees are $50 additional each year.

(p) This college has been closed.

(q) Gives only the work of the first three years of the Canadian five-year medical course, which corresponds to the preliminary college science year and the first two medical years in the United States.

(r) In all Canadian medical schools the first year is devoted largely to courses in physics, chemistry and biology, which in the medical schools of the United States are taught in the one or two years of premedical collegiate work. The standard of the Canadian schools is equal, therefore, to that of the forty-four colleges in the United States which require one year of collegiate work, but that standard is surpassed by thirty-nine medical colleges in the United States which require two years of collegiate work for admission.

(s) Figures given are those for session 1913-14.

(*Continued from page 687*)

thirty-nine medical colleges, of higher entrance standards — one or two years of preliminary collegiate work. (See Table 16.)

NUMBER OF MEDICAL GRADUATES

The total number of graduates for the year ending June 30, 1915, was 3,536, a decrease of only 58 below 1914, and a decrease of 445 below 1913. The total

TABLE 5.—MEDICAL COLLEGE GRADUATES

Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1880.....	2,673	380	188	..	..	3,241
1890.....	3,853	380	221	..	..	4,454
1900.....	4,715	413	86	..	..	5,214
1901.....	4,879	387	148	18	12	5,444
1902.....	4,508	336	138	16	11	5,009
1903.....	5,088	420	149	24	17	5,698
1904.....	5,190	371	146	20	20	5,747
1905.....	5,126	276	153	22	23	5,600
1906.....	4,841	286	186	22	29	5,364
1907.....	4,591	225	121	11	32	4,980
1908.....	4,370	215	116	12	28	4,741
1909.....	4,163	209	84	15	44	4,515
1910.....	4,113	183	114	16	14	4,440
1911.....	4,006	152	110	5	..	4,273
1912.....	4,206	185	92	..	..	4,483
1913.....	3,679	209	93	..	..	3,981
1914.....	3,370	154	70	..	..	3,594
1915.....	3,286	195	55	..	..	3,536

this year is 2,211 (38.8 per cent.) less than in 1904, when 5,747, the largest number were graduated.

The number of graduates from the non-sectarian colleges was 3,286, or 84 less than last year, and 393 less than in 1913. It is a decrease of 1,904 (36.6 per cent.) below 1904, when 5,190, the largest number, were graduated from non-sectarian colleges. (See Table 10.) From the homeopathic colleges there were 195 graduates, or 41 more than in 1914, and 14 less than in 1913. It is a decrease of 225 (53.6 per cent.) below 1903, when 420, the largest number of homeopathic physicians, were graduated. The eclectic colleges graduated 55, or 15 less than last year, and 38 less than in 1913. It is a decrease of 166 (75.1 per cent.) below 1890, when 221, the largest number of eclectic physicians, were graduated.

GRADUATES HOLDING DEGREES IN ARTS

Of the 3,536 medical graduates, 858, or 24.3 per cent., were reported to hold also degrees in arts or science, as compared with 22.5 per cent. last year, 18.9 per cent in 1913, 17 per cent. in 1912, and 15.3 per cent. in 1910. Of the 3,286 non-sectarian school graduates, 839, or 22.5 per cent., were reported to have baccalaureate degrees, while of the homeopathic graduates, 16, or 8.2 per cent., were so reported, and of the eclectic graduates, 3, or 5.5 per cent., were reported as holding degrees from colleges of liberal arts. As will be noted by referring to Table 14, of the 858 graduates holding baccalaureate degrees, 131 — the largest number — came from Illinois colleges, followed by 107 from New York, 95 from Maryland, 92 from Massachusetts, and 74 from Pennsylvania. It is noted that, as expected, the percentage of graduates holding collegiate degrees is gradually increasing and will continue to increase, particularly in the non-sectarian colleges, because a larger number of medical schools are requiring college work for admission.

TABLE 6.—MEDICAL GRADUATES WITH LIBERAL ARTS DEGREES

Year	Non-sectarian			Homeopathic			Eclectic			Totals		
	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.
1910.....	4,113	664	16.1	183	13	7.1	114	3	2.6	4,440	680	15.3
1911.....	4,006	683	17.0	152	18	11.8	110	4	3.6	4,273	705	16.5
1912.....	4,206	744	17.7	185	15	8.1	92	4	4.3	4,483	763	17.0
1913.....	3,679	732	19.9	209	20	9.6	93	1	1.1	3,981	753	18.9
1914.....	3,370	794	23.5	154	7	4.5	70	6	8.6	3.594	807	22.5
1915.....	3,286	839	25.5	195	16	8.2	55	3	5.5	3,536	858	24.3

TABLE 7.—WOMEN IN MEDICINE

Year.	Total women students.	Percentage of all students, both sexes.	Total women graduates.	Percentage of graduates, both sexes.	Women's colleges.	Students.	Percentage of all women students.	Graduates.	Percentage of all women graduates.	Co-ed. schools.	Students.	Percentage of all women graduates.	Graduates.	Percentage of all women graduates.
1904	1,129	4.3	244	4.0	3	183	16.2	56	23.0	97	946	83.8	198	77.0
1905	1,073	4.1	219	4.0	3	221	20.6	54	24.5	96	852	79.4	165	75.5
1906	895	3.5	233	4.3	3	189	21.0	33	14.1	90	706	79.0	200	85.9
1907	928	3.8	211	4.2	3	210	22.6	39	18.5	86	718	77.4	172	81.5
1908	835	3.7	185	3.9	3	186	22.3	46	24.9	88	649	77.7	139	75.1
1909	921	4.2	162	3.7	3	169	18.4	33	20.3	91	752	81.6	129	79.7
1910	907	4.2	157	3.5	3	155	17.1	41	26.1	82	752	82.9	116	73.9
1911	680	3.4	159	3.7	2	134	19.7	36	22.6	74	546	80.3	123	77.4
1912	679	3.2	142	3.2	2	143	21.1	32	22.5	64	536	78.9	110	77.5
1913	640	3.8	154	3.8	2	138	21.6	33	21.4	55	502	78.6	121	78.6
1914	631	3.8	121	3.4	2	135	21.4	25	20.7	54	496	78.6	96	79.3
1915	592	4.0	130	3.7	2	116	19.6	38	29.2	53	462	80.4	92	70.8

During the past year there were 592 women studying medicine, or 39 less than last year, a decrease of 48 below 1913, and a decrease of 537 (47.6 per cent.) below 1904, when 1,129 women students, the largest number, were reported. The percentage of all medical students was 4, or slightly larger than last year. There were 130 women graduates this year, 9 more than last year, or 3.7 per cent. of all graduates. Of all the women matriculants, 116 (19.6 per cent.) were in attendance at the two medical colleges for women, while the remaining 462 (80.4 per cent.) were matriculated in the 53 coeducational colleges. From the two women's colleges there were 38, or 29.2 per cent., of all women graduates, while 92, or 70.8 per cent., secured their degrees from coeducational colleges.

NUMBER OF COLLEGES

Until two years ago no exact data were available on which absolute statements could be made regarding the number of medical schools existing in the various years prior to 1900. Through the work of the Council on Medical Education, however, sufficient reliable data regarding all medical schools were collected and the chart prepared from which the actual number of

(*Continued on page 694*)

Marginal Number	NAME OF COLLEGE	1 Alabama.....293	2 Arizona.....13	3 Arkansas.....138	4 California.....416	5 Colorado.....95	6 Connecticut.....184	7 Delaware.....23	8 Dist of Col.....98	9 Florida.....99	10 Georgia.....435	11 Idaho.....21	12 Illinois.....1,318	13 Indiana.....332	14 Iowa.....322	15 Kansas.....236	16 Kentucky.....186	17 Louisiana.....180	18 Maine.....121	19 Maryland.....227	20 Massachusetts..572	Marginal Number
1	Birmingham Medical College, Birmingham	36	....	....	....	....	....	....	....	1	7	....	....	....	....	....	....	....	....	....	....	1
2	University of Alabama, School of Med., Mobile	63	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2
3	University of Arkansas, Medical Dept., Little Rock	....	....	64	....	....	....	....	....	....	....	....	....	....	....	1	3	3	1	....	....	3
4	College of Medical Evangelists, Loma Linda	....	2	....	14	1	....	....	....	1	....	....	1	3	....	1	....	....	....	....	....	4
5	California Eclectic Med. Coll., Los Angeles.—E.	....	....	....	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5
6	College of Physicians and Surgeons, Los Angeles	....	1	....	28	3	1	....	1	....	....	....	12	4	7	3	3	....	....	....	1	6
7	Oakland College of Med. and Surg., Oakland	....	....	....	11	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	7
8	College of Phys. and Surgs. of San Francisco	....	....	....	38	....	1	....	....	....	....	....	1	....	2	....	1	....	....	....	....	8
9	Hahnemann Medical College of the Pacific.—H.*	....	....	....	45	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	9
10	Leland Stanford Junior Univ., School of Medicine	....	....	....	73	2	....	....	....	....	....	....	....	1	....	....	....	....	....	....	1	10
11	Univ. of California Medical School, San Francisco	....	....	....	123	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	1	11
12	Univ. of Colorado, School of Med., Boulder-Denver	....	....	....	....	49	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	12
13	Yale University, School of Medicine, New Haven	....	1	....	....	....	34	....	....	....	....	....	2	....	....	....	....	....	1	....	1	13
14	Georgetown University, School of Medicine	....	....	....	....	1	7	....	24	....	....	....	....	....	1	....	....	....	1	3	15	14
15	George Washington University Medical School	....	....	....	2	....	6	1	45	1	1	....	6	....	....	....	....	2	....	1	2	15
16	Howard University, School of Med., Washington	1	....	2	....	....	1	....	10	4	5	....	1	....	1	....	3	....	....	6	....	16
17	Atlanta Medical College	37	....	....	....	....	....	....	....	14	214	....	....	1	....	....	1	1	....	....	....	17
18	Georgia College of Eclectic Med. and Surg.—E.	....	....	....	....	....	....	....	....	....	21	....	....	....	....	....	....	....	....	....	....	18
19	University of Georgia, Medical Dept., Augusta	....	....	....	....	....	....	....	....	1	51	....	....	....	....	....	....	....	....	....	....	19
20	Bennett Medical College, Chicago	2	....	1	4	....	2	....	....	1	7	....	208	12	7	3	....	1	2	2	....	20
21	Chicago College of Med. and Surg., Chicago	4	1	1	....	....	2	....	....	4	4	....	214	23	15	5	2	2	2	....	7	21
22	Chicago Hospital College of Medicine, Chicago	....	....	....	....	....	....	....	....	....	....	....	60	....	....	....	....	....	....	....	....	22
23	Hahnemann Med. Coll. and Hosp. of Chicago.—H.	....	....	....	....	1	1	....	....	....	....	....	31	11	6	6	....	....	1	....	....	23
24	Jenner Medical College, Chicago	....	....	....	....	....	....	....	....	....	....	....	175	....	....	....	....	....	....	....	....	24
25	Northwestern University Medical School, Chicago	....	....	1	1	4	....	....	....	....	....	1	79	5	12	8	2	....	....	....	1	25
26	Rush Medical College (University of Chicago)	2	1	1	5	6	....	....	1	....	2	2	188	13	27	22	5	....	....	....	1	26
27	University of Illinois, College of Medicine, Chicago	1	....	....	....	3	....	....	....	....	2	1	150	8	14	8	....	....	1	....	1	27
28	Indiana University, School of Med., Indianapolis	1	....	....	....	....	....	....	....	....	....	....	....	145	....	....	1	....	....	....	....	28
29	State Univ. of Iowa, College of Med., Iowa City	....	....	....	1	....	1	....	....	2	....	1	3	....	122	1	1	1	....	....	....	29
30	State Univ. of Iowa, College of Homeo. Med.—H.	....	....	....	....	....	....	....	....	....	....	....	....	....	9	....	....	....	....	....	....	30
31	Univ. of Kansas, School of Med., Lawrence-Rosedale	....	....	....	....	....	....	....	....	....	....	....	....	....	....	95	....	....	....	....	....	31
32	University of Louisville, Medical Dept., Louisville	3	2	2	2	....	....	....	....	3	3	....	12	37	2	2	79	1	....	....	....	32
33	Tulane University of Louisiana, School of Medicine	31	....	14	....	....	....	....	....	8	9	....	....	....	....	2	3	126	....	....	....	33
34	Bowdoin Medical School, Brunswick-Portland	....	....	....	....	....	3	....	....	....	....	....	....	....	1	....	....	....	57	....	5	34
35	College of Physicians and Surgeons of Baltimore	....	1	....	....	....	6	....	....	1	1	....	1	....	....	....	....	....	....	26	7	35
36	Johns Hopkins University, Med. Dept., Baltimore	10	....	....	10	....	7	2	6	2	17	....	8	5	7	2	5	1	....	65	13	36
37	University of Maryland, School of Medicine	2	....	1	2	....	12	....	1	5	4	....	1	1	....	....	....	1	2	97	12	37
38	Boston University, School of Medicine.—H.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	4	....	50	38
39	College of Physicians and Surgeons, Boston	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	52	39
40	Medical School of Harvard University, Boston	....	....	....	11	8	6	1	2	1	4	....	7	6	5	1	....	1	13	2	121	40
41	Tufts College Medical School, Boston	....	....	....	....	....	12	....	....	....	1	....	1	1	1	1	....	....	15	....	222	41
42	University of Michigan Medical School	....	....	....	2	....	1	....	....	....	6	2	9	13	6	3	3	....	....	3	3	42
43	University of Michigan, Homeo. Med. School.—H.	....	....	....	2	....	....	....	....	....	....	....	1	3	4	2	1	....	....	1	....	43
44	Detroit College of Medicine and Surgery, Detroit	....	....	....	....	....	....	....	....	....	1	....	2	5	....	1	....	....	....	....	....	44
45	University of Minnesota Medical School	....	....	....	7	....	....	....	....	....	....	2	3	1	7	....	....	....	....	1	....	45
46	University of Mississippi, Dept. of Med., Oxford	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	46
47	University of Missouri, School of Medicine, Columbia	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	47
48	Eclectic Medical University, Kansas City.—E.†	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	48
49	Kansas City Hahnemann Medical College.—H.	....	....	....	....	....	....	....	....	....	....	....	1	1	....	10	....	....	....	....	....	49
50	Nat. Univ. of Arts and Sciences, Med. Dept., St. Louis	1	....	1	....	....	....	....	....	....	1	1	31	....	1	3	1	....	....	....	....	50
51	St. Louis College of Physicians and Surgeons	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	51
52	St. Louis University, School of Medicine	1	....	2	2	1	....	....	....	....	....	....	37	6	14	13	1	....	....	....	....	52
53	Washington University Medical School, St. Louis	....	....	3	....	....	....	....	....	....	....	....	12	....	1	4	....	....	....	....	....	53
54	Lincoln Medical College, Lincoln.—E.†	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	54
55	John A. Creighton Medical College, Omaha	....	1	....	....	....	....	....	....	....	....	....	3	....	20	5	....	....	....	....	....	55
56	University of Nebraska, College of Medicine, Omaha	....	....	....	1	2	....	....	....	....	....	....	2	....	12	7	1	....	....	....	....	56
57	Dartmouth Medical School, Hanover	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	1	....	7	57
58	Albany Medical College, Albany	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	4	58
59	University of Buffalo, Dept. of Med., Buffalo	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	59
60	Columbia University, Coll. of Phys. and Surgs.	1	....	....	....	5	12	....	....	....	10	1	1	2	3	....	1	....	....	....	6	60
61	Cornell Univ. Medical College, New York City	....	....	....	1	....	8	....	1	....	....	1	....	....	1	....	....	....	....	....	4	61
62	Fordham Univ., School of Medicine, New York City	....	....	....	....	....	14	....	....	1	....	....	1	1	....	....	....	....	....	....	4	62
63	Long Island College Hospital, Brooklyn	....	....	....	....	....	2	....	....	....	....	....	1	....	....	....	....	....	....	....	3	63
64	New York Homeo. Med. Coll. and Flower Hosp.—H.	....	....	....	3	....	4	....	1	....	....	....	2	1	....	....	....	....	1	....	1	64
65	New York Med. Coll. and Hosp. for Women.—H.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	65
66	Univ. and Bellevue Hosp. Med. Coll., New York City	....	....	....	....	....	15	....	....	....	....	....	....	....	1	....	....	....	....	....	1	66
67	Syracuse University, College of Medicine, Syracuse	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....	67
68	Univ. of North Carolina, School of Med., Chapel Hill	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	68
69	North Carolina Medical College, Charlotte	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	69
70	Leonard Medical School, Raleigh	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	70
71	Wake Forest College, School of Med., Wake Forest	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	71
72	University of North Dakota, School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	72
73	Eclectic Medical College, Cincinnati.—E.	....	....	1	1	....	....	....	....	....	....	....	3	5	....	1	8	....	....	....	....	73
74	University of Cincinnati, College of Medicine	....	....	....	1	....	....	....	....	....	....	....	1	3	....	1	8	....	....	....	....	74
75	Western Reserve University, School of Medicine	....	....	....	....	....	....	....	....	....	....	1	2	2	2	2	....	....	....	....	....	75
76	Ohio State Univ., Coll. of Med., Columbus	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	76
77	Ohio State Univ., Coll. Homeo. Med., Columbus.—H.	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	77
78	Univ. of Okla., Sch. of Med., Norman-Oklahoma City	6	....	1	....	....	....	....	....	....	....	....	1	....	....	9	....	....	....	....	....	78
79	University of Oregon, Dept. of Medicine, Portland	....	....	....	1	1	1	....	....	....	....	....	3	1	1	3	....	....	1	....	....	79
80	Hahnemann Med. Coll. and Hosp. of Phila.—H.	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	80
81	Jefferson Medical College of Philadelphia	4	1	1	7	....	10	9	....	5	4	1	5	2	....	3	3	1	5	3	4	81
82	Medico-Chirurgical College of Philadelphia	....	....	....	1	....	3	5	....	....	1	2	2	....	....	....	....	1	....	2	3	82
83	Temple University, Dept. of Medicine, Philadelphia	....	....	....	....	....	1	1	....	....	....	....	2	1	....	....	....	....	....	1	....	83
84	University of Pennsylvania, School of Medicine	2	....	....	4	1	1	3	....	....	2	2	2	3	2	1	2	1	....	4	3	84
85	Woman's Medical College of Pennsylvania	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	3	85
86	Univ. of Pittsburgh, School of Medicine, Pittsburgh	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	86
87	Medical College of the State of South Carolina	....	....	....	....	....	....	....	....	4	1	....	....	....	....	....	....	....	....	....	....	87
88	Univ. of South Dakota, Coll. of Med., Vermilion	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	88
89	Lincoln Memorial Univ., Med. Dept., Knoxville	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	7	....	....	....	....	89
90	University of Tennessee, Coll. of Med., Memphis	13	....	20	....	1	....	....	1	1	....	....	2	....	....	....	2	10	....	....	....	90
91	Univ. of West Tenn., Coll. of Med. & Surg., Memphis	5	....	4	....	....	....	....	....	2	2	....	....	....	....	....	2	....	....	2	....	91
92	Meharry Medical College, Nashville	29	....	9	....	....	....	....	1	16	36	....	5	....	2	2	13	10	....	1	1	92
93	Vanderbilt University, Medical Dept., Nashville	35	1	4	1	3	....	....	....	13	12	....	9	....	1	....	21	9	....	....	....	93
94	Baylor University, College of Medicine, Dallas	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	2	....	....	....	94
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

H.—Homeopathic; E.—Eclectic. * Exact distribution not given. † Figures are for 1913-14.

Marginal Number	21 Michigan.....452	22 Minnesota.....320	23 Mississippi.....223	24 Missouri.....508	25 Montana.....23	26 Nebraska.....248	27 Nevada.....4	28 New Hampshire..42	29 New Jersey.....353	30 New Mexico.....8	31 New York.....1,948	32 North Carolina 480	33 North Dakota...51	34 Ohio.....718	35 Oklahoma.....115	36 Oregon.....53	37 Pennsylvania.1,140	38 Rhode Island....64	39 South Carolina 218	40 South Dakota...54	41 Tennessee.....312	42 Texas.....495	43 Utah.....80	44 Vermont.....71	45 Virginia.....363	46 Washington.....91	47 West Virginia...172	48 Wisconsin.....387	49 Wyoming.....8	50 Philippines, etc. 121	51 Foreign.....458	52 Totals.....14,891	Marginal Number
1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	2	....	....	....	....	....	2	....	....	....	....	49	1
2	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	65	2
3	....	....	....	2	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	77	3
4	2	2	....	1	1	5	....	....	1	3	1	....	....	....	2	....	....	....	....	....	1	5	....	....	....	4	....	....	1	....	11	63	4
5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	12	5
6	6	5	....	6	....	5	....	....	2	....	7	....	....	4	....	....	4	....	....	2	1	1	1	1	....	....	....	4	....	....	19	132	6
7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	12	7
8	1	1	....	1	....	....	....	....	....	....	....	....	....	1	....	3	....	....	....	....	....	....	....	....	....	1	....	....	....	....	11	62	8
9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	45	9
10	....	2	....	....	1	....	1	....	....	....	1	....	1	1	....	1	....	....	....	1	....	....	3	1	....	3	....	....	....	....	2	95	10
11	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	2	....	....	....	....	1	....	....	1	133	11
12	....	....	....	1	....	....	....	....	....	....	2	....	....	2	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	1	59	12
13	1	....	....	1	....	....	....	1	1	1	4	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....	....	....	49	13
14	1	....	....	....	....	....	....	....	4	....	....	6	....	2	....	....	8	1	....	....	....	....	....	1	1	1	....	....	....	2	2	81	14
15	....	3	....	....	....	....	....	....	3	....	21	2	....	2	....	1	9	1	2	....	2	....	....	....	13	1	1	2	....	....	15	145	15
16	....	....	1	2	....	....	....	....	2	....	1	15	....	1	....	....	7	....	9	....	1	9	....	....	7	....	1	....	....	....	10	100	16
17	....	....	13	....	....	....	....	....	....	....	1	14	....	....	....	....	1	1	22	..	7	2	....	1	2	1	2	....	....	....	6	341	17
18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	21	18
19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	54	19
20	15	7	2	8	2	3	....	....	1	....	8	1	....	5	2	....	9	1	2	....	4	2	1	....	2	1	10	20	....	22	13	393	20
21	22	15	2	4	2	5	....	....	3	....	20	1	3	19	2	....	17	1	....	2	2	3	2	1	1	2	15	48	....	23	28	529	21
22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	60	22
23	5	4	....	....	....	2	....	....	....	....	....	....	....	8	1	....	3	....	....	....	....	....	....	....	....	....	....	4	....	....	2	86	23
24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	175	24
25	6	12	1	3	....	4	....	....	....	1	1	....	6	6	2	1	....	....	....	8	1	2	2	....	....	5	....	18	....	....	1	194	25
26	8	19	2	9	8	17	....	....	1	....	5	....	11	24	3	1	3	....	1	6	6	10	15	1	1	7	2	44	1	1	5	487	26
27	9	20	1	5	....	5	....	....	1	....	1	....	....	4	3	....	1	....	....	6	1	1	2	....	....	3	....	20	....	5	12	289	27
28	1	1	....	....	....	....	1	....	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	152	28
29	....	2	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	2	3	143	29
30	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	11	30
31	....	....	....	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	101	31
32	....	1	6	4	....	....	....	....	1	....	....	3	1	2	4	....	8	....	1	1	2	9	....	....	1	1	8	2	1	1	3	208	32
33	1	....	32	6	....	....	....	....	1	....	....	2	1	....	1	1	....	....	3	....	1	32	....	....	....	....	....	1	....	8	3	286	33
34	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	70	34
35	....	....	....	....	1	....	....	....	9	....	7	4	....	3	1	....	20	4	....	....	....	1	4	....	3	1	25	....	....	13	1	140	35
36	4	2	3	8	....	2	....	1	13	....	25	12	4	25	....	5	36	1	10	1	3	4	....	....	23	4	3	5	....	2	5	361	36
37	1	....	1	....	....	....	....	4	11	....	27	39	....	2	....	....	29	4	17	....	....	....	1	1	18	2	14	....	....	4	31	347	37
38	....	....	1	....	....	....	....	2	....	....	5	1	....	2	....	....	2	1	....	....	....	....	....	2	1	....	1	....	....	....	12	86	38
39	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	55	39
40	1	3	....	9	....	....	....	5	2	1	22	7	....	9	1	....	16	20	3	1	1	3	6	3	....	1	1	4	....	2	9	319	40
41	....	....	....	....	....	....	....	10	1	....	9	....	....	2	....	....	3	16	....	....	....	....	....	1	....	....	....	....	....	....	9	305	41
42	154	5	....	1	....	4	....	1	1	....	19	1	....	23	1	3	13	....	1	....	1	....	....	....	....	6	1	2	....	6	13	307	42
43	29	2	....	....	....	....	....	....	....	....	6	....	....	10	1	1	3	....	....	....	....	....	....	....	....	....	1	....	....	....	1	68	43
44	157	2	....	....	....	1	....	....	....	....	....	....	....	5	1	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	20	197	44
45	....	161	....	....	....	1	....	....	....	....	....	....	5	....	....	....	....	....	....	3	....	....	....	....	....	9	....	7	....	....	1	208	45
46	....	....	42	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	45	46
47	....	....	....	58	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	1	65	47
48	....	....	....	65	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	65	48
49	....	....	....	14	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	1	29	49
50	....	....	1	76	....	....	....	....	....	....	....	1	....	....	4	....	....	....	....	....	1	1	....	....	....	....	2	....	....	....	1	127	50
51	....	....	....	74	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	74	51
52	7	2	....	61	....	4	....	....	....	....	1	....	....	14	2	2	1	....	....	1	....	2	....	....	....	5	....	6	....	....	3	188	52
53	1	....	....	39	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	1	....	3	1	....	1	....	....	5	....	1	1	75	53
54	....	....	....	....	....	29	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	29	54
55	....	12	....	7	4	81	....	....	....	....	2	....	....	1	....	1	1	....	....	3	....	....	1	....	....	2	....	....	2	1	1	148	55
56	....	3	....	1	....	58	....	....	....	....	2	....	....	1	....	....	....	....	....	2	....	....	....	....	....	....	....	....	1	....	3	96	56
57	....	....	....	....	....	....	....	7	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	23	57
58	....	....	....	....	....	....	....	....	2	....	164	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	173	58
59	....	....	....	....	....	....	....	....	....	....	187	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	191	59
60	2	2	....	2	....	1	....	....	32	1	253	7	....	2	2	2	8	1	2	....	3	2	3	....	3	1	1	2	....	....	7	381	60
61	....	....	1	1	....	....	....	....	13	....	90	1	....	2	....	....	3	1	....	1	....	....	1	1	1	....	1	....	....	....	1	134	61
62	....	....	....	....	....	....	....	....	13	....	112	....	....	....	....	....	6	....	....	....	....	....	....	....	....	....	....	....	....	2	55	209	62
63	....	....	....	....	....	....	....	....	7	....	269	....	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1	....	285	63
64	....	....	....	....	....	....	....	....	32	....	187	....	....	....	....	....	5	....	....	....	....	1	....	1	..1	1	..	....	....	1	....	242	64
65	....	....	....	....	....	....	....	....	8	....	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	38	65
66	....	....	....	....	....	....	....	....	73	....	250	4	....	4	1	....	1	2	....	....	1	....	....	1	....	....	1	1	....	....	8	364	66
67	....	....	....	....	....	....	....	....	1	....	86	....	....	....	....	....	5	....	....	....	....	1	....	....	....	....	....	....	....	....	5	100	67
68	....	....	....	....	....	....	....	....	....	....	....	73	....	....	....	....	....	....	5	....	....	....	....	....	1	....	....	....	....	....	1	80	68
69	....	....	....	....	....	....	....	....	....	....	....	48	....	....	....	....	....	....	2	....	....	....	....	....	1	....	....	....	....	....	....	52	69
70	....	....	1	....	....	....	....	....	....	....	1	5	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	11	70
71	....	....	....	....	....	....	....	....	....	....	....	21	....	....	....	....	....	....	2	....	....	....	....	....	3	....	....	....	....	....	....	26	71
72	....	1	....	....	....	....	....	....	....	....	1	....	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	17	72
73	2	1	....	2	....	7	....	....	....	....	5	....	....	64	....	....	4	....	....	....	1	....	....	....	....	1	8	....	....	....	....	114	73
74	1	....	....	....	....	....	....	....	....	....	....	....	1	60	....	....	2	....	....	....	....	....	....	....	....	....	1	....	....	....	1	80	74
75	1	....	....	....	....	....	....	....	....	....	2	....	....	121	1	....	13	....	1	1	1	1	5	....	....	....	6	1	....	....	6	169	75
76	....	1	....	....	1	....	....	....	....	....	2	....	....	214	....	....	5	....	....	....	....	....	....	....	....	....	5	1	....	....	....	231	76
77	....	....	....	....	....	....	....	....	....	....	....	....	....	39	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	2	46	77
78	....	....	....	2	....	....	....	....	1	....	9	1	....	....	52	....	2	....	2	....	1	3	....	....	1	....	....	1	....	....	1	93	78
79	3	4	....	2	....	4	....	1	....	....	1	1	1	3	....	23	....	....	....	2	....	....	....	....	....	10	1	3	1	....	10	82	79
80	....	....	....	1	....	....	....	....	7	....	1	....	....	3	....	....	62	1	....	....	....	1	....	....	1	1	....	....	....	....	6	85	80
81	....	4	5	3	....	3	....	1	49	....	24	38	....	11	....	4	285	4	9	....	1	....	3	4	3	5	7	2	....	15	8	556	81
82	1	1	....	....	....	....	....	....	24	....	5	2	1	2	....	1	215	1	....	....	....	1	1	....	2	1	2	2	....	1	14	297	82
83	1	....	....	....	1	....	....	....	2	....	5	....	....	....	....	....	39	....	....	....	1	....	....	1	2	....	....	....	....	....	5	63	83
84	2	....	1	1	1	3	....	....	18	....	11	24	....	3	....	1	144	....	1	....	3	....	....	....	4	7	1	3	1	....	14	276	84
85	1	....	....	....	....	....	....	1	3	....	15	5	....	3	....	....	28	1	1	....	....	1	1	1	1	1	....	....	....	....	9	78	85
86	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	100	....	....	1	....	....	....	....	....	....	1	....	....	....	....	103	86
87	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	72	....	....	....	....	....	1	....	....	....	....	....	....	82	87
88	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	11	....	....	....	....	....	....	....	....	....	....	....	12	88
89	....	....	....	....	....	....	....	....	....	....	....	7	....	....	1	....	....	....	....	....	24	....	....	....	3	....	....	....	....	....	....	43	89
90	....	....	50	1	....	1	....	....	....	....	....	2	....	1	9	....	....	....	....	....	77	21	....	....	....	....	....	....	....	....	....	212	90
91	....	....	2	....	....	....	....	....	....	....	2	10	....	....	4	....	....	....	4	....	3	3	....	....	4	....	3	....	....	....	1	53	91
92	....	....	34	10	....	....	....	....	1	....	3	23	....	....	4	....	....	....	24	....	42	47	....	....	8	....	2	....	....	....	31	354	92
93	2	1	12	7	....	....	....	....	....	....	2	1	1	1	2	....	....	....	4	....	109	37	....	....	2	1	....	3	....	....	....	294	93
94	....	....	1	....	....	....	....	....	....	....	1	....	....	....	5	....	....	....	....	....	....	45	....	....	....	....	....	....	....	....	....	56	94
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	

Marginal Number	NAME OF COLLEGE	1 Alabama.....293	2 Arizona.....13	3 Arkansas.....138	4 California.....416	5 Colorado.....95	6 Connecticut....184	7 Delaware.....23	8 Dist of Col.....98	9 Florida.....96	10 Georgia.....435	11 Idaho.....21	12 Illinois.....1,318	13 Indiana.....332	14 Iowa.....322	15 Kansas.....286	16 Kentucky.....186	17 Louisiana.....180	18 Maine.....121	19 Maryland.....227	20 Massachusetts..572	Marginal Number
95	Southern Methodist Univ., Med. Dept., Dallas.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	95
96	Fort Worth School of Medicine, Fort Worth.....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	2	....	....	....	96
97	University of Texas, Dept. of Med., Galveston.....	1	1	2	....	....	....	....	....	1	1	....	....	1	....	1	....	3	1	....	....	97
98	Univ. of Utah., School of Med., Salt Lake City.....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	98
99	Univ. of Vermont., Coll. of Med., Burlington.....	....	....	....	....	....	5	....	....	....	....	....	....	....	....	....	....	....	12	....	11	99
100	Univ. of Virginia, Dept. of Med., Charlottesville.....	2	....	1	....	....	1	1	1	1	1	1	1	1	....	....	....	....	....	3	....	100
101	Medical College of Virginia, Richmond.....	....	....	....	....	....	2	....	1	1	2	....	....	....	....	....	....	1	....	2	....	101
102	West Virginia Univ., School of Med., Morgantown...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	102
103	University of Wisconsin Medical School, Madison....	....	....	....	....	....	....	....	....	....	....	....	5	1	....	....	....	....	....	1	....	103
104	Marquette University, School of Med., Milwaukee.....	....	....	....	....	1	....	....	....	....	....	....	3	....	3	1	....	....	....	....	....	104
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

H.—Homeopathic; E.—Eclectic. * Exact distribution not given. † Figures are for 1913-14.

(*Continued from page 691*)

schools existing in any one year could be positively stated.[2] Table 8 allows of comparisons between the number of colleges existing in recent years.

TABLE 8.—Medical Colleges

Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1850.....	44	3	4	1	..	52
1860.....	53	6	4	2	..	65
1870.....	60	8	5	2	..	75
1880.....	76	14	8	2	..	100
1890.....	106	16	9	2	..	133
1900.....	126	22	9	2	1	160
1901.....	125	22	10	2	1	160
1902.....	126	20	9	3	2	160
1903.....	126	20	9	3	2	160
1904.....	127	19	9	3	2	160
1905.....	125	19	9	3	2	158
1906.....	130	19	8	3	2	162
1907.....	127	18	9	3	2	159
1908.....	120	18	9	2	2	151
1909.....	115	15	8	1	1	140
1910.....	109	12	8	1	1	131
1911.....	103	12	7	..	..	122
1912.....	101	11	6	..	..	118
1913.....	92	10	5	..	..	107
1914.....	87	10	5	..	..	102
1915.....	83	8	4	..	..	95

Since June 30, 1914, one new college was organized and eight colleges (mentioned on page 698) have suspended or merged with others, leaving 95 medical colleges still existing. The number of colleges is the smallest since 1880, at which time began the rapid movement toward creating medical colleges, many of which were conducted for profit. The rapid increase in the number of colleges between 1880 and 1904 has been paralleled only by the rapid decrease since 1904. There has been a net decrease of 66 colleges since 1906, when there were 162, and when this country had about one-half of the world's supply of medical colleges. Ninety-two colleges have been closed by merger or otherwise since 1904, but in the same time twenty-five new colleges were organized, leaving 95 medical colleges which still exist. The net reduction has been 67 colleges, or 41.4 per cent.

The non-sectarian (regular) colleges number 83, a decrease of 4 since last year. The homeopathic colleges number 8, or 2 less than last year, and the eclectic colleges number 4, one less than last year. The non-sectarian colleges show a net reduction of 47, or 36.1 per cent., since 1906, when there were 130, the largest number of non-sectarian medical colleges. The homeopathic colleges show a net decrease of 14, or 63.7 per cent., since 1901, when 22, the largest number of homeopathic colleges, were in existence. The eclectic colleges show a net reduction of 6, or 60 per cent., since 1901, when there existed 10, the largest number of eclectic colleges.

2. Life Chart of the Medical Colleges in the United States, The Journal A. M. A., Aug. 23, 1913, p. 578.

TABLE 9.—Colleges Closed Since 1904

Year	Class A* Mgd.	Class A* Ext.	Class B Mgd.	Class B Ext.	Class C Mgd.	Class C Ext.	Totals Mgd.	Totals Ext.	Total Closed
1905.....	8	1	..	..	..	..	8	1	9
1906.....	..	..	..	..	..	..	..	..	..
1907.....	3	..	3	1	..	3	6	4	10
1908.....	2	..	2	..	1	4	5	4	9
1909.....	3	..	2	..	..	7	5	7	12
1910.....	1	..	3	..	3	6	7	6	13
1911.....	..	..	3	..	1	3	4	3	7
1912.....	2	..	..	..	..	3	2	3	5
1913.....	3	..	6	1	1	3	10	4	14
1914.....	..	..	..	..	2	3	2	3	5
1915.....	1	..	1	2	1	3	3	5	8
Totals...	23	1	20	4	9	35	52	40	92

* Based on the classifications of medical colleges prepared by the Council on Medical Education.

TABLE 10.—Reductions in Numbers of Medical Colleges, Students and Graduates

Numbers	Non-sectarian Colleges	Non-sectarian Students	Non-sectarian Graduates	Homeopathic Colleges	Homeopathic Students	Homeopathic Graduates	Eclectic Colleges	Eclectic Students	Eclectic Graduates	Totals Colleges	Totals Students	Totals Graduates
Largest....	130	24,930	5,190	22	1,909	420	10	1,014	221	162	28,142	5,747
Present....	83	13,914	3,286	8	735	195	4	241	55	95	14,891	3,536
Decrease...	47	11,016	1,904	14	1,173	225	6	773	166	67	12,251	2,211
Percentage	36.1	44.2	36.6	63.7	61.4	53.6	60.0	76.2	75.1	41.4	47.1	38.4

FEWER BUT BETTER COLLEGES

Of the 92 medical colleges which have ceased to exist since 1904, 52 were closed by merger and 40 became extinct. It is noteworthy that this rapid diminution in the number of colleges began with the creation of the Council on Medical Education in 1905. The largest number closing in single years were 10

Marginal Number	21 Michigan.....452	22 Minnesota.....320	23 Mississippi.....223	24 Missouri.....508	25 Montana.....23	26 Nebraska.....248	27 Nevada.....4	28 New Hampshire..42	29 New Jersey.....353	30 New Mexico.....8	31 New York.....1,948	32 North Carolina 480	33 North Dakota...51	34 Ohio.....718	35 Oklahoma.....115	36 Oregon.....53	37 Pennsylvania.1,140	38 Rhode Island....64	39 South Carolina 218	40 South Dakota...54	41 Tennessee.....312	42 Texas.....495	43 Utah.....80	44 Vermont.....71	45 Virginia.....363	46 Washington.....91	47 West Virginia...172	48 Wisconsin.....387	49 Wyoming.....8	50 Philippines, etc. 121	51 Foreign.....458	52 Totals.....14,891	Marginal Number
95	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	25	....	....	....	....	....	....	....	....	....	25	95
96	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	38	....	....	....	....	....	....	....	....	....	43	96
97	....	....	3	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	172	....	....	....	....	....	....	....	....	....	189	97
98	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	25	....	....	....	....	....	....	....	....	27	98
99	....	....	....	....	....	....	....	5	2	....	18	....	....	....	....	....	2	2	....	....	....	....	....	43	....	....	....	....	....	....	2	102	99
100	....	....	8	....	....	....	....	....	1	....	3	7	....	....	1	....	2	....	7	....	3	2	....	....	53	....	4	1	....	....	2	108	100
101	....	....	....	....	....	....	....	....	2	....	7	85	....	4	....	....	2	....	9	....	....	1	....	....	192	....	17	....	....	6	5	339	101
102	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	19	....	....	....	....	19	102
103	1	1	....	1	1	2	....	....	....	....	....	....	....	....	....	1	1	....	....	....	1	....	....	....	....	....	1	78	....	....	1	96	103
104	2	16	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	1	....	....	....	....	....	95	....	1	....	125	104
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	

in 1907, when the Council's first classification of medical colleges was prepared; 13 in 1910, when the second classification was published, and 14 in 1913, when the third classification was made public.

Of the 92 medical colleges which have been closed, 48 were rated by the Council on Medical Education in Classes A and B, and 44 in Class C. Note also that 43, or 95.5 per cent., of the closures of the medical colleges in Classes A and B were through merger with other colleges, while of the 44 Class C colleges which closed, only 9 (20 per cent.) were through merger with other colleges. In other words, all but five of the colleges which became extinct had been rated in Class C by the Council on Medical Education.

While the total number of colleges is growing smaller, however, and *approaching more nearly the normal supply for this country*, the high-grade, stronger medical colleges are constantly increasing. In 1904, only 4, or 2.5 per cent. of all medical colleges were requiring any preliminary education in advance of the usual high school education, now 83[3] (88.4 per cent.) are of advance college work. Of these 83 colleges, there are 39 which are requiring two years or more of collegiate work for admission and seven others have adopted the higher requirement to go into effect in the next one or two years. In 1904 very little was known about the practice of colleges in the administration of entrance standards, as at that time no systematic check was kept on the methods used; now, through the Students' Register, the standards actually enforced by each college are known, faulty methods or "paper standards" are discovered and corrected or exposed, and instead of being an unknown quantity, preliminary requirements are now known with fair accuracy.

FURTHER MERGERS NEEDED

There are still sixteen cities each of which has two or more medical schools, and in two of these mergers are scarcely possible, owing to the fact that the schools are for different races, leaving fourteen cities where mergers are still possible. These cities and the number of colleges in each are as follows: Chicago, 8; New York, 7; Philadelphia, 6; Boston, 4; San Francisco, 3; St. Louis, 3; Washington, 3, and there are 2 colleges each in Ann Arbor, Baltimore, Cincinnati, Columbus, Iowa City, Los Angeles and Omaha. In 1904 there were 24 cities having each from 2 to 14 medical schools. The highest development of medical education in these cities is prevented by the existence of too many competing medical schools. For the further improvement not only of undergraduate, but also of graduate medical instruction in this country, there should be other mergers in the fourteen cities named.

3. See list on page 704.

TABLE 11.—Cities Having Two or More Medical Colleges

City	A	B	C	Total
Chicago	3	3	2	8
New York	5	1	1	7
Philadelphia	5	1	..	6
Boston	3	..	1	4
San Francisco	2	..	1	3
St. Louis	2	..	1	3
Washington	3	..	..	3
Ann Arbor	2	..	..	2
Baltimore	2	..	..	2
Cincinnati	1	1	..	2
Columbus	1	..	1	2
Iowa City	2	..	..	2
Los Angeles	..	1	1	2
Memphis	1	..	1*	2
Nashville	1	1*	..	2
Omaha	1	1	..	2

* One school for the colored race.

LENGTH OF TERMS

The length of terms of each college fluctuates somewhat from year to year, but on the whole, during the

TABLE 12.—College Terms

Year	23 to 26 weeks		27 to 28 weeks		29 to 30 weeks		31 to 32 weeks		33 to 34 weeks		35 to 36 weeks		Over 36 weeks	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1902	44	28.4	44	28.4	11	7.1	33	21.3	3	1.9	18	11.6	2	1.3
1903	33	21.4	46	29.9	15	9.7	37	24.0	2	1.3	19	12.4	2	1.3
1904	27	16.3	44	26.5	22	13.3	37	22.3	13	7.8	20	12.0	3	1.8
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	28	23.8	3	1.9
1906	14	8.7	35	21.7	26	16.1	32	19.9	24	14.9	28	17.4	2	1.3
1907	6	3.7	27	16.8	26	16.1	42	26.1	29	18.0	29	18.0	2	1.3
1908	2	1.3	21	13.8	28	18.4	51	33.6	24	15.8	22	14.5	4	2.6
1909	4	2.3	17	11.6	23	16.4	51	34.9	18	12.3	30	20.5	3	2.0
1910	2	1.5	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1911	..	....	6	5.0	16	13.3	37	30.8	32	26.7	28	23.4	1	0.8
1912	1	0.9	1	0.9	11	9.5	34	29.3	37	31.8	31	26.7	1	0.9
1913	..	....	3	2.8	5	4.7	29	27.4	41	38.7	27	25.5	1	0.9
1914	..	....	2	2.0	4	4.0	25	24.8	41	40.5	28	27.7	1	1.0
1915	..	....	1	1.0	5	5.3	22	23.2	36	37.9	30	31.6	1	1.0

Name of College	Enrolled During 1914-15				
	1st Yr.	2d Yr.	3d Yr.	4th Yr.	Total
Birmingham Medical College	.....	.....	.....	49	49
University of Alabama, School of Medicine	9	25	18	13	65
Univ. of Arkansas, Med. Dept., Little Rock	27	13	13	24	77
College of Med. Evangelists, Loma Linda[1]	25	11	15	12	63
Cal. Eclectic Medical College, Los Angeles.—E.	4	5	1	2	12
College of Phys. and Surgs., Los Angeles	23	57	22	30	132
Oakland Coll. of Med. and Surg., Oakland	2	3	3	4	12
College of Phys and Surgs. of San Francisco	32	7	15	8	62
Hahnemann Med. Coll. of the Pacific.—H.[2]	7	13	15	10	45
Leland Stanford Junior Univ., School of Med.	27	25	27	16	95
University of California Medical School	50	40	30	13	133
University of Colorado, School of Medicine	15	23	13	8	59
Yale University, School of Med., New Haven	18	17	7	7	49
Georgetown University, School of Medicine	18	11	11	41	81
George Washington University Medical School	23	49	43	30	145
Howard University, School of Medicine	32	18	24	26	100
Atlanta Medical College, Atlanta	31	61	115	134	341
Georgia Coll. of Eclectic Med. and Surg.—E.	.....	.....	14	7	21
University of Georgia, Medical Dept.	14	20	8	12	54
Bennett Medical College, Chicago	32	81	135	145	393
Chicago College of Medicine and Surgery	54	99	222	154	529
Chicago Hospital College of Medicine[3]	.....	.....	.....	.....	60
Hahnemann Medical College and Hosp.—H.	9	34	20	23	86
Jenner Medical College, Chicago	79	52	14	30	175
Northwestern Univ. Med. School., Chicago	71	41	42	40	194
Rush Medical College, Chicago[4]	100	158	113	116	487
University of Illinois, College of Medicine	13	61	111	104	289
Indiana University, School of Medicine	50	40	35	27	152
State Univ. of Iowa, Coll. of Med., Iowa City	62	27	30	24	143
State Univ. of Iowa, Coll. of Homeo. Med. Iowa City.—H.	6	2	.....	3	11
University of Kansas, School of Medicine	33	40	13	15	101
University of Louisville, Medical Dept.	9	73	58	68	208
Tulane Univ. of Louisiana, School of Med.	71	55	74	86	286
Bowdoin Medical School, Brunswick-Portland	26	11	10	23	70
College of Phys. and Surgs. of Baltimore	13	28	48	61	140
Johns Hopkins University, Medical Dept.	91	90	89	91	361
University of Maryland, School of Medicine	32	95	116	104	347
Boston University, School of Medicine.—H.	15	31	19	21	86
College of Phys. and Surgs., Boston[3]	13	6	10	26	55
Medical School of Harvard University	98	70	62	89	319
Tufts College Medical School, Boston	77	101	68	59	305
Univ. of Michigan Medical School, Ann Arbor	100	89	73	45	307
Univ. of Michigan, Homeo. Med. School.—H.	21	13	13	21	68
Detroit College of Medicine and Surgery	17	88	46	46	197
University of Minnesota Medical School	75	61	36	36	208
University of Mississippi, Dept. of Medicine	26	19	.....	.....	45
University of Missouri, School of Medicine	39	26	.....	.....	65
Eclectic Medical Univ., Kansas City.—E.[5]	22	16	12	15	65
Kansas City Hahnemann Medical College.—H.	10	5	10	4	29
National University of Arts and Sciences, Medical Department	10	32	45	40	127
St. Louis College of Physicians and Surgeons	20	15	18	21	74
St. Louis University, School of Medicine	52	47	44	45	188
Washington Univ. Medical School, St. Louis	14	16	16	29	75
Lincoln Medical College, Lincoln.—E.[5]	5	11	8	5	29
John A. Creighton Medical College	14	46	42	46	148
University of Nebraska, College of Medicine	42	20	24	10	96
Dartmouth Medical School, Hanover	14	9	.....	.....	23
Albany Medical College, Albany	14	53	54	52	173
Univ. of Buffalo, Dept. of Med., Buffalo	30	68	38	55	191
Columbia Univ., College of Phys. and Surgs.	132	92	71	86	381
Cornell Univ. Med. Coll., New York City	54	28	32	20	134
Fordham University, School of Medicine	73	58	42	36	209
Long Island College Hospital, Brooklyn	32	84	90	79	285
New York Homeopathic Medical College and Flower Hospital.—H.	53	51	62	76	242
New York Medical College and Hospital for Women.—H.	5	12	12	9	38
University and Bellevue Hospital Medical College, New York City	150	70	46	98	364
Syracuse University, College of Medicine	30	33	24	13	100
University of North Carolina, School of Med.	53	27	.....	.....	80
North Carolina Medical College, Charlotte[6]	.....	23	8	21	52
Leonard Medical School, Raleigh	5	6	.....	.....	11
Wake Forest College, School of Medicine	16	10	.....	.....	26
University of North Dakota, School of Med.	8	9	.....	.....	17
Eclectic Medical College, Cincinnati.—E.	36	27	25	26	114
University of Cincinnati, College of Medicine	21	18	21	20	80
Western Reserve University, School of Med.	52	31	52	34	169
Ohio State University, College of Medicine	41	83	62	45	231
Ohio State Univ., Coll. of Homeo. Med.—H.	14	6	7	19	46
University of Oklahoma, School of Medicine	31	26	16	20	93
University of Oregon, Dept. of Med., Portland	33	13	16	20	82
Hahnemann Medical College and Hospital of Philadelphia.—H.	10	34	18	23	85
Jefferson Medical College of Philadelphia	86	134	189	147	556
Medico-Chirurgical College of Philadelphia	30	91	80	96	297
Temple Univ., Dept. of Medicine, Philadelphia	1	17	15	30	63
University of Pennsylvania, School of Med.	87	58	74	57	276
Woman's Medical College of Pennsylvania	8	20	20	30	78
University of Pittsburgh, School of Medicine	46	21	25	11	103
Medical Coll. of the State of South Carolina	15	24	18	25	82
University of South Dakota, College of Med.	7	5	.....	.....	12
Lincoln Memorial University, Medical Dept.[7]	.....	12	19	12	43
University of Tennessee, College of Medicine	13	54	70	75	212
University of West Tennessee, College of Medicine and Surgery[2]	2	4	18	29	53
Meharry Medical College, Nashville	72	108	83	91	354
Vanderbilt University, Med. Dept., Nashville	30	88	78	98	294
Baylor University, College of Medicine, Dallas	12	5	15	24	56
Southern Methodist University, Med. Dept.	6	3	9	7	25
Fort Worth School of Medicine	8	19	3	13	43
University of Texas, Department of Medicine	60	62	33	34	189
University of Utah, School of Medicine	20	7	.....	.....	27
University of Vermont, College of Medicine	29	16	16	41	102
University of Virginia, Dept. of Medicine	34	24	24	26	108
Medical College of Virginia, Richmond	42	111	83	103	339
West Virginia University, School of Medicine	5	14	.....	.....	19
University of Wisconsin Medical School	54	42	.....	.....	96
Marquette University, School of Medicine	21	12	47	45	125
Totals, 1914-15	3373	3919	3675	3864	14891
Totals, 1913-14	4684	3981	3807	3955	16502
Decrease	1311	62	132	91	1611

1. There were respectively 3 and 22 students in the classes of the first and second years of the five-year course. 2. Figures by classes are approximate; total is exact. 3. Figures are approximate. 4. There were 258 students in the first two classes; division in each class approximate. 5. Figures are for 1913-14. 6. Students being taught at the Medical College of Virginia, Richmond. 7. Students being taught at the University of Tennessee, College of Medicine, Memphis.

This table shows for all colleges, except one, the number of students enrolled in each of the four classes. Eleven colleges teach only the first two years of the medical course. The Georgia College of Eclectic Medicine and Surgery, the Lincoln Memorial University and the North Carolina Medical College had students only in the last three classes. Birmingham Medical College had only seniors and graduated its last class.

The largest first year classes are found at the University and Bellevue Hospital Medical College, 150; Columbia University, College of Physicians and Surgeons, 132; Rush Medical College and the University of Michigan Medical School, each 100; Harvard University, Medical School, 98, and Johns Hopkins University, Medical Department, 91. The smaller enrolments in the first and second year classes of the Atlanta Medical College, Bennett Medical College and the Chicago College of Medicine and Surgery, mark the beginning of a more rigid requirement of a four-year high school course for admission.

The totals for the previous session are also given to permit of comparison. The marked reduction in the number of first year students is due to the general adoption of higher entrance standards. This was done at the beginning of the last session by forty-three colleges. Sixty students (of the Chicago Hospital College of Medicine) have been figured in the total (14,891) which are not shown by classes.

The six colleges having the largest enrolments are Jefferson Medical College, 556; Chicago College of Medicine and Surgery, 529; Rush Medical College, 487; Bennett Medical College, 393; Columbia University, College of Physicians and Surgeons, 381, and the University and Bellevue Hospital Medical College, 364.

last twelve years there has been a decided lengthening of college terms. This has reference to the weeks of actual work exclusive of holidays. Only one college this year reported sessions shorter than twenty-nine weeks, whereas in 1901, one hundred colleges reported sessions of from twenty-three to twenty-eight weeks. Five colleges claim courses of twenty-nine or thirty weeks of actual work, twenty-two claim courses of thirty-one or thirty-two weeks, and thirty-six, the largest number, claim courses of from thirty-three to thirty-four weeks. Of the 95 colleges now existing, 89, or 92.7 per cent., now claim to require from thirty-one to thirty-eight weeks of actual work, exclusive of holidays, as compared with 30 per cent. in 1901.

TUITION AND OTHER FEES

Special attention is called in Table 1 on page 688 to the total amount charged by the various colleges per annum for tuition, matriculation, laboratory and graduation fees for each student. In Table 13 the 95 remaining colleges have been grouped according to the amount of fees charged and according to their

classification by the Council on Medical Education in Class A, B and C. Nineteen colleges charge fees of $100 or less per year; fifty-two between $100 and $175, and twenty-four charge above $175. Of the nineteen colleges charging $100 or less, twelve, or nearly two-thirds. were listed among Class A (acceptable) colleges[4] by the Council on Medical Education, four were Class B and three of them are found among the Class C colleges. Among the eight Class A colleges having these low fees are the schools of medicine of the state universities of Colorado, Mississippi, Missouri, North Dakota, South Dakota, Texas and Utah. On the other hand, eight colleges listed by the Council in Class C charge fees of from $100 to $175 per year for each student. As shown on page 704, diplomas from Class C colleges are reported as not recognized by thirty-two state licensing boards. It is a question, therefore, why a student should spend his time and money in a low-grade college the diplomas of which are not recognized by many states,[5] when in the same time and with even less money he can attend one of the best-equipped colleges, the diplomas of which are recognized in all states. Although thirty-seven colleges

TABLE 13.—COLLEGE FEES

Total Fees	Number of Colleges			
	Class A*	Class B	Class C	Total
$ 50 or less	3	3	..	6
50 to $ 75	5	1	2	8
75 to 100	4	..	1	5
100 to 125	7	3	1	11
125 to 150	10	5	5	20
150 to 175	14	4	2	20
175 to 200	15	1	..	16
200 or above	8	..	..	8
Totals	66	17	12	95

* Based on the latest classification of medical colleges prepared by the Council on Medical Education (see page 703).

listed in Class A charge fees ranging from $150 to $275 per year for each student, the actual expense for teaching that student in these colleges amounts to from two to three to several times these sums. In fact, accurate data secured from sixty-five medical colleges this year, shows that the average amount received each year from the individual student was $138, while the average amount actually expended in the training of that student for a year was $382! And reports have not yet come in from about twenty colleges which are well endowed, which would make the difference even more marked.

In this connection, a glance at Table 1 on page 688 will show that many of the Class A colleges have only from 7 to 75 students in each class, or totals of from 50 to 300 enrolled, when they could easily care for classes of 50 to 100, or total enrolments of 200 to 400 each. It is quite evident, therefore, that with the same equipment and at practically no additional expense these schools could easily accommodate two, three, or in some instances several times the number of students at present enrolled, which would greatly reduce the disproportion of expense over income from fees. A further reduction in the vast oversupply of medical schools in this country, therefore, would be in the interests of economy as well as of marked advantage to medical education.

4. See classification on page 703.
5. See also in THE JOURNAL of April 24, 1915, p. 1412, the table showing in what states the diplomas of the various medical colleges are not given full recognition.

COLLEGES, STUDENTS AND GRADUATES BY STATES

Illinois has heretofore had the largest number of medical colleges, but now, as shown in Table 14, the first place is held by New York, where there are ten

TABLE 14.—MEDICAL COLLEGES, STUDENTS AND GRADUATES BY STATES

State	College		Students		Graduates		Graduates with B.S. or A.B.
	Total	Class C	Men	Women	Men	Women	
Alabama	1	..	114	...	57	...	4
Arkansas	1	..	75	2	19	...	1
California	6	2	483	71	77	11	30
Colorado	1	..	55	4	7	1	4
Connecticut	1	..	49	...	7	...	7
Dist. of Columbia	3	..	323	3	76	...	18
Georgia	3	1	416	...	151	...	6
Illinois	8	2	2,093	120	484	21	131
Indiana	1	..	150	2	26	2	18
Iowa	2	..	152	2	26	...	9
Kansas	1	..	98	3	13	1	13
Kentucky	1	..	208	...	68	...	4
Louisiana	1	..	285	1	78	...	30
Maine	1	..	70	...	22	...	7
Maryland	2	..	817	31	214	5	95
Massachusetts	4	1	705	60	173	16	92
Michigan	3	..	541	31	103	5	38
Minnesota	1	..	201	7	20	...	17
Mississippi	1	..	45	...	...	...	...
M'ssouri	5	2	602	21	145	7	25
Nebraska	3	1	261	12	59	4	13
New Hampshire	1	..	23	...	...	...	...
New York	10	1	2,041	76	484	13	107
North Carolina	3	..	168	1	19	...	...
North Dakota	1	..	17	...	...	...	...
Ohio	5	1	623	17	140	5	51
Oklahoma	1	..	92	1	20	...	2
Oregon	1	..	78	4	18	...	1
Pennsylvania	7	..	1,365	93	337	33	74
South Carolina	1	..	82	...	25	...	11
South Dakota	1	..	12	...	...	...	...
Tennessee	4	1	946	10	273	2	28
Texas	3	..	302	11	66	4	10
Utah	1	..	27	...	...	...	...
Vermont	1	..	102	...	41	...	2
Virginia	2	..	447	...	114	...	9
West Virginia	1	..	16	3	...	...	...
Wisconsin	2	..	215	6	44	...	1
Totals	95	12	14,299	592	3,406	130	858

colleges. Illinois has eight; Pennsylvania has seven and California has six colleges. Illinois still has the largest number of students enrolled, having 2,213 matriculants last session, followed by New York with 2,117 and Pennsylvania with 1,458. In regard to the graduates, the same relative position obtains.

Table 15 shows the colleges existing during the last session and their students and graduates grouped according to their rank in the classification of the Council on Medical Education. As will be noted, there were sixty-seven colleges in Class A, twenty-two

in Class B and fifteen in Class C. It is encouraging to note that 76 per cent. of all students were enrolled in the 64.4 per cent. of colleges which are in Class A, and that these colleges turn out 74.4 per cent. of all graduates. At the other extreme, only 6.1 per cent. of all students and 6.2 per cent. of all graduates were from the 14.4 per cent. of colleges rated in Class C.

TABLE 15.—Statistics According to College Classification

	Colleges*		Students		Graduates	
	No.	Per Cent.	Number	Per Cent.	Number	Per Cent.
Class A.....	67	64.4	11,314	76.0	2,629	74.4
Class B.....	22	21.2	2,668	17.9	688	19.4
Class C.....	15	14.4	909	6.1	219	6.2
	104	100.0	14,891	100.0	3,536	100.0

* Includes 9 colleges which will hold no more sessions.

EFFECT OF HIGHER ENTRANCE STANDARDS

Of the 100 medical colleges which held sessions during 1914-15, eighty-two put into effect the requirements for admission of one or more years of collegiate work, in addition to a high school education. In thirty-nine the higher requirement began in 1914—at the beginning of the last college session—and, with one exception, these colleges, as shown in Table 16, had decreased enrolments. In forty-three colleges, however, the higher requirement was put into effect in 1913 or earlier and all but five report either increased enrolments or larger freshman classes. This indicates that after a year or so has been allowed for readjustments under the higher preliminary requirements, the enrolments of freshman students are inclined to show an increase.

TABLE 16.—Variations in Medical College Enrolments

Figures showing numbers of colleges having enrolments in the session of 1914-15, respectively, larger, equal or smaller than in the session of 1913-14.

Total Registration This Year	Medical Colleges Requiring for Admission					Total Colleges
	Two Years of College Work, Effective in		One Year of College Work, Effective in		High School Course	
	1913 or Previous	In 1914	1913 or Previous	In 1914		
Increased.....	24	..	8	1	4	37
Equal.....	2 (1)	..	..	..	2	4
Decreased.....	5 (3)	3	4 (2)	35	12	59
Totals.....	31	3	12	36	18	100

Figures in parenthesis show number of colleges which, although the total enrolment was diminished, had larger freshman classes than a year ago.

The marked reduction in the enrolments of the first year classes this year were due to the general adoption, by medical colleges of higher entrance standards. This is evidenced by the fact that the majority of medical colleges which had previously adopted the higher standards had equal or increased enrolments.

COLLEGE NOTES

Colleges Closed During the Year.—Seven medical colleges have been reported as closed during the year, of which two were closed by merger with other colleges and five ceased to exist. The colleges are:

Birmingham Medical College, Birmingham, Ala. This college has been converted into a graduate school and has discontinued undergraduate teaching.

California Eclectic Medical College, Los Angeles. This college is reported closed.

Hahnemann Medical College of the Pacific, San Francisco. This college is reported to have transferred its property to the Medical School of the University of California, where elective courses in homeopathic materia medica and homeopathic therapeutics will be offered.

College of Physicians and Surgeons of Baltimore. This school has merged with the University of Maryland, School of Medicine, but a joint title will be retained: "The University of Maryland, School of Medicine, and the College of Physicians and Surgeons."

Kansas City Hahnemann Medical College, Kansas City, Mo. This college has been suspended.

Cleveland-Pulte Medical College, Cleveland, Ohio. This college has been closed and its property is said to have been transferred to the Ohio State University.

Southern Methodist University, Medical Department, Dallas, Texas. This college has been suspended.

New College Organized.—One new college was organized during the year. This was the Ohio State University, College of Homeopathic Medicine, Columbus, Ohio.

Special Items Concerning Medical Education

Arkansas.—The Arkansas legislature appropriated $65,000 for the Medical Department of the University of Arkansas for the next biennium and also passed a bill providing for a state hospital to be erected at Little Rock and conducted in connection with the university.

California.—The College of Medical Evangelists, Loma Linda-Los Angeles, will require two years of college work for admission beginning with the session of 1915-16.

——Beginning with the session of 1916-17 two years of college work will be required for admission by the College of Physicians and Surgeons, Medical Department of the University of Southern California, Los Angeles.

——Definite provision has been made for an endowment sufficient to yield an annual income of $1,200 in perpetuity for the maintenance of the position of research associate in pathology at the University of California.

Connecticut.—The Yale University, School of Medicine, received $25,000 for the further endowment of the University Clinic and $5,100 for the establishment of the Ramsey memorial scholarship. Work has been begun on a three story and basement building to be known as the Anthony N. Brady Memorial Laboratory.

Georgia.—The Emory University has taken over as its medical department the Atlanta Medical College, provided an endowment of $250,000 and agreed to erect a teaching hospital to cost from $200,000 to $300,000 on or near the college property.

——The sum of $25,000 was given to the University of Georgia, Medical Department, to be known as the William J. Young library fund, the income from which is to be used in the improvement and development of the library.

Illinois.—A sum of $27,000, to cover eight full courses, was given to Northwestern University Medical School by James A. Patten.

——The Illinois House of Representatives appropriated $5,000,000 for the University of Illinois, about $100,000 of which will be utilized, it is said, for the erection of a new clinical building in Chicago.

Indiana.—A gift of $100,000 to be used in scientific research was received from Dr. Luther D. Waterman by the Indiana University.

——The additional sum of $10,000 has been given to the Robert W. Long Hospital, the teaching hospital of the Indiana University, School of Medicine, by Dr. and Mrs. Robert W. Long.

Kansas.—The state appropriated $25,000 for a new laboratory building for the School of Medicine of the University of Kansas. The school was given eighteen and a half lots in the city of Rosedale by Dr. Marshall A. Barber.

Louisiana.—Tulane University of Louisiana has granted all the privileges of the medical college to women students.

Maine.—The Bowdoin Medical School, formerly known as the Medical School of Maine, will require two years of college work for admission beginning with the session of 1916-17.

Maryland.—Plans have been made for an addition to the medical laboratory of the Johns Hopkins University, the cost to be $50,000. A sum of $16,500, to be paid in three yearly installments, has been provided for the Johns Hopkins Hospital by John D. Rockefeller, Jr., the money to be used in a special social hygiene department to be established in September.

Massachusetts.—The Boston University, School of Medicine, will require two years of collegiate work for admission for the session of 1916-17 and thereafter. The school has received $100,000 for a maternity hospital to be erected on a site near its campus. The sum of $5,000 was provided by the will of Dr. Alcma J. Flint.

——The Medical School of Harvard University has received a contingent bequest of $50,000 by the will of Dr. William H. Baker, the money to be used for the endowment of a chair to be known as the William H. Baker chair of gynecology. The will of Mrs. Endicott provides $25,000, the income from which is to be used for cancer investigation work. Mrs. Helen Collamore bequeathed to the university $20,000 for three perpetual beds to be added to the Collamore ward. Another gift of $10,000 for the endowment of a scholarship in the medical department was received by the will of Fannie Bartlett. There has been started a campaign for $150,000 for the endowment of a chair of mental disease, the plan including provision for a full-time professor.

Missouri.—By the will of James Campbell, his estate, valued at from $6,000,000 to $10,000,000, is bequeathed to the St. Louis University, School of Medicine, subject to the life tenure of his wife and daughter.

——A contingent bequest estimated at more than $1,000,000, to be used in the establishment of an eye, ear, nose and throat hospital in connection with the Washington University Medical School, was provided by the will of Mrs. William McMillan.

Nebraska.—The Nebraska legislature appropriated $150,000 for a state hospital to be used as the teaching hospital of the College of Medicine of the University of Nebraska.

New York.—Plans for a new medical plant in connection with Columbia University have been announced. The share of the Presbyterian Hospital in the project will be $9,200,000 and the university is to raise $7,500,000. The Vanderbilt clinic will be rebuilt as a part of the new hospital included in the plans and provision will be made for the permanent location of the George Crocker Cancer Research Foundation. A gift of $113,750 from William K. Vanderbilt has enabled the university to purchase the site for the new school. A sum of $100,000 has been received for research in cancer by the will of Emil C. Bondy. Under the will of William Douglas Sloane $50,000 was provided for the Sloane Maternity Hospital. Two gifts, one amounting to $4,000 and the other to $2,500, were received for surgical research. Two thousand dollars was given for the department of physiology, and a like amount for the Frank Hartley scholarship fund.

——The John Arbuckle Memorial, which cost $250,000 and which completes the north wing of the Long Island College Hospital, has been opened.

——The New York Homeopathic Medical College and Flower Hospital received $5,000 for the establishment of a bed in the hospital and $1,000 for the students' endowment fund by the will of Miss Thena M. Mills.

——The New York Medical College and Hospital for Women received $10,000 by the will of William Washington Cole.

——The Syracuse University, College of Medicine, has taken over the Hospital of the Good Shepherd as a teaching institution.

Ohio.—The Ohio State University, College of Medicine, will require two years of collegiate work for admission for all students matriculating in the session of 1915-16 and thereafter.

——The new Cincinnati General Hospital, which cost $4,500,000, and which took four years to build, has been opened. The departments of pathology, bacteriology, physiology and biochemistry of the University of Cincinnati, College of Medicine, are housed on the grounds.

——The University of Cincinnati, College of Medicine, was offered $250,000 for a new building by Mrs. Mary M. Emery, on the condition that the institution raise a like amount before July 1. On that day $255,000 had been secured. A sum of $1,000 for running expenses was given the school by Charles Boldt.

Oregon.—The University of Oregon, Department of Medicine, has raised most of the sum of $25,000, on the securing of which the $50,000 appropriated by the state for a new building becomes available.

Pennsylvania.—The Hahnemann Hospital of Philadelphia received a contingent bequest of $5,000 by the will of Charles R. Paul.

——Jefferson Medical College is to receive $100,000 under the will of Josephine Lewis for the endowment fund providing the institution secures an equal amount. The Jefferson Hospital received a contingent bequest of $15,000 for the establishment of three beds by the will of Annie Wilson. The Corinna Borden Keen Research Fellowship has been established by Prof. William W. Keen in the Jefferson Medical College, with the provision that the recipient shall spend at least one year in research work. The income from the gift now amounts to $1,000.

——The University of Pennsylvania received $50,000 by the will of Miss Anna M. Blanchard. A sum of $50,000, the income from which is to be used for the maintenance of the William Pepper Clinical Laboratories, was provided by the will of Samuel Dickson.

——The Woman's Medical College of Pennsylvania received $10,000 from the Shipper estate. Five thousand dollars was received by the will of Mrs. Anna Yarnall. A gift of $5,000 was received for the Edith E. Keisher scholarship fund and another sum of $225 for a scholarship fund. The Woman's Hospital secured $5,000 by the will of Robert H. Crozer and the income from $3,000 by the will of Edward T. Dobbins. An endowment fund of $2,000 was also obtained.

South Carolina.—Commencing with the session of 1916-17, the Medical College of the State of South Carolina will require two years of collegiate work for admission. The college received $1,000 under the will of Mrs. Salina Huger, the income to be used in the purchase of books on diseases of children for the college library.

Tennessee.—The building formerly occupied by the Medical Department of the University of Nashville, estimated to be worth about $50,000, has been purchased by William Litterer and donated to the Vanderbilt University. The building, it is said, is to be remodeled and used for teaching and research in bacteriology. The university is also planning to erect a laboratory building to cost $250,000 and another building to cost $350,000.

Texas.—A Woman's Hospital, costing $125,000, has been erected on the grounds of the John Sealy Hospital, which is connected with the Medical Department of the University of Texas, by Mrs. R. Waverly Smith and her brother John Sealy. A new nurses home, costing $90,000, has been completed by the University of Texas.

West Virginia.—The School of Medicine of West Virginia University will require two years of collegiate work for admission for all students matriculating in the session of 1917-18 and thereafter.

——Contracts have been let for a new building for the School of Medicine of West Virginia University, the cost to be $57,000.

Wisconsin.—In accordance with an amendment to its medical practice act, Wisconsin's requirements of preliminary education will include two years of college work beginning with the session of 1915-16. This will apply to all graduates of 1919 and thereafter.

——The requirements for admission to Marquette University, Schol of Medicine, will be increased to two years of collegiate work beginning with the session of 1915-16. Subscriptions to the endowment fund have been received to the amount of $150,000.

Foreign

Canada.—Dalhousie University, Faculty of Medicine, received $30,000 toward the endowment of a chair of anatomy.

Colombia.—According to a recent decree of the government, a foreign physician, in order to become licensed, must present a diploma from a recognized foreign college; must submit to a clinical examination; and must present a thesis on some national medical theme, on which the medical council will require the applicant to explain orally what may seem to the council proper in a public examination.

STANDARDS OF THE COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION

Essentials of an Acceptable Medical College

(Revised to Aug. 1, 1915)

The following outline of the essentials of an acceptable medical college was issued by the Council on Medical Education of the American Medical Association for its suggestive value in the rapid development in progress among the medical colleges in the United States. It also represents the basis on which medical colleges are rated in the Council's classifications.

ADMISSION OF STUDENTS

1. A strict enforcement of the following standards and requirements, the college itself to be held responsible for any instances in which they are not enforced.

[Since the product of the medical school depends largely on the quality of the students admitted, in rating medical colleges, special emphasis is laid by the Council on the strictness and honesty by which the standards of admission and advanced standing are administered. By the admission of unfit students the school is handicapped from the very beginning and, in the opinion of the Council, deserves a low rating regardless of its equipment, its clinical facilities and its teaching force.]

2. A requirement for admission of a four-year high school education, and in addition at least one year of college work, including eight semester hours each of physics, chemistry and biology of college grade and a reading knowledge of German or French.

3. These minimum requirements[1] for admission to the study of medicine are set forth in the following statements relating to high school requirements and to the work of the preliminary college year or years:

I. HIGH SCHOOL REQUIREMENTS

(a) For admission to the preliminary college year, students must have completed a four-year course of at least fourteen units in a standard accredited high school or other institution of standard secondary school grade, or have its equivalent as demonstrated by an examination conducted by a duly authorized examiner of the College Entrance Examination Board, or by the authorized examiner of a standard college or university which has been approved by the Council on Medical Education, or by an examiner whose certificates are accepted by such approved standard colleges or universities. A detailed statement of attendance at the secondary school, and a transcript of the student's work should be kept on file by the medical school authorities. This evidence of actual attendance at the secondary school or schools should be obtained for every student no matter whether he is admitted to the freshman or to advanced classes. This information regarding high school education should be kept separate from the transcript of college work described below.

(b) The subjects for which credits for admission to the preliminary college year may be accepted are shown in the accompanying schedule.

II. WORK OF THE PRELIMINARY COLLEGE YEAR

(c) The preliminary college year, which is the present minimum requirement for admission to medical schools, shall extend through one college session of at least thirty-two weeks of actual instruction, including final examinations. Its purpose is to provide the student with a training that will enable him to enter more intelligently on the study of the fundamental medical sciences.

(d) In excellence of teaching and in content, the work of this preliminary college year shall be at least equal to the work done in the freshman year in standard colleges and universities which enforce for admission at least fourteen units of accredited high school work, and exact for graduation at least 120 semester hours[2] of collegiate work.

(e) This preliminary college year shall consist of at least thirty semester hours,[2] fully completed before the student enters the medical school. This is entirely in addition to the fourteen units of secondary school work. Each student before being admitted to the medical school must have fully completed fourteen (14) units of high school work and at least thirty (30) semester hours of college work. If the college work did not include the specified subjects, as shown in (f), the students must be required to remove such conditions as are permitted in those subjects by *additional* college work. Additional college credits are necessary also, to make up any deficiencies there may be in high school credits. For example, if a student completed only three years of high school work before entering "college," then two years of collegiate work (60 semester hours) must be required before he is admitted to the medical school.

(f) This preliminary college year shall include courses in physics, chemistry and biology, each course to embrace at least eight semester hours of didactic and laboratory work as shown in the accompanying schedule, provided that the

SCHEDULE OF SUBJECTS OFFERED IN ACADEMIC AND SECONDARY SCHOOLS, CREDITS IN WHICH ARE ACCEPTABLE FOR ENTRANCE TO THE PRELIMINARY COLLEGE YEAR LEADING TO THE MEDICAL COURSES

SUBJECTS	UNITS	REQUIRED	ELECTIVE
ENGLISH			
Reading and Practice	2	2	...
Study and Practice	1	...	1
MATHEMATICS			
Algebra to Quadratics	1	1	...
Algebra (Quadratic Equations, Binominal Theorem and Progressions)	½	...	½
Plane Geometry	1	1	...
Solid Geometry	½	...	½
Trigonometry	½	...	½
LATIN			
Grammar and Composition	1	*	1
Caesar	1	*	1
Cicero	1	...	1
Virgil	1	...	1
Cornelius Nepos	1	...	1
Greek			
Grammar and Composition	1	*	1
Xenophon	1	*	1
Homer	1	...	1
German (or French)			
Elementary	2	2*	...
Intermediate	1	...	1
Other Foreign Language			
Elementary	2	...	2
HISTORY			
American History and Civil Government	1	1	...
Greek and Roman History	1	...	1
Medieval and Modern History	1	...	1
English History	1	...	1
Science †			
Botany and Zoology, each	1	...	1
or Biology	1	...	1
Chemistry	1	...	1
Physics	1	...	1
Physiography	½	...	½
Physiology	½	...	½
Agriculture	1	...	1
Drawing	1	...	1
Manual Training	1	...	1
Domestic Science	1	...	1
Music			
Appreciation or Harmony	1	...	1
Total	33½	7	26½

A *unit* is the credit value of at least 36 weeks' work of 4 or 5 recitation periods per week, each recitation period to be of not less than 40 minutes. In other words, a unit represents a year's study in any subject in a secondary school constituting approximately a quarter of a full year's work. A satisfactory year's work in any subject cannot be accomplished under ordinary circumstances in less than 120 sixty-minute hours, or their equivalent.

Required Branches: Of the 14 units of high school work it is suggested that the subjects in capitals aggregating 7 units be required. Other work to the amount of at least 7 units may be made up from any of the other subjects of the above schedule.

* Two units of Greek or Latin may be substituted for the two required units of French or German.

† Credentials of each science course must include evidence of laboratory work.

1. The requirements here given were prepared by a joint committee representing the Council on Medical Education and the Association of American Medical Colleges, assisted by Dr. Kendric C. Babcock, formerly Specialist in Higher Education of the United States Bureau of Education.

2. A semester hour is the measurement of work represented by one class period per week for half of the college year. Each laboratory period to be so valuated must extend over at least two hours.

requirement in biology may be satisfied by presenting six semester hours of college zoology, or by presenting one unit of high school biology, including laboratory work, and completing four semester hours of college zoology; and provided that the requirement in physics may be satisfied by presenting one unit of high school physics, including laboratory work, and completing four semester hours of college physics which continues and does not duplicate the work done in high school. Under no arrangement, however, should there be a total of less than thirty semester hours of college work. It is strongly urged that these include six semester hours of a modern language other than English, preferably French or German.[3]

(g) Credits for two or more years of collegiate work cannot be considered *fully* acceptable unless courses in physics, chemistry and biology, as described above, have been completed. It is urged that a reading knowledge of French or German also be required.

SCHEDULE

Subject	Lectures or Recitations per Week	Laboratory Periods† per Week	Total Hours per Semester	Total Semester Hours per Year
Physics, 1....	2 or 3	2 or 1	4	8
Chemistry, 1..	2	2	4	8
Biology, 1....	2 or 3	2 or 1	4	8
(orZoology,1)*				
Elective, preferably	(1)	(2)	(3)	(6)
French or German, 2*.	4 or 3	.....	4 or 3	8 or 6
Totals.....	9 or 11	6 or 5	16 or 15	32 or 30

* See paragraph (*f*).
† Each laboratory period must extend over at least two hours.

(h) Medical schools which aim to give a premedical year, including these science courses, should admit only those students who have completed at least fourteen units of unconditioned high school work,[4] should provide expert full-time teachers in the various subjects in addition to the regular staff of the medical school; should provide standard laboratory equipment; and should provide a training in the subjects of the premedical year no less thorough than that given in standard colleges of liberal arts and the total work of this premedical year should amount to at least thirty semester hours of non-medical subjects.

(i) Postgraduate courses given in high schools cannot be considered equal to college courses given by college teachers, unless such postgraduate courses are definitely organized on a junior college basis, and credits for work done in them regularly recognized and accepted by a state university or other university of similar rank, approved by the Council.

(j) A year of work in a college of medicine, dentistry, pharmacy, or other professional college is not considered as an equivalent to the required premedical college year.

III. ENTRANCE CONDITIONS UNTIL JAN. 1, 1917[5]

(k) A student may be admitted with certain subject conditions provided he has completed at least one year [thirty semester hours, see paragraph (e)] of work in an approved college of liberal arts or science, provided no conditions may be permitted in the prescribed eight semester hours of college chemistry. These conditions may be either in (1) or (2), but not in both: (1) In one-half (four semester hours) of the required course in physics, or, (2) in one-half of the required course in biology (four semester hours), or in zoology (three semester hours). These conditions must be removed before the beginning of the work of the second medical year and the credits for these conditions must be in addition to the required thirty semester hours.

(l) A candidate who has completed two or more years of work in an approved college of liberal arts, or science, may be admitted conditioned in all of the required work in physics, or one-half of the work required in biology, to a total not to exceed eight semester hours. These conditions must be removed before the beginning of the second medical year. No condition may be permitted in the prescribed eight semester hours of college chemistry.

(m) A candidate who holds a baccalaureate degree from a standard four year college or university approved by the Council on Medical Education may be admitted, in the fall of 1915 only, conditioned in all the physics or all the biology or in one-half of the physics and one-half of the biology, the total condition not to exceed eight semester hours. After 1915 only one-half of the biology (four semester hours) and one-half of the physics, or in all of the physics, the total not to exceed eight semester hours, may be carried as a condition. These conditions must be removed before the beginning of the second medical year. No condition may be permitted in the prescribed eight semester hours of college chemistry.

(n) Since the medical course demands the full energy of the student, especially in the freshman year, all deficiencies should be removed, so far as possible, during the summers preceding and following the freshman medical year.

(o) A medical school having students who were conditioned on entrance in 1914-15, under the former regulations, are entitled to have conditions of such students brought into conformity with the rulings here announced without prejudice to its standing.

4. The college should require that students be in actual attendance in the college within the first week of each annual session and thereafter.

5. Actual attendance at classes should be insisted on except for good cause, such as for sickness, and under no circumstances should credit be given for any course where the attendance has been less than 80 per cent. of the full time.

6. (*a*) Full advanced standing may be granted to students only for work done in other acceptable colleges and in granting advanced standing there should be no discrimination against the college's full-course students. (*b*) In *exceptional cases* students from Class B medical schools may be given advanced standing but not higher than *entrance* to the third year (junior) class and no credit should be given in any subject except on recommendation of the head of the department teaching that subject. (*c*) In *exceptional cases* students from Class C colleges may be given advanced standing but not higher than *entrance* to the second year (sophomore) class and then only after thorough examinations in all first year subjects have been passed.

SUPERVISION, EQUIPMENT, TEACHERS

7. There should be careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out fair ideals of medical education as interpreted by modern knowledge.

8. There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students by means of which an exact knowledge can be obtained regarding each student's work. Records should also be kept showing readily the attendance of patients at the teaching hospitals and dispensaries; the maternity cases attended by students and the post-mortem cases used in teaching.

9. The college should have a fully graded course covering four years of at least thirty-two weeks each, exclusive of time required for matriculation and holidays, and at least thirty hours per week of actual work; this course should be clearly set forth in a carefully prepared and printed schedule of lectures and classes.

(*a*) The college should give two years of work consisting largely of laboratory work in thoroughly equipped laboratories in anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics and clinical diagnosis. Present-day medical knowledge makes it essential that these subjects be in charge of full-time, well-trained teachers.

3. The inclusion of French or German is required for entrance to institutions which are members of the Association of American Medical Colleges.
4. Part courses or uncompleted courses are not to be accepted.
5. Deficiencies in preparation may be made up in large part in attendance at a summer session of the university, either before or following the freshman medical year.

(*b*) Two years of clinical work largely in hospitals and dispensaries, with thorough courses in internal medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene and medical jurisprudence.

(*c*) As soon as conditions warrant, a fifth undergraduate year should be required which should be spent by the student as an intern in an approved hospital.

10. The college should provide at least six expert, thoroughly trained professors in the laboratory branches, salaried so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be the training of medical students. It is advised that four of these professors be placed in charge of the departments of (*a*) anatomy, (*b*) physiology, (*c*) pathology and bacteriology and (*d*) physiologic chemistry and pharmacology. The other two may be assigned one to the laboratory course in histology and embryology under the department of anatomy and the other to the department of pathology and bacteriology, possibly to the course in laboratory clinical diagnosis. There should also be a sufficient number of assistants in each department to look after the less important details. For colleges having sixty students or less in each class, there should be at least one full-time salaried assistant for each of the four departments mentioned, and at least one additional assistant in each of these departments should be provided for each additional thirty students enrolled. This represents a low average of the full-time assistants already employed by the accepted medical colleges.

11. The faculty should be thoroughly organized and should be made up of graduates of institutions recognized as medical colleges and who have had a training in all departments of medicine. Non-medical men should be selected as teachers in medical schools only under exceptional circumstances and only because medical men of equal special capacity are not available. All faculty members should be appointed because of their ability as teachers and not because they happen to be on the attending staff of a hospital or for other like reasons.

CLINICAL FACILITIES

12. The college should own or entirely control a hospital in order that students may come into close and extended contact with patients under the supervision of the attending staff. This hospital should be in close proximity to the college and have a daily average (for senior classes of 100 students *or less*) of not less than 200 patients who can be utilized for clinical teaching, these patients to be of such character as to permit the student to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties. In the use of this material it is suggested that bed-side and ward clinics be developed for sections of from five to ten junior students, and that a certain number of patients in medicine, surgery and the specialties be assigned to each senior student. The treatment and care of these patients should be particularly observed and recorded by the student under the strict supervision of the intern, or the attending staff of the hospital.[6]

13. The college should also have ample hospital facilities for children's diseases, contagious diseases and nervous and mental diseases.

14. At least six maternity cases should be provided for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

15. Facilities should be provided for at least thirty necropsies during each college session which are attended and can be participated in by senior students (for senior classes of 100 students *or less*).

16. The college should own or control a dispensary, or outpatient department, the attendance to be a daily average of sixty cases (for senior classes of 100 students *or less*), the patients to be carefully classified, good histories and records of the patients to be kept and the material to be well used. The attending staff should be made up of good teachers, should be well organized and be regular in attendance.

OTHER TEACHING FACILITIES

17. The college should have a working medical library to include the more modern text and reference books with the *Index Medicus* and thirty or more leading medical periodicals; the library room should be properly lighted and heated, and easily accessible to students during all or the greater part of the day; it should be equipped with suitable tables and chairs, and have a librarian in charge.

18. A working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from post mortems there also be kept the record of the post mortem, the clinical history of the patient on whom the necropsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen.

19. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver; to provide cross-sections and other demonstration material and to allow of a thorough course for each senior in operative surgery on the cadaver.

20. For modern experimental laboratory work in physiology, pharmacology and bacteriology as well as for a reasonable amount of medical research, a supply of animals—frogs, turtles, rabbits and guinea-pigs, if not also cats and dogs—is essential. Proper provision, also, is necessary for the housing and care of such animals. In any use made of animals great care should be used to prevent needless suffering and work by students should be carefully supervised.

21. A supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, a Roentgen-ray and other apparatus now so generally used in medical teaching.

22. The college should show evidences of thorough organization and of reasonably modern methods in all departments and evidences that the equipment and facilities are *being intelligently used* in the training of medical students.

23. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and latest graduating class in regular annual catalogues or announcements.

NOTE.—Correspondence from medical colleges regarding any of the above requirements is invited, and any further suggestions or information available will be gladly furnished.

Definitions of a Medical College* and a Medical School†

"An institution to be ranked as a medical college must have at least six professors giving their entire time to medical work, a graded course of four full years of college grade in medicine, and must require for admission not less than the usual four years of academic or high-school preparation, or its equivalent, in addition to the preacademic or grammar-school studies."

By a medical school as differentiated from a medical college is meant a part of a university requiring for admission *two years* of collegiate work, or its equivalent, and offering instruction of not less than two years' duration, leading to the degree of Doctor of Medicine.

6. Suggestions more in detail may be found in the "Report of the Committee on the Reorganization of Clinical Teaching," The Journal A. M. A., March 6, 1915.

* This definition is based on the definition of a "college" given in the revised ordinances of the state of New York. It has been adopted also by the Carnegie Foundation for the Advancement of Teaching.

† Based on the definition of the term "school" adopted in 1909 by the Association of American Universities.

Grading of Medical Colleges

As in the previous classification, all medical colleges were rated by the Council on Medical Education on a civil service basis on a scale of 1,000 points. The data relating to each college were grouped under ten general heads in such manner that the groups would have as nearly equal weight as possible, each group allowing a possible 100 points (10 per cent.) out of a possible 1,000 points (100 per cent.). The ten heads under which the data were arranged are as follows:

1. Showing of graduates before state boards and other evidences of the training received.
2. Enforcement of a satisfactory preliminary educational requirement, granting of advanced standing and the character of the records.
3. Character of curriculum, grading of course, length of session, time allowed for matriculation and supervision.
4. Medical school buildings; light, heat, ventilation, cleanliness.
5. Laboratory facilities and instruction.
6. Dispensary facilities and instruction.
7. Hospital facilities and instruction, maternity work, autopsies, specialties.
8. Faculty, number and qualifications of trained teachers, full-time instructors, and assistants, especially of the laboratory branches, organization, and extent of research work.
9. Extent to which the school is conducted for properly teaching the science of medicine rather than for the profit of the faculty directly or indirectly.
10. Possession and use made of libraries, museums, charts, stereopticons, etc.

Class A colleges are those which are acceptable; Class B, those which, under their present organization, might be made acceptable by general improvements, and Class C, those which require a complete reorganization to make them acceptable.

THIRD CLASSIFICATION OF MEDICAL COLLEGES

Revised to Aug. 1, 1915

CLASS A—ACCEPTABLE MEDICAL COLLEGES

ALABAMA

University of Alabama, School of Medicine.....Mobile

CALIFORNIA

Leland Stanford Junior Univ., School of Med..San Francisco
University of California Medical School.....San Francisco

COLORADO

University of Colorado, School of Med.....Boulder-Denver

CONNECTICUT

Yale University, School of Medicine.....New Haven

DISTRICT OF COLUMBIA

Georgetown University, School of Medicine.....Washington
George Washington University Medical School..Washington
Howard University, School of Medicine.....Washington

GEORGIA

Atlanta Medical College.....Atlanta
University of Georgia, Medical Department.....Augusta

ILLINOIS

Northwestern University Medical School.....Chicago
Rush Medical College (University of Chicago).....Chicago
University of Illinois, College of Medicine.....Chicago

INDIANA

Indiana Univ., School of Med.....Bloomington-Indianapolis

IOWA

State University of Iowa, College of Medicine...Iowa City
State Univ. of Iowa, Coll. of Homeopathic Med...Iowa City

KANSAS

University of Kansas, School of Med.....Lawrence-Rosedale

KENTUCKY

University of Louisville, Medical Department.....Louisville

LOUISIANA

Tulane Univ. of Louisiana, School of Med....New Orelans

MAINE

Bowdoin Medical School.....Brunswick-Portland

MARYLAND

Johns Hopkins University, Medical Department...Baltimore
University of Maryland, School of Medicine and
the College of Physicians and Surgeons[1].....Baltimore

MASSACHUSETTS

Boston University, School of Medicine.....Boston
Medical School of Harvard University.....Boston
Tufts College Medical School.....Boston

MICHIGAN

Detroit College of Medicine and Surgery.....Detroit
University of Michigan Medical School.....Ann Arbor
University of Mich., Homeopathic Med. School..Ann Arbor

MINNESOTA

University of Minnesota Medical School.....Minneapolis

MISSISSIPPI

University of Mississippi, Dept. of Medicine*.....Oxford

MISSOURI

St. Louis University, School of Medicine.....St. Louis
University of Missouri, School of Medicine*.....Columbia
Washington University Medical School.....St. Louis

NEBRASKA

University of Nebraska, College of Medicine.....Omaha

NEW HAMPSHIRE

Dartmouth Medical School*.....Hanover

NEW YORK

Albany Medical College.....Albany
Columbia Univ., Coll. of Phys. and Surgs...New York City
Cornell University Medical College.....New York City
Fordham University, School of Medicine...New York City
Long Island College Hospital.....Brooklyn
Syracuse University, College of Medicine.....Syracuse
University and Bellevue Hospital Med. Coll..New York City
University of Buffalo, Department of Medicine.....Buffalo

NORTH CAROLINA

University of North Carolina, School of Med.*..Chapel Hill
Wake Forest College, School of Medicine*....Wake Forest

NORTH DAKOTA

University of North Dakota, School of Medicine*..University

OHIO

Ohio State University, College of Medicine.....Columbus
University of Cincinnati, College of Medicine.....Cincinnati
Western Reserve University, School of Medicine..Cleveland

OREGON

University of Oregon, Department of Medicine.....Portland

PENNSYLVANIA

Hahnemann Medical College and Hospital.....Philadelphia
Jefferson Medical College of Philadelphia.....Philadelphia
Medico-Chirurgical College of Philadelphia....Philadelphia
University of Pennsylvania, School of Med....Philadelphia
University of Pittsburgh, School of Medicine....Pittsburgh
Woman's Medical College of Pennsylvania.....Philadelphia

SOUTH DAKOTA

University of South Dakota, College of Medicine*..Vermilion

TENNESSEE

Vanderbilt University, Medical Department.....Nashville
University of Tennessee, College of Medicine.....Memphis

TEXAS

University of Texas, Department of Medicine.....Galveston

UTAH

University of Utah, School of Medicine*.....Salt Lake City

VERMONT

University of Vermont, College of Medicine.....Burlington

VIRGINIA

Medical College of Virginia.....Richmond
University of Virginia, Department of Med...Charlottesville

WISCONSIN

Marquette University, School of Medicine.....Milwaukee
University of Wisconsin Medical School*.....Madison

Total, 66.

---

* These colleges give only the first two years of the medical course.

1. In 1915 the University of Maryland School of Medicine and the College of Physicians and Surgeons of Baltimore were merged into one institution but retain the double title.

CLASS B—COLLEGES NEEDING GENERAL IMPROVEMENTS TO BE MADE ACCEPTABLE

ARKANSAS

University of Arkansas, Medical Department....Little Rock

CALIFORNIA

College of Physicians and Surgeons.....Los Angeles
Oakland College of Medicine and Surgery.....Oakland

ILLINOIS

Bennett Medical College.....Chicago
Chicago College of Medicine and Surgery.....Chicago
Hahnemann Medical College and Hospital.....Chicago

NEBRASKA

John A. Creighton Medical College.....Omaha

NEW YORK

New York Homeopathic Medical College and Flower Hospital.....New York City

NORTH CAROLINA

Leonard Medical School*.....Raleigh

OHIO

Eclectic Medical College.....Cincinnati

OKLAHOMA

Univ. of Oklahoma, School of Med..Norman-Oklahoma City

PENNSYLVANIA

Temple University, Department of Medicine...Philadelphia

SOUTH CAROLINA

Medical College of the State of South Carolina..Charleston

TENNESSEE

Meharry Medical College.....Nashville

TEXAS

Baylor University, College of Medicine.....Dallas
Fort Worth School of Medicine.....Fort Worth

WEST VIRGINIA

West Virginia University, School of Med.*....Morgantown

Total, 17.

CLASS C—COLLEGES REQUIRING A COMPLETE REORGANIZATION TO MAKE THEM ACCEPTABLE

CALIFORNIA

College of Medical Evangelists....Loma Linda-Los Angeles
College of Physicians and Surgeons.....San Francisco

GEORGIA

Georgia College of Eclectic Medicine and Surgery[2]..Atlanta

ILLINOIS

Chicago Hospital College of Medicine.....Chicago
Jenner Medical College.....Chicago

MASSACHUSETTS

College of Physicians and Surgeons[3].....Boston

MISSOURI

Eclectic Medical University[4].....Kansas City
National Univ. of Arts and Sciences, Med. Dept.[5]...St. Louis

NEBRASKA

Lincoln Medical College[6].....Lincoln

NEW YORK

New York Med. Coll. and Hosp. for Women..New York City

OHIO

Ohio State Univ., Coll. of Homeopathic Med.....Columbus

TENNESSEE

University of West Tenn. Coll. of Med. and Surg..Memphis

Total, 12.

2. Reported not recognized by the Georgia State Board of Medical Examiners.
3. Reported not recognized by the Massachusetts Medical Society.
4. Reported not recognized by the Missouri State Board of Health.
5. Formerly known as the American Medical College.
6. Formerly known as the Cotner University Medical College.

Colleges Not Recognized

Official statement from the following thirty-four state licensing boards indicate that as a a rule the colleges rated in Class C are not recognized:

Alabama	Maryland (Reg.)	Oklahoma
Arkansas (Reg.)	Michigan	Pennsylvania
Colorado	Minnesota	Porto Rico
Connecticut (Reg.)	Mississippi	Rhode Island
Deleware	New Hampshire	South Carolina
Florida (Reg.)	New Jersey	South Dakota
Georgia	New Mexico	Texas
Indiana	New York	Vermont
Iowa	North Carolina	Virginia
Kentucky	North Dakota	West Virginia
Louisiana (Reg.)	Ohio	Wisconsin
Maine		

Of the above states the boards of New Hampshire, Rhode Island and Virginia recognize only the medical colleges listed in Class A.

State Requirements of Higher Preliminary Education

There are now twenty-eight states which have adopted requirements of preliminary education in addition to a standard four-year high school education. These states, the number of college years required and the time the higher requirement becomes effective are as follows:

State Examining Board of	Number of Years Required	Affects Students Matriculating	Affects All Applicants
Requiring Two Years:			
Alabama	2	1915-16	1919
Colorado	2	1910-11	1914
Indiana	2	1911-12	1915
Iowa	2	1911-12	1915
Minnesota	2	1908-09	1912
New Hampshire	2	1915-16	1919
New Jersey	2	1917-18	1921
North Dakota	2	1908-09	1912
South Dakota	2	1911-12	1915
Wisconsin	2	1915-16	1919
Requiring One Year:			
Arkansas	1	1915-16	1919
California	1	1915-16	1919
Connecticut	1	1910-11	1914
Illinois	1	1915-16	1919
Kansas	1	1910-11	1914
Kentucky	1	1914-15	1918
Louisiana	1	1915-16	1919
Maryland	1	1914-15	1918
Michigan	1	1914-15	1918
Mississippi	1	1915-16	1919
Oklahoma	1	1914-15	1918
Pennsylvania	1	1914-15	1918
Rhode Island	1	1914-15	1918
Texas	1	1914-15	1918
Utah	1	1913-14	1917
Vermont	1	1913-14	1917
Virginia	1	1914-15	1918
Washington	1	1914-15	1918

Colleges Having Higher Entrance Requirements

The thirty-nine medical schools which are now requiring, as a minimum for entrance *two years* or more of work in a college of liberal arts in addition to a four-year high-school education are as follows:

	In Force
ALABAMA	
University of Alabama, School of Medicine	1915
CALIFORNIA	
College of Medical Evangelists	1915
Leland Stanford Junior University, School of Medicine	1909
University of California Medical School	1905
COLORADO	
University of Colorado, School of Medicine	1910
CONNECTICUT	
Yale University, School of Medicine	1909
DISTRICT OF COLUMBIA	
Georgetown University, School of Medicine	1912
Howard University, School of Medicine	1914
ILLINOIS	
Northwestern University Medical School	1911
Rush Medical College (University of Chicago)	1904
University of Illinois, College of Medicine	1914
INDIANA	
Indiana University, School of Medicine	1910
IOWA	
State University of Iowa, College of Medicine	1910
State University of Iowa, College of Homeopathic Medicine	1910

KANSAS
University of Kansas, School of Medicine..... 1909

MARYLAND
Johns Hopkins University, Medical Department..... 1893

MASSACHUSETTS
Medical School of Harvard University..... 1900

MICHIGAN
University of Michigan Medical School..... 1909

MINNESOTA
University of Minnesota Medical School..... 1907

MISSOURI
University of Missouri, School of Medicine..... 1910
Washington University Medical School..... 1912

NEBRASKA
University of Nebraska, College of Medicine..... 1909

NEW HAMPSHIRE
Dartmouth Medical School..... 1910

NEW YORK
Columbia University, College of Physicians and Surgeons..... 1910
Cornell University Medical College..... 1908
Syracuse University, College of Medicine.....1910

NORTH CAROLINA
Leonard Medical School..... 1914
Wake Forest College, School of Medicine..... 1908

NORTH DAKOTA
University of North Dakota, School of Medicine..... 1907

OHIO
Ohio State University, College of Medicine..... 1915
Western Reserve University, School of Medicine..... 1901

PENNSYLVANIA
University of Pennsylvania, School of Medicine..... 1910
University of Pittsburgh, School of Medicine..... 1913
Woman's Medical College of Pennsylvania..... 1915

SOUTH DAKOTA
University of South Dakota, College of Medicine..... 1909

UTAH
University of Utah, School of Medicine..... 1910

VIRGINIA
Medical College of Virginia..... 1915

WISCONSIN
Marquette University, School of Medicine..... 1915
University of Wisconsin Medical School..... 1907

The forty-four medical colleges which are now requiring, or have announced that they will hereafter require, as a minimum for entrance one year of collegiate work in addition to a four-year high school course, the requirement beginning in the year given:

	In Force
ARKANSAS	
University of Arkansas, Medical Department	1915
CALIFORNIA	
College of Physicians and Surgeons, Los Angeles	1914
DISTRICT OF COLUMBIA	
George Washington University Medical School	1914
GEORGIA	
Atlanta Medical College	1914
University of Georgia, Medical Department	1914
ILLINOIS	
Bennett Medical College	1915
Chicago College of Medicine and Surgery	1915
Hahnemann Medical College and Hospital of Chicago	1914
KENTUCKY	
University of Louisville, Medical Department	1914
LOUISIANA	
Tulane University of Louisiana, School of Medicine	1910
MAINE	
Bowdoin Medical School	1912
MARYLAND	
College of Physicians and Surgeons of Baltimore	1914
University of Maryland, School of Medicine	1914
MASSACHUSETTS	
Boston University, School of Medicine	1914
Tufts College Medical School	1914
MICHIGAN	
Detroit College of Medicine and Surgery	1914
University of Michigan, Homeopathic Medical School	1912
MISSISSIPPI	
University of Mississippi, Department of Medicine	1914
MISSOURI	
National Univ. of Arts and Sciences, Med. Dept	1914
St. Louis University, School of Medicine	1910
NEBRASKA	
John A. Creighton Medical College	1914
NEW YORK	
Albany Medical College	1914
Fordham University, School of Medicine	1911
Long Island College Hospital	1914
University and Bellevue Hospital Medical College	1912
University of Buffalo, Department of Medicine	1914
NORTH CAROLINA	
University of North Carolina, School of Medicine	1910
OHIO	
Eclectic Medical College	1915
University of Cincinnati, College of Medicine	1913
OKLAHOMA	
University of Oklahoma, School of Medicine	1914
OREGON	
University of Oregon, Department of Medicine	1910
PENNSYLVANIA	
Hahnemann Medical College and Hospital of Philadelphia	1914
Jefferson Medical College of Philadelphia	1914
Medico-Chirurgical College of Philadelphia	1914
Temple University, Department of Medicine	1914
SOUTH CAROLINA	
Medical College of the State of South Carolina	1914
TENNESSEE	
Vanderbilt University, Medical Department	1914
University of Tennessee, College of Medicine	1914
University of West Tennessee, College of Medicine and Surgery	1914
TEXAS	
University of Texas, Department of Medicine	1910
Baylor University, College of Medicine	1913
VERMONT	
University of Vermont, College of Medicine	1912
VIRGINIA	
University of Virginia, Department of Medicine	1910
WEST VIRGINIA	
West Virginia University, School of Medicine	1911

The seven following medical colleges shown in the above list as now requiring one year of collegiate work for admission have announced that all students admitted in the session given and thereafter will be required to have completed *two years* of collegiate work:

	Session of
College of Physicians and Surgeons, Los Angeles	1916-17
Bowdoin Medical College (Maine)	1916-17
Boston University, School of Medicine	1916-17
University of North Carolina, School of Medicine	1917-18
Medical College of the State of South Carolina	1916-17
University of Virginia, Department of Medicine	1917-18
West Virginia University, School of Medicine	1917-18

Hospital Intern Year

Six medical colleges have adopted the requirement of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the sessions when the requirement became effective are as follows:

	Session of
University of Minnesota Medical School	1910-11
Leland Stanford Jr. University, School of Medicine	1914-15
Rush Medical College (University of Chicago)	1914-15
University of California Medical School	1914-15
Northwestern University Medical School	1915-16
University of Vermont, College of Medicine	1915-16

Two state licensing boards, those of Pennsylvania and New Jersey, now require that every candidate to be eligible for license to practice medicine in those states must have served at least one year as an intern in an approved hospital. The requirement became effective in Pnnsylvania in 1914, and will bcome effective in New Jersey in 1916.

Graduate Courses in Public Health

Graduate courses in public health have been established in connection with seven medical schools leading to a degree of Doctor of Public Health[1] (Dr.P.H.), Certified Sanitarian (C.S.), Master of Science in Public Health (M.S.(P.H.)) or Master of Public Health (M.P.H.). The course is for one year except at the universities of Colorado, Michigan, Minnesota and Wisconsin where the course for the Doctorate covers two years. Wisconsin gives a Diploma in Public Health (D.P.H.) for a one-year course. The University of California grants a degree of Graduate in Public Health (Gr.P.H.). These colleges are as follows:

1. Or hygiene (University of Pennsylvania).

MEDICAL COLLEGES GIVING COURSES IN PUBLIC HEALTH

Names of Colleges	Course Started in—	Degree Granted	Years in Course	Degrees Required for Entrance
Univ. of Penn. School of Med.	1909	Dr. P. H.	1	M.D.
		C. S.	1	A.B. or B.S.
Med. School of Harvard Univ.	1910	Dr. P. H.	1	A.B., B.S., or M.D.
Univ. of Mich. Med. School...	1912	M. S. (P. H.)	1	A.B. or B.S., and M.D.
		Dr. P. H.	2	
Univ. of Wis. Med. School....	1912	D. P. H.	1	M.D.
		Dr. P. H.	2	M.D.
Univ. of Colo. School of Med.[2]	1913	M. S. (P. H.)	1	A.B., B.S., or M.D.
		Dr. P. H.	2	
Detroit Coll. of Med. and Surg.	1913	M. P. H.	1	M.D.
Univ. & Bell. Hosp. Med. Coll.	1914	Dr. P. H.	1	M.D.
Tulane Univ. School of Med. ..	1914	Dr. P. H.	1	M.D.
Univ. of Minn. Med. School...	1914	Dr. P. H.	2	M.D.
Univ. of Calif. Med. School[3]...	1915	Gr. P. H.	1	M.D.

2. The University of Colorado offers a course of one year leading to the degree of master of science in sanitary engineering to those holding the degree of B.S. in engineering.

3. The University of California offers three courses leading to the degree of graduate in public health. A four-year course beginning with the junior collegiate year; a two-year course for graduates in sanitary engineering; and a course of one and a half years for graduates in medicine.

Special courses in hygiene and preventive medicine are being developed in several other medical schools.

State University Medical Schools

Twenty-nine states now have medical schools as integral parts of the state universities or—in one instance—under state control as separate institutions. These states and other interesting data regarding the medical schools are as follows:

STATE UNIVERSITY MEDICAL SCHOOLS

Medical School of State University of	Only School in State	Length of Med. Course in Years	Years of College Work for Admission	Medical School of State University of	Only School in State	Length of Med. Course in Years	Years of College Work for Admission
Alabama.....	Yes	4	2†	North Carolina.....	.....	2	1
Arkansas.....	Yes	4	1	North Dakota..	Yes	2	2†
California.....	.....	5	2	Ohio*.....	.....	4	2
Colorado.....	Yes	4	2†	Oklahoma.....	Yes	4	1
Georgia.....	.....	4	1	Oregon.....	Yes	4	1
Illinois.....	.....	4	2	South Carolina	Yes	4	1
Indiana.....	Yes	4	2†	South Dakota..	Yes	2	2†
Iowa*.....	Yes	4	2†	Tennessee.....	.....	4	1
Kansas.....	Yes	4	2	Texas.....	.....	4	1
Maryland.....	.....	4	1	Utah.....	Yes	2	2
Michigan*.....	.....	4	2	Vermont.....	Yes	5	1
Minnesota.....	Yes	5	2†	Virginia.....	.....	4	1
Mississippi.....	Yes	2	1	West Virginia..	Yes	2	1
Missouri.....	.....	2	2	Wisconsin.....	.....	2	2†
Nebraska.....	.....	4	2				

* Have homeopathic departments.
† Similar requirements by licensing board.

In sixteen states no other medical schools exist, medical education in the state being entirely in charge of the state university.

An act of the Maryland ligislature in 1914 created a Maryland State University and provided $15,000 per year for 1915 and 1916, to be used for medical education in the state. The merger recently made between the University of Maryland, School of Medicine and the College of Physicians and Surgeons of Baltimore, it is expected, will result in a close affiliation, at least, with the new Maryland State University.

Of the twenty-nine state medical schools, twenty-one give the complete medical course and grant M.D. degrees while eight give only the first two years of the medical course. California, Minnesota and Vermont require a five-year course, the fifth year to be spent by the student in a hospital as an intern, or in other recognized clinical work. The universities of Iowa, Michigan and Ohio have homeopathic departments. In Iowa the entrance requirements are the same for the two departments, but in Michigan and Ohio, while for the regular department two years of collegiate work are required for entrance, only one year is required for the homeopathic college.

As may be noted, sixteen of these state university medical schools are now requiring for admission two years of collegiate work. As already shown the state schools are supported in this requirement by the state licensing boards in Alabama, Colorado, Indiana, Iowa, Minnesota, North Dakota, South Dakota and Wisconsin. The thirteen remaining state university medical schools now require for admission a standard four-year high school course and in addition one year of collegiate work.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are as follows:

SECTION 1.—Every college holding membership in this Association shall, on and after Jan. 1, 1914, require for matriculation a completed or unconditioned medical student's certificate, to be granted by a state medical examining and licensing board, or a board empowered by statute to grant such certificates, or a certificate of entrance to the academic department of any state university, or a certificate of entrance to an accredited university or college, providing that said certificate is granted on no less than the following requirements:

(a) A diploma and transcript of record from a fully accredited high school, normal school or academy requiring for admission evidence of the completion of a standard course in primary and intermediate grades, and for graduation, the completion of a standard four-year high school course, embracing two years (2 units) of mathematics, two years (2 units) of English, two years (2 units) of one foreign language, one year (1 unit) of American history and civics, and seven years (7 units) of further credit in language, literature, history or science, making the total of units at least fourteen; and in addition, one year each of physics, chemistry, biology and French or German of college grade of each not less than eight semester hours.

(*b*) For the high school requirement an examination in the following branches totaling 14 units:

(A) Required, 7 units.	Units
Mathematics (minimum 2 years, maximum 3 years), algebra and plane geometry	2
English (minimum 2 years, maximum 4 years)	2
One foreign language (minimum 2 years, maximum 4 years)	2
History, American and civics	1
Total number of required units	7

(B) Elective, 7 units.

To be selected from the following:

	Units
English language and literature (in addition to the required work)	1 to 2
Foreign languages, additional, Latin, German, Italian, French, Spanish or Greek (not less than 1 year in any one)	1 to 4
Advanced mathematics, advanced algebra, solid geometry and trigonometry (½ year each)	1
Natural science, chemistry 1 year, physics 1 year, and biology, botany, physiology and zoology (½ to 1 year each)	½ to 2
Earth science, physical geography, geology and agriculture (½ year to 1 year each)	½ to 1
Astronomy (½ year)	½
Drawing (½ to 1 year)	½ to 1
History, ancient, medieval and modern, and English (1 year each)	1 to 3
Economics (½ year)	½
Manual training (1 year)	1
Book-keeping (½ to 1 year)	½ to 1

One unit in any subject is the equivalent of work in that subject for four or five periods per week for a year of at least thirty-six weeks, periods to be not less than forty-five minutes in length. One unit is equivalent to 2 semester credits or 2 points.

THE PRELIMINARY COLLEGE YEAR

(The requirements of the preliminary college year are the same as set forth in the standard of the Council on Medical Education on page 700. The standard was adopted April, 1915, by a joint committee representing the two organizations.)

SEC. 2.—The examination of credentials must be conducted by and under the authority of the board of medical examiners of the state in which the college is located, or by a duly authorized examiner of the college entrance examination board, or the authorized examiner of an accredited university, state or otherwise, or by an examiner whose certificates are accepted by accredited colleges or universities, or by a method approved by the judicial council of this association.

SEC. 3.—The term "accredited" as applied to high schools, academies, colleges and universities means institutions of that type that have been investigated and are accredited by the state university of their respective states, by the North Central Association of Colleges and Secondary Schools, the Association of Colleges and Preparatory Schools of the Southern States, the Association of Colleges and Preparatory Schools of the Middle States and Maryland, the New England College Entrance Certificate Board, the Association of American Universities and the Association of State Universities, provided that such accrediting is based on Article III, Section 1, of this constitution.

SEC. 4.—Colleges in membership in this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, excepting for the fourth year of the course, but no member of this Association shall admit a student to advanced standard without receiving from the dean, secretary or registrar of such college a direct written communication certifying to the applicant's standing. Credit

for time or scholarship cannot be given beyond that of the college issuing the credentials, except by mutual agreement between the colleges.

SEC. 5.—Candidates for the degree of Doctor of Medicine shall have attended four courses of study in four calendar years, each annual course to have been of not less than thirty-two teaching weeks' duration, and at least ten months shall intervene between the beginning of any course and the beginning of the preceding course.

SEC. 6.—No time credit shall be given to holders of a Bachelor's degree, but subject credit may be given on satisfactory examination. Four years of residence in a medical college shall be required of all candidates for the degree of Doctor of Medicine.

SEC. 7.—A college which gives less than a four years' course of study, but does not graduate students, and is possessed of other required qualifications, may be admitted to membership.

SEC. 8.—Each student shall be obliged to attend not less than 80 per cents. of the exercises in every annual course of study for which he seeks credit. No student shall be given credit on examination unless he attains a grade of at least 70 per cent. or its equivalent in any other marking system. And no student shall be graduated unless he shall have attained a passing grade in each and all subjects of the required curriculum.

CURRICULUM

SECTION 1.—The entire course of four years shall consist of at least 4,000 hours for each student, and shall be grouped in divisions and subdivided into subjects; each division and subject to be allotted the number of hours as shown in the following schedule:

DIVISION 1.—ANATOMY, 720 HOURS (18 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Gross anatomy (including applied anatomy)	510	120	390
(b) Histologic and miscroscopic anatomy	135	30	105
(c) Embryology	75	30	45

DIVISION 2.—PHYSIOLOGY AND CHEMISTRY, 600 HOURS (15 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Inorganic chemistry	180	60	120
(b) Organic chemistry	75	30	45
(c) Physiologic chemistry	104	30	75
(d) Physiology	240	140	100

DIVISION 3.—PATHOLOGY, BACTERIOLOGY AND HYGIENE, 450 HOURS (11.25 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Bacteriology	135	30	105
(b) Hygiene and general dietetics	45	45	...
(c) Pathology	270	60	210

DIVISION 4.—PHARMACOLOGY, MATERIA MEDICA AND THERAPEUTICS, 240 HOURS (6 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Pharmacology	105	40	65
(b) Materia medica and pharmacology	80	...	...
(c) Therapeutics	55	...	...

DIVISION 5.—MEDICINE AND MEDICAL SPECIALTIES, 970 HOURS (24.25 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) General medicine (including clinical microscopy)	640	...	...
(b) Pediatrics	150	...	...
(c) Nervous and mental diseases	105	...	...
(d) Jurisprudence, ethics and economics	30	...	...
(e) Dermatology and syphilis	45	...	...

DIVISION 6.—SURGERY AND SURGICAL SPECIALTIES, 720 HOURS (18 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) General surgery	510	...	...
(b) Orthopedic surgery	45	...	...
(c) Genito-urinary diseases	45	...	...
(d) Eye	60	...	...
(e) Ear, nose and throat	60	...	..

DIVISION 7.—OBSTETRICS AND GYNECOLOGY, 300 HOURS (7.5 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Obstetrics	195	...	...
(b) Gynecology (including some abdominal surgery)	105	...	...

Colleges may reduce the number of hours in any subject not more than 20 per cent. provided that the total number of hours in a division is not reduced. Where the teaching conditions in a college are best subserved, the subject may be, for teaching purposes, transferred from one division to another. When didactic and laboratory hours are specified in any subject, laboratory hours may be substituted for didactic hours.

SEC. 2.—Each medical college in membership in the Association shall print in every annual catalogue or announcement a table of the total number of hours work given in said college, arranged both by subjects and years.

SEC. 3.—Each college in membership in this Association shall print annually a list of its students by classes.

MEMBERS OF ASSOCIATION

University of Alabama, School of Medicine.
Leland Stanford Junior University, School of Medicine.
University of California Medical School.
University of Southern California, Medical Department.
University of Colorado, School of Medicine.
Yale University, School of Medicine.
Georgetown University, School of Medicine.
George Washington University Medical School.
Howard University, School of Medicine.
University of Georgia, Medical Department.
Northwestern University Medical School.
Rush Medical College.
University of Illinois, College of Medicine.
Indiana University, School of Medicine.
State University of Iowa, College of Medicine.
University of Kansas, School of Medicine.
University of Louisville, Medical Department.
Tulane University of Louisiana, School of Medicine.
College of Physicians and Surgeons, Baltimore.
Johns Hopkins University, Medical Department.
University of Maryland, School of Medicine.
Medical School of Harvard University.
Tufts College Medical School.
Detroit College of Medicine and Surgery.
University of Michigan Medical School.
University of Minnesota Medical School.
University of Mississippi, Department of Medicine.
St. Louis University, School of Medicine.
University of Missouri, School of Medicine.
Washington University Medical School.
John A. Creighton Medical College.
University of Nebraska, College of Medicine.
Columbia University, College of Physicians and Surgeons.
Cornell University Medical College.
Syracuse University, College of Medicine.
University and Bellevue Hospital Medical College.
University of Buffalo, Medical Department.
University of North Carolina, School of Medicine.
Wake Forest College, School of Medicine.
University of North Dakota, School of Medicine.
University of Cincinnati, College of Medicine.
Ohio State University, College of Medicine.
Western Reserve University, School of Medicine.
University of Oklahoma, School of Medicine.
Hahnemann Medical College and Hospital of Philadelphia.
University of Pennsylvania, School of Medicine.
University of Pittsburgh, School of Medicine.
University of the Philippines College of Medicine and Surgery.
Meharry Medical College (Affiliated Member).
University of Tennessee, College of Medicine.
Vanderbilt University, Department of Medicine.
University of Texas, Department of Medicine.
University of Utah, School of Medicine.
University of Vermont, College of Medicine.
Medical College of Virginia.
University of Wisconsin Medical School.

The secretary-treasurer of the Association is Dr. Fred. C. Zapffe, 3431 Lexington Street, Chicago.

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, several of which do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination, regardless as to whether the college is sectarian or not. In a few instances in which such reports were not received the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1914. Extracts of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's estimate for 1914. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of collegiate work. Two states, New Jersey and Pennsylvania, require a year's hospital internship before a license will be granted.

ALABAMA

Alabama, population 2,269,945, has one medical college, the School of Medicine of the University of Alabama, located in Mobile, a city with a population of 55,573.

In order to secure licenses to practice medicine in Alabama, students matriculating in the session of 1915-16 and thereafter, must have completed *two years* of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine.

Mobile

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, St. Anthony and Lawrence Streets.—Organized in 1859 as the Medical College of Alabama. Classes were graduated in 1861 and in all subsequent years except 1862 to 1868, inclusive. It was reorganized as the Medical Department of the University of Alabama in 1897. All property was transferred to the

University of Alabama in 1907, when the present title was assumed. Two years of college work are required for admission. The faculty consists of 17 professors and 36 lecturers and assistants, a total of 53. The course of study covers four years of thirty-two weeks each. The total fees for each of the four years, respectively, are $165, $160, $160 and $185. The Acting Dean is Dr. Thomas H. Frazer. The total registration for 1914-15 was 65; graduates, 13. The fiftieth session begins Sept. 13, 1915, and ends June 7, 1916.

ARKANSAS

Arkansas, population 1,686,480, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 53,811.

To secure licenses to practice medicine in Arkansas, student matriculating in the session of 1915-16 and thereafter must have completed at least one year of collegiate work including college courses in physics, chemistry, biology and a modern language before beginning the study of medicine. This applies to all graduates of 1919 and thereafter.

Little Rock

University of Arkansas Medical Department, Markham and Center Streets.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class graduated in 1880. The faculty consists of 19 professors and 38 lecturers and assistants, total 57. Entrance requirements are a year of collegiate work beyond a four-year high school course. The course of study covers four years of thirty-two weeks each. The fees are $125 for each of the first three years and $150 for the fourth year. The Dean is Dr. Morgan Smith. Total registration 1914-15 was 77;; graduates, 19. The thirty-seventh session begins Sept. 13, 1915, and ends May 12, 1916.

CALIFORNIA

California, population 2,757,895, has six medical colleges. Three are located in San Francisco, a city of 448,502 inhabitants. They are Leland Stanford Junior University School of Medicine, College of Medicine of the University of California and the College of Physicians and Surgeons. The College of Physicians and Surgeons, Medical Department of the University of Southern California is situated in Los Angeles, population 438,914. The Oakland College of Medicine and Surgery is in Oakland, population 183,002. The College of Medical Evangelists is located at Loma Linda, a village of 110 people.

To secure licenses to practice medicine in California under the "physician's and surgeon's" certificate, students matriculating in medical colleges in and after the session of 1915-16, prior to such matriculation, must have completed at least one year of recognized collegiate work including college courses in physics, chemistry, biology and a modern language. This applies to all graduates of 1919 and thereafter.

Berkeley-San Francisco

University of California Medical School, University Campus, Berkeley; Second and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1865. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment, became a clinical department. This Los Angeles portion was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided for. *Two years* of collegiate work are required for admission. The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco. The faculty is composed of 23 professors and 72 associates and assistants, a total of 95. The course covers five years of nine months each, the fifth year to consist of an internship or of special work in a department of the medical school. Fees for the four years, respectively, are $190, $190, $167 and $167. The Dean is Dr. Herbert C. Moffitt, San Francisco. Total registration for 1914-15 was 133, graduates, 14. The forty-third session begins Aug. 13, 1915, and ends May 17, 1916.

Loma Linda-Los Angeles

College of Medical Evangelists.—Organized in 1909. The faculty numbers 11. The first class graduated in 1914. The course extends over four years of nine months each. *Two years* of college work are required for admission. The total fees each year are $136; matriculation fee, $5, payable but once; graduation fee, $10. President is Dr. Newton Evans. The total registration for 1914-15 was 63; graduates, 12. The seventh session begins Sept. 26, 1915, and ends June 15, 1916.

Los Angeles

College of Physicians and Surgeons, Medical Department of the University of Southern California, 516 East Washington Street.—Organized in 1903, first class graduated in 1905; became Medical Department, University of Southern California, Aug. 11, 1909. The course covers four years of nine months each. One year of collegiate work is required for admission. The faculty consists of 23 professors and 57 associate professors, lecturers and instructors, a total of 80. The fees for the four years, respectively, are $185, $182, $160 and $175. The Dean is Dr. Charles W. Bryson. The registration for 1914-15 was 132; graduates, 25. The next session begins Sept. 6, 1915, and ends June 7, 1916.

Oakland

Oakland College of Medicine and Surgery, Thirty-First and Grove Streets.—Organized in 1900, opened in 1902. The first class graduated in 1906. The faculty numbers 44. The course covers four years of nine months each, and the classes are limited to ten students each. The total fees for each of the four years, respectively, are $185, $190, $150 and $150. The Registrar is Dr. Edward N. Ewer. The total registration for 1914-15 was 12; graduates, 4. The fourteenth session begins Aug. 16, 1915, and ends June 1, 1916.

San Francisco

College of Physicians and Surgeons, 344 Fourteenth Street.—Organized in 1896. The first class graduated in 1897. The faculty numbers 30. The course covers four years of nine months each. The fees for each of the four years, respectively, are $165, $160, $160 and $185. The Dean is Dr. L. W. Spriggs. Registration for 1914-15 was 62; graduates, 8. The nineteenth session begins Sept. 6, 1915, and ends June 8, 1916.

San Francisco-Palo Alto

Leland Stanford Junior University, School of Medicine, University Campus, Palo Alto, and Sacramento and Webster Streets, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The faculty consists of 42 professors and 54 lecturers, assistants, etc., a total of 96. Three years of collegiate work are required for admission. The course covers five years of nine months each, including a year of practical or intern work. The total fees for the first four years, respectively, are $160, $155, $150 and $150. The Dean is Dr. R. L. Wilbur, San Francisco. The total registration for 1914-15 was 95; graduates, 16. The sixth session begins Sept. 1, 1915, and ends May 22, 1916.

COLORADO

Colorado, with a population of 909,537, has one medical college, the University of Colorado School of Medicine. The first two years of the course are given at Boulder, the seat of the university, while the last two, or clinical years, are given in Denver, which has a population of 245,523.

The Colorado State Board of Medical Examiners will register without further examination graduates of medical colleges in good standing who present licenses issued after examination by any other licensing board. The law permits any one, graduate or non-graduate, to try the Board's written examination. No graduate of 1914 or thereafter is eligible to obtain a license in Colorado, on indorsement of his credentials, unless he graduated from a medical college which, at the time he matriculated, required at least *two years'* study, without conditions, in an accredited college of liberal arts, and this work must have included courses in physics, chemistry, biology and one modern language.

Boulder-Denver

University of Colorado School of Medicine.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911, when the legal right to teach the last two or clinical years in Denver was secured. The faculty embraces 53 professors and 30 lecturers and assistants, a total of 83. The work embraces a graded course of four years of nine months each. The entrance requirements are *two years* of college work counting toward a degree in arts in an accredited college or university. The tuition is $75 per year; there are no other fees. The Dean is Dr. William P. Harlow, Boulder. The total registration for 1914-15 was 59; graduates, 8. The thirty-fourth session begins Sept. 13, 1915, and ends June 7, 1916.

CONNECTICUT

Connecticut, with a population of 1,202,688, has one medical college, Yale University, School of Medicine, located in New Haven, population 144,505.

Candidates for license to practice medicine in Connecticut, who graduate in 1914 or thereafter are not eligible unless, prior to entering on the study of medicine they had completed, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology.

New Haven

Yale University, School of Medicine, 150 York Street and Congress Avenue and Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. The faculty consists of 24 professors and 50 lecturers and assistants, a total of 74. The requirement for admission is *two full years* of collegiate work plus evidence of satisfactory preparation in physics, general inorganic chemistry and general biology. In 1916-17 and thereafter, all matriculants must have satisfactorily completed courses in general physics, general inorganic chemistry, general biology, organic chemistry, physical chemistry or laboratory physics, elementary psychology, and must have a reading knowledge of German, all reasonably equivalent to the courses in these subjects in Yale University. The course covers four years of nine months each. The fees for the four years, respectively, are approximately $223, $170, $153 and $163. The Dean is Dr. George Blumer. The total registration for 1914-15 was 49, graduates, 7. The one hundred and third session begins Sept. 30, 1915, and ends June 21, 1916.

DISTRICT OF COLUMBIA

Washington, population 353,378, has three medical colleges; George Washington University Medical School, Georgetown University, School of Medicine and Howard University, School of Medicine.

Washington

GEORGE WASHINGTON UNIVERSITY MEDICAL SCHOOL, 1325 H Street, N.-W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name, National Medical College. Classes were graduated in 1826 and in all subsequent years, except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. The faculty is composed of 34 professors and 52 instructors, demonstrators and assistants, a total of 86. One year of collegiate work is required for admission. The course covers four years of thirty-two weeks each. The total fees for the four years, respectively, are $163, $159, $153 and $153. The Dean is Dr. William C. Borden. The total registration for 1914-15 was 145; graduates, 25. The ninety-fourth session begins Sept. 29, 1915, and ends June 7, 1916.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 920 H Street, N.-W.—Organized in 1851. The first class graduated in 1852. The faculty contains 24 professors, 67 instructors and assistants; total, 91. *Two years* of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for the first year are $165, and for each of the other three years, $150. The Dean is Dr. George M. Kober. The registration for 1914-15 was 81; graduates, 31. The sixty-fifth session begins Sept. 24, 1915, and ends June 13, 1916.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Colored students compose a majority of those in attendance. The faculty comprises 17 professors and 21 lecturers and assistants, 38 in all. The admission requirements are one year of collegiate work including physics, chemistry, botany and zoology and a reading knowledge of one modern language besides English. The course covers four years of thirty-two weeks each. The fees of each of the four sessions, respectively, are $137, $127, $127 and $134. The Dean is Dr. Edward A. Balloch. Registration for 1914-15 was 100; graduates, 20. The forty-eighth session begins Oct. 1, 1915, and ends June 7, 1916.

GEORGIA

Georgia, population 2,776,513, has three medical colleges; University of Georgia, Medical Department, located in Augusta, population 49,451, the Atlanta Medical College and the Georgia College of Eclectic Medicine and Surgery in Atlanta, a city of 179,292 population.

Atlanta

ATLANTA MEDICAL COLLEGE, MEDICAL DEPARTMENT OF EMORY UNIVERSITY, Butler and Armstrong Streets.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming its first title. Became the Medical Department of Emory University in 1915. One year of collegiate work is required for entrance. It has a faculty of 32 professors and 71 instructors, assistants, etc., a total of 103. The course of study is four years of thirty-two weeks each. The fees are $150 each year. The Dean is Dr. W. S. Elkin. Total registration for 1914-15 was 341; graduates, 132. The next session begins Sept. 27, 1915, and ends May 31, 1916.

GEORGIA COLLEGE OF ECLECTIC MEDICINE AND SURGERY, Tanner Street near Edgewood Avenue.—Organized in 1877 as the Georgia Eclectic Medical College. In 1884 it acquired the charter of the College of American Medicine and Surgery. Assumed present title in 1886. The first class graduated in 1878. The total registration for 1914-15 was 21; graduates, 7. It is stated that this college will close after the next session when it will have graduated the balance of the students enrolled.

Augusta

UNIVERSITY OF GEORGIA, MEDICAL DEPARTMENT, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the University in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. The faculty includes 20 professors and 30 assistants, 50 in all. One year of collegiate work is required for entrance. The course is four years of thirty-four weeks each. Fees are $150 each year for non-residents of Georgia; for residents the fees for the four years respectively are $55, $50, $55 and $60. The Dean is Dr. W. H. Doughty, Jr. The total registration for 1914-15 was 54; graduates, 12. The eighty-fourth session begins Sept. 15, 1915, and ends May 31, 1916.

ILLINOIS

Illinois, population 5,986,781, has eight medical colleges, two of which give instruction at night, all located in Chicago, a city of 2,393,325 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Hahnemann Medical College and Hospital, Bennett Medical College, Chicago College of Medicine and Surgery, Jenner Medical College and the Chicago Hospital College of Medicine.

To be eligible for license to practice medicine in Illinois, students matriculating in the session of 1915-16 and thereafter, in addition to an accredited four-year high school education, must have completed at least a year of collegiate work including courses in physics, chemistry, biology and a modern language, to be taken either in a preliminary year given by a recognized medical college, or in an approved college of liberal arts.

Chicago

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago. The first class graduated in 1844. The faculty is composed of 108 professors, 193 associates, instructors, etc., a total of 301. The requirements for admission are *two years* of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes and to 120 students in each of the clinical years. No application for admission is accepted after September 1. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshmen and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison Streets. The tuition fees are $180 each year. A matriculation fee of $5 is paid but once, and there are incidentals amounting from $3 to $10 annually. The Dean is Dr. John M. Dodson. Total registration 1914-15 was 487; graduates, 104. The seventy-third session begins Oct. 1, 1915, and ends June 17, 1916.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 2431 South Dearborn Street.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. The faculty comprises 57 professors and 78 lecturers and assistants, a total of 135. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University plus *two years* of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each. The fees for the four years, respectively, are $190, $195, $190 and $206. The Dean is Dr. Arthur R. Edwards. The total registration for 1914-15 was 194; graduates, 36. The fifty-sixth session begins Oct. 5, 1915, and ends June 6, 1916.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, Honore and Congress Streets.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. The American Medical Missionary College was absorbed in 1910. *Two years* of collegiate work are required for admission. The faculty is composed of 55 professors, 99 assistants and instructors, a total of 149. The total fees for the four years, respectively, are $155, $160, $150 and $165. The Dean is Dr. D. A. K. Steele. Total registration for 1914-15 was 289; graduates, 102. The thirty-fourth session begins Sept. 30, 1915, and ends June 14, 1916.

CHICAGO COLLEGE OF MEDICINE AND SURGERY, 706 South Lincoln Street.—Organized in 1901 as the American College of Medicine and Surgery (Chicago Eclectic Medical College). The latter part of the name was dropped in 1902 and it became the Medical Department of Valparaiso University. Eclecticism was dropped in 1905. The name was changed to the above in 1907. One year of collegiate work, including courses in physics, chemistry, biology and a modern language is required for admission. The course covers four years of eight months each. The faculty numbers 137. The total fees of each of the four years are $150. The Secretary is Dr. Fred. C. Zapffe. The total registration for 1914-15 was 531; graduates, 125. The fifteenth session begins Oct. 4, 1915, and ends May 27, 1916.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF CHICAGO, 2811 Cottage Grove Avenue.—Organized in 1859. The first class was graduated in 1861. Absorbed the Chicago Homeopathic Medical College in 1904. The faculty includes 58 professors and 25 lecturers, assistants, etc., a total of 83. One year of collegiate work, including courses in physics, chemistry and biology and a modern language is required for admission. The course extends over four years of eight months each. The tuition fees for the four years, respectively, are $151, $136.50, $171.50 and $186.50. The Dean is Dr. Joseph P. Cobb. The total registration for 1914-15 was 86; graduates, 23. The fifty-sixth session begins Sept. 28, 1915, and ends May 25, 1916.

BENNETT MEDICAL COLLEGE, Fulton and Ada Streets.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Dropped Eclecticism and assumed present title in 1909. In 1910 it united with the Illinois Medical College and became by affiliation the Medical Department of Loyola University. The first class graduated in 1870. Became an integral part of Loyola University in 1915. The faculty numbers 68. The course covers five years of thirty-two weeks each. The fees are $150 each year. The Dean is Dr. Maximilian Herzog. The total registration for 1914-15 was 393; graduates 92. The next session begins Sept. 28, 1915, and ends May 27, 1916.

JENNER MEDICAL COLLEGE, an afternoon and night school, located at 701 South Wood Street.—Organized in 1892. Classes were graduated in 1896 and in all subsequent years. The faculty numbers 48. The Secretary is Dr. John D. MacKellar. Total registration for 1914-15 was 175; graduates 24. The next session begins Sept. 13, 1915, and ends June 17, 1916. *Reported not recognized by the licensing boards of thirty-two states.*

CHICAGO HOSPITAL COLLEGE OF MEDICINE, another afternoon and night school, located at 3832 Rhodes Avenue.—Organized in 1911; chartered in 1912. Claimed to have had a registration of about 60 in 1914-15. There were 9 graduates. *Official reports indicate that the diplomas from this college are not recognized by the licensing boards of thirty-two states.*

INDIANA

Indiana, population 2,779,467, has one medical college, the Indiana University School of Medicine, located at Indian-

apolis, a city of 259,413 people, except that the work of the first year is offered also at Bloomington, the seat of the University.

Candidates for license to practice medicine in Indiana who matriculated between Jan. 11, 1910 and Jan. 11, 1911, must have completed one year of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine. Those matriculating subsequent to Jan. 11, 1911, must have completed *two years* of work in a recognized college of liberal arts. For students matriculating after June 30, 1912, this additional preliminary work must have included college courses in physics, chemistry and biology.

Bloomington and Indianapolis

Indiana University School of Medicine.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. The faculty consists of 72 professors and 59 lecturers, associates and assistants, a total of 131. *Two years* of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees for the four years, respectively, are $100, $100, $130, and $130. A fifth optional year leading to the "M.D. cum laude" has been added. The Secretary at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1914-15 was 152; graduates, 28. The next session begins Sept. 20, 1915, and ends June 14, 1916.

IOWA

Iowa, population 2,221,755, has two medical colleges. The College of Medicine and the College of Homeopathic Medicine of the State University of Iowa, both located in Iowa City, population 10,987.

Candidates for license to practice medicine in Iowa who graduate subsequent to Jan. 1, 1915, must have completed *two years* of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a modern language.

Iowa City

State University of Iowa College of Medicine. University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. The faculty is made up of 23 professors, 24 lecturers, demonstrators and assistants, a total of 47. *Two years* of collegiate work, including courses in physics, chemistry, biology and French or German, are required for admission. The course of study covers four years of thirty-six weeks each. The tuition fee for residents of Iowa is $85 per year and for nonresidents $100, plus a matriculation fee of $10 and a graduation fee of $10. The Dean is Dr. Lee Wallace Dean, Iowa City. Total registration for 1914-15 was 143; graduates, 23. The forty-sixth session begins Sept. 20, 1915, and ends June 9, 1916.

State University of Iowa College of Homeopathic Medicine.—Organized in 1877. The first class graduated in 1878. Class each subsequent year except 1914. The faculty is composed of 15 professors and 15 lecturers and assistants, a total of 30. The work of the first two years is taken in classes with the students of the College of Medicine of the State University of Iowa, and it has the same entrance requirements. The fees are $100 each year for nonresidents of Iowa and $85 for residents, plus a matriculation fee of $10, paid but once, and a graduation fee of $10. The Dean is Dr. George Royal. Total registration for 1914-15 was 11; graduates, 4. The thirty-eighth session begins Sept. 20, 1915, and ends June 9, 1916.

KANSAS

Population 1,784,897, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,915, and the last two years in Rosedale, a suburb of the two Kansas Cities, which together have a population of 382,142.

Candidates for license to practice medicine in Kansas who matriculated in the session of 1910-11 and thereafter must present ceredentials showing that they matriculated in and graduated from a medical college which required for admission at least one year of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course. This applies to all graduates of 1914 and thereafter.

Lawrence and Rosedale

University of Kansas School of Medicine.—Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Rosedale. Absorbed Kansas Medical College in 1913. The faculty, including lecturers and clinical assistants, numbers 53. The requirements for admission are *two years* of collegiate work. The course covers four years of nine months each. The total fees are for each of the first two years, $30 per year (and for nonresidents of the state, $45); for the last two years $100 and $105 respectively. The Dean is Dr. S. J. Crumbine; Associate Dean, Dr. M. T. Sudler. The total registration for 1914-15 was 101; graduates, 14. The thirty-sixth session begins Sept. 15, 1915, and ends June 7, 1916.

KENTUCKY

Kentucky, population 2,350,731, has one medical college, the University of Louisville Medical Department, situated in Louisville, a city of 223,928 inhabitants.

To be eligible for license to practice medicine in Kentucky all students matriculating in and after the session of 1914-15 must have completed, in addition to an accredited four-year high school course, at least one year's work in an approved college of liberal arts, including college courses in physics, chemistry, biology and a modern language.

Louisville

University of Louisville Medical Department, First and Chestnut Streets.—Organized in 1837 as the Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 the present name was assumed. In 1907 it absorbed the Kentucky University Medical Department. In 1908 it absorbed the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. One year of collegiate work is required for admission. It has a faculty of 33 professors and 59 lecturers and assistants, a total of 92. The course covers four years of thirty-two weeks each. The fees are $170 each year; graduation fee, $10. The Dean is Dr. Henry Enos Tuley. The total registration for 1914-15 was 208; graduates 68. The next session begins Sept. 27, 1915, and ends June 8, 1916.

LOUISIANA

Louisiana, having a population of 1,773,482, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 361,221.

Candidates for license to practice medicine in Louisiana who graduate in 1919 and thereafter must present evidence that they had successfully completed, at an approved college or university at least one year of work including biology, physics, chemistry and a modern language, before entering on the study of medicine. This applies to all students who matriculated in 1915 and thereafter.

New Orleans

Tulane University of Louisiana School of Medicine, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years, except 1863-65, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. The faculty has 22 professors and 89 instructors, demonstrators, etc., a total of 111. The course covers four years of thirty-two weeks each. One year of collegiate work is required for admission. Total fees are $185 per year; graduation fee, $30. The Dean is Dr. Isadore Dyer. The total registration for 1914-15 was 286, graduates 78. The eighty-first session begins Sept. 28, 1915, and ends June 15, 1916.

MAINE

Maine, population 762,787, has one medical college, the Bowdoin Medical School, located in Brunswick and Portland, the latter having a population of 62,161.

Brunswick-Portland

Bowdoin Medical School. The Medical Department of Bowdoin College. The first two years are given at Bowdoin College, Brunswick, the last two at Portland, building located on Chadwick Street.—Organized in 1820 as the Medical School of Maine. The first class graduated in 1821. Present title assumed in 1915. The faculty numbers 66. One year of collegiate work is required for admission. Beginning with the session of 1916-17 *two years* of collegiate work will be required. The course covers four years of eight months each. The total fees are $115 for each of the first three years and $140 for the fourth. The Dean is Dr. Addison E. Thayer, 10 Deering Street, Portland. The total number of students in 1914-15 was 70; graduates, 22. The ninety-fifth session begins Oct. 14, 1915, and ends June 22, 1916.

MARYLAND

Maryland, with a population of 1,341,075, contains two medical colleges, located in Baltimore, a city with 579,590 inhabitants. They are as follows: Johns Hopkins University Medical Department, School of Medicine of the University of Maryland and the College of Physicians and Surgeons, the last two having been merged.

To be eligible to practice medicine in Maryland, all students matriculating in the session of 1914-15 and thereafter,

in addition to a four-year high school education, must have completed a year of college work including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

Baltimore

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT, Washington and Monument Streets.—Organized in 1893. The first class graduated in 1897. The faculty consists of 37 professors and 90 clinical professors, etc., a total of 127. The requirements for admission demand that the applicant either has (a) completed the chemical-biological course which leads to the A.B. degree in the university or (b) graduated at an approved college or scientific school and has a knowledge of French and German, physics, chemistry and biology, such as may be obtained from a year's course. The course extends over four years of eight and one-half months each. The charge for tuition is $240 for the first year and $200 for each of the other three years. The Dean is Dr. J. Whitridge Williams. Total registration for 1914-15 was 361; graduates, 89. The twenty-third session begins Oct. 5, 1915, and ends June 13, 1916.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. The combined faculty numbers 188. A year of collegiate work is required for admission. The course covers four years of eight months each. The total fees are $165 each year; matriculation fee, $5; graduation fee, $30. The Dean of the University of Maryland School of Medicine is Dr. Arthur M. Shipley; of the College of Physicians and Surgeons, Dr. Wm. F. Lockwood. The total number of students registered in the two schools in 1914-15 was 487; graduates, 130. The one hundred and ninth session begins Oct. 1, 1915, and ends May 28, 1916.

MASSACHUSETTS

Massachusetts, population 3,605,522, has four medical colleges: Medical School of Harvard University, Boston University School of Medicine, College of Physicians and Surgeons and Tufts College Medical School. They are all situated in Boston, a city of 733,802.

Boston

MEDICAL SCHOOL OF HARVARD UNIVERSITY, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 57 professors and 159 associates, assistants, etc., a total of 216. Candidates for admission must present either a recognized college degree with courses in inorganic and organic chemistry or credits for *two years* of work in a recognized college or scientific school, which must include courses in physics, inorganic and organic chemistry and biology. The session is four years of eight months each. The total fee for each is $225. The Dean is Dr. Edward H. Bradford. The total registration for 1914-15 was 319; graduates, 87. The one hundred and thirty-fourth session begins Sept. 27, 1915, and ends June 22, 1916.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. One year of collegiate work is required for admission; after Oct. 1, 1916, *two years* of collegiate work will be required. The faculty includes 23 professors, 50 associates, etc., making a total of 73. The course covers four years of eight months each. Total fees for each of the four years, respectively, are $177, $172, $152 and $185. The Dean is Dr. John P. Sutherland. Total registration for 1914-15 was 86; graduates, 21. The forty-third session begins Oct. 7, 1915, and ends June 7, 1916.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. It has a faculty of 31 professors and 102 assistants, lecturers, etc., a total of 133. One year of collegiate work is required for admission. The course covers four years of eight months each. The total fees are $155 each year. The Dean is Dr. Charles F. Painter. Total registration for 1914-15 was 305; graduates, 64. The twenty-second session begins Sept. 29, 1915, and ends May 29, 1916.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. The college announcement gives the names of 190 "matriculants and applicants" for the session of 1914-15, which included both dental and medical students. Fairly reliable information, however, shows that the total attendance of medical students during 1914-15 was about 55. There were 17 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of thirty-two states.*

MICHIGAN

Michigan, population 2,976,030, has three medical colleges. Two of these, the University of Michigan Department of Medicine and Surgery and the Homeopathic Medical College of the University of Michigan, are located at Ann Arbor, a city of 14,948 people. The Detroit College of Medicine and Surgery is located at Detroit, a city of 537,650 inhabitants.

To be eligible for license to practice medicine in Michigan, all students matriculating in and after the session of 1914-15, in addition to an accredited four-year high school education, must have completed at least one year's work in an approved college of liberal arts, including college courses in physics, chemistry and biology, prior to beginning the study of medicine.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. It has a faculty composed of professors and 59 associates, instructors, etc., a total of 79. The entrance requirements are *two years* of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of one modern language. The curriculum embraces four years of nine months each. The total fees for Michigan students for the entire course of four years is $350 and for others about $400. The Dean is Dr. Victor C. Vaughan. The total registration for 1914-15 was 307; graduates, 43. The sixty-sixth session begins Oct. 5, 1915, and ends June 29, 1916.

UNIVERSITY OF MICHIGAN HOMEOPATHIC MEDICAL SCHOOL.—Organized in 1875. The first class graduated in 1877. Although the work of the first two years is taken in the same classes with the Medical School of the University of Michigan, nevertheless the entrance requirements have been kept at one year of collegiate work; the requirement for the other department is two years of collegiate work! The Dean is Dr. W. B. Hinsdale. The total registration for 1914-15 was 68; graduates, 20. The next session begins Oct. 5, 1915, and ends June 9, 1916.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 250 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. Entrance requirements are one year of collegiate work. The faculty embraces 23 professors, 149 lecturers, etc., a total of 172. The course covers four years of eight months each. The fees for the four years, respectively, are $155, $130, $90 and $120. The Secretary is Dr. Joseph H. Hathaway. The total registration for 1914-15 was 197; graduates, 45. The thirty-first session begins Sept. 22, 1915, and ends June 1, 1916.

MINNESOTA

Minnesota, population 2,213,919, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis. Minneapolis and St. Paul are practically one city, and have a combined population of 580,232.

Candidates for license to practice medicine in Minnesota who graduated subsequent to June 1, 1912, in addition to an accredited four-year high school education, must have completed *two years* of work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital Medical College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. The faculty includes 46 professors and 61 instructors and assistants, a total of 107. The curriculum covers four years of nine months each and a year's internship in an approved hospital. The entrance requirements are *two years* of university work which must include one year each of physics, general chemistry, qualitative analysis, zoology or botany, and French or German, all in addition to a four-year high school course, including two years of Latin. Students entering hereafter will be required to secure a degree of B.S. or A.B. before the M.D. is granted. Total fees are $150 each year. The Dean is Dr. E. P. Lyon. The total registration for 1914-15 was 208; graduates, 20. The twenty-eighth session begins Sept. 14, 1915, and ends June 8, 1916.

MISSISSIPPI

Mississippi, population 1,901,882, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 2,014 inhabitants.

Candidates for license to practice medicine in Mississippi who matriculate in the session of 1915-16 and thereafter, in addition to a standard four-year high school education, must have completed a year's work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

UNIVERSITY OF MISSISSIPPI DEPARTMENT OF MEDICINE.—Organized in 1903. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are one year of collegiate work in addition to an accredited four-year high school education. The total fees each year are, respectively, $81 and $83. The faculty numbers 14. The Dean is Dr. W. S. Leathers. The total registration for 1914-15 was 45. The thirteenth session begins Sept. 17, 1915, and ends June 1, 1916.

MISSOURI

Missouri, population 3,372,886, has five medical colleges. St. Louis, population 734,667, contains three of these, viz., the School of Medicine of St. Louis University, Washington University Medical School and the Medical Department of the National University of Arts and Sciences. Kansas City, which with Kansas City, Kan., has a total population of 376,182, has one college, the Eclectic Medical University.

The School of Medicine of the University of Missouri is at Columbia, a town of 11,371 people.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. The faculty includes 9 professors and 9 assistant professors, lecturers, etc., a total of 18. The course covers two years of nine months each. The entrance requirements are *two years* of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours, and general bacteriology, 3 hours. Total fees are $45 each year. The acting Dean is Dr. Guy L. Noyes. Total registration of students for 1914-15 was 65. The next session begins Sept. 15, 1915, and ends June 9, 1916.

Kansas City

ECLECTIC MEDICAL UNIVERSITY, 1423 Independence Avenue.—Organized at Kansas City, Mo., in 1898 with the present title. Moved to Kansas City, Kan., in 1907, and took the name of Western Eclectic College of Medicine and Surgery. Returned to Kansas City, Mo., in 1909 and resumed the present title. First class graduated in 1900. The total registration for 1914-15 was, approximately, 65; graduates, 15. *Reported not in good standing by the Missouri State Board of Health and by thirty other state licensing boards.*

St. Louis

WASHINGTON UNIVERSITY MEDICAL SCHOOL, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Assumed present title in 1911. The faculty comprises 24 professors and 63 lecturers, instructors, etc., a total of 87. *Two full years* of college work are required for admission including courses in English, physics, chemistry and biology and a reading knowledge of German. The course is four years of eight months each. The total fees for the four years are, respectively, $155, $150, $150 and $155. The Dean is Dr. Philip A. Shaffer. The total registration for 1914-15 was 75; graduates, 29. The next session begins Sept. 23, 1915, and ends June 8, 1916.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Avenue.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 52 professors, 76 lecturers and assistants, a total of 128. One year of college subjects preliminary, to the four years of medical subjects is given in the medical school. The curriculum covers four years of thirty-two weeks each. The total fees are $140 each year. The total registration for 1914-15 was 188; graduates, 43. The Dean is Dr. Hanau W. Loeb. The next session begins Oct. 1, 1915, and ends June 1, 1916.

NATIONAL UNIVERSITY OF ARTS AND SCIENCES, Medical Department, Garrison and Lawton Avenues.—Organized in 1873 as the American Medical College, and Eclectic Institution. Eclecticism dropped in 1910. Absorbed the Barnes Medical College in 1911. Became the Medical Department of the National University of Arts and Sciences in 1912. Absorbed St. Louis College of Physicians and Surgeons in 1915. Two classes were graduated each year from 1874 to 1883, inclusive. Since then one class has graduated each year. The course covers four years of eight and a half months each. A five-year course is required including a preliminary year in physics, chemistry and biology. Fees: matriculation, $5; tuition each year, $135. The Secretary is Dr. E. L. Cooley. The total registration for 1914-15 was 127; graduates, 40. The next session begins Sept. 20, 1915, and ends June 10, 1916.

NEBRASKA

Nebraska, population 1,245,873, has three medical colleges. The University of Nebraska College of Medicine and the John A. Creighton Medical College of Omaha, population 133,274, and the Lincoln Medical College at Lincoln, population 45,643.

Lincoln

LINCOLN MEDICAL COLLEGE. Eclectic. Corner 13th and P Streets, Lincoln.—Organized in 1890 as the Lincoln Medical College. Became Cotner University Medical College in 1911. Affiliation with Cotner University cancelled and present title resumed in 1915. The first class graduated in 1891. The Dean is Dr. F. L. Wilmeth. The total registration for 1913-14 was 29; graduates, 5. The next session begins Sept. 15, 1915, and ends May 27, 1916.

Omaha

JOHN A. CREIGHTON MEDICAL COLLEGE, Fourteenth and Davenport Streets. It is the Medical Department of Creighton University.—Organized in 1892. The first class graduated in 1895. It has a faculty of 15 professors and 38 associates, lecturers and assistants, a total of 53. One year of collegiate work is required for admission. The course of study embraces four years of eight months each. The total fees each year are $130; matriculation fee, $5. The Dean is Dr. A. L. Muirhead. Total registration for 1914-15 was 148; graduates, 46. The thirty-fourth session begins Sept. 1, 1915, and ends April 29, 1916.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913 when all four years were transferred to Omaha. The faculty is composed of 31 professors and 28 lecturers and instructors, total 59. *Two years* of collegiate work are required for admission including courses in physics, chemistry, zoology and German. The fees for each of the four years, respectively, are $135, $130, $120 and $120. The Secretary is Dr. Irving S. Cutter. Total registration for 1914-15 was 96; graduates, 12. The next session begins Sept. 20, 1915, and ends June 2, 1916.

NEW HAMPSHIRE

New Hampshire, population 438,662, has one medical college, located at Hanover, population 1,340.

To be eligible for license to practice medicine in New Hampshire, all students matriculating in and after the session of 1915-16, in addition to a four-year high school education, must have completed at least *two years* of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 10 professors and 2 instructors, a total of 12. *Two years* of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the B.S. degree in Dartmouth College may substitute the work of the first two years in medicine for that of the junior and senior years in the academic department. Candidates for the A.B. degree may make a similar saving of one year. The fees for the two years in medicine are, respectively, $171 and $180. Dean, Dr. John M. Gile; Secretary, Colin C. Stewart. The next session opens September 23, 1915, and ends June 21, 1916.

NEW YORK

New York State, population 9,899,761, has ten medical colleges. Seven of these, College of Physicians and Surgeons (Columbia University), Long Island College Hospital, New York Homeopathic Medical College and Hospital, New York Medical College and Hospital for Women, Cornell University Medical College, the University and Bellevue Hospital Medical College and Fordham University School of Medicine, are located in New York City, population 5,333,537. Albany Medical College is located in Albany, a city of 102,961 people. The University of Buffalo Medical Department is situated in Buffalo, population 454,112. The College of Medicine, Syracuse University, is in Syracuse, a city of 149,353 inhabitants.

Albany

ALBANY MEDICAL COLLEGE, Lancaster and Jay Streets.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915, Union University assumed full control. The faculty is composed of 19 professors and 50 lecturers, assistants, etc., a total of 69. One year of collegiate work, including college courses in physics, chemistry and biology are required for admission. The curriculum covers four years of eight months each. The fees for each year are $160. The Dean is Dr. Thomas Ordway. The total registration for 1914-15 was 173; graduates, 50. The eighty-fifth session begins September 27, 1915, and ends June 1, 1916.

Buffalo

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. The faculty is composed of 33 professors and 71 lecturers, assistants, etc., a total of 104. One year of collegiate work, including college courses in physics, chemistry and biology are required for admission. The course covers four years of eight months each. The total fees for the four years, respectively, are $185, $180, $140 and $140. The Dean is Dr. Thomas H. McKee. Total registration for 1914-15 was 191; graduates, 53. The seventieth session begins September 20, 1915, and ends June 2, 1916.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. The faculty is composed of 77 professors and 146 instructors, demonstrators, etc., a total of 223. *Two years* of collegiate work, including courses in physics, chemistry and biology are required for admission. The work covers four years of eight months each. The Dean is Dr. Samuel W. Lambert. The total fees for the first year are $255; for the second and third, $250, and $275 for the fourth year. Total registration for 1914-15 was 381; graduates, 85. The one hundred and eighth session begins Sept. 29, 1915, and ends June 7, 1916.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or New York. The faculty is composed of 48 professors and 76 assistants, lecturers, instructors, etc., a total of 124. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have such knowledge of physics, inorganic chemistry and biology as may be obtained in college by a year's course in these subjects when accompanied by laboratory work. The fees for each of the four years are, respectively, $190, $185, $185 and $200. The Dean is Dr. William M. Polk. Total registration for 1914-15 was 134; graduates, 20. the eighteenth session begins Sept. 27, 1915, and ends June 16, 1916.

FORDHAM UNIVERSITY SCHOOL OF MEDICINE, Bathgate Avenue and Fordham Road.—Organized in 1905 as the School of Medicine of St. John's College. Present title assumed in 1907. First class graduated in 1909. The faculty consists of 25 professors and 56 lecturers and

assistants, a total of 81. The course of instruction covers four years of eight and a half months each. Total fees for the four years, respectively, are $216, $216, $212 and $210. A year's work in a recognized college of liberal arts, including college courses in physics, chemistry and biology is required for admission. The Dean is Dr. William P. Healy. The total registration for 1914-15 was 209; graduates, 36. The eleventh session begins Sept. 24, 1915, and ends June 8, 1916.

LONG ISLAND COLLEGE HOSPITAL, Henry Street, near Atlantic Avenue, Brooklyn.—Organized in 1858. The first class graduated in 1860. It has a faculty of 41 professors and 72 assistants, instructors, etc., a total of 113. A year of collegiate work, including college courses in physics, chemistry and biology is required for admission. The course covers four years of eight months each. Fees: first year, $210, second year, $205, third, $200 and $200 for the fourth year. The Secretary is Dr. Otto V. Huffman. Total registration 1914-15 was 285; graduates, 76. The fifty-eighth session begins Sept. 20, 1915, and ends June 1, 1916.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, Eastern Boulevard, between Sixty-Third and Sixty-Fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title, New York Homeopathic Medical College, was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. The faculty consists of 26 professors and 44 assistants, lecturers, etc., a total of 70. The total fees for each year of the four years, respectively, are $165, $160, $150 and $180. The Dean is Dr. Royal S. Copeland. Total registration for 1914-15 was 242; graduates, 69. The fifty-sixth session begins Oct. 1, 1915, and ends May 24, 1916.

NEW YORK MEDICAL COLLEGE AND HOSPITAL FOR WOMEN (Homeopathic) 17-19 West One Hundred and First Street.—Organized in 1863. The first class graduated in 1864. The faculty numbers 65. The course covers four years of thirty weeks each. The fees for each of the four years, respectively, are $180, $175, $165 and $180. The Dean is Dr. Cornelia C. Brant. The total registration for 1914-15 was 38; graduates, 8. The fifty-third session begins Sept. 23, 1915, and ends June 1, 1916.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, First Avenue and Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department or New York University. First class graduated in 1899. The faculty is composed of 53 professors and 127 instructors, etc., in all 180. The course covers four years of eight months each. Entrance requirements are one year of collegiate work, in addition to a standard four-year high school course, including college courses in physics, chemistry and biology. The fees are $200 per year; graduation fee, $25. The Secretary is Dr. Samuel A. Brown. Total registration for 1914-15 was 364; graduates, 93. The next session begins Sept. 22, 1915, and ends June 7, 1916.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307-311 Orange Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Two years of a recognized college course are required for admission. The course covers four years of thirty-five weeks each. The total fees are $175 annually. The faculty is composed of 22 professors and 53 associate and assistant professors, lecturers and instructors. The Dean is Dr. John L. Heffron. The total enrolment for 1914-15 was 100; graduates, 13. The forty-fourth session begins Sept. 21, 1915, and ends June 14, 1916.

NORTH CAROLINA

North Carolina, population 2,339,452, has three medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,449. The Leonard Medical School is at Raleigh, population 19,883. Wake Forest College School of Medicine is at Wake Forest, population 1,443.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. One year of collegiate work is required for admission. The faculty is composed of 15 professors and 11 lecturers, assistants, etc., a total of 26. The total fees for the two years, respectively, are $120 and $125. The Dean is Dr. I. H. Manning. The total registration for 1914-15 was 80; the thirtieth session begins Sept. 9, 1915, and ends May 31, 1916.

Raleigh

LEONARD MEDICAL SCHOOL.—Colored. This department of Shaw University was established in 1882. Classes were graduated in 1886, 1888 and in all subsequent years, including 1914 when clinical teaching was discontinued. A year of collegiate work is required for admission. It has a faculty of 8. The course covers four years of seven and a half months each. The total fees for each year are $50, graduation fee, $10. The Dean is Dr. George H. Stoddard. Total registration for 1914-15 was 11. The thirty-fourth session begins Sept. 29, 1915, and ends may 12, 1916.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology numbers 10, exclusive of laboratory assistants. Only the first two years of the medical course are offered after the completion of freshmen and sophomore college work, and on this combined course the B.S. degree is conferred. Each annual course extends over nine months. The fees for each year aggregate $103. The Secretary is E. B. Earnshaw. The total registration for 1914-15 was 26. The fourteenth session begins Sept. 7, 1915, and ends May 19, 1916.

NORTH DAKOTA

North Dakota, population 686,966, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 14,827 people. It gives only the first two years of the medical course.

Candidates for license to practice medicine in North Dakota who graduated in 1912 and thereafter, in addition to a four-year high school education must have completed *two years* of work in an approved college of liberal arts including courses in Latin, physics, chemistry, botany and zoology, prior to beginning the study of medicine.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. The faculty is composed of 6 professors and 12 instructors, a total of 18. The course consists of *two years* of academic work and two years of medicine, occupying nine months each year. The total fee for each of the medical years is $50. The Dean is Dr. F. E. French. The total registration for 1914-15 was 17. The tenth session begins Sept. 21, 1915, and ends June 14, 1916.

OHIO

Ohio, population 5,026,898, has five medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 402,175 inhabitants. Cleveland, population 639,431, contains one medical school, Western Reserve University School of Medicine. Columbus, population 204,567, contains the two departments of the Ohio State University, the College of Medicine and the College of Homeopathic Medicine.

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Clifton Avenue, west of Vine Street.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. The faculty consist of 36 professors, 101 associates, assistants, etc., a total of 137. The course covers four years of eight months each. The fees are $150 a year; a matriculation fee of $5 payable but once, and a graduation fee of $25. The Dean is Dr. Christian R. Holmes. The total registration for 1914-15 was 80; graduates, 19. The next session begins Sept. 28, 1915, and ends June 10, 1916.

ECLECTIC MEDICAL COLLEGE, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843 inclusive. It has a faculty of 25 professors and 10 lecturers and assistants, a total of 35. One year of college work is required for admission. The course covers four years of eight months each. The fees are $120 for each yeear. The Secretary is Dr. John K. Scudder. Total registration for 1914-15 was 114; graduates, 26. The next session begins Sept. 6, 1915, and ends May 16, 1916.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 1353 East Ninth Street.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 it absorbed the Cleveland College of Physicians and Surgeons. The faculty includes 36 professors and 57 lecturers, assistants, etc., a total of 93. The curriculum embraces four years of eight and one-half months each. Three years of college work are required for admission. The total fees for each of the four years are, respectively, $162, $155, $150 and $155. The Secretary is Dr. F. C. Waite. The total registration for 1914-15 was 169; graduates, 34. The seventy-third session begins Sept. 30, 1915, and ends June 15, 1916.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Buttles Avenue and Park Street.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. The faculty consists of 43 professors and 58 lecturers, demonstrators, etc., a total of 101. *Two years* of collegiate work are required for admission. The course covers four years of eight months each. Matriculation, $5; tuition of $150 each year. The Dean is Dr. W. J. Means. The total registration for 1914-15 was 232; graduates, 44. The next session begins Sept. 21, 1915, and ends June 14, 1916.

OHIO STATE UNIVERSITY COLLEGE OF HOMEOPATHIC MEDICINE.—Organized precipitately in 1914, when, it is stated, the property of the Cleveland Pulte Medical College of Cleveland, a Class C institution, was transferred to the Ohio State University. Classes are taught separately from the students of the College of Medicine, although anatomy and psychology are taught by teachers in the latter. Only one year of collegiate preliminary education is required, although two years are required of students of the College of Medicine. Tuition fees of only $125 are charged, whereby students of the College of Medicine are charged $150. The Dean is Dr. Claude A. Burrett. The total registration for 1914-15 was 46; graduates, 18. The next session begins Sept. 21, 1915 and ends June 14, 1916.

OKLAHOMA

Oklahoma, population 2,026,534, has one medical college, the School of Medicine of the University of Oklahoma. The work of the first and second years is given in the academic laboratories at Norman, a city of 3,724 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 83,559 and which is eighteen miles north of Norman.

To be eligible for license to practice medicine in Oklahoma, all students matriculating in and after the session of 1914-15, in addition to a four-year high school education, must have completed at least one year of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine.

Norman and Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course until 1910, when a clinical department was established at Oklahoma City. It has a faculty of 46 professors and 8 instructors, a total of 54. *One year* of collegiate work is required for admission. The course is four years of nine months each. An optional course of six years is offered for the degrees of B.S. and M.D. The total fees for the four years are, respectively, $50, $33, $10 and $15. The Dean is Dr. LeRoy Long, 317 East Fourth Street, Oklahoma City. The total registration for 1914-15 was 93; graduates, 20. The sixteenth session begins Sept. 21, 1915, and ends June 8, 1916.

OREGON

Oregon, population 783,239, has one medical college, the University of Oregon Department of Medicine located in Portland, a city of 260,601 population.

Portland

UNIVERSITY OF OREGON DEPARTMENT OF MEDICINE, Lovejoy and Twenty-Third Streets.—Organized in 1887. The first class graduated in 1888. A class graduated each subsequent year except 1898. Became an integral part of the University of Oregon in 1910. The Willamette University Medical Department was merged in 1913. It has a faculty of 28 professors and 35 lecturers, assistants, etc., a total of 63. Entrance requirements are one year of college work or its equivalent. The course is four years of eight months each. Fees: Matriculation, $5; tuition, $150 each year. The Dean is Dr. K. A. J. Mackenzie. The total registration for 1914-15 was 82; graduates, 18. The twenty-ninth session begins Oct. 1, 1915, and ends May 31, 1916.

PENNSYLVANIA

Pennsylvania, population 8,245,967, has seven medical colleges. Of these, Philadelphia, having a population of 1,657,810 contains six, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania, Medico-Chirurgical College of Philadelphia and Temple University Department of Medicine. The other school, the School of Medicine of the University of Pittsburgh, is situated in Pittsburgh, a city of 564,878.

To be eligible for license to practice medicine in Pennsylvania, students matriculating in the session 1914-15 and thereafter, in addition to a four-year high school education must have completed a year's work either in an approved college of liberal arts or in a preliminary year in the medical college, including college courses in physics, chemistry and biology, before beginning the study of medicine. He must also have completed an internship of at least one year in an approved hospital.

Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772-79, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania was adopted in 1909. It granted the first medical diploma issued in America. The faculty is made up of 49 professors, associate, adjunct and assistant professors, and 122 lecturers, associates, instructors, etc., a total of 171. The minimum requirements for admission are a standard four-year high school course or its equivalent, plus two years of work in an approved College of Arts and Science, including courses in French or German, and in physics, chemistry and general biology or zoology, with appropriate laboratory exercises. The course embraces four years of study of thirty-four weeks each. The total fees for each of the four years are, respectively, $233, $210, $210 and $214. The Dean is Dr. William Pepper. Total registration for 1914-15 was 276; graduates, 57. The one hundred and fiftieth session begins Sept. 24, 1915, and ends June 21, 1916.

JEFFERSON MEDICAL COLLEGE, Tenth and Walnut Streets.—Organized in 1825 as the Medical Department of Jefferson College, Cannonsburg. The first class graduated in 1826. The present title was assumed in 1838. It has a faculty of 21 professors and 135 lecturers, demonstrators, etc., a total of 156. Entrance requirements are a completed course in a standard secondary school and in addition a preliminary year in a medical college devoted to physics, chemistry and biology, or two years of work in a college of liberal arts including the subjects specified. The course of study covers graded work of four years of eight and a half months each. The tuition is $200 a year, with a matriculation fee of $5, paid but once. The Subdean is Dr. Ross V. Patterson. The total registration for 1914-15 was 556; graduates, 145. The ninety-first session begins Sept. 24, 1915, and ends June 3, 1916.

MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA, Cherry Street, between Seventeenth and Eighteenth Streets.—Organized in 1881. The first class graduated in 1882. The faculty is composed of 35 professors and 74 lecturers, assistants, etc., a total of 109. Entrance requirements are a completed course in a standard secondary school and in addition a preliminary year devoted to college courses in physics, chemistry and biology. The work embraces four years of eight months each. The fees for each are $180; matriculation fee, paid but once, $5. The Dean is Dr. Seneca Egbert. The total registration for 1914-15 was 297, graduates, 82. The thirty-fifth session begins Sept. 24, 1915, and ends June 9, 1916.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Twenty-First and N. College Avenue. Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 11 professors and 46 assistants, lecturers, etc., in all 57. Entrance requirements are a completed course in a standard secondary school, and in addition *two years* of collegiate work including courses in physics, chemistry and biology. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $187, $181, $183 and $179.50. The Dean is Dr. Clara Marshall. The total registration for 1914-15 was 78; graduates, 30. The sixty-sixth session begins Sept. 15, 1915, and ends May 31, 1916.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 226 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition a preliminary year devoted to college courses in physics, chemistry and biology. It has a faculty of 40 professors and 40 lecturers, instructors, etc., in all 80. The work covers four years of eight and a half months each. Total fees for the four years, respectively, are $185, $185, $175 and $175. The Dean is Dr. William A. Pearson. The total registration for the college year 1914-15 was 85; graduates, 22. The sixty-eighth session begins Sept. 27, 1915, and ends June 1, 1916.

THE TEMPLE UNIVERSITY DEPARTMENT OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. The faculty numbers 97. The fees for each of the four years, respectively, are $168.50, $167, $151 and $161. The Dean is Dr. Frank C. Hammond. The total registration for 1914-15 was 63; graduates, 24. The fifteenth session begins Sept. 15, 1915, and ends June 5, 1916.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Grant Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. The faculty is composed of 41 professors and 53 associates, assistants, etc., 94 in all. Entrance requirements are *two years* of recognized college work, to have included essentially courses in chemistry (inorganic and organic), physics, biology and German or French, based on a four-year high school preparation. It is possible for students to get the degree of B.S. and M.D. in six years. The course of study for medicine alone is four years of eight and a half months each. The tuition is $210 a year. The Dean is Dr. Thomas S. Arbuthnot. The total registration for 1914-15 was 103; graduates, 10. The thirtieth session begins Sept. 27, 1915. and ends June 15, 1916.

SOUTH CAROLINA

South Carolina, population 1,590,015, has one medical college, situated in Charleston, a city of 60,121 people.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, Lucas and Calhoun Streets.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. It has a faculty of 22 professors and 42 lecturers, instructors, etc., a total of 64. The course covers four years of eight months each. One year of collegiate work including courses in physics, chemistry and biology is required for admission in addition to a standard high school preparation. Beginning with the session of 1916-17 *two years* of preliminary collegiate preparation will be required. The total fees are $140 each year. The Dean is Dr. Robert Wilson, Jr. Total enrolment for 1914-15 was 82; graduates, 25. The eighty-seventh session begins Oct. 1, 1915, and ends June 1, 1916.

SOUTH DAKOTA

South Dakota, population 661,583, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a town of 2,187 people.

To be eligible for license to practice medicine in South Dakota, graduates of 1915 and thereafter must show that they matriculated in and graduated from medical colleges which required at least *two years* of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. This affects all students who matriculated in the session of 1911-12 and thereafter.

Vermilion

UNIVERSITY OF SOUTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1907. Offers only the first two years of the medical course. *Two years'* work in a college of liberal arts is required for admission. The fees are

$60 each year. The faculty numbers 10. The Dean is Christian P. Lommen, B.S. The total registration for 1914-15 was 12. The ninth session begins Sept. 21, 1915, and ends June 15, 1916.

TENNESSEE

Tennessee, population 2,254,754, has four medical colleges. Of these Vanderbilt University Medical Department and Meharry Medical College are situated in Nashville, a city with a population of 114,899. The College of Medicine of the University of Tennessee and the University of West Tennessee College of Medicine and Surgery are located in Memphis, population 143,231.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, three buildings, 879 Madison Avenue, 880 Monroe Avenue and 718 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department University of Tennessee 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The Trustees of the University of Nashville by formal action of that Board named the University of Tennessee College of Medicine as its legal successor in medical teaching, transferring all of its college and hospital equipment to the successor. This college then removed to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Entrance requirements are a completed secondary education plus one year of collegiate work. The fees are $100 per year for bona fide residents of the state, and $150 per year for non-residents; for the fourth year, $175. The Dean is Dr. Herbert Thomas Brooks. Total registration for 1914-15 was 255; graduates, 77. These figures include 43 students from the Lincoln Memorial University, 12 of whom were granted diplomas by the latter this year. The next session begins Sept. 20, 1915, and ends June 3, 1916.

UNIVERSITY OF WEST TENNESSEE COLLEGE OF MEDICINE AND SURGERY. Colored. 1190 South Phillips Place.—Organized in 1900. The first class graduated in 1904, and a class graduated each subsequent year. It has a faculty of 20. The course covers four years. The fees are $55 per year; graduation $10 extra. The Dean is Dr. M. V. Lynk. Registration for 1914-15 was 53; graduates, 29. The sixteenth session begins Sept. 15, 1915, and ends May 4, 1916.

Nashville

VANDERBILT UNIVERSITY MEDICAL DEPARTMENT.—This school was founded in 1874. The first class graduated in 1875. The faculty consists of 25 professors and 59 lecturers, a total of 84. One year of collegiate work is required for admission. The course covers four years of nearly eight months each. The total fees for each of the first three years are $150, and for the fourth year, $175. The Dean is Dr. L. E. Burch. The total registration for 1914-15 was 294; graduates, 97. The forty-second session begins Sept. 29, 1915, and ends June 14, 1916.

MEHARRY MEDICAL COLLEGE. Colored. Fourth Avenue, South, and Chestnut Street.—This school was organized in 1876 as the Medical Department of Tennessee College, which became Walden University in 1900. First class graduated in 1877. The faculty is made up of 14 professors and 11 instructors, demonstrators, etc., 25 in all. The work embraces four years of thirty weeks each. The total fees for each of the first three years are $70 and for the fourth year, $80. The Dean is Dr. G. W. Hubbard. Total registration for 1914-15 was 354; graduates, 72. The fortieth session begins Sept. 7, 1915, and ends April 20, 1916.

TEXAS

Texas, population 4,257,854, has three medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 40,289 inhabitants. The Fort Worth School of Medicine is at Fort Worth, population 94,494. The Baylor University College of Medicine is located in Dallas, population 111,986.

To be eligible for a license to practice medicine in Texas, students matriculating in the session of 1914-15 and thereafter must have completed a year of collegiate work including courses of physics, chemistry, biology and a modern language, in addition to a standard four-year high school course.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 720 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University at Waco. It acquired the charter of Dallas Medical College in 1904. The first class graduated in 1901. The faculty numbers 43. Entrance requirement is one year of college work in addition to a four-year high school education. The course is four years of eight months each. The fees are $115 each year; matriculation fee of $5, paid but once; graduation fee, $15. The Dean is Dr. E. H. Cary. Total registration for 1914-15 was 56; graduates, 19. The sixteenth session begins Oct. 1, 1915, and ends May 31, 1916.

Fort Worth

FORT WORTH SCHOOL OF MEDICINE, Medical Department of Texas Christian University, Calhoun and Fifth Streets.—Organized in 1894 as the Fort Worth School of Medicine. It was the Medical Department of the Fort Worth University until 1911, when it became affiliated with Texas Christian University. The first class graduated in 1895. It has a faculty of 27 professors and 48 lecturers, assistants, etc., in all 73. The course covers four years of nine months each. The total fees for each of the four years, respectively, are $114, $113, $108 and $125. The Dean is Dr. Samuel A. Woodward. The total registration for 1914-15 was 43; graduates, 11. The twenty-second session begins Sept. 20, 1915, and ends June 9, 1916.

Galveston

UNIVERSITY OF TEXAS DEPARTMENT OF MEDICINE, on the Strand, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. It has a faculty of 16 professors and 13 lecturers, a total of 29. The curriculum embraces four years of eight months each. The entrance requirement is one year of collegiate work in addition to a four-year high school education. The total fees for the four years, respectively, are $60, $30, $15 and $10. The Dean is Dr. William S. Carter. Total registration for 1914-15 was 189; graduates, 34. The twenty-fifth session begins Oct. 1, 1915, and ends May 31, 1916.

UTAH

Utah, population 414,518, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 109,530 people.

To be eligible to secure licenses to practice medicine in Utah, students matriculating in and after the session of 1912-13, in addition to a four-year high school education, must have completed at least one year of collegiate work prior to beginning the study of medicine, this preliminary college work to have included college courses in physics, chemistry and biology.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Gives only first two years of the medical course. Each course covers thirty-six weeks. *Two years* of collegiate work are required for admission. The medical faculty consists of 12 professors and 8 lecturers and assistants, a total of 20. The fees are $70 each year for residents, and $95 each year for non-residents. The Dean is Dr. Perry G. Snow. Total registration for 1914-15 was 27. The ninth session begins Sept. 16, 1915, and ends June 9, 1916.

VERMONT

Vermont, population 361,205, has one medical school, located at Burlington, a town of 21,247 people.

Students matriculating in and after the session of 1912-13 who desire to practice medicine in Vermont must have obtained a preliminary training of at least one year of collegiate work in addition to a standard four-year high school education, this additional year's work to include college courses in physics, chemistry and biology.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. The faculty numbers 41. One year of college work in addition to a standard four-year high school education is required for admission. The course of study covers four years of nine months each. The total fees for each of the first three years are $145, and $170 for the fourth year. The Dean is Dr. H. C. Tinkham. The total registration for 1914-15 was 102; graduates, 41. The next session begins Sept. 29, 1915, and ends June 28, 1916.

VIRGINIA

Virginia, population 2,150,009, has two medical colleges, one the Department of Medicine of the University of Virginia, situated in Charlottesville, population 6,765, and the Medical College of Virginia at Richmond, population 134,917.

Only graduates of medical colleges registered by the Virginia State Board of Medical Examiners are eligible to obtain licenses to practice medicine in this state. Medical colleges to be so registered must require of all students admitted in the sessions of 1914-15 and thereafter, completion of at least one year of collegiate work including college courses in physics, chemistry and biology, in addition to a standard four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. It has a faculty of 14 professors and 22 lecturers, instructors, assistants, etc., a total of 36. The requirements for admission are the completion of a four-year high school course, or its equivalent, and a year of college work devoted to chemistry, physics and biology. In 1917 and thereafter *two years* of preliminary college preparation will be required for admission, including the specified sciences and French or German. Total fees each year are $140; matriculation fee, $10. The Dean is Dr. R. H. Whitehead. The total registration for 1914-15 was 108; graduates, 26. The eighty-seventh session begins Sept. 16, 1915, and ends June 14, 1916.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Marshall and College Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College

of Medicine was merged. In 1914 the North Carolina Medical College was merged. Classes were graduated in 1840 and in all subsequent years. It has a faculty or 45 professors and 88 lecturers, instructors, etc., a total of 133. The requirement for admission is a four-year high school education and in addition *two years* of collegiate work, including courses in physics, chemistry, biology and French or German. The course embraces four years of eight months each. Fees, $164 for the first year and $144 for each subsequent year; graduation fee, $30. The Dean is Dr. Stuart McGuire. The total registration for 1914-15 was 391; graduates, 107, including 52 students of the North Carolina Medical College and 19 who were granted degrees by the latter. The eighty-seventh session begins Sept. 21, 1915, and ends June 6, 1916.

WEST VIRGINIA

West Virginia, population 1,332,910, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 12,239 population.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. One year of work in an approved college of liberal arts is required for admission. In 1917 and thereafter *two years* of college work will be required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 10. Fees: For residents of the state, $25 each year; for nonresidents, $50. The Dean is Dr. John N. Simpson. The total registration for 1914-15 was 19. The next session begins Sept. 13, 1915, and ends June 14, 1916.

WISCONSIN

Wisconsin, population 2,446,716, has two medical colleges, the Medical School of the University of Wisconsin, which teaches the first two years of the medical course, and is located at Madison, a city of 29,469 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 417,054 people.

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL. — Organized in 1907. Gives only the first two years of the medical course. For matriculation at least *two years* in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 11 professors and 14 lecturers, instructors, etc., a total of 25. Tuition fees: For residents of the state, $70 each year; for nonresidents, $170. The Dean is Dr. Charles R. Bardeen. The registration for 1914-15 was 96. The eighth session begins Sept. 20, 1915, and ends June 21, 1906.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, Fourth Street and Reservoir Avenue.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. It has a faculty of 41 professors and 63 assistants, instructors, etc., a total of 104. The entrance requirements include, in addition to a four-year high school education, *two years* of college work, including courses in physics, chemistry, biology and a modern language. The curriculum is for four years of thirty-four weeks each. The total fees for the four years, respectively, are $170, $170, $170 and $195. The Dean is Dr. Louis F. Jermain. The registration for 1914-15 was 125; graduates, 44. The fourth session begins Oct. 1, 1915, and ends June 15, 1916.

PHILIPPINE ISLANDS

The Philippine Archipeligo, having a population (estimated 1914) of 8,460,052, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the Medical Faculty of the University of St. Thomas. They are located in the city of Manila, which in 1910 had a population of 234,409.

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE AND SURGERY, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. Present title in 1910. The faculty includes 22 professors and 44 lecturers, assistants, etc., a total of 66. *Two years* of collegiate work leading to the degree of Bachelor of Arts are required for admission. The course extends over five years of nine months each with an additional sixth year of intern service. The Dean is Dr. William E. Musgrave. The total registration for 1913-14 was 82; graduates, 9. The eighth session began July 1, 1914, and ended March 30, 1915.

CANADA

The Dominion of Canada has nine medical colleges, all but one of which require a five-year course, including in the first year courses in physics, chemistry and biology. This course is practically equal to that in the colleges of the United States which require one year of college work for admission, including the science courses named. None of the Canadian colleges has a fixed minimum requirement of two years of collegiate work, or its equivalent, preliminary to or as a part of the medical course. A new medical school at Edmonton, Alberta, gives only the first two years of the medical course, or three years including the preliminary science year.

Alberta

UNIVERSITY OF ALBERTA, FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Offers only the first three years of the four-year medical course, including the preliminary science year. The faculty numbers 10. Fees for the first year are $60; for the second and third years, each $75. The registrar is Cecil E. Race, B.A. The registration for 1914-15 was 40. The third session begins Sept. 28, 1915, and ends May 17, 1916.

Manitoba

MANITOBA MEDICAL COLLEGE, Winnipeg.—It is the Medical Faculty of the University of Manitoba. Organized in 1883, first class graduated in 1886 and a class graduated each subsequent year. The faculty numbers 69. The fees are $155 for the first year and $150 for each subsequent year. The entire course covers five years, the first year including courses in physics, chemistry and biology. The Dean is Dr. H. H. Chown, 263 Broadway, Winnipeg. Total registration for 1914-15 was 126; graduates, 29. The next session begins Sept. 22, 1915, and ends May 12, 1916.

Nova Scotia

DALHOUSIE UNIVERSITY, FACULTY OF MEDICINE, Halifax, N. S. — Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College in 1855. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the University and the Board, and candidates may quality at the same time for their academic degrees and the provincial license. First class graduated in 1872. It has a faculty of 35 professors, lecturers and demonstrators. Requires matriculation examination and a graded course of five years, including preliminary courses in physics, chemistry and biology. Total fees for the five years, respectively, are $131, $124, $117, $117 and $117. Total registration for 1914-15 was 70; graduates, 12. The Secretary is Dr. A. W. H. Lindsay, 319 Pleasant Street, Halifax, N. S. The next session begins Sept. 8, 1915, and ends May 4, 1916.

Ontario

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. The course of study covers five years of eight months each, the first year including courses in physics, chemistry and biology. It has a faculty of 51 professors and 134 lecturers, associates, etc., a total of 185. The fees are $150 each year; graduation fee $8. The Secretary is Dr. A. Primrose. The total registration for 1914-15 was 568; graduates, 112. The next session begins Sept. 28, 1915, and ends May 27, 1916.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston. — Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the University, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became an integral part of Queen's University. The faculty includes 25 professors and 14 assistants, instructors, etc., a total of 39. The fees amount to $105 each year; fee for M.D., C.M. degrees, $30. The course covers five years of seven months each, the first year including courses in physics, chemistry and biology. The total registration in 1914-15 was 268; graduates, 65. The Dean is Dr. J. C. Connell. The next session begins Sept. 13, 1915, and ends April 26, 1916.

WESTERN UNIVERSITY, FACULTY OF MEDICINE, London.—Organized in 1881, first class graduated in 1883, and a class graduated each year subsequently. The Faculty of Medicine became an integral part of Western University in 1913. The faculty numbers 39. The course is five years of eight months each, the first year including courses in physics, chemistry and biology. The total fees each year are $150; matriculation fee $15; graduation fee $35. The Dean is Dr. H. A. McCallum. Total registration for 1914-15 was 75; graduates, 12. The next session begins Oct. 1, 1915, and ends June 1, 1916.

Montreal

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-39 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. The course extends over five years of eight months each, including the preliminary year devoted to physics, chemistry and biology. The faculty numbers 130. The total fees for the five years respectively are $174, $174, $181, $174 and $204. The total registration for 1914-15 was 390; graduates, 60. The Registrar is Dr. John W. Scane. The next session begins Oct. 1, 1915, and ends June 6, 1916.

MONTREAL SCHOOL OF MEDICINE AND SURGERY, Montreal.—Organized in 1843, incorporated in 1845. In 1891, by act of parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name assumed in 1911. A class was graduated in 1845 and in each subsequent year. The faculty numbers 70. The course extends over five years, including preliminary courses in physics, chemistry and biology. The Dean is Dr. E. P. Lachapelle. The total registration for 1914-15 was 136; graduates, 15. The next session begins Oct. 1, 1915, and ends June 20, 1916.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 24. The fees are $60 each year. The course extends over five years, the first year including courses in physics, chemistry and biology. The Dean is Dr. Edwin Turcot, Quebec. Total registration for 1914-15 was 81; graduates, 13. The next session begins Sept. 14, 1915, and ends June 1, 1916.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, AUGUST 21, 1915

MEDICAL EDUCATION—A REVIEW OF FIFTEEN YEARS' PROGRESS

We publish this week, for the fifteenth consecutive year, complete statistics regarding medical education in the United States. During these fifteen years there has been a most remarkable and encouraging improvement, and it seems worth while to review the measures which have brought about the excellent results.

BEGINNING OF THE CAMPAIGN

In 1900, THE JOURNAL began the collection of statistics regarding medical colleges, students and graduates. The results that first year were so unsatisfactory that the data gathered were not published. The next year, however, the returns were much better and, in 1901, the first Educational Number of THE JOURNAL was published. There were 159 medical colleges included in the statistics. It was a matter of common knowledge that many of the colleges then existing were joint-stock corporations, conducted largely for the profit of their owners. It was also well known that by many of the colleges little or no attention was paid to admission requirements. At that time, little was known regarding the qualifications of the teachers, the possession and equipment of laboratories, or the extent and use made of clinical material. Sectarian medicine had reached its zenith in 1901, there being twenty-two homeopathic and ten eclectic colleges. In all colleges included in the statistics, there was an enrolment of 26,417 students, and of these, 5,444 were graduated.

By the collection and publication of such data, in 1901, a beginning was made in the great campaign for the improvement of medical education. The information published provided a fixed point from which future progress could be measured. It also showed the necessity, and furnished the impetus which led to the creation of a permanent committee of the American Medical Association — the Council on Medical Education — to centralize its efforts in this particular work. The statistics were collected and published by THE JOURNAL annually for five years, however, before the Council began active work.

PROGRESS FROM 1906 TO 1910

Naturally, one of the functions of the Council on Medical Education was that of developing the work begun by THE JOURNAL in collecting and publishing statistics relating to medical education. Permanent files for this information were started, and a careful study of medical education begun. An annual conference was held, to which all organizations interested in medical education were requested to send delegates, and in this way a free floor was established for the discussion of educational problems. In 1906, two educational standards were suggested, one for immediate acceptance, and another, termed the "ideal" standard, for future adoption. To secure more reliable information regarding the work of the various medical colleges in 1907 and 1909, respectively, two complete tours of inspection were made, and the first two classifications prepared, the second of which was published in 1910. A special campaign was carried on in cities in which two or more weak medical colleges existed, urging that such institutions merge and in that way form one stronger institution.

By 1910, the number of medical students had been reduced from 28,142 to 21,526, the number of graduates from 5,600 to 4,440, and the number of medical colleges from 162 to 131. Meanwhile, many of the institutions had undergone a remarkable internal development: better teachers had been employed, better buildings erected, new laboratories established, and better clinical facilities secured. Furthermore, a remarkable improvement had been made in entrance standards. The number of medical colleges requiring for admission, in addition to a high school education, one or more years of collegiate work, had been increased from five to thirty-five, and eight state licensing boards had adopted a similar standard of preliminary education for those who were to secure licenses to practice medicine in those states. Through the inspections and other means of verifying the data collected, the information published each year in the Educational Number was verified and made more reliable. A complete list of medical colleges abroad[1] was also compiled, and later a chart[2] was published showing the educational standards of the European countries in comparison with those of the United States.

PROGRESS FROM 1910 TO 1915

During the second five-year period of the Council's work, between 1910 and 1915, the general study of medical education was continued. The information regarding all medical colleges existing and extinct was perfected sufficiently to enable the publication of a life chart[3] by means of which, for the first time, an accurate knowledge could be had as to the number of medical colleges existing in the United States in any

1. THE JOURNAL A. M. A., Aug. 17, 1907, p. 596.
2. THE JOURNAL A. M. A., Aug. 20, 1910, p. 680.
3. THE JOURNAL A. M. A., Aug. 23, 1913, p. 578.

year since the Department of Medicine of the College of Philadelphia — now the University of Pennsylvania — was organized in 1765. To secure a better record of the history and educational qualifications of medical students, and facts regarding their promotion from class to class, a medical students' register was established. Here, again, the Council has received the hearty support and a gratifying cooperation from the majority of medical colleges. Two other complete inspections of medical colleges were made, and two new classifications published.

During this second five-year period, twenty medical colleges were merged with others, and nineteen became extinct, thus further reducing the total number from 131 to ninety-five. The number of students also was reduced, from 21,526 to 14,891, and the total number of graduates from 4,440 to 3,536. Meanwhile, the number of medical colleges which had adopted the one or two years of collegiate work for admission was increased from thirty-five (27 per cent.) to eighty-three (88 per cent.), and the number of state licensing boards holding to these higher requirements was increased from eight to eighteen. Not only had 88 per cent. of all medical colleges adopted the higher entrance requirements, but also through the reliable information collected by the Council, the methods employed by each college in admitting students, and the strictness with which the standards were enforced were known with fair accuracy. The Council is now in position, therefore, to call attention to faulty methods and "paper standards," which were so common before this campaign for improvement began. The continuous agitation for better conditions in medical education appealed to philanthropists to such an extent that endowments for medical education were greatly increased, and large gifts for medical buildings, new laboratories, scholarships, endowed chairs and teaching hospitals have become of frequent occurrence. In several instances the teaching plants of medical schools — notably the medical schools of Harvard University, Washington University and the University of Minnesota — have been extensively remodeled or entirely rebuilt. A similar reconstruction is under way for the medical school of Columbia University.

The session of 1914-1915 marks an important epoch in the history of medical education in this country, since it witnessed the general adoption of higher entrance qualifications, namely, one or more years of college work, including courses in physics, chemistry and biology. At the beginning of the session, forty-three medical colleges, for the first time, began the enforcement of the higher requirements. The standard which had been termed "ideal" in 1905, therefore, became the essential standard for the session of 1914-1915. Altogether, the progress in the last fifteen years has been remarkable, and especially so since the creation of the Council on Medical Education in 1905. In fact, the progress has far exceeded the highest expectations of those who were acquainted with the serious conditions existing at the time the campaign for improvement began. Many institutions which were conducted for the profit of their owners have been closed; the number of high-grade, well-equipped and well-endowed medical colleges, however, has been greatly increased.

VALUE OF THESE STATISTICS

The first essential for progress in any enterprise is to have an accurate knowledge of the basic facts. The collection and publication of these statistics have enabled those interested in medical education to realize the needs, to note the progress made and to plan for still further improvement. Many medical colleges have been closed in this general reorganization of medical education, and the records of some have been lost. Nevertheless, in the records of the Council on Medical Education, there is definite and official information regarding the students and graduates of most of these, so that their interests are thereby protected. By having accurate information regarding medical graduates, the Council has an excellent means of checking the reports of state licensing boards, thereby making those reports and statistics based on them more reliable. From the information published, the prospective medical student is enabled to make a more intelligent and wise choice of a medical school. Above all, however, these statistics have led to an annual output of an army of better trained physicians — trained to use the latest and best methods in the recognition, treatment and prevention of disease. The public will undoubtedly profit by the change.

THE BODY TEMPERATURE OF EUROPEANS IN THE TROPICS

Opinions as to the effect of tropical heat on the body temperature of Europeans are somewhat conflicting. Some investigators maintain that it is raised by a small amount—less than 1 degree Fahrenheit—and that this rise is ordinarily more marked during the first few weeks of residence in the tropics. On the other hand, many investigators have found the body temperature no higher in the tropics than elsewhere. From observations on the mouth temperatures of 600 United States soldiers serving in the Philippines, made at quarterly intervals during twelve months, Chamberlain[1] reported a mean temperature of 98.7. On two occasions, 473 soldiers observed immediately after drill showed mean mouth temperatures of 98.96 and 98.78, which are in accord with records obtained under somewhat similar conditions of exercise at Vancouver, with an air temperature of 50.

1. Chamberlain, W. P.: Am. Jour. Trop. Dis. and Prev. Med., 1913, i, 12.

Chamberlain concluded that the mean normal temperature for white men living in the Philippines differs very little from that found in the cooler climate of the United States. His figures have recently been criticized by Young,[2] because they were obtained by thermometer readings from the mouth. It is now realized that the mouth temperature is not a reliable index of the internal temperature of the body. The records from the rectum or urine are far more dependable and are almost invariably higher than those obtained by mouth. This would be a minor criticism of the cases in point if the discrepancies between the mouth and rectal temperatures were in the nature of a constant difference. It may actually happen, however, that the effect of exercise may cause the mouth temperature as usually recorded to fall, while the rectal temperature rises, as one would expect immediately after vigorous muscular activity. The mouth cavity is cooled by rapid breathing or environmental influences that do not affect the internal temperature as measured in other places. Young reports that, in his experience, even on waking in the morning, the difference between the average of the mouth and the rectum in some individuals was more than 1 degree Fahrenheit, while the difference was much greater after exercise than when at rest, amounting frequently in certain subjects to as much as 3 degrees.

Fallacious conclusions, accordingly, are liable to follow temperature observations in the mouth alone, even under comparable conditions of bodily activity. Young[2] reminds us, furthermore, that another source of error may lie in the fact that the body temperature of a healthy person varies considerably during the twenty-four hours, even when no voluntary muscular work is performed. With exercise this variation, even in a temperate climate, is much greater, and in a hot climate a considerable rise of rectal temperature is produced by a very small amount of muscular effort. The calculation of a mean body temperature from a series of observations taken at intervals during the day is thus likely to yield very discordant results. Such a mean temperature, moreover, is in itself of little value, since it gives no indication of the changes which may take place; it seems, therefore, more rational to determine the range of variation of body temperature in health.

Taking into account the possible sources of error, Young has reported a new series of observations from the Australian Institute of Tropical Medicine in north Queensland. Tropical Australia differs from most other places in the tropics in that there is practically no black population, and the whole of the work is carried out by white people, who conform to the same working hours as in temperate climates. The climate is a typical monsoonal one, the rainy season occurring during the hot months of the year. The observations were made in Townsville, where from November to April the wet bulb thermometer seldom falls below 70 F. in the daytime, and on many occasions rises above 80. It is sometimes stated that in the tropics, where the inspired air is warm and moist, these differences do not exist, and the temperature of the mouth approximates closely to that of the rectum. But Young has found that the temperature of the mouth of Europeans living in the tropics is often considerably lower than that of the rectum, and this difference is generally much more marked after exercise, just as in temperate climates. The temperature of the mouth is thus not reliable as a measure of the body temperature. During complete rest the rectal temperature did not show any marked variations from the limits of temperature observed in Europe. A considerable rise in the rectal temperature was produced by slight muscular work, and this was usually maintained for some time after the work had ceased. The high rectal temperatures observed throughout the day were due solely to muscular exertion.

2. Young, W. J.: Observations Upon the Body Temperature of Europeans Living in the Tropics, Jour. Physiol., 1915, xlix, 222.

MIXED VACCINES

In recent years the use of drugs in the treatment of the sick has been supplemented to a great extent by the use of serums and vaccines. A commercialism has developed in the sale of these products, however, which threatens to rival that connected with the supplying of drugs, the shotgun mixed vaccines taking the place of shotgun nostrums. The difference is that in the case of vaccines it is the doctor who is directly duped, and not the layman; the latter is unable to use these products as he uses drugs taken by the mouth.

The purveyors of mixed stock vaccines claim that most infections are due to a mixture of organisms. For this reason, they say it is reasonable to use a mixture of several organisms supposedly concerned in the causation of the morbid condition. It is claimed, therefore, that mixed stock vaccines are legitimate and that their use should be encouraged by recognition on the part of the Council on Pharmacy and Chemistry, and that these products should not be placed in the same class with the shotgun proprietary mixture of drugs.

When we consider the infections, the etiology of which is known, there does not seem to be any evidence whatever that they are caused by the action of more than a single organism: is not the diphtheria bacillus the sole cause of diphtheria, the tetanus bacillus of tetanus, the meningococcus of meningitis, the typhoid bacillus of typhoid fever, and so on? For some of these, in addition to the fulfilment of Koch's postulates, we have specific antiserums which, without aid from "the other germs at work," exercise a definite curative effect. It would seem,

then, that instead of few, if any, infections being due to a single organism, the reverse is the case. The mere presence of a multiplicity of organisms in cultures taken from an infected region by no means proves that the symptoms are due to all the organisms.

Before we can justify the use of mixed vaccines at all, it must be proved that the organisms composing the vaccine act in symbiosis. It is true that there is an occasional association of two or more organisms (pathogenic and not saprophytic), but the association in the great majority of cases is accidental, as, for example, when an influenzal meningitis is superimposed on a tuberculous one. When such association has been demonstrated bacteriologically, then, and not till then, might there be justification for using the mixed vaccine; but even in this case there is no good reason why the two vaccines should be mixed and not put up separately, the mode of injection, whether separately or combined, and the dosage to be determined in each particular case. The so-called "bacteriologic diagnosis," endorsed and demanded by the conscientious advocates of vaccine therapy, is entirely out of the question at present in cases for which mixed vaccines are urged by certain manufacturers. The organisms in mixed stock vaccines often are common saprophytic residents of mucous passages, and their mere presence in cultures taken, sometimes none too carefully, from diseased processes of those passages certainly proves nothing, except their presence. Thus, "for the prophylaxis and treatment of common colds, mixed infections of the respiratory mucous membranes, acute and chronic catarrhal conditions of the nose, throat and respiratory organs," this mixture of vaccines is recommended: *Bacillus influenzae, Staphylococcus aureus, Staphylococcus albus,* streptococcus, pneumococcus, *Micrococcus catarrhalis* (group). For pyorrhea practically the same mixture is recommended with the addition of diphtheria bacilli. Equally elaborate mixtures of vaccines are being pushed for the treatment of gonorrhea and its complications, to wit: gonococci, *Staphylococcus aureus, Staphylococcus albus,* streptococci, *Bacillus coli,* diphtheria bacilli. The indications for this mixture are given as gonorrheal epididymitis, acute and chronic gleet, gonorrheal conjunctivitis, prostatitis, rheumatism. Such ready-made mixtures (of killed bacteria or bacterial products—phylacogens) that may or may not contain the vaccine of the real cause of the disease are the modern equivalent of the polypharmacy of old.

The essential basis of "vaccine therapy" is the use of the specific organism or its products, but the use of such preparations has gone far beyond such limitation. We are now advised by commercial houses that, when the specific organism is not known, a mixed vaccine or the mixed products of a number of organisms be used in the hope, it is to be supposed, that one of them may exert some specific action.

It is recognized that the shotgun prescription is unscientific and an admission on the part of its user of his failure to arrive at an accurate diagnosis; the same is true of the mixed stock vaccines. There is the added possibility of harm, because, as expressed by Vaughan, "the parenteral administration of any foreign protein is always attended by the possibility of harm." This warning applies not only to the mixed vaccines composed of the whole killed bacteria but also to the mixed filtered metabolic products of a number of bacteria (phylacogens) which, on account of the possible presence of free toxic products, have additional potentialities for harm.

The absurdity of some of the uses for mixed vaccines, as stated in some of the advertising matter, is nothing short of grotesque: There is a mixed vaccine for hay fever — and the statement is made that pollen irritation favors the development of pathogenic bacteria in the respiratory tract, and that these bacteria then become a primary factor of the disease! (This is reminiscent of the old idea of "bilious" fever "turning into typhoid"!) It is further stated that the immunizing influence of an appropriate bacterin will cure the hay fever or so modify it as to cause little distress!

Vaccine therapy undoubtedly in some cases is a most valuable method of treatment; but when the claim is made that a combination of the dead bodies or the filtered products of a number of different bacteria are useful for the treatment of several diseases, each with a different specific cause, the suggestion closely approaches quackery.

There is no doubt that the use of the shotgun, stock mixed vaccine should be checked and the scientific use of bacterial vaccines encouraged. How may this be accomplished?

Physicians should realize more keenly than is generally the case that the intelligent individualizing use of vaccines requires definite recognition of the causative organism, that is, etiologic diagnosis; and that the claims of those who push the sale of irrational ready-made mixtures must be ignored utterly. It is humiliating that members of the medical profession should allow themselves to be influenced by the scientific jargon which the vaccine maker uses with an air of authority.

Manufacturers should be required to state on the label whether the product is experimental or of established value, and the federal law regulating the sale of serums, vaccines and similar products should be amended to give the Public Health Service authority to prevent interstate sale and shipment of worthless and possibly harmful biologic products, the burden of proof to be on the purveyor.

Those reputable manufacturers who attempt to do an honest business in spite of dishonest competition

should be upheld and supported. Unscrupulous manufacturers will then find unprofitable their attempts to foist on our profession non-potent, and in many cases harmful, products of this class.

To emphasize again, the use of the mixed stock vaccines of commerce is irrational because it is based on the conception that infections are caused by more than one kind of micro-organism; it is harmful because it encourages superficial examination, slipshod diagnosis and routine treatment without individualization; it is unnecessary because, when the physician desires to use more than one vaccine, he can inject them separately or mix them at the time of injection in such dosage as he chooses.

MAKING THE RIGHT START

For the student who has decided to study medicine the first and most important step is the selection of a medical school; a false step here may handicap him for life. Fortunately, as already stated,[1] never before has there been available so much reliable information to guide him.

Before choosing a medical school the student should obtain information on several important points: its requirements of preliminary education; the character of its teaching; whether or not its diplomas are recognized in all states, and the tuition fees charged.

Low entrance requirements by a medical school may attract some students. It is important, however, for the student to make sure that his preliminary education is sufficient to meet the requirements of the state licensing boards of the country. He should know that at the present time ten[2] state licensing boards require that before beginning the study of medicine the student must have completed two years of work in a college of liberal arts, in addition to a four-year high school education, and that the boards of eighteen other states[3] require at least one year of such preliminary college preparation. Although he may not at first be seeking a license in one of these twenty-eight states, he may later miss a great opportunity by being thus debarred. He should know also that all the better medical colleges[4] now require this higher preliminary education since — most important of all — the student needs it to grapple intelligently with the difficult and complex subjects of the modern medical course. Lower entrance requirements by any medical college, therefore, should be regarded as an indication that the medical training furnished will be correspondingly low.

A generation or two ago almost any medical course was adequate to cover the medical knowledge of the time. Not so at present. Modern medicine is based on scientific knowledge and without this knowledge the physician of the future will be a failure. Adequate instruction in medicine can now be given only by expert teachers, with well-equipped laboratories, and in connection with dispensaries and hospitals which provide an abundance of clinical material.

Formerly a course in almost any medical college furnished an adequate qualification for the license to practice medicine in all states. This has also been changed. At the present time state licensing boards are making more use of their power to discriminate between medical colleges and to refuse recognition to those which are deemed not properly qualified to furnish a training in modern medicine. Diplomas from those not recognized, therefore, do not constitute acceptable qualifications for the license to practice medicine in such states. The student must make sure not only that he has adequate preliminary education, but also that he has secured his medical training in a college which is recognized in all states.

The student is, of course, bound to consider the expense of his medical training, and herein lies the bait by which some inferior colleges which profess deep interest in "the poor boy" endeavor to attract students. If the training is not thorough and up to date, the student should know that the training furnished will be a mighty poor investment at any price. As a matter of fact, and as shown in the statistics published this week, the total fees charged by many of the best medical colleges, particularly the medical departments of some state universities, are lower than those charged by some of the poorly equipped proprietary institutions. In the same length of time, therefore, and often for even lower fees than he would pay in a poorly equipped institution, the student may acquire his education in one of the best medical colleges of the land. If some of the better schools do charge higher fees, they spend on each student per year several times the amount of money that the student pays for tuition. This they are able to do because of endowments or state aid. It would be poor economy, therefore, for one to enter a low-grade college which depends on students' fees alone for its income, when for a few additional dollars each year one can enter a thoroughly equipped institution and get a far better medical training. Even if one should be required to work one's way through, in whole or in part, the opportunities for doing so are usually greater in the better than in the lower standard colleges. As a rule, however, it is the student who works his way through who appreciates not only the value of money, but also the value of the medical course he is getting. It is not surprising, therefore, that many such students are found in the

1. Choice of a Medical School, editorial, THE JOURNAL A. M. A., Aug. 22, 1914, p. 690.
2. These states are Alabama, Colorado, Indiana, Iowa, Minnesota, New Hampshire, New Jersey, North Dakota, South Dakota and Wisconsin.
3. These states are Arkansas, California, Connecticut, Illinois, Kansas, Kentucky, Louisiana, Maryland, Michigan, Mississippi, Oklahoma, Pennsylvania, Rhode Island, Texas, Utah, Vermont, Virginia and Washington.
4. Listed on page 704.

high-grade medical colleges. As previously shown,[5] there are now about 170 free scholarships, as well as generous loan funds, available in the better medical colleges for deserving students.

How may the student secure reliable information on these matters? Some medical colleges advertise extensively in newspapers and popular magazines and through announcements and circulars containing glowing, if not misleading, statements. At present certain medical schools are being thus advertised, even though their diplomas are not recognized in from twenty-five to thirty-two states![6] It is hardly to be expected that the announcements sent out by these schools will contain the information which the prospective medical student needs. It is essential, therefore, that he should secure information from impartial and reliable sources, so as to make sure he is not enticed into a low-grade institution and find on graduation that his diploma has but limited value. To inform himself thoroughly, therefore, he should first secure the announcements of a number of colleges and study these. But, at the same time, he should secure reliable information from other sources. He should read the reports on medical colleges published from time to time in The Journal by the Council on Medical Education, which can be obtained in reprint form. After an extensive investigation the medical schools of the country have been rated by the Council in three classes, namely, A, B and C. If the student is otherwise in doubt, he will not make a mistake by choosing one of the colleges contained in the higher classification. If he has earned his diploma at a college in the higher classification which required for admission two or more years of college work, in addition to a four-year high school education, there is no doubt regarding either the quality of the training obtained or his eligibility after graduation to obtain a license in any state he may choose.

In his preliminary and medical education the student should bear in mind that he is laying the foundation for the rest of his life. If he finds that additional preliminary education is needed to enter one of the better medical colleges, he should consider the time well spent, since he is all the more sure of having laid a solid foundation. Although the medical profession in this country is overcrowded, there is always room for the thoroughly competent. On the other hand, disappointed indeed will he be if because of lower entrance requirements or other allurements he is induced to get his training in a poorly equipped college and finds after graduation that he is handicapped for life.

5. Scholarships in Medical Education and the "Poor Boy," Current Comment, The Journal A. M. A., Feb. 13, 1915, p. 597. This contains a list of the medical colleges which provide free scholarships.

6. For table showing in what states diplomas granted by the various medical colleges are not fully recognized, see The Journal A. M. A., April 24, 1915, p. 1412.

GASTRIN

The discovery by Bayliss and Starling, in 1902, of secretin, a specific chemical stimulant to pancreatic secretion, has been the starting point of much valuable investigation and not a little fruitful speculation in physiologic science. It furnished an example of the stimulation of one organ by a chemical product formed in another, and this led Starling to propose the general term "hormone" to designate substances which act thus at long distance by being transported in the circulation. Soon afterward Edkins, in 1906, expressed the belief in the existence of a comparable gastric secretagogue which he designated gastric secretin, or gastrin. This product was believed to be formed by the contact of certain substances with the pyloric mucous membrane, and to be carried, after absorption into the blood stream, to the gastric glands, stimulating them to secretion.

The main experimental facts on which these conclusions were based have since been substantiated by other workers. As yet no one has succeeded in preparing either secretin or gastrin in a form approaching chemical purity, and much of the controversy attached to the questions raised by these important discoveries has centered in the real specificity of the exciting substances isolated thus far. Tissue extracts are in general likely to furnish products capable of lowering arterial blood pressure. Accordingly, vasodilation has been held responsible by investigators here and there for the resulting secretory activity. If a common pressure-lowering tissue constituent were the sole factor involved in the striking phenomenon of an increased flow of gastric juice observed after injection of so-called gastrin extracts, one would expect a rather widespread distribution of the exciting agent. This appears not to be the case. According to the latest reports in this field,[1] the gastrin is not confined to one part of the stomach, as Edkins and others believed, but is uniformly distributed throughout the stomach mucosa. Gastrin is found in much smaller concentrations in the duodenum, and its presence can just be demonstrated in the esophagus. Preparations of other parts of the body — pancreas, submaxillary glands, smooth and striated muscle — are without special effect on gastric secretion.

Keeton and Koch[1] believe that gastrin causes a true gastric flow rather than a simple vasomotor response. This is a logical conclusion from the fact that an intramuscular dose of gastrin which causes a fall in blood pressure lasting over four or five minutes may excite a secretion of a duration of an hour and a half, with a maximum flow between thirty and forty-five minutes following the injection. These investigators further conclude that gastrin is of a chemical nature different from that of pancreatic secretin, and that it

1. Keeton, R. W., and Koch, F. C.: The Distribution of Gastrin in the Body, Am. Jour. Physiol., 1915, xxxvii, 481.

is a specific substance. Lest the therapeutist become unduly impatient, it may be added that immediately practical possibilities arising out of these findings have not yet been developed.

Current Comment

TRAINING OF MEDICAL MISSIONARIES

Inquiries have come to THE JOURNAL from time to time requesting information regarding medical schools which "will give condensed courses in medical training such as will furnish sufficient medical knowledge for a foreign missionary." These inquirers have usually urged that there is "not time for a full and complete medical course," and that since they are going to practice among the heathen, a thorough medical training does not appear essential. It is an encouraging contrast, therefore, to note that the fourth report of the Board of Missionary Preparation, just received, urges that those intending to take up the work of medical missionaries "should be fully prepared according to the highest medical standards" — "should be graduates of medicine from some first-class medical college." The soundness of this advice is clear. The farther a physician goes from medical societies and medical institutions, the more he must depend on his own knowledge and resources. For that reason, instead of securing a smattering of medical knowledge, a thorough medical training becomes all the more important. The majority of graduates of low-grade medical colleges stay in the larger cities, where, if they get into a tight place, they can transfer their responsibility to others. The medical missionary who goes where few physicians are found needs the most thorough training possible. All the more reason, therefore, why he should have been taught by the best teachers, in colleges with the best-equipped laboratories, and where he has had an opportunity to observe all forms of disease at the bedside, in dispensaries and in hospitals. If he is conscientious in the work he has undertaken — and his calling implies that — he will naturally desire to have the training which will enable him to render the greatest service to the portion of humanity in his charge, from both the physical and moral standpoints.

THE HOSPITAL INTERN YEAR

An article by Dr. Ewing, in this week's issue,[1] should be read by those who are interested in the development of the medical curriculum. Dr. Ewing deals with the subject from the broad standpoint of the effect of the hospital intern year on the medical curriculum; but the importance of the hospital internship to the public should not be forgotten. Investigation shows there are enough fairly good hospitals to provide internships for all medical graduates, and that from 75 to 90 per cent. of all graduates voluntarily take such hospital service. These graduates naturally look for the best hospitals. Hospitals, also, need interns, and naturally prefer the graduates of the better medical colleges. It is claimed that some hospitals are not conducted in such a manner as to give the intern a satisfactory training. This is doubtless true, and it is a matter which needs correcting. On the other hand, the hospitals claim that graduates of some colleges are not adequately trained to make satisfactory interns. This is also true, and is rapidly being corrected. As medical colleges turn out better-trained men, hospitals will be able to obtain better interns, who, in turn, will help to improve the hospitals. The standards of some hospitals may, indeed, have a depressing effect on the intern; but if the student has any strength of character, instead of this relationship resulting in a lowering of his ideals, it will result in improved conditions in the hospital. Instances could be given, in fact, in which the routine in hospitals has been revolutionized and the efficiency of the service enormously increased through the influence of well-educated interns. It is conceded that he who completes an internship in a good hospital makes a better and safer practitioner than he who goes directly into practice without that training. In the former case he learns to apply his medical knowledge while he is under the supervision of the hospital staff, and benefits from his acquaintance with the hospital routine and the methods of treatment employed. Since there are enough hospitals to provide internships for all graduates, and since so large a majority of graduates already obtain these internships, the question of greatest importance, apparently, is how to improve both hospitals and colleges to make these internships of greater value, not only to the intern and to the hospital, but also — ultimately — to the public.

1. Ewing, James: The Hospital Intern Year as a Requirement for Medical Licensure, THE JOURNAL A. M. A., this issue, p. 670.

THE WORKING OF THE LEAVEN

Under the title, "Medicine Man Quits With $1,000,000," the Brazil (Ind.) *News* for August 5 prints a news item that will interest many JOURNAL readers. Here it is:

"KOKOMO, *August 5.*—The Cora B. Miller Medicine Company, known over the country because of its extensive magazine advertisements of a cure for the complaints of women, today discharged its small army of stenographers and other employees and then closed its doors to business. The closing came as the result of a fraud order issued recently by the Postoffice Department, which denied the use of the mails to the circular advertising matter of the company.

"According to Dr. Frank Miller, who started the business twenty-five years ago, when he was practically penniless, the company will never again do business. Miller is now worth from $900,000 to $1,000,000.

"For the first twenty years of the business, there was no interruption, and the money poured into the coffers of the company from women of the country. Four years ago, however, the government took exception to the use of the name Cora B. Miller in connection with the advertising, inasmuch as Mrs. Miller had no connection with the company, and the firm was forced to change names.

"The change marked a turning point in the affairs of the company, and when recently the government brought a fraud order against the company, Miller decided to quit the business. Miller is the largest holder of real estate in Kokomo."

Readers of THE JOURNAL will remember the Cora B. Miller fraud which was exposed in the Propaganda

department July 23, 1910, and the matter reprinted and widely circulated in pamphlet form.[1] The newspaper quoted above credits the failure of the Miller concern to the fact that the federal authorities caused it to change its name from "Mrs. Cora B. Miller" to "Miller Medicine Company." That this change probably had something to do with the decline of the business is doubtless true. Another agency, however, has been at work, and tended to make the Miller fraud less profitable. A good many thousand reprints of The Journal's exposé have been circulated. The public generally, and especially the feminine part of it, has been wholesomely awakened to the wretched swindles that have been, and still are, perpetrated on it by "patent medicine" fakers. The American Medical Association, therefore, may certainly take some of the credit for bringing about the consummation that resulted in Miller retiring from his fraudulent trade. And here we have one more explanation of the fact that certain individuals froth at the mouth whenever the American Medical Association and The Journal are mentioned.

PERTUSSIS AND VACCINATION

A word of commendation should be accorded the New York Department of Health for its appeal to the physicians of New York for their collaboration in the more extensive use of vaccine in the treatment of pertussis. This disease, "which kills yearly ten thousand American children," occupies a unique position among the infectious diseases, in that its onset is indefinite, its duration particularly long, and its seriousness not at all appreciated by the public. The basis for this appeal is in the favorable results in the prophylactic use of the vaccine already reported. It would be well if the collaboration were given still wider scope and were extended to other large municipalities so that we could determine without undue delay the possibility of reducing the morbidity and mortality of this disease.

1. This now appears in the pamphlet "Female Weakness Cures and Allied Frauds," price 10 cents.

Attacking the "Patent Medicine" Citadel of Secrecy.—The Bulletin of the New York City Department of Health says: The Louisiana State Board of Health has adopted verbatim the ordinance enacted by the Board of Health of The City of New York in December last, regulating the sale of proprietary and patent medicines. This ordinance, as our readers will recall, will become effective in New York City on December 31, 1915. It requires either the registration of the names of ingredients of all proprietary or patent medicines with the board of health, or, in lieu thereof, the printing of the name of each ingredient "conspicuously, clearly and legibly in English, on the outside of each bottle, box or package in which the medicine or medicinal compound is held, offered for sale, sold or given away." We are advised that the City of Cincinnati has under consideration the enactment of this same ordinance, and that similar legislation is being considered in Indiana, Minnesota and other Western states. We are hopeful that in due time New York city's ordinance will become effective throughout the country through the action of the respective local authorities, and will thus have all the force and effect of a national law. The real need of the country is national legislation on this subject; but in the absence of national legislation, it is gratifying to know what progress can be made by means of local legislation.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ARKANSAS

Colored Physicians Organize.—The Southwestern Arkansas Society of Colored Physicians, Dentists and Pharmacists was organized at Hope, July 14, and the following officers were elected: president, Dr. J. E. Swayze, Arkadelphia; vice president, Dr. Isaac B. Jordan, Hope; secretary, Dr. George A. Forde, Malvern, and treasurer, Dr. W. E. Thompson, Ph.G., Hope.

Personal.—Dr. Steven W. Harrison, Fort Smith, formerly president of the Arkansas State Medical Association of Physicians, Dentists and Pharmacists, has been elected delegate to the National Medical Association, Chicago.——Dr. W. O. Clark, Pine Bluff, has closed the Clark Sanitarium for three weeks and will do postgraduate work in Chicago and Rochester.

GEORGIA

Hospital Notes.—A commission to govern the Macon Hospital was elected at a meeting of the common council, June 29, but the plan for a joint city and county hospital has been abandoned.——The Atlanta Physicians' Club, at a special meeting, July 21, unanimously endorsed the proposed bond issue of $500,000 for improvements at the Grady Hospital. The resolutions adopted provided that the hospitals be maintained solely as a charitable institution and the pay wards be abolished. The Fulton County Medical Society at its meeting, July 15, also went on record as favoring the bond issue.——Dr. Robert M. and William P. Harbin, Rome, have applied for a charter for the incorporation of the Harbin Hospital with a capital stock of $20,000 with the privilege of increasing to $100,000.

ILLINOIS

Field Hospital Goes to Camp.—The Field Hospital No. 1, Illinois National Guard, under the command of Major William J. Swift, M. C., left for Camp McCoy, Sparta, Wis., August 12. They will remain in camp twelve days and will be under the instruction of Major William W. Reno, M. C., U. S. Army, commanding Field Hospital, Company and Ambulance Company No. 1.

Sanatorium Bids Authorized.—At a meeting of the Rock Island City Council, July 28, plans and specifications for the Rock Island Municipal Tuberculosis Sanatorium were submitted by the architect and accepted. The building is to cost about $25,000 and will be of brick structure, of cottage style of architecture and will have accommodation for thirty-two patients.

Rules Governing Contagious Diseases.—The State Board of Health has published a series of pamphlets showing the officially adopted rules for the control of contagious diseases, as in force on and after February 16. These include "general rules for the control of communicable diseases;" "scarlet fever," "whooping cough," "typhoid fever and typhoid carriers," "smallpox," "measles," "chicken-pox," and "diphtheria."

Civil Service Examinations.—An examination will be held on September 2, by the Cook County Civil Service Commission at Room 547, County Court House, for the position of resident physician at the Psychopathic Hospital. The pay is $100 a month and maintenance and the resident physician is required to live at the institution, and is held responsible for the medical treatment of the inmates and the enforcement of the rules of the institution under the supervision of the county physician.

Illinois at the Mississippi Valley Tuberculosis Conference.—At the request of the governor of Indiana, Governor Dunne has appointed twenty-five delegates to represent Illinois at the Mississippi Valley Tuberculosis Conference which will be held at Indianapolis from September 29 to October 1. This conference, consisting of delegates appointed by the governors of the entire central section of the United States, devotes itself to the discussion of the practical problems of the warfare against tuberculosis and outlines the methods to be employed in the various states.

Chicago

Sachs to Be Reappointed.—Apparently authoritative word from the city hall states that Mayor Thompson will reappoint Dr. Theodore B. Sachs, head of the Municipal Tuberculosis Sanatorium.

Personal.—Dr. Frank W. Lynch, assistant professor of obstetrics in Rush Medical College, has been made professor of gynecology and obstetrics and head of the department, in the University of California, and will leave to take up his new duties September 1.

INDIANA

Infant Welfare Dispensaries Opened.—The City Board of Health, Indianapolis, in order to decrease the infant mortality during the summer has opened up six welfare dispensaries at which the proper methods of caring for children will be demonstrated. The Children's Aid Association will distribute pure milk. During the first six months of the school-nursing system, nine school nurses have been employed and more than four thousand calls have been made to the homes of schoolchildren.

Charges Against Elwood Physician.—Dr. John F. Spaunhurst, Indianapolis, a member of the State Board of Medical Registration, is said to have filed two affidavits in the circuit court charging Fred H. Prechtel, a chiropractor of Elwood, with practicing medicine without a license. It is claimed in the charges that Prechtel is not a registered physician. The penalty prescribed for violation of the medical registration law is a fine of not less than $25 and not more than $200.

Investigation of Mental Deficiency.—The governor has appointed a commission to investigate the causes and prevention of mental deficiency in the state. The medical members of the commission are Drs. George F. Edenharter, superintendent of the Central Indiana State Hospital, Indianapolis; Samuel E. Smith, superintendent of the Eastern Indiana State Hospital, Richmond; Charles P. Emerson, dean of the Indiana University School of Medicine, Indianapolis; Walter C. Van Nuys, superintendent of the Indiana Village for Epileptics, Newcastle; and Dr. George S. Bliss, superintendent of the State School for Feeble-Minded Youths, Fort Wayne.

IOWA

State Health Exhibit.—The State Board of Health is planning a state health exhibit to be sent around the state in a special car similar to that of the Louisiana Board of Health.

Personal.—Dr. Walter L. Bierring, Des Moines, president of the Iowa State Board of Health, succeeds Dr. Otto V. Huffman as secretary-treasurer of the Federation of State Medical Boards and will be the editor of the federation's *Monthly Bulletin.*

Hospital Notes.—Professional and business men of Marengo are arranging for the establishment of a city hospital in that city. A site has been located and plans and specifications have been prepared.——Capt. W. M. Greeley announces that he will build a hospital in Ames as a memorial to his wife, the late Mary Greeley.

MICHIGAN

Leper in Glenwood.—John C. Hopper, a farm laborer living near Glenwood, has been found to be suffering from leprosy.

The Care of Babies.—The July issue of *Public Health*, the official publication of the Michigan State Board of Health, is devoted almost entirely to the care of babies and children.

Tuberculosis Day.—August 20 was named by the governor as Tuberculosis Day, on which he requested that all physicians of the state give free medical examination to all who were suspected of being afflicted with tuberculosis. The medical societies and the medical profession at large lent their cooperation.

Free Treatment of State Crippled.—During the last year more than 700 children have been treated free of charge at the University Hospital, Ann Arbor, under the state law of 1913, which provides for the medical and surgical treatment of children afflicted with curable maladies or deformities, whose parents are unable to provide proper care or treatment.

Antituberculosis Convention.—The annual meeting of the Michigan Society for the Relief and Prevention of Tuberculosis will be held in Grand Rapids, September 2 to 4. Dr. Victor C. Vaughan, dean of the Medical School of the University of Michigan, will deliver an address on "Campaigns on Tuberculosis in Michigan" and will discuss the best method of using the $100,000 appropriated by the legislature for the suppression of tuberculosis in the state.

Personal.—Dr. Ralph C. Apted, city physician of Grand Rapids, is still under treatment in the Augustana Hospital, Chicago, and is reported to be improving rapidly.——Dr. Walter C. Lambert, Wyandotte, in an effort to avoid a collision with a motor cycle, lost control of his automobile, which crashed into a tree throwing Dr. Lambert out, fracturing his jaw and causing serious injuries to the chest. ——Dr. Ferris N. Smith, Grand Rapids, sustained a badly lacerated ear August 31, by the overturning of his automobile near Ionia.——The governor is said to have demanded the resignation of Dr. David L. Trear, Adrian, a member of the Board of Control of the State Public School, Coldwater.——The city council of Negaunee has appointed Dr. Carl J. Larson full-time health officer.—— Dr. Robert M. Gubbins, Ceresco, is said to be in a critical condition at the Battle Creek Sanatorium following an operation for the removal of gallstones.——Dr. Orson Millard has been appointed a member of the Flint Hospital board.——Dr. Calvin R. Elwood, Menominee, returned home July 5, after a trip to New York for consultation regarding his eyes.——Dr. Pierce O. Wagener, Harbor Beach, was seriously injured in a railway accident at Rock Falls, August 6.——Dr. Harry A. Haze, Lansing, has been appointed a member of the Board of Control of the State Public School, Coldwater.

MINNESOTA

New Hospitals.—Construction work on the Government Hospital for the Indians on the Fond du Lac reservation near Cloquet began July 31.——A house has been purchased in Lake City which will be remodeled and used as a hospital.

Directory of Tuberculosis Houses.—The health department of Minneapolis announces that it has prepared a list of houses in which tuberculosis patients have lived. This plan is commended as affording greater protection to public health.

Dispensary to Move.—As soon as the alterations to Millard Hall, the central building of the Minnesota Medical College, have been completed, the university will remove its free dispensary from Seven Corners, Minneapolis, to the Hall and thereby make the services of the dispensary more available to patients from the Twin Cities.

NEW JERSEY

Personal.—Dr. Edward Guion, for twelve years chief health officer of Atlantic City, has resigned, his resignation taking effect August 1.——Dr. John W. Wade, president of the Millville Board of Health, is ill and has been taken to a Philadelphia hospital for operation.

Vaccination Law Held Mandatory.—Based on the theory that to give a board of education a prerogative in the matter of adjudging the efficacy of vaccination as a preventive of smallpox vouchsafed to no other public body in the world outside of state legislatures, Commissioner James G. Enright, Jersey City, of the State Department of Public Instruction, August 3, dismissed the appeal of Clarence S. Curtis, whose son was excluded from the public schools of that city because of his refusal to permit the boy to be vaccinated. Mr. Curtis is opposed to theory and practice of vaccination and wanted the local authorities to give him a hearing. As the statute is mandatory, Commissioner Enright pointed out that the contention of Mr. Curtis could not be entertained.

NEW YORK

Huffman Moves to Brooklyn.—Dr. Otto V. Huffman, formerly secretary of the New York State Board of Medical Examiners and secretary-treasurer of the Federation of State Medical Boards, has moved from Albany to Brooklyn. Dr. Huffman has accepted the lectureship on physical diagnosis at Long Island College Hospital, and will serve as secretary and executive head of the college faculty. No successor to the position left vacant at Albany has been appointed.

Plans for Rochester Health Conference.—The *Monthly Bulletin* of the New York State Department of Health announces that plans are being carried forward for a Health Conference in Rochester September 6 to 10 which it is

believed will be a notable public health convention. Organizations which will cooperate are the American Public Health Association, the New York State Department of Health, the New York State Sanitary Officers Association and the Rochester Public Health Association.

State to Keep Hospital Commission.—The proposed amendment continuing the present State Hospital Commission as a constitutional body in control of the administrative and financial operations of the state hospitals for the insane which has been before the committee on charities of the constitutional convention has been reported favorably. The committee is opposed to proposals for a board of control for all the institutions of the state. In his report to the convention, Chairman Wadsworth pointed out that the hospital commission looks after 33,000 patients in fourteen hospitals, with 6,000 employees and 200 medical officers, at a cost of $8,500,000 a year. It is stated that this is the largest undertaking of a medical and curative nature maintained by any government in the world and that at the present rate of increase when the next constitutional convention meets the number of insane in the state will have reached 60,000 and the number of employees, 10,000.

Labor Unions Cooperating with Public Health Campaign.—Last April Health Commissioner Hermann M. Biggs sent out a letter to some of the principal labor unions of the state offering the services of the department lecturers to speak before labor union meetings on health topics, particularly tuberculosis, and asking the unions to cooperate by appointing health committees to aid in the general and local health campaign. A special circular was prepared dealing with the problem of industrial tuberculosis and the weekly *Health Hints* service of the department has been offered to the principal labor papers of the state. These steps have met with a gratifying response from the leaders of labor unions and a considerable number of meetings have been arranged. A number of the labor union papers have expressed their interest in the *Health Hints* service and will use them when possible. The Joint Board of Sanitary Control of New York City has ordered 10,000 copies of the special circular on industrial tuberculosis for use among the members of the cloak, suit, skirt, dress and waist industries.

New York City

Personal.—Dr. Daniel A. Sinclair and Dr. Joseph B. Bissell have returned from England.——Dr. George E. Brewer has returned from France, where he has been giving his services in hospital work among the wounded.——Dr. Andrew J. Gilmour in company with Professor Helvey successfully scaled Mount Geike, one of the most precipitous peaks in the Selkirk range, on August 12.

Gifts and Bequests.—After some litigation it has been decided that the Knickerbocker Hospital is entitled to $580,000 from the estate of Mrs. Mary R. Wright. The hospital was formerly known as the J. Hood Wright Hospital, the name having been changed to attract support from other sources since the Wright estate was insufficient to meet the growing needs of the institution.

Ward for Accident Cases.—The managers of the Norwegian Hospital, Brooklyn, have arranged for the construction of a $10,000 ward for the care of accident cases. This step has been taken because of the increase in accident cases in the industrial section of Brooklyn where the hospital is located. Since the industrial concerns in the neighborhood will receive the chief benefit from such a ward the managers are organizing a fund to which these concerns will be asked to contribute.

Health Talks in Stores.—The directors of the Retail Drygoods Association have voted to establish a committee on health and sanitation to cooperate with the department of health in protecting the health of the 50,000 employees of the retail drygoods stores in this city. The owners of large department stores are planning to secure the best working conditions for those in their employ. The Bureau of Public Health Education, under the direction of Dr. Charles F. Bolduan, will establish a course of lectures and a publicity campaign for the purpose of teaching employees how to be healthy and sanitary.

NORTH CAROLINA

Hospital Chartered.—The secretary of the state has issued a charter to the Mary Elizabeth Hospital Company, Raleigh, with an authorized capital stock of $25,000.

Traveling Health Exhibit.—The entire public health exhibit of the North Carolina State Board of Health, will be shown at the various county fairs in central North Carolina and also at the State Fair, Raleigh.

Vaccination for Typhoid in Durham.—Dr. Archibald Cheatham, health officer of Durham, reports 4,263 inoculations for typhoid fever. The county will soon establish a laboratory for the joint use of Durham and Durham County.

Personal.—Dr. C. DeWitt Colby, Asheville, sustained painful injuries in an automobile accident last week.——Dr. Hugh W. McCain, High Point, has acquired the interest of Dr. Guy F. Duncan in the High Point Hospital and has associated with him Dr. John T. Burrus in the management of the institution.

Anonymous Infants.—A recent checking of the records of the State Board of Health shows that not less than 72,000 births have been recorded without the name of the child having been given. The board therefore, requests practitioners to make a special effort to impress on parents the importance of having the name ready when the time for filing the certificate comes, in order that the vital statistics records may be complete.

Sanitary Prison Camps.—The last bulletin of the State Board of Health, reporting the findings of a recent inspection of ten of the convicts camps of the state, says that of these ten camps, six did not have sufficient air; only three were not infected with bed bugs; three were without furniture; in three the convicts had no night shirts; in eight two sheets were not provided and in five, no towels were provided. In two camps all the prisoners had been vaccinated against smallpox and typhoid fever and in two there were tuberculosis patients in the camp. The rating of the camps showed that the best camps scored only 77 points while the worst scored 39.3 points, the average being 56. As the result of this inspection, bimonthly inspections are to be made by the State Board of Health and score charts will be kept from which the rating of the camps will be computed.

OHIO

Society Reorganized.—The Monroe County Medical Society, at a meeting held in Woodsfield, July 2, reorganized electing Dr. Alexander H. Korner, Woodsfield, president; and Dr. William E. Thompson, Antioch, secretary-treasurer.

Research Work in Tuberculosis.—Dr. Robert H. Bishop, Jr., chief of the Cleveland Bureau of Tuberculosis, has arranged for the establishment of a laboratory at the Warrensville Sanatorium, at which research work may be carried out.

Patients Transferred to Lima.—Dr. Charles H. Clark, superintendent of the State Hospital for the Criminal Insane, Lima, has already received 300 patients and announces that he can take care of 100 additional each week until 1,000 have been transferred.

Health Campaign.—The State Board of Health is making an aggressive educational campaign this summer against preventable diseases. Dr. R. G. Patterson, director of the division on public health education and tuberculosis, has arranged to show the state exhibit at a number of county fairs from August 10 to October 5, staying a week at each place and at the State Fair.

Nonmedical Healers Must Be Licensed.—The Platt-Ellis Bill became operative August 1. This bill provides for the registration of all nonmedical healers including chiropodists, chiropractors, masseurs, and those who practice spondylotherapy, neurotherapy, naprapathy, hydrotherapy, psychotherapy, and other nonmedical cults. The new law does not affect osteopaths or Christian Scientists.

Personal.—Dr. Shelby Mumaugh, Lima, sustained a compound fracture of the right leg and injuries to the left arm in a collision between the automobile in which he was riding and a Pennsylvania train, three miles west of Lima, August 1.——Dr. Charles W. Wendelken, for three and one-half years city physician of Portsmouth, has resigned to take effect August 2.——Dr. Paul D. Epsey, Fort William, has purchased the Whitehead Hospital, Xenia, and will take charge of the institution this month.——Dr. Benjamin P. Hall, Richwood, is ill with gallstone disease in the Grant Hospital, Columbus.

PENNSYLVANIA

Personal.—Dr. Harry A. Briney, Pittsburgh, received slight injuries in an automobile collision August 6.——Dr. George W. Dreher, Shamokin, is convalescent after a long period of illness.

Soft Drink Manufacturers Arrested.—The increasing demands for nonalcoholic drinks during the hot weather has increased the number of adulterated soft drinks and thirty-five arrests were made because of saccharin additions to the drinks during the month of July. Most of these prosecutions were brought in Philadelphia, Lancaster, Beaver, Dauphin and York counties.

Federal Investigation of Occupational Diseases.—The federal government has opened offices and laboratories for the investigation and study of occupational diseases in the Pittsburgh district. Dr. Joseph W. Schereschewsky of the Public Health Service has been placed in charge and has removed with his family to Pittsburgh. Headquarters will be at the Marine Hospital, where rooms are being fitted up. There will be four laboratories, the chemical, physiologic, bacteriologic and physical. This new Public Health Service station will have also, five assistants, who will take up the study of fatigue, and its relation to temperature and humidity in the mills and workshops of the Pittsburgh district.

SOUTH CAROLINA

Sanatorium Opened.—The Greenville County Sanatorium for Tuberculosis near Piney Mountain was formally opened August 4. The principal address was delivered by Dr. James A. Hayne, Columbia, secretary of the South Carolina Board of Health.

Sanitary Survey of Capital.—Application has been filed by Dr. S. Koffowe B. Fishburne, health officer of Columbia. with the State Board of Health, that a sanitary survey of Columbia be made as soon as possible by the United States Public Health Service.

Hospital News.—Rev. Lewis J. Bristow, Abbeville, has resigned to become superintendent of the South Carolina Baptist Hospital, Columbia. Mr. Bristow is responsible for the establishment of this hospital.—Excavation, preparatory to the erection of St. Mary's Hospital, North Anderson, was commenced July 28.

Pellagra in Orphanage.—Of the 250 children at the Epworth Orphanage, Columbia, between 75 and 100 are said to be afflicted with pellagra. To combat this disease, the board of trustees have asked the cooperation of the United States Public Health Service, and Surgeon Joseph Goldberger has been assigned to take charge of the cases and to direct the diet and medical treatment of the patients.

State Hospital Policy.—The Board of Regents of the State Hospital for the Insane, at its meeting July 29, fixed its policy regarding the liability for the support of inmates of the institution. When the inmate has any estate or income, he is to be regarded as liable for his support; a father is to be liable for the support of his minor child and the husband for the support of his wife. When relatives of inmates are financially able to contribute to their support, it is the policy of the board to attempt to induce such relatives to assume in whole or in part the support. The board fixed $250 as the annual amount required for the support and treatment of a patient.

TEXAS

Library Installed.—A medical library of about 1,000 volumes has been installed in the new quarters of the Bexar County Medical Society in the Bedell Building, San Antonio, and a large number of medical journals have also been ordered.

Pellagra Day.—August 6 was known as Pellagra Day in Dallas County. The County Medical Society devoted its meeting to the discussion of the history and treatment of the disease, and pellagra clinics were held at Baylor Medical College in the afternoon.

State Medical Association Office Moves.—On account of the urgent need of larger quarters, the office of the State Medical Association of Texas has been moved from the basement of the Western National Bank Building, Fort Worth, to a four-room suite on the sixth floor of the building.

Hospital Notes.—It is stated that John Sealy contemplates the expenditure of $80,000 in the near future on improvements and additions for the John Sealy Hospital. The changes include an additional story for each wing of the building and enlargement of the clinical facilities.——Bids for the erection of the Robert Green Memorial Hospital, a joint hospital for San Antonio and Bexar Counties, were opened August 20.——Contracts were let July 22 for the erection of a new east wing to St. Paul's Sanitarium, Dallas, to cost $200,000.——Presbyterians of Texas are planning to erect a new sanitarium building just north of the present Austin Sanitarium to cost $100,000.

Personal.—Dr. John M. F. Gill, Cameron, has been appointed physician to the Confederate Home, Texas, succeeding Dr. T. F. Moore.——Dr. John S. Turner, Dallas, has been appointed a member of the State Board of Health, succeeding Dr. John O. McReynolds, Dallas, resigned.——Dr. John B. Baldwin, Marshall, has been appointed chief surgeon of the Marshall and East Texas Railway, succeeding Dr. James H. Taylor, deceased.——Dr. Jefferson D. Yates, Orange, fell from his automobile recently, fracturing his right forearm.——Dr. Joseph C. Henderson, Waelder, fractured his forearm while trying to crank his automobile, recently.——Fire destroyed the residence of Dr. Thomas K. Proctor, San Angelo, July 9, with a loss of $5,000.

Agreement in Health Problems.—At a conference held July 31, between representatives of the State Health Department, the United States Public Health Service, and the shipping interests of Galveston, the following agreements were reached:

That the federal health officers will board ships from foreign ports first, pending the answer to a request made of the secretary of the treasury, asking that the order be rescinded, which recently notified the state health officer that he would not be allowed on board vessels until the completion of inspection by the federal officers.

That the two health departments will act together in their treatment of health problems as they are presented by the incoming ships.

That when fumigation is necessary both departments will aid in the work, but the fee of $50 for the work will go to the state.

That two certificates of health will be issued, one signed by the federal and one by the state officer, when a vessel has passed inspection, and that both will be honored by the collector.

That neither side will surrender any of its rights by the agreement, which will be in effect until the representatives of the attorney general's department and of the United States district attorney's department have the opportunity to investigate the legal status of the problem.

UTAH

Utah After Unlicensed Practitioners.—The State Medical Board of Utah is apparently conducting a campaign against unlicensed practitioners. The arrest is reported of one F. J. Schultz, a chiropractor, of a Japanese "divine healer," of a Chinese "doctor" named E. Foo Lun, said to have had offices in both Salt Lake City and Denver, and also of a Dr. Healy who was said to be conducting a free show and incidentally selling medicine.

VIRGINIA

Personal.—Dr. J. Wilton Hope, Hampton, who has served Elizabeth City and county as health officer for ten years, has been reappointed for another term by the State Board of Health.——Dr. J. Warren Knepp, Roanoke, has been commissioned first lieutenant, M. C., Va. Vols., and assigned to the Company at Roanoke.—Dr. Jeffrey N. Ellder, Richmond, has been appointed medical director of the Hopewell Hospital, Hopewell.

Inter-Hospital Conference.—The second semiannual meeting of the Inter-Hospital Medical Conference, whose membership consists of superintendents and assistants of the Virginia hospitals for the Insane and the Epileptic Colony, was held at the Central State Hospital, Petersburg, last month. The members propose to organize a state society for mental hygiene, the purposes of which are, the conservation of mental health, the prevention of mental diseases and mental deficiency, and improvement in the care and treatment of those suffering from mental defects. The next meeting will be held at the Southwestern Hospital, Marion.

WEST VIRGINIA

Personal.—Dr. Colin R. Weirich, Wellsburg, has been placed in charge of the department of preventable diseases of the State Board of Health and Dr. Melvin P. Malcolm, Lewiston, has been made chief of the pure food and drug department.——Dr. Andrew L. Coyle, Wheeling, is reported to be held in Toronto, Ont., as a Germany spy.——Dr. Samuel L. Jepson, state health commissioner, has transferred his office from Wheeling to Charleston where he has quarters on the second floor of the Capitol Building.

CANADA

Personal.—Dr. U. J. Lalonde, Quebec, has been elected one of the high trustees of the Catholic Order of Foresters.——Lieut. Harry W. Paddell, Canadian A. M. C., Swift Current, Sask., has been appointed medical officer of the Tenth Canadian Mounted Rifle Regiment Overseas Force.——

Dr. William A. Henderson, Sarnia, Ont., has been given a commission in the Royal Army Medical Corps and has started for the front.

Canadians Drinking and Smoking Less.—There were nearly 800,000 gallons of spirits less drunk in the past fiscal year than in the previous year; 48,000,000 fewer cigars, and 27,000,000 fewer cigarettes were smoked. For the previous twenty years the nation's drink and tobacco bill had been steadily increasing. Of cigars there were consumed 236,866,542; cigarettes, 1,089,156,606, and of spirits, 4,072,187 gallons as compared with 4,831,116 gallons for the preceding six months. The per capita consumption of spirits was 1.872 gallons as compared with 1.116 in 1913-1914. This is lower than at any time since 1903. The per capita consumption of beer last year was 6.071 gallons as compared with 7.200 gallons in 1913-1914.

FOREIGN

New Sanatorium for the Philippines.—The president of the Philippine Antituberculosis Society has been authorized to enter into a contract for the construction of a sanatorium for the society. The Balic-Balic site has been selected as the most advantageous and desirable for the erection of the building.

American Bequest to Roman Hospitals.—According to the will of the widow of the prince of Vicovaro, her entire property is bequeathed to the clinics connected with the University of Rome. She was Eleanor Spencer of New York, and since she has been a widow has made her home in that city.

Memorial to Reil.—Johann C. Reil, the anatomist, began his career as professor at Halle, and a memorial to him was recently unveiled at that place. It stands in front of the university clinic, the seat of his labors until called to Berlin in 1810. He died in 1813, aged 55. The *Medizinische Klinik* states that he succumbed to typhus acquired in a field hospital.

Infant Welfare Circulars.—The Auguste Viktoria institution of Berlin has just issued three circulars for free distribution, one on the prevention of summer mortality among babies, one on infant feeding, and one on guarding infants and young children against infection, etc. The circulars can be obtained at local drug stores, and they are supplied directly to factories and stores on demand.

Prizes for Improved Orthopedic Appliances.—The city of Magdeburg has offered three prizes, from $125 to $750, for improved artificial limbs or substitutes for limbs, or devices to aid cripples at work or at the table, etc. Seven lines are specified along which improvement is sought. One is for a device to take the place of the thumb and two fingers after amputation of part of the arm. The criterion for this is that the man shall be able to work with a file and then let go of it. According to the *Medizinische Klinik* the prize lists close October 1.

Preventive Red Cross Work in Belgium.—Professor Pannwitz of Berlin has charge of the sanitary work in Belgium, and is said to be now issuing a journal, the *Offizielle Zeitschrift des belgischen Roten Kreuzes,* which is published in German, French and Flemish. It describes the aims and work of the Red Cross in war and in peace and especially the work in Belgium. Graf Trachenberg is chief of the Red Cross service there, and has founded at Brussels a dispensary and consultation station for children, for persons with pulmonary affections and for the unemployed.

Advertisers Fined for Exaggerated Claims.—The court at Leipzig recently imposed fines on several persons connected with the advertising of a book called "Häusliche Hilfe," an ordinary household medical guide. The fines were imposed for an advertising circular sent out commending the book as a guide with the aid of which one could cure himself of every possible disease by means of water, herbs and domestic remedies. The court said that the advice given in the book was good, perhaps, but by no means adapted to render the services of a physician unnecessary or to cure all diseases, such as those of the heart and lungs.

Triumph of Antimalaria Work in Italy.—The railroads in Italy are the property of and managed by the state, and the station agents and other employees in the regions infested with malaria always paid a heavy tribute to the disease. During the years 1885 to 1901, on an average each year, 69.92 per cent. of the railroad employees in the malarial districts contracted the disease. In 1906 a vigorous screening campaign was inaugurated and the proportion dropped to 24.65 per cent. This number has been constantly growing less since, until during 1914 only 6.03 per cent. of the employees living in the hotbeds of malaria or working there had malaria and they lost only an average of 1.01 days from work.

Deaths in the Profession Abroad.—C. Rahts of Berlin, long a member of the German imperial board of health, aged 64. He had charge of the records of causes of death and statistics of public sanatoriums.——E. Gagnoni, professor of pediatrics at the University of Siena.——O. Bondy, privatdocent of gynecology and obstetrics at the University of Breslau.——S. Stern, for many years professor of clinical propadeutics at the University of Vienna, aged 84.——H. Hertz, formerly professor of medicine at the University of Amsterdam, died at Weimar, aged 84.——C. A. Siecke, assistant at the laboratory for applied chemistry at the University of Leipzig.——San.-Rat Böttcher, collaborator on the *Deutsche medizinische Wochenschrift,* and Geheimrat Proskauer of Berlin, aged 64.

WAR NOTES

Hot Oxygen for Gangrene.—It is reported that the use of superheated oxygen for the treatment of gangrene has been used with success in the Paris military hospitals. Oxygen is said to be better than hot air to dry and sterilize moist gangrene and to act more quickly.

The Care of Returning Soldiers.—The new South Wales branch of the British Medical Association has offered to organize a voluntary medical service to look after all the wounded and sick soldiers. In South Australia, a military hospital of 250 beds is to be organized and a second hospital for convalescents of a similar capacity at Torrneis Park, near Adelaide.

Typhus Checked.—The American Minister at Bucharest, Roumania, in a cablegram dated July 26, to the American Red Cross, says that during his inspection of the country, he visited 75 per cent. of all the Serbian hospitals, and found no new cases of typhus. The malady appears to be entirely checked, but the physicians say that it may appear again in September.

Character of Wounds at Dardanelles.—According to W. A. Chapple in the *British Medical Journal,* the surgeon of a French hospital ship in the Dardanelles reports that the wounds received by the soldiers in the Dardanelles differ from those seen at the western front. In France the majority of wounds are inflicted by shells, whereas in the Dardanelles the injuries are mostly caused by bullets. This is attributed to the fact that the Turks are not well supplied with artillery. The proportions given are as follows: bullet wounds, 77.8 per cent.; shell, 11.1; fragments of stone, 1; wounds caused by agents impossible to recognize, 11.1 per cent.

Analysis of Wounded.—The *Lancet* has published an analysis of the first thousand cases treated at the American Red Cross Hospital, Paignton, South Devon, England. This shows that out of 425 wounded received in the hospital, 41.2 per cent. were suffering from perforated wounds (shrapnel or gunshot), 59 per cent. from nonperforated wounds (shrapnel, gunshot, shell or grenade), and only 0.6 per cent. from incised (bayonet) wounds. In 254 cases, the wounds were infected, but only two cases of tetanus occurred. The average time between the receipt of injuries and of the first aid dressing was 6.53 hours. Of the 1,000 patients, 623 were discharged cured, 345 were improved, 29 not improved, and 3 died.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending Aug. 14, 1915, lists the following contributions:

Dr. W. L. Keller, Hot Springs, Ark.	$ 5.00
Dr. E. C. Ellett, Memphis, Tenn.	10.00
Dr. David W. Cheever, Boston, Mass.	20.00
Receipts for the week ending August 14	$ 35.00
Previously reported receipts	7,779.84
Total Receipts	$7,814.84
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
353 standard boxes of food at 2.28	804.84
Total disbursements	7,310.04
Balance	$ 504.80

F. F. Simpson, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

The Budapest Unit.—Dr. Charles McDonald, Salem, N. J., director of Unit "E," American Red Cross, at Budapest, Hungary, in his report to the chief surgeon of the American Red Cross, in Washington, gives an account of the work done by his unit. From October 1914, until the end of the year, the unit had in charge a hospital with 200 beds and, soon after its arrival, the resources of the institution were taxed by the sick and wounded coming directly from the front. At one time there were 80,000 wounded in Budapest. The medical cases included cholera, typhus fever, tetanus, typhoid fever, dysentery and gastro-enteritis. There were many nervous and mental cases and the condition of the soldiers as to cleanliness was very poor and vermin were abundant. Among the wounds, those from shrapnel were most frequently encountered. Many fractures were treated, almost all of the compound variety, and practically all open wounds were infected, in many cases with gaseous gangrene as a complication. The modern steel jacketed bullet of high velocity was found to be humane and the wounds received rarely fatal. Dr. McDonald recommends the addition of iodin to the first aid packet. He also directs especial attention to the care of the feet of soldiers.

PARIS LETTER

PARIS, July 29, 1915.

The War

CREATION OF A SUBDEPARTMENT TO INCLUDE THE MEDICAL SERVICE

Three assistant secretaries have just been appointed in the war department, one of whom, M. Justin Godard, deputy from Lyons, has been placed at the head of the military medical service. Complete authority has been given to him with regard to all technical questions and those pertaining to the supply of materials. The assistant secretary decides and submits to the minister of war all questions with regard to the staff, etc., of the medical service.

THE WORK OF THE SOCIETY FOR AIDING WOUNDED SOLDIERS

During the ten months which elapsed between the opening of hostilities and June 1, 1915, the Société Française de secours aux blessés militaires, which is one of the three societies composing the French Red Cross, had assured the operation of 773 auxiliary hospitals, representing 70,000 beds, of ninety-three first-aid posts established in the sixth and twentieth regions, of eighty-eight infirmaries and of forty-five railway station canteens where the sick and wounded receive the necessary care and soldiers passing through are fed. In these hospitals are employed 12,000 nurses with diplomas; 10,000 assistants give their aid in the kitchens, linen rooms and sterilization rooms. Sixteen of these nurses and assistants had paid for their devotion with their lives by June 1. Five were killed during the bombardment of Rheims; the others succumbed to contagious diseases contracted while nursing the wounded. Among the nurses of the society, one has received the medal of the Legion of Honor, thirty have been mentioned in the orders of the day, and thirty-three have received the medal of epidemics.

The society has organized a rapid transportation service for the wounded which consists of eighty-eight automobiles, divided into a certain number of units. It has also sent many articles of clothing and comforts for the sick to the hospitals and the ambulances and to the front.

In order to perform all these services, the society has expended the considerable sum of 21,484,000 francs ($4,296,800). At the beginning of the war, the Société Française de secours aux blessés militaires had at its disposal about 8,000,000 francs ($1,600,000); the rest it owes to the generosity of the public.

An American friend of France, who desires to remain anonymous, has just sent to Mrs. Wharton a gift of 40,000 francs ($8,000) for the society. This gift is to be used in fitting out an automobile unit for the sanitary service at the front. These auxiliary automobile units include a car for sterilization, one for roentgenography, one for douche baths and cleansing, and one for supplies. Four of these new units are already operating at the front, and have rendered great services.

THE COURSE TO BE PURSUED WITH SOLDIERS WHO REFUSE TREATMENT OR OPERATIONS REGARDED AS NECESSARY

The minister of war has on various occasions been consulted with regard to soldiers who refuse immunizing treatment against certain diseases, or operations for the cure or amelioration of conditions produced by wounds. The refusal may be due to the soldier's failure to comprehend his own interests, to sheer cowardice, to the desire of prolonging his stay in the hospital, and sometimes to the hope of escaping military service or of obtaining a high rate of indemnity. The following are the instructions on the subject which the minister has sent to the military physicians:

In general, it is important to avoid any coercive measures. The physician should use persuasion, explaining to the soldier the purpose of the proposed measure and showing him his true interest and the benefit that he may expect from the treatment or operation to which he hesitates to submit.

In a case of categorical refusal, the solution of the problem varies according to the factors entering into it:

1. When it is a question of legally prescribed measures involving both individual and collective prophylaxis, such as vaccination against smallpox or typhoid, it is not permissible to decline the treatment. In the interests of the community the treatment should be applied without exception. Refusal to submit to it may be treated as a breach of military discipline.

2. When a wounded man refuses a simple and bloodless method of treatment, such as various procedures of physiotherapy (massotherapy, mechanotherapy, thermotherapy, electrotherapy, etc.), which tend to ameliorate the patient's infirmities without any risk whatever and to reduce his incapacity for labor, he may be treated as a malingerer who intentionally prolongs or aggravates his condition by refusal of care with intent to reduce his aptitude for service and augment the chances or the amount of final compensation. Any suitable disciplinary measures may be applied.

3. The right to refuse a bloody operation with or without anesthesia is considered absolute in law and jurisprudence, because every bloody operation entails a risk of death. The exercise of this indisputable right of refusal, however, may entail certain consequences. The wounded man may have his final indemnification reduced, especially in the following two cases: (*a*) when the operation is very trifling and does not require general anesthesia (incision of a superficial purulent collection, extraction of an easily accessible bullet, etc.); (*b*) when an operation is urgent beyond all doubt to avoid a complication capable of producing an important or absolute incapacity (refusal to submit to the enucleation of a wounded eye in case of threatened sympathetic ophthalmia, or to the amputation of a limb in gangrene, etc.). In such case the physician should give the patient friendly advice that the operation offers the sole chance of survival or of minimum infirmity. He should suggest a consultation with one or several physicians, or, if necessary, removal of the patient to a regional surgical center. If, notwithstanding, the patient persists in his refusal, the physician in charge of the case should draw up a report, giving exact data with reference to the proposed operation, its justification and the patient's refusal with his reasons. This report is to be signed by the patient, the physician in charge of the case and the physician in chief.

With such a report before them, experts are to estimate on a fractional scale the degree which the operation might have reduced the total incapacity for work. When applications for retirement pension or for relief pension are passed on, the surplus functional incapacity caused by the failure to submit to treatment or operation is to be taken into account.

THE MEDICAL SERVICE AT THE FRONT

An ambulance physician has just published a very instructive article on this subject in the *Revue scientifique*. At present, he says, the weak point of the organization of the medical service is the following: Each army corps possesses sixteen ambulances which the administration regards as interchangeable. Instead of being specialized, these ambulances are supposed to be always ready to substitute for each other, and to become, according to circumstances, a surgical or a medical center or a center for the treatment of contagious diseases. It is indispensable, on the contrary, that when an ambulance is adapted to a certain task by experience or even by makeup, it should be devoted exclusively to that work. According to the author, specialization should be the pivot of a serious reorganization of the medical service at the front, as it has been of that of the rear.

Among the ambulances of a division, two should be particularly devoted to the treatment of the wounded who need only to have their wounds dressed before they are sent to the rear. The staffs of these ambulances should be made up of good, experienced general practitioners. There should also be in each division a special surgical ambulance devoted exclusively to the treatment of wounded men whose con-

dition calls for particular attention or for urgent operation (serious mutilation of limbs, lesions of the main arterial trunks, and wounds of the chest, the head, the eye and especially of the abdomen). The staff of this ambulance should include a professional surgeon, sufficiently sure of himself to undertake any of the sometimes very complicated and delicate operations demanded by battle wounds, and two good assistants. Also a special medical ambulance should be installed in each division on the same model as the surgical ambulance and with a staff as carefully selected, to handle all cases of serious acute diseases which ought to be treated on the spot because of the dangers to the patient of removal to the rear. Here also the choice of the physician should be particularly circumspect, for it is no easier to transform oneself into a medical specialist than into a surgeon.

PROMOTION OF AUXILIARY PHYSICIANS

As I mentioned in a previous letter (The Journal, June 12, 1915, p. 2002), medical students who have twelve *inscriptions* (that is to say, who have completed three years of studies) may be appointed auxiliary physicians (a grade equivalent to that of the highest rank of noncommissioned officer). The minister of war has just decided that the grade of physician *aide-major* of the second class (which corresponds to the grade of second lieutenant) may be conferred, on the initiative of their superior officers, on auxiliary physicians who have served for at least six months with the army in the field, who have at least twelve *inscriptions*, who have been wounded or mentioned in the order of the division, the army corps or the army, and who have been noted by the director of the medical service as technically fit to perform temporarily the duties of the position.

LONDON LETTER

London, Aug. 6, 1915.

The War

THE SHORTAGE OF PHYSICIANS

The shortage of physicians in the voluntary hospitals was the subject for conference held by the British Hospitals Association at which it was stated that the expense incurred on resident physicians is greatly in excess of that incurred in normal times. As yet no hospital is in extreme difficulties. Most of the hospitals that require only two or three residents have been able to make good their vacancies, but those in the nonteaching hospitals, requiring four, five, or six officers, are having greater difficulties. On the whole, however, the work has not generally been restricted though outpatient work has been reduced. To meet the shortage, women physicians have been appointed to aid in the casualty departments. As regards the hospitals with medical schools the War Office has met the situation by giving temporary honorary commissions to the men qualified after each medical examination. The guarantee is given that not more than five men shall be called up at once, but they are liable to be summoned at forty-eight hours' notice, and all are liable for service at the end of three months, while all sign a contract undertaking to serve for a year at home or abroad. The situation in the nonteaching hospitals, however, has not been met, and it is difficult for them with salaries to offer between $750 and $1,000, to compete with the War Office, that is offering as much as $2,500 in money, and in addition the attractive conditions connected with the wearing of khaki. It has been suggested that the general practitioners at the war hospitals should extend the amount of their services and that the graduates of foreign universities be utilized. Several of the graduates of Canadian and Australian schools have served with great success. In the case of America there is no difficulty as to language, but there is the problem of medical registration.

CONFERENCE ON ARTIFICIAL LIMBS

The mutilations consequent on this terrible war have brought the question of artificial limbs forward. An international exhibition of artificial limbs and a conference on the subject has been held. Sir Watson Cheyne, president of the Royal College of Surgeons, presided. He pointed out that long delay in fitting artificial limbs after amputation often led to wasting of the muscles. The fitting of artificial limbs was, naturally, more difficult in military than in civil practice, for in the latter the operation could usually be designed so as to preserve the best possible stump. Amputations in war, on the other hand, very often could not be made on set lines if as much of the limb as possible was to be saved, with the result that the scars and flaps which covered the stump were sometimes much more tender and much less fit to bear weight than after the ordinary amputations. The fitting of a limb was thus a more troublesome business, and any uncomfortable pressure quickly wore down a man's spirit and energy. Sir Arthur May, medical director general of the Royal Navy, said that in ordinary peace conditions the number of men who lost their limbs in the navy was much greater than in the army. In war, however, this relation had been reversed, and there were twenty or thirty times as many cases of loss of limbs in the army as in the navy. Still, the cases in the navy were much larger in number than before the war. The number was so large that delay in provision was inevitable, yet the longer a man went without his artificial limb, when once he was ready for it, so much the worse for him. Surgeon General M. W. Russell, deputy director general of the Army Medical Service, said that the aim of the conference was to focus the present position of the artificial limb industry. The supply of artificial limbs in war time was quite a different matter from the supply in peace; the question for consideration was how the expansion in demand might be met by a corresponding expansion in supply. A resolution was carried asking the orthopedic surgeons who had been called into consultation to draw up a report advising as to the most suitable artificial limbs for various amputations. Mr. T. H. Openshaw made an interim report on the judging, and announced the awards of medals.

Gambling in Life Insurance

In this country it is illegal to gamble in the life of another person by taking out an insurance policy. Such a policy is therefore void. For insurance to be legal the person who takes out the policy must have an "insurable interest" in the life in question, that is, must in some way be a loser by the person's death. Nevertheless attempts to gamble in insurance are made from time to time. In a case which has just been before the court Mr. Justice Scrutton strongly condemned the taking out of policies by the lower classes assisted by the greed of insurance agents to gamble in the lives of others. The plaintiff, a woman, took out policies on the lives of her daughter, brother, husband's uncle, her little boy and the mother of the husband's first wife. She also effected insurances on people who were not relations. She was therefore described by the judge as a professional gambler in the lives of others. In one case she took up the policies taken up by a man on the life of a woman who owed him money and on the lives of two others for whom he had not insurable interest. He got tired of paying the premiums on the lives of some of these persons who obstinately continued in good health, but the superintendent and agent of the insurance society did not desire that the policies should lapse and, knowing the plaintiff's proclivity, persuaded her to pay the premiums and keep the policies alive. After a time she began to have some doubt either as to the legality or profitableness of her venture and when the premiums were beginning to get to the amount she would receive on the death of the insured she claimed them back and on refusal sued the society. The agents of the society evidently gave her some assurance that the transaction was all right. In the court their lawyer contended that it was an illegal transaction—that each party being of equal guilt, the plaintiff could not recover for misrepresentation; that the misdeeds of the defendants, if any, had nothing to do with the matter, and that the court would be enforcing a public interest by declining to allow either party to succeed on a claim based on an illegal transaction. The plaintiff's counsel replied that the parties were not of equal guilt, as the defendants had obtained the premium by the fraud of their agents. Mr. Justice Scrutton held that to say that a policy was all right was not necessarily fraudulent, because it might mean that the policy, though not legally enforceable, would be paid in honor, or that it was a legally enforceable policy. He declined to hold that in the case of a policy prohibited by law, money paid under it could be recovered, even if the payment was induced by a fraudulent representation. While he thought the plaintiff was far from being an injured innocent, in the view the jury took she might have believed the policies were valid. He found for the defendants on the ground that the policies were prohibited by statute, and he did not think the court ought to enforce the repayment of money paid under them. As, however, he was not satisfied with the conduct of the defendants, judgment would be without costs.

Marriages

LIEUT. ALEXANDER WATSON WILLIAMS, M. C., U. S. Army, Texas City, Tex., to Miss Florence Hanson Light of Washington, D. C., August 12.

CAPT. JOHN ROY MCKNIGHT, M. C., U. S. Army, Fort Stotzenburg, P. I., to Miss Clara Mabel Stayer, at Manila, P. I., March 10.

LUTHER MITCHELL FERGUSON, M.D., Newtonville, Mass., to Miss Edith Gray of Brookline, Mass., at Longwood, Mass., August 4.

CHARLES WESLEY LEFEVER, M.D., Philadelphia, to Miss Susan V. Knight of Vermont, at Dummerstown, Vt., August 7.

CALVIN HOOKER GODDARD, M.D., Baltimore, to Miss Eliza Cunningham Harrison of New Kent County, Va., August 3.

RUPERT FOLGER, M.D., to Miss Bertha May Whitford, both of Whitestone, L. I., N. Y., in New York City, August 2.

CLAUDE MCRAVEN, M.D., Cape Girardeau, Mo., to Miss Adah M. Coy of East St. Louis, in St. Louis, August 5.

WILLIAM HALLECK BRADDOCK, M.D., to Miss Victoria Barbara Francefort, both of New York City, July 31.

KARL KROGH AMUNDSON, M.D., to Miss Daisy Sarah Porter, both of Cambridge, Wis., July 28.

FRANK S. PECK, M.D., to Miss Mary Morris, both of Oklahoma City, Okla., recently.

Deaths

Charles Herbert Bradley, M.D. Northwestern University Medical School, Chicago, 1890; aged 50; a Fellow of the American Medical Association; a member of the Minnesota Pathological Society; from 1904 to 1910, secretary-treasurer, and in 1911, president of the Hennepin County (Minn.) Medical Association; for six years assistant physician in the Kankakee (Ill.) State Hospital; for many years a member of the staff of the Minneapolis State Hospital; clinical instructor in medicine in the University of Minnesota in 1912 and 1913; died at his home in Minneapolis, August 1, from disease of the brain. The Hennepin County Medical Society and the visiting staff of the Minneapolis City Hospital, at special meetings adopted resolutions regarding the death of Dr. Bradley, and six members of the Hennepin County Medical Society acted as pallbearers at his funeral.

Thomas Lawrence McDermott, M.D. Bellevue Hospital Medical College, 1866; aged 71; formerly a member of the Kentucky State Medical Association; consulting physician to St. Mary and St. Elizabeth's Hospital and the Louisville City Hospital; a member of the Board of Public Safety of Louisville; formerly a member of the city council; died in St. Joseph's Infirmary, Louisville, August 1, from carcinoma of the throat. Resolutions on the death of Dr. McDermott were adopted at a special joint meeting of the board of aldermen and the board of councilmen and the pallbearers at his funeral were, the mayor and seven of Dr. McDermott's friends in the medical profession.

Emily Myers Oberlin, M.D. University of Michigan, Ann Arbor, 1909; aged 48; formerly a Fellow of the American Medical Association; a member of the Michigan State Medical Society; of Oshkosh, Wis.; at one time a member of the Mayo staff, Rochester, Minn., and later pathologist and director of the laboratory of the Woman's Hospital, Ann Arbor, Mich.; prominent in public welfare and charity and correction work; died in Minneapolis, about August 7.

John Bacon, M.D. University of Pennsylvania, Philadelphia, 1889; aged 50; a Fellow of the American Medical Association and a member of the Philadelphia College of Physicians; for two years physician to the Eastern Penitentiary; for twenty years a practitioner of Torresdale, Philadelphia; a member of the staff of the Jewish and Frankford hospitals; died in the University Hospital, Philadelphia, August 2.

Eric M. Lundholm, M.D. Carolinean Medico-Surgical Institution, Stockholm, Sweden, 1890; aged 57; a Fellow of the American Medical Association and chief surgeon to the Bethesda Hospital, St. Paul; died in Rochester, Minn., August 6, from pneumonia following a surgical operation. Six members of the medical staff of Bethesda Hospital acted as pallbearers at the funeral.

Philip Coffman Palmer, M.D. Rush Medical College, 1884; aged 64; of Kansas City, Mo.; formerly professor of diseases of women and surgical gynecology in Columbian Medical College, Kansas City, and head physician of the Modern Woodmen of America; died August 1, from heart disease, while being taken from the Union Station, Kansas City, to the German Hospital.

Morris Milton Caldwell, M.D. Jefferson Medical College, 1905; aged 36; a member of the Medical Society of the State of North Carolina; a promising young practitioner of Wilmington; while being conveyed in a small boat from Wilmington to a German vessel interned in the Cape Fear River, was accidentally drowned by the capsizing of the boat, August 7.

P. Brynberg Porter, M.D. University of Pennsylvania, Philadelphia, 1869; aged 70; of New York City; for several years secretary of the Medical Association of the Greater City of New York and a member of the American Therapeutic Society; New York editor of the *Boston Medical and Surgical Journal;* died in St. Mark's Hospital, New York City, July 6.

Charles Thomas Harper, M.D. University of Maryland, Baltimore, 1894; aged 42; of Wilmington, N. C.; a Fellow of the American Medical Association and a member of the State Board of Medical Examiners of North Carolina; who was operated on for appendicitis recently at Harpers' Sanitarium, Wilmington; died in that institution, August 9.

Andrew Walker Herdman Lindsay, M.D. Dalhousie University (Halifax, N. S. Medical College), 1875; University of Edinburgh, Scotland, 1877; aged 63; secretary and registrar of the Provincial Medical Board of Nova Scotia and secretary and professor of anatomy in his alma mater; died recently at his home in Halifax.

John Henry Borneman, Jr., M.D. Jefferson Medical College, 1903; aged 35; a Fellow of the American Medical Association and a promising young physician of Wilmington, N. C.; was drowned August 7, while being taken in a boat to the *Nicaria*, a German vessel interned in the Cape Fear River, near Wilmington.

Athanase Edouard Gourdeau, M.D. Victoria University, Coburg, Ont., 1873; aged 65; a member of the Michigan State Medical Society, and for more than thirty years a practitioner of Ishpeming, Mich.; died in Laurier's Camp, near Little Lake, Mich., August 2, from carcinoma of the throat.

Delano Stapleton Fitzgerald, M.D. University of Paris, France, 1880; aged 62; of Baltimore; who retired from practice several years ago and since that time had traveled extensively; died at his summer home, Esperanza, near Garrison, Baltimore County, Md., August 6, from heart disease.

George R. Duncan, M.D. University of Tennessee, Nashville, 1885; aged 67; died at his home in Fall Branch, Tenn., July 29, from the effects of a gunshot wound of the heart, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health.

Walter W. Wolfe, M.D. Medical College of the State of South Carolina, Charleston, 1879; aged 61; a practitioner of Fort Motte, S. C., for thirty years; died in a hospital in Columbia, S. C., July 25.

Joseph A. Ferrin, M.D. College of Physicians and Surgeons, San Francisco, 1907; aged 29; of Half Moon Bay, Calif.; died in Calistoga, Calif., July 1, from pulmonary tuberculosis.

David B. Umstead, M.D. Hahnemann Medical College, Philadelphia, 1878; aged 58; of Tacony, Philadelphia; died at his summer home in Wildwood, N. J., July 25, from heart disease.

Jason B. Hitchcock, M.D. State University of Iowa, College of Homeopathic Medicine, Iowa City, 1880; aged 66; of Montfort, Wis.; died in Long Beach, Calif., about July 23.

Orville Clark Strong, M.D. University of Buffalo, N. Y., 1871; aged 81; a Fellow of the American Medical Association; died at his home in Colden, N. Y., July 29.

Amasa W. Manire, M.D. University of Nashville, Tenn., 1870; aged 78; a Confederate veteran; died at his home in Tullahoma, Tenn., about July 22.

Richard Lewis Howell, M.D. Jefferson Medical College, 1879; aged 57; who retired from practice many years ago; died at his home in Boston, July 26.

Thomas H. Collins, M.D. Baltimore University, 1903; aged 35; milk inspector of Lawrence, Mass.; died at his home in Lawrence, April 7, from sarcoma of the stomach.

Correspondence

Alcohol in the European Armies

Sehr geehrter Herr Redacteur:—In der Nummer 20 vom 15. Mai d.J. bringen Sie unter dem Titel "Alcohol in the European Armies" eine Zusammenstellung nach dem *British Medical Journal* über den täglichen Alkoholverbrauch der fechtenden Truppen, die soweit sie, die deutschen Truppen angeht sinnlos ist. Sie schreiben, der Deutsche Soldat bekommt täglich 1,793 Gramm Bier und 20 Gramm Branntwein, konsumiert also täglich 70.7 Gramm Alkohol. Ich weiss nicht wie Sie oder das *British Medical Journal* gerade auf 1,793 g. Bier kommen, aber dass diese Zahl unmöglich ist, hätten Sie sich denken können. Nehmen wir an, wir hätten 3 Millionen Soldaten an den Fronten—es werden wohl mehr sein—so bekämen diese täglich 5,379,000 Kilogramm Bier. Der Liter Bier, incl. Verpackung, wiegt nach der Berechnung der Brauereien, 1.65 Kilo, das Tagesquantum der Armee demnach 8,875,350 Kilo; ein Eisenbahnwagen für Bier fasst 10,000 Kilo Nutzlast. Es müssten also täglich 887 Eisenbahnwagen nur mit Bier nach den verschiedenen Operationsgebieten und ebensowiel zurück gehen, eine Belastung der Bahnstrecken, die der Heeresleitung schon deshalb zuviel werden müsste, weil wir auch sonst noch allerlei in die Operationsgebiete zu transportieren haben. In Wirklichkeit besteht überhaupt kein regulärer Alkoholkonsum, die körperliche Leistungsfähigkeit wird lieber mit Kaffe und Thee stimuliert und wenn sich einmal ein Fass Bier in eine Ruhestellung verirrt, so ist es schon ein freudiges Ereignis für die Soldaten. Sie müssen sich schon darauf gefasst machen, dass Ihre Frage, wieweit militärische Erfolge durch "Dutch courage" d. h. also in Rausch errungen werden, für die Erfolge Deutscher Truppen ein ungelöstes Problem bleiben wird.

Mit ausgezeichneter Hochachtung,

Dr. Walther Straub, Freiburg i/Br., 10. Juli, 15.
Prof. a. d. Universität Freiburg, i/Br.

TRANSLATION

To the Editor:—In The Journal, May 15, 1915, page 1663, appears an editorial comment entitled "Alcohol in the European Armies," which is based on figures obtained from the *British Medical Journal* discussing the daily consumption of alcohol by the armies in the field. So far as these figures are intended to apply to the German troops, they are without basis and fact. It is said in the editorial comment that the German soldier is allowed 1,793 gm. of beer and 20 gm. of brandy daily, amounting to a total of 70.7 gm. of alcohol a day. I do not know how you or the *British Medical Journal* happened to take the figure 1,793 gm. of beer, but that this could not possibly be true should have occurred to you. Let us assume, for the sake of argument, that there are 3,000,000 soldiers at the front, although there are probably more than that. They would receive 5,379,000 kg. of beer daily. A liter of beer, including packing, weighs, according to the estimation of the breweries, 1.65 kg., so that the daily allowance for the army would total 8,875,350 kg. The ordinary freight car carrying beer will hold 10,000 kg. Therefore, 887 such cars filled with beer would have to be shipped to the front daily and as many returned. Such freight traffic, under present conditions, is an impossibility because so many other things must be transported to the front at this time. In reality there is no regular alcohol allowance or consumption. The soldiers are given coffee and tea as stimulants, and not alcohol; and if, by any chance, a keg of beer should happen to fall into the hands of the soldiers, it is cause for celebration. You must be prepared to find unsolved in the final analysis the problem as to how much military efficiency among the German troops may be increased by means of so-called "Dutch courage."

Very respectfully yours,

Walther Straub, M.D., Freiburg im Breisgau, July 10, 1915.
Professor of Pharmacology, University of Freiburg im Breisgau.

[Comment.—The editorial commented on by Professor Straub was based on a discussion of "Alcohol in European Armies," which appeared in the *British Medical Journal*. Presumably, the figures quoted were based on the army regulations in the different countries. It was not claimed that the regulation ration was issued every day to every man in the army. The discussion in the *British Medical Journal* has centered around the wisdom of issuing a ration of rum to the men on duty in the trenches. Professor Straub's *reductio ad absurdum*, therefore, does not have any direct bearing on the point under discussion.—Ed.]

Save the Catgut

To the Editor:—Some time ago The Journal spoke of the desperate need of surgical supplies of all kinds among the emergency hospitals not directly under military or Red Cross control, and the French Wounded Emergency Fund was started. Though working hard getting surgical dressings for the Red Cross and our own hospitals, I was restimulated by Mary Rinehart's article, "The Red Badge of Mercy," in the *Saturday Evening Post*, July 31. The idea has probably occurred to others, but is not carried out systematically, namely, of preserving unused pieces of sterile catgut from clean operations, and at once placing it in glass jars in strong alcohol. I have started our own hospital, and others in the city have promised to follow suit at once. I am convinced that hundreds of yards of good usable catgut are being thrown away daily in Canadian and American hospitals.

I make a special appeal that this catgut may be properly saved and forwarded frequently to the fund mentioned above or to the Red Cross for sending to these hospitals.

Sterile chromic, iodized, formaldehyd or plain catgut from clean operations, immediately placed in strong alcohol and covered, will remain sterile and usable for months.

How often we open a tube of catgut to use only a small part of it; the remainder, often a couple of feet, is thrown away.

This saving can be and should be undertaken at once by every hospital and surgeon using quantities of catgut, even among those whose sympathies lie with Germany, for German wounded are helped as are the British and French. No matter what our side, the great outstanding fact faces us that thousands of wounded of both sides are in desperate need of surgical supplies.

Our duty is plain.

The catgut now wasted can be used to save lives in desperate need of it at this moment in France.

Do it now!

Gordon G. Copeland, M.D., Toronto.
Assistant Obstetric Surgeon, Toronto Western Hospital.

Quackery and Fee-Splitting

To the Editor:—Apropos your "unchangeableness of man's artistic powers," ("Psychology and Art of the Cave Man," editorial, The Journal, Jan. 31, 1915, p. 729), I submit that the title will, with slight variations, cover all his other powers. Remoteness and strangeness of time, place and society can never alter man's nature. Quackery, like other stigmata, endures because of a thousand sincere followers "boosting" without hope of or desire for reward. It is the "I cannot otherwise" tyranny of infatuation of indolent and elementary minds that raise personal preference to the dignity of a creed. It is easier to accept an idea than to form one. Nearly a thousand years ago Sadi wrote:

A man had sore eyes. He went to a horse doctor who applied to his eyes what he used for his horses. The man became blind. He took the case before the judge, who said, "No damages; if this fellow were not an ass he would not have gone to a farrier."

Hans Sachs (1494) must have had in mind the origin of fee-splitting when he wrote:

The devil to a doctor said, "I'll go
Unto a burgher in your town,
Who's rich enough to buy a crown:
And I will give him such a pain
That soon as you come by again,
You enter in and pray me out;
That is upon a ransom stout —
Some twenty gulden fair laid down,
At which the rich man will not frown.
So then between yourself and me
The money even shared shall be."

J. H. Mackay, Francitas, Tex.

Prevention.—Disease prevention is the only practical procedure by which we may hope to establish and maintain a low death rate. We will succeed only to the degree that all the people become interested to the point of cooperation. —North Carolina *Health Bulletin.*

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE MEDICAL RESERVE CORPS

To the Editor:—Who and where is the official head of our Medical Reserve Corps? What are the requiremeuts for appointment to the service, and how are appointments obtained? What military rank and what pay, if any, does such appointment carry with it?

H. C. M., Del Norte, Colo.

ANSWER.—The Surgeon-General of the Army is officially the head of the Medical Reserve Corps. The membership of the Medical Reserve Corps consists of first, the contract surgeons on duty at the time of the passage of the bill establishing the Medical Reserve Corps, conditioned on their application receiving the approval of their chief surgeon; second, young practitioners who desire eventually to enter the Medical Corps of the Army and who, on passing the preliminary examination, are commissioned first lieutenants, Medical Reserve Corps, active list, and ordered for instruction to the Army Medical School, Washington, D. C.; third, medical practitioners of established reputation, who, having passed the required examination, are commissioned as first lieutenants, Medical Reserve Corps, inactive list, and who may be called on at any time when an "existing emergency" demands. The requirements for commission in the Medical Reserve Corps are that the candidate is a citizen of the United States, a graduate of a reputable medical college, within the ages of 22 and 45 years, and that he pass the required examination. Application for examination should be made to the Adjutant-General of the Army, Washington, D. C., and should be accompanied by two letters in the form of testimonials as to character, standing, etc. Examination is authorized for a date mutually agreeable to the candidate for commission and the officer conducting the examination. The examinations are, when practicable, held under the direction of an officer of the Medical Corps; but when this is not practicable, officers of the Medical Reserve Corps have in some instances been authorized to conduct the examination. The examination is both physical and mental, the latter covering the following: (*a*) practice of medicine, including etiology, clinical description, pathology and treatment of diseases; (*b*) surgery, principles and practice; (*c*) obstetrics and gynecology; (*d*) hygiene, personal and general, especially as to the prophylaxis of the more prevalent epidemic diseases. This examination is oral and sufficiently comprehensive to determine whether, in the opinion of the board, the applicant is (or is not) qualified to practice his profession under the usual conditions of the military service.

The rank of officers of the Medical Reserve Corps is that of a first lieutenant in the Army; the pay on active duty, $2,000 per year, with 10 per cent. increase for each five years of active service up to twenty years. There is no pay while on the inactive list. On active duty, officers of the Medical Reserve Corps enjoy "all the rights and privileges" of commissioned officers of the Army. They are not entitled to promotion or to retired pay, but are entitled to pension for injury or disability incurred in line of duty.

FISHER REMEDY—A MERCURY NOSTRUM

To the Editor:—Under separate cover I am sending in its original box a capsule which is reported to contain no mercury, but to be a specific cure. Five capsules sell for $25. The physician directs the patient to take courses of five capsules, one capsule each day, with an interval of three weeks between courses. The patient is warned against taking milk, oysters or liquor during the administration of the drug and for two or three days thereafter.

This treatment was taken by a patient of ours who had multiple gummas of the ribs, which healed under its administration, leaving him, however, with an extreme thirst, extreme polyuria, loss of weight and anemia. This patient, after taking four capsules, became so nauseated that he refused to take the fifth.

Could you give me any data about the remedy, or must I conclude that these symptoms are an extension of the disease rather than the effect of the treatment?

WILLIAM N. ANDERSON, M.D., Omaha.

ANSWER.—The letter and specimen were submitted to our Chemical Laboratory which reports:

The small square pill box sent by Dr. Anderson, containing one capsule, bore a label with illustrations of five capsules. On the center capsule the word "Hero" appeared, and around it the inscription "Fisher Remedy. A Treatment for All Blood Diseases. Trademark registered. Manufactured by N. Bergman & Co., San Francisco, U. S. A."

The single capsule contained a grayish, moist mass weighing 1.07 gm. and possessing a slight licorice-like odor. When treated with water, the mass rapidly disintegrated; and when the mixture was poured into a tube, a heavy lemon-yellow substance settled to the bottom, followed by a layer of gray material.

From our examination it is concluded that the capsule contains a mixture essentially of mercury, with chalk and mercuric subsulphate, with some starch and licorice root as excipients.

As mercuric subsulphate has emetic properties, it is probable that the patient's nausea was due directly to this drug.

This preparation is probably a new form of a mixture put out in the form of boluses a few years ago by one Fisher in Shirland, Ill. These boluses were irregular in shape and size, but were practically identical in composition with the capsule just examined, as they also contained mercury with chalk, mercuric subsulphate and an excipient.

NURSING IN PREGNANCY

To the Editor:—I frequently meet laymen who have the idea that a mother who is pregnant should never nurse a baby. Presumably this is based on the belief that deleterious products exist in the milk of the mother under such circumstances. I have never seen anything to this effect in medical literature, and cannot recall ever having observed any ill results from a pregnant mother nursing a baby.

FRANK P. NORMAN, M.D., Greenville, Ga.

ANSWER.—So far as is at present known, the existence of pregnancy has no bad effect on the breast milk except in the reduction of the quantity in certain instances. There is no proof that pregnancy develops deleterious products in the milk. The deterioration of the breast milk which sometimes occurs is frequently due to nervous shock produced by the discovery of the new pregnancy. It is a common occurrence among the poorer classes in France to see a mother six or seven months pregnant nursing a baby.

ARTICLES ON BLADDER HERNIA

To the Editor:—Please give a list of articles on bladder hernia complicating femoral hernia; diverticulum of the bladder; simple bladder hernia.

I recently operated on a patient who supposedly had femoral hernia on the left side. Operation disclosed that the hernia consisted of the bladder and peritoneal sacs firmly adherent to each other.

G. S. S., Virginia.

ANSWER.—

Finsterer, H.: Hernia of Bladder, *Beitr. z. klin. Chir.*, 1913, lxxxi; abstr., THE JOURNAL, Feb. 8, 1913, p. 484.

Lower, W. E.: Improved Method of Removing Diverticulum of Urinary Bladder, *Cleveland Med. Jour.*, January, 1914; abstr., THE JOURNAL, Feb. 7, 1914, p. 489.

Lower, W. E.: Diverticulum of the Urinary Bladder, THE JOURNAL, Dec. 5, 1914, p. 2015.

Cabot, H.: Ten Cases of Diverticulum of Bladder, *Boston Med. and Surg. Jour.*, Feb. 25, 1915; *ibid.*, March 11, 1915.

GRANT'S EPILEPSY CURE

To the Editor:—A patient of mine is taking a treatment for epilepsy furnished by "Dr. Fred E. Grant," Kansas City, Mo. I am sure from the type of correspondence and wrapper on bottle that he is another "quack." Will you kindly give me what information you can about Grant and his treatment, and if you have exposed him please send me your pamphlet and I will remit in stamps whatever the charge and postage. My patient shows a fine folliculitis — probably bromid — and I presume this is just another fake in the same class of the many you have so admirably exposed. Please try to send the information at your earliest opportunity, as I want to get this patient out of quack hands as soon as possible.

L. E. H., New York.

ANSWER.—Your surmise is correct. Fred E. Grant's epilepsy cure was examined some months ago in the Association's laboratory. The results of the examination and a report on the nostrum itself appears in the pamphlet "Epilepsy Cure Frauds," price 10 cents.

Medical Education and State Boards of Registration

COMING EXAMINATION

NEW HAMPSHIRE: Concord, September 15-16. Sec., Dr. Walter T. Crosby, Pembroke Bldg., Manchester.

Illinois January Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, Jan. 13-15, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 55, of whom 39 passed and 15 failed. One candidate did not complete the examination. The following colleges were represented:

College	Year Grad.	Total No. Licensed
PASSED		
Columbian University	(1900)	1
Bennett Medical College	(1911, 1) (1914, 2)	3
Chicago College of Med. and Surg.	(1912) (1913) (1914, 9)	11
College of Med. and Surg., Chicago, Physio.	(1909)	1
Hahnemann Med. Coll. and Hosp., Chicago	(1911) (1914)	2
Jenner Medical College	(1914)	1
Northwestern University	(1897) (1911)	2
Rush Medical College	(1911, 2) (1914, 6)	8
University of Illinois	(1914)	2
Johns Hopkins University	(1912)	1
Boston University	(1904)	1
Harvard University	(1912)	1
National Univ. of Arts and Sciences, Med. Dept.	(1913)	1
Washington University	(1912)	1
John A. Creighton Medical College	(1914)	1
Fordham University	(1914)	1
University of Zurich	(1911)	1
FAILED		
Bennett Medical College	(1914)	3
Chicago College of Med. and Surg.	(1914)	4
College of Med. and Surg., Chicago	(1912)	1
College of Med. and Surg., Physio., Chicago	(1910)	1
Illinois Medical College	(1910)	1
Hospital College of Medicine, Louisville	(1904)	1
University of Louisville	(1913)	1
Meharry Medical College	(1911) (1914)	2
Royal University of Palermo	(1911)	1

Arkansas May Report

Dr. J. T. Stout, secretary of the State Board of Arkansas Medical Society, reports the written examination held at Little Rock, May 11-12, 1915. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 45, of whom 42 passed and 3 failed. Two candidates were granted reregistration licenses. Seven candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
College of Physicians and Surgeons, Little Rock	(1911)	75.2
University of Arkansas	(1914) 75.1, 77.2; (1915) 76.2, 78.7, 79.4, 80.3, 81.6, 81.7, 82.2, 83.1, 83.2, 83.9, 84.1, 84.4, 85.7, 85.8, 86.1, 86.8, 88.4, 88.9, 89.3	
University of Louisville	(1909)	79.7
Tulane University of Louisiana	(1908)	83.2
St. Louis University	(1915)	89.5
Washington University	(1905)	82.9
Meharry Medical College	(1910) 83; (1915)	81.6
University of Tennessee	(1914) 76.4; (1915) 77.6, 77.9, 81.8, 82.1, 83.4, 83.6, 84.1, 86.5, 88.8, 89.7.	
Vanderbilt University	(1915) 81.1, 85.2, 90.2	
FAILED		
College of Physicians and Surgeons, Little Rock	(1910)	56.7
University of Arkansas	(1912)	66.6
Meharry Medical College	(1915)	61.7

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
College of Physicians and Surgeons, Kansas City	(1902)	Kansas
Kentucky School of Medicine	(1891)	Indiana
Johns Hopkins University	(1908)	Wisconsin
Tulane University of Louisiana	(1913)	Louisiana
University of Nashville	(1896)	Oklahoma
Medical College of Virginia	(1899) (1911)	Virginia

Book Notices

A TEXT-BOOK FOR MIDWIVES. By John S. Fairbairn, M.A., B.M., Obstetric Physician, St. Thomas Hospital; Lecturer on Midwifery, St. Thomas Medical School, Physician and Lecturer to Midwives, General Lying-In Hospital. Price, $3.75. Pp. 317, with 107 illustrations. Oxford University Press, 1914.

In accordance with the Midwife Act passed by the English Parliament in 1902, all midwives then in practice were admitted to the roll without evidence of education or training. Since then every woman wishing to practice as a midwife must go through a course of training provided by the Central Midwives Board (C. M. B.) and pass an examination. Many trained nurses take this course for midwives, but the County Councils may also send up handy village women who are also admitted to it. The minimum course of training seems very short, especially for those who have had no training as nurses. It covers a period of at least three calendar months in both theory and practice, consisting of at least fifteen lectures and requiring the personal attendance at the delivery of at least twenty patients in labor as well as the nursing of twenty puerperas and infants. Having completed the course of training, the candidate for registration as midwife must pass the examination by the C. M. B., when she is entitled to practice in accord with the provisions of the act and subject to the rules and regulations.

The author of this book has had over twelve years' experience as teacher and examiner of midwives, as well as in the capacity of lecturer in a medical school. He has prepared a book which is more comprehensive than has generally been considered necessary for midwives. The result of his experience, however, is that a more educated class with an insatiable thirst for knowledge is coming forward to qualify as midwives, and that they demand and need a comprehensive work that can be used for reference even if not studied thoroughly.

The book begins with an introduction giving the fundaments of general anatomy, physiology and bacterial infection. The rest of the book is divided into nine parts devoted to pregnancy, labor, puerperium and infant, including one part on hygiene and disinfection and one on the midwife's duties. There is also an appendix on note taking, weights and measures and drugs, as well as a glossary and a good index.

The theory has been combined with the practical rules to show the rationale of the latter. The theory has been developed in accord with the best modern teaching. The practical rules necessarily conform to the rules of the C. M. B., and are largely in definition and amplification of them. A few things seem worthy of notice. In the rules for the management of labor it seems strange that no mention is made of the use of gloves. In the preparation of the vulvar region, the statement that "it is not practicable to shave the parts" is not in accord with the best practice in this country. Allowing midwives to handle breech presentation cases we would regard as very dangerous. The danger to the child from excessive uterine contractions is not mentioned except in the remarks on precipitate labor, a quite different matter. In general, however, the rules are in accord with those prescribed for obstetric nurses in this country, although somewhat less definite.

The book seems to be well adapted to the needs of midwives, and can be heartily recommended to such American midwives as wish a thorough course in obstetric theory as well as practice. It would also be of interest and value to trained nurses who wish to specialize in obstetric nursing.

INDISPENSABLE ORTHOPEDICS. A Handbook for Practitioners. By F. Calot, Chief Surgeon to the Hôpital Rothschild. Translated from the Sixth French Edition by A. H. Robinson, M.D., M.R.C.S., and Louis Nicole. Two volumes. Cloth. Price, $5 per volume. Pp. 1175, with 1,260 illustrations. St. Louis: C. V. Mosby Company, 1915.

These two volumes, as shown by the typography and composition, were evidently printed in France. The illustrations, which include eight fine full page colored plates, form a striking feature of the work. Careful attention is paid to

the details of treatment, particular stress being laid on plaster work. Celluloid work is also carefully considered. Although the method of preparing plaster apparatus varies considerably from that employed by orthopedists in this country, the final construction is probably quite as efficient, and the variation in method will be of interest to those who study it. The text is divided into four parts, with three preliminary chapters on general technic, including plaster and celluloid work, anesthesia and puncture and injection. Part 1 is devoted to acquired tuberculous affections, Part 2 to acquired nontuberculous affections, and Part 3 to congenital orthopedic affections. Part 4 is an appendix devoted to other manifestations of tuberculosis, syphilis, osteomyelitis, etc. The text is intended primarily for the general practitioner who is not a surgeon, but of course will not be without interest to the specialist. The spirit of optimism and faith that, through the author's careful instruction, many of the *bêtes noires* of the orthopedic specialist can be easily and satisfactorily treated by the everyday practitioner, stands out boldly in every page of the book. For instance, on page 826 appears the statement, "Every practitioner, without exception, may treat and cure all the club feet seen in ordinary practice up to 18 or 20 years." So it is with congenital dislocation of the hip, wry neck, the various tuberculous conditions and scoliosis. As to the author's optimism regarding his own skill in treating tuberculosis of the epididymis and male genitals in general—which with a chapter on cervical adenitis hardly corresponds with the American conception of indispensable orthopedics—the following quotation from page 1011 is an illuminating illustration. He says, "I will repeat here that in the last eighteen years we have not seen a single tuberculosis, even suppurating, of the male genital organs, which has not been cured by our treatment, lasting in most cases less than a year." The keynote of his treatment of tuberculous affections, whether of soft parts or of joints, is rest by the seashore, particularly at Berck, and a system of puncture and injections into the tuberculous focus. The latter is his sheet anchor, with the former the most valuable adjunct. He pays no special attention to heliotherapy, and in his treatment of tuberculosis of the spine does not mention Albee's work or methods. The work has the good quality of being very individualistic, representing the author's own views and experiences, with the exception of a chapter on operative treatment of infantile paralyses of the poliomyelitic and the cerebral types, by Vulpius. He appreciates Abbott's work on scoliosis and devotes a number of pages to its description, showing many illustrations of apparently overcorrected scoliotic spines which are becoming so much less frequent with more extended experience in American practice. Finally, in the last line of the last volume, apropos of this and other treatments, appears this sentence, representing the crowning achievement of orthopedic optimism: "So then it is in our power to cure scoliosis." So much for the matter of the text. As to the manner, the translation is quite literal with French diction and English spelling. The word orthopedic is spelled "orthopedic," "orthopaedic" and "orthopoedic," the latter appearing to be the favorite. The syllabification of words broken at the end of the line is abominable, the book showing so many examples like ma-king, extre-mity, requi-red, cons-tructed and remembe-ring, that one gives up in despair or disgust trying to record them. This is not fair to the author. It is earnestly to be hoped that these faults will be corrected in the next English edition.

Shortage of Drugs in South America.—A Brazilian exchange relates that the commercial crisis throughout South America in consequence of "the European conflagration" has affected drugs as well as everything else. Supplies are running short, and they are being eked out by adulteration. Physicians are warned especially against falsification of ether. The Rio de Janeiro Board of Health recently examined 100 specimens of citrate of magnesia, obtained from various pharmacies, and found that only 20 per cent. were free from adulteration of falsification.

Miscellany

Public Health Legislation for 1915

Since January 1, the legislatures in all the states, with the exception of Georgia, Kentucky, Louisiana, Maryland and Mississippi, have been in session. All have adjourned except that of Alabama, which may possibly remain in session for a month or more. The legislatures of Delaware, Montana, Nevada, New Mexico and South Dakota adjourned without enacting any public health legislation. In most of the other states, few public health measures were considered, yet in some states as many as fifty public health laws were enacted. Many of these are of minor importance, but a large mass of important legislation was enacted, including laws regulating the reporting of vital statistics and the practice of medicine, and providing for the organization and administration of the state boards or departments of health. In all, 367 public health measures are reported as passed. A summary of the more important follows:

ARIZONA.—The law for reporting vital statistics was amended to make the secretary of each county board of health the county registrar of vital statistics and to permit county boards of health to appoint local registrars for each district in the county. Fees are to be allowed such registrars for making reports.

ARKANSAS.—Laws were enacted establishing separate boards for the registration of chiropractors and optometrists. The board of health law was amended.

CALIFORNIA.—The medical practice act of 1913 was again amended, principally to authorize the issuing of reciprocity certificates to others than those licensed to practice medicine and surgery, and to add a new section on chiropody, California thus being one of seven states to provide means for licensing chiropodists. The law specifies the number of hours required for preparation for such a license. After 1922, applicants for these licenses must be high school graduates. The number of hours to be required of any applicant under this law was materially reduced.

The laws providing for the registration of nurses, the reporting of vital statistics and the licensing of pharmacists were amended. A law providing for the regulation of dentistry, to establish a state board of embalmers, to amend the measure regulating the sale and use of poisons to make it conform more nearly to the federal narcotic law, to amend the measures for the regulation of the sale and distribution of food and beverages, to regulate the construction of buildings, especially the building of tenement houses in incorporated towns and cities, and a large number of laws of a general nature for the prevention and control of disease were enacted.

COLORADO.—The medical practice act was amended, making chiropractors and midwives subject to the control of the state board of examiners. The law is carefully worded so as not to affect the rights which have accrued to osteopaths under prior laws, although their subsequent control and regulation is provided for. Optometrists and Christian Scientists are specifically excepted. The law has been referred for a referendum vote, and its operation is thus suspended, at least until 1916.

The narcotic law was amended to conform to the federal measure. It simplifies the work of physicians.

CONNECTICUT.—The medical practice act was amended as regards the examination of applicants as to educational and moral qualifications. The revocation of licenses for drug addiction was provided for. The practice of midwifery and chiropody were placed under the jurisdiction of the state board.

The narcotic laws were amended generally, as were also the measures for the regulation of the sale of food and beverages. Among a large number of laws to prevent and regulate disease were measures for the appointment of school physicians, for distribution of antitoxins and for the destruction of mosquitoes.

Florida. — Probably the two most important measures enacted were those providing for the reporting of vital statistics and for the medical supervision of schoolchildren. The vital statistics law conforms very nearly to the model bill of the American Medical Association. It marks a decided advance in public health in Florida. The law for the supervision of schoolchildren provides that county physicians are to be medical inspectors for their respective counties and are to be paid out of the state board of health funds. The state board of health is given the general enforcement of this measure.

Other measures were those for the regulation of hotels, restaurants and lunch counters, as well as places where food is prepared, stored and kept, two laws regulating the construction of water closets and the disposal of sewage generally, and a measure similar to the Louisiana law providing a health train and exhibit.

Idaho.—The narcotic law was amended to conform to the federal law. A measure was enacted requiring physicians to pay an annual license fee of one dollar, but this was vetoed by the governor.

Illinois.—Among the numerous health measures passed, the more important are: a comprehensive and excellent vital statistics law, based on the model law of the American Medical Association; a tuberculin test law; a school sanitation law; a law for the prevention of infant blindness; a state antinarcotic law, conforming to the federal law; a law for the confinement of feebleminded persons; an amendment to the medical practice act which restores to the state board of health the power to revoke the licenses of practitioners licensed prior to July 1, 1899; a law providing for the establishment of a tuberculosis sanatorium by counties, and a revised law on occupational diseases. Other measures are those making immoral women subject to one year's imprisonment for the purpose of curing them of venereal diseases; prohibiting the shipment of cattle into Illinois, unless tuberculin tested; amending the embalmers' act; empowering the city councils of certain cities and villages to establish and maintain garbage systems, and a law for the protection of laborers from poisonous fumes and dust. An optometry law was also enacted.

Indiana.—Tuberculosis was made reportable and declared to be an infectious and communicable disease dangerous to public health. The law further provides for the disinfection of infected premises and preventing the renting of such buildings until the law is complied with. Other measures were those providing for the proper sanitation of school buildings, their construction, lighting and the like, the control and regulation of funerals, and for the codification of the public health laws.

Iowa.—Several measures were enacted with reference to the hygiene and proper care of children.

Kansas.—A law was enacted creating a division of child hygiene and one for the dental inspection of schoolchildren. Other measures were those providing for the protection of drinking water and for the construction and maintaining of sewer systems; forbidding false and misleading advertising; forbidding fee splitting by physicians, and several other measures of minor importance.

Maine.—Laws were enacted creating a board for the examination and registration of nurses, regulating the sale of habit-forming drugs, and amending the workmen's compensation act. None of these measures differs widely from similar laws in force in other states. The vital statistics law was amended in a minor regard, and a number of laws were enacted of a general hygienic nature, such as those regulating the sale of food, the employment of women and children in factories, and the control of the feebleminded and the insane.

Massachusetts.—The new laws enacted were of somewhat minor importance, being chiefly for the regulation and control of the sale of various foods. The narcotic law was amended to conform more nearly to the federal narcotic measure, and the medical practice act was also amended, chiefly as to the qualification of applicants for licenses.

Michigan.—A law was passed providing for the regulation of chiropodists, who are placed under the board of registration in medicine. The vaccination and veterinary laws were amended, as were also some of the food and drug laws, with a special regard for milk and milk products. Provision was made for the establishment of branch bacteriologic laboratories, and for the purchase of necessary supplies. The public health laws were amended generally in several particulars, an appropriation of $50,000 being made for the control of tuberculosis.

Minnesota.—Tuberculosis and narcotic drugs received careful consideration. Among other measures were those forbidding false and misleading advertising, controlling the sale and manufacture of various foods, providing for railway sanitation, and authorizing the establishment of sewage systems in certain localities. The optometry law was amended so as to cover all who treat the eyes by prescribing glasses.

Missouri.—The vital statistics law was amended by providing for fees for the reporting of births and deaths. The law controlling the sale of narcotic and hypnotic drugs was amended to apply to opium, morphin, codein and heroin more specifically. Two measures were enacted for the regulation and control of tuberculosis conforming to similar measures found in other states. A number of laws were passed amending the food and drug laws, to prevent nuisances, to forbid fraudulent advertising and to protect persons working in lead and zinc mines.

Nebraska.—A law was enacted giving physicians a lien on any sum which may be due a patient from some other person who may be responsible for such person's injury. One for the regulation and licensing of chiropractors was also enacted.

New Hampshire.—The board of health law was amended to provide for the appointment and regulation of local health officers, for the establishment and regulation of quarantine, and in certain other regards. Laws were enacted for the treatment of persons afflicted with tuberculosis, particularly in the advanced stages, for the control and prevention of infant blindness and to control the insane. Other laws were for the distribution of antitoxin, the sanitation of schoolhouses, to restrict the use of the common towel, and to provide for the efficient administration of hospitals. The medical practice act was amended, but not in any way to differentiate it from other laws of this nature. Other laws specifically regulating physicians were one to prevent false prescribing and one relating to the sale of habit-forming drugs. The food and drugs laws were amended, and a measure was enacted for the regulation of marriages, forbidding the consummation of such a relationship between mental defectives. This law is more like the earlier measures on this subject, and makes no attempt to be so far-reaching as the Wisconsin act of two years ago. Other laws of interest are those relating to pandering and child labor.

New Jersey.—The board of health law was amended by abolishing the present board and creating a department of health in its place. This department is controlled by eight persons appointed by the governor. A director of health is to be chosen by the board. The law is similar to the New York measure. The vital statistics law was amended. Several laws were passed for the control of contagious diseases and the regulation of feebleminded persons. The medical practice act and the laws for the control of osteopathy, nursing, dentistry and chiropody were amended. The principal amendment to the medical practice act related to medical qualifications and defined what constitutes the practice of medicine. The food and drug laws were amended to define adulteration and misbranding and to prevent the spread of diseases through the sale of dairy products, as well as in several minor details. A large number of measures of a general hygienic nature was enacted, such as those for the establishment of public baths and playgrounds, to protect certain workmen, and to control various animal diseases.

NEW YORK.—The public health laws were amended to reorganize local boards of health and to authorize the consolidation of municipalities into health districts. Certain penalties were provided for violations of the sanitary code, and fees were authorized for reporting births and deaths. The vaccination law was amended, making a distinction between cities of the first and second class and all other localities in the state. Under this law, vaccination of schoolchildren is not required outside of cities of the first and second classes, unless smallpox actually exists. An expert testimony law was enacted, amending the judiciary law in relation to the appointment of examining physicians in criminal or special proceedings. The narcotic law was amended to secure greater protection, and an amendment was added to the public health laws to provide for better regulation and inspection of public water supplies.

NORTH CAROLINA.—The board of health and the vital statistics laws were amended, and measures were enacted for the better control and regulation of tuberculosis. Generous appropriations were made for several state institutions.

NORTH DAKOTA.—The laws were amended to provide for the organization of county boards of health and for the appointment and removal of county health officers. The law providing for the medical supervision of schoolchildren was amended by making such supervision mandatory. Laws were also enacted for the regulation and licensing of nurses and chiropractors.

OHIO.—Attention was centered on the medical practice act, effort being directed toward the proper defining of unprofessional conduct, so as to prevent improper advertising and the division of fees or "fee-splitting," and the wording of the act so as to make it clear that it covered any and all forms of healing, with the exception of midwifery and osteopathy. By this amendment the medical board was given the power to supervise all other cults. A nurses' registration bill, a law for the prevention of blindness in the new-born, a law for the prevention of tuberculosis and for the distribution of antitoxin, and several measures to regulate the sale of food and drugs were also passed.

OKLAHOMA.—The board of health was given authority to establish chemical and bacteriologic laboratories for the examination of public water supplies and for the analysis of foods, drugs and medicines. The laws were also amended to provide for a more efficient supervision of the manufacture of foods and for the proper inspection of hotels, lodging and rooming houses and places where foods are prepared and kept.

OREGON.—The vital statistics law was amended to conform more nearly to the model bill, and other laws were enacted for the prevention of blindness in infants and to protect and conserve the purity of municipal and domestic water supplies.

PENNSYLVANIA.—The quarantine laws were amended for the purpose of obtaining greater security from various contagious diseases. The osteopathic law was amended to define what constitutes a reputable school and to determine eligibility of applicants. A law was enacted for the promotion of biologic science and for the discovery of new methods of treatment in medicine and surgery, and for the care and treatment of persons habitually addicted to the use of alcohol or drugs.

RHODE ISLAND.—Some minor changes were made in the law governing the board of health, providing for expenses and for the preparing and publishing of certain statistics. The medical practice act was amended to require certificates to be signed by both the president and the secretary of the board. Other measures were those providing for the disposition of dead bodies and the proper treatment of persons suffering from occupational diseases, and to require the vaccination of schoolchildren, unless certified as unfit subjects for this purpose. Appropriations were made for the proper care and treatment of tuberculous patients, etc. The appointment of medical inspectors for the schools of Providence was authorized, and the food and drug laws were amended in several regards. Several measures were enacted for the protection of persons in various employments and to secure efficient administration of these laws.

SOUTH CAROLINA.—The public health laws were amended to provide for the appointment of local boards of health in cities and towns, to secure the proper control of the insane and to provide the conditions on which graduate nurses of other states may be licensed in South Carolina.

TENNESSEE.—Two measures of interest were enacted, one of which provides for the prevention of blindness in the new-born, and the other amends the medical practice act so as to make it of broader application, more specific in its intent and purpose, and to determine the proper qualifications for licensure.

TEXAS.—Measures were enacted to provide for health districts, to appropriate a certain sum for the prevention of bubonic plague, to provide for the care of crippled children, to prevent the pollution of water courses and to require hotels and other such places to take proper sanitary precautions in the interest of the public welfare.

UTAH.—The public health laws were amended by prescribing the qualifications of the secretary of the state board of health and providing for his salary. A measure was enacted creating a commission for the investigation of the amount of feeblemindedness in the state.

VIRGINIA.—A resolution was adopted to provide a commission for the study of tuberculosis and to defray its expenses.

VERMONT.—The board of health law was amended with regard to the organization and the compensation of the secretary and certain appointees. The laws on controllable diseases were amended, forbidding the marriage of persons infected with venereal diseases and requiring the reporting of such diseases, and providing an appropriation for the care of indigent tuberculous persons. The laws providing for the care of the insane and feebleminded persons were amended. Provisions were made for their care in hospitals. The law providing for the medical supervision of schoolchildren was amended to provide for medical inspectors, designating their duties and providing for the administration of the law by the board of health. Laws were enacted to regulate the erection of school buildings, the sanitation of barber shops and the construction of mausoleums and the like. The medical practice act was amended with reference to the qualifications of the applicants for licenses and the definition of unprofessional conduct. Osteopaths complying with certain requirements are not covered by this measure. The optometry law was amended to forbid fraudulent personation of this profession. The laws for the sale of narcotic drugs were changed to prevent the improper use of such medicines and in some degree to conform to the federal measure. Other laws were those for the reformation of inebriates by their proper confinement and control, the regulation of places where women are employed by compelling the use of chairs, and the establishment of a laboratory of hygiene to aid in the control of infectious bovine abortion.

WASHINGTON.—The vital statistics law was amended by providing for the redistricting of the state outside of certain cities, each district to be in charge of district health officers. The medical practice act was amended to define unprofessional conduct by prohibiting a conspiracy on the part of one physician to obtain money from or injure the reputation of another practitioner. The board of health law was amended by providing for an annual convention of county health officers, as the commissioner of health shall determine.

WEST VIRGINIA.—The principal measure enacted was that reorganizing the department of health. Under this law the board of health was changed into a state department of health, with a commissioner of health at the head, and an advisory board. This council is given the additional duty of supervising the practice of medicine and surgery. Optometrists are exempted from this provision.

WISCONSIN.—The legislature has just adjourned after passing a number of public health measures, notably an amendment to the medical practice act and an optometry law. A detailed sumary of Wisconsin legislation will appear later.

WYOMING.—A law was enacted providing for the medical supervision of schoolchildren. It is made the duty of the schoolteachers to watch the children for defective sight or hearing and diseases of the nose and throat. The state superintendent of public instruction is to provide the rules for the proper guidance of the teachers.

Medicolegal

Tender of Person for Operation to Determine Whether Appendix Had Been Removed

(Hoxsey vs. Murray et al. (Wash.), 147 Pac. R. 205)

The Supreme Court of Washington affirms a judgment against Mr. Murray and wife for professional services rendered to Mrs. Murray. One item of his account was for "curetting," January 26, and another for a "laparotomy," Feb. 16, 1911. The court says that the defendants charged in a cross-complaint that the plaintiff was employed, on the latter date, to operate on Mrs. Murray for appendicitis, and for no other purpose, but that, without authority, he removed her ovaries and fallopian tubes, which operation was not necessary and not justified by her condition. The primary issue in the case as tried was whether the operation performed February 16 was authorized. The evidence introduced by the plaintiff was to the effect that the curetting was made necessary by an attempt of Mrs. Murray to perform an abortion on herself by the use of a catheter, as she admitted to the plaintiff and to a number of other witnesses who testified; that before the laparotomy operation was performed, Mrs. Murray was told that she would probably lose both fallopian tubes, and said to go ahead and remove everything that was diseased; that a median incision was made just below the navel, and, when examined, both fallopian tubes were found to contain pus and the ovaries were found to be diseased; that Mr. Murray was then called into the room and advised that if the ovaries were not removed they would give Mrs. Murray constant trouble, and he said to remove whatever was necessary; that the appendix was not removed. The trial of the case began Sept. 12, 1913, and, on the 16th, while the case of the defendant was being presented, counsel for the plaintiff moved the court to appoint a commission of three physicians to examine Mrs. Murray as to her physical condition, whereupon counsel for the defendants said that he would tender Mrs. Murray to two physicians and another one that he named for an examination as to whether her appendix had been removed, stating that he was very sure it had, and that he had been authorized to make this tender of her for an operation to determine that fact. Subsequently, during the same day, Mrs. Murray, while on the witness stand, when asked whether she was willing to submit her body to an operation to determine whether the appendix had been removed, replied that she was. The Supreme Court holds that the trial court rightly declined to direct the commission appointed by him to perform the operation because of lack of power. After the verdict for the plaintiff, and a motion for a new trial, defendants' counsel advised counsel for the plaintiff that Mrs. Murray had employed a physician to perform an operation to determine whether her appendix had been removed, and that three other physicians would assist; that the plaintiff or any representative of his might be present, but plaintiff's counsel said they would not care to have a physician present. Two of those physicians made affidavit that the appendix "had been removed some time previously by a surgical operation," and two of them stated: "We found that there was no appendix there." The Supreme Court does not think that a new trial should be granted. Had the question not been raised on the trial in any form, and subsequently, in the ordinary course of affairs, an operation had been performed, and the fact disclosed while the motion for a new trial was pending, a different question would have been presented. If it were a reasonable and proper thing to tender Mrs. Murray for the operation, it would have been equally reasonable that the defendants, claiming that the appendix had been removed, should ask a continuance of the trial in order that they might determine such fact. Nor was there error in permitting evidence to be introduced relative to the fact that Mrs. Murray had told the plaintiff and other witnesses who testified that she had used a catheter in attemping to perform an abortion.

Injudicious Exercise Proximate Cause of Injury

(Kill vs. Industrial Commission et al. (Wis.), 152 N. W. R. 148)

The Supreme Court of Wisconsin affirms a judgment confirming an order of the commission dismissing the application of the plaintiff for compensation from a packing company by which he had been employed as a tinsmith. The court says that, on the sixteenth of the month, he accidentally cut his left wrist. The company sent him to a physician, who treated him. On the twenty-fifth, the wound was practically healed, and the physician discharged him as cured. On Saturday evening, the twenty-sixth, he engaged in a boxing match, and on the following Monday night suffered pain in his wrist. On the following day his wrist was found to be infected, and finally he lost the bones of the hand and wrist, incapacitating him from following his trade. The commission found, among other things, from the evidence before it, that the wrist became infected at the time of the injury on the sixteenth, through the introduction of poisonous bacteria, known as streptococci. Through Nature's process these germs were walled off and did no damage at first. This was because the patient was strong enough to resist the attack of the bacteria. Had he not entered the boxing bout, in the course of time the bacteria would have been expelled from the system without harmful results. But the strenuous exercise of the boxing bout had the effect of "lighting up" or stirring into activity the poisonous germs, and at the same time lessening the resisting power of the plaintiff, resulting in the active poisoning of the arm. The physician advised him, at the time of his discharge, on the twenty-fifth, not to enter the bout; that it might do harm, and it might not—it would be impossible to say. The contention of the plaintiff was that his final disabled condition was the proximate result, within the meaning of the statute, of the injury received by him while in the course of his employment by the packing company. But it seems clear to the court, from the findings supported by evidence, that the injury to the plaintiff, while in the employ of the packing company, was not the proximate cause of the present disability. That injury had been healed and cured, sufficiently at least that, had it not been for the bout voluntarily entered into with knowledge of the danger, the injury complained of would not have occurred. The commission, therefore, was justified in finding that the bout proximately caused the injury complained of. The injury must be proximately caused by the accident, and not self-inflicted, according to the statute, to entitle to damages.

Society Proceedings

COMING MEETINGS

Amer. Assn. of Obstetricians and Gynecologists, Pittsburgh, Sept. 14-16.
American Electro-Therapeutic Association, Atlantic City, Sept. 14-16.
American Public Health Association, Rochester, N. Y., Sept. 7-10.
American Roentgen Ray Society, Atlantic City, Sept. 22-25.
Association of Military Surgeons of the U. S., Washington, Sept. 13-15.
Colorado State Medical Society, Denver, Oct. 5-9.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Indiana State Medical Association, Indianapolis, Sept. 23-24.
Kentucky State Medical Association, Louisville, Sept. 21-23.
Michigan State Medical Society, Grand Rapids, Sept. 1-2.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Missouri Valley Medical Society, Des Moines, Sept. 23-24.
New Mexico Medical Society, E. Las Vegas, Sept. 6-8.
Oregon State Medical Association, Portland, Sept. 9-10.
Pennsylvania State Medical Society, Philadelphia, Sept. 20-23.
Utah State Medical Association, Salt Lake City, Sept. 28-29.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

August 1, XXXVIII, No. 2, pp. 163-312

1 Preservation of Life of Frog's Egg and Initiation of Development, by Increase in Permeability. J. F. McClendon, Minneapolis.
2 Action of Anesthetics in Preventing Increase of Cell Permeability. J. F. McClendon, Minneapolis.
3 New Hydrogen Electrodes and Rapid Methods of Determining Hydrogen Ion Concentrations. J. F. McClendon, Minneapolis.
4 Direct Reading Potentiometer for Measuring Hydrogen Ion Concentrations. J. F. McClendon, Minneapolis.
5 *Acidity Curves in Stomachs and Duodenums of Adults and Infants. J. F. McClendon, Minneapolis.
6 Perfusion of Mammalian Medulla: Effect of Calcium and of Potassium on Respiratory and Cardiac Centers. D. R. Hooker, Washington, Md.
7 Interpretation of Membrane Manometer Curves as Affected by Variations in Blood Pressure. J. D. Pilcher, Cleveland.
8 Studies on Hydrogen-Ion Concentrations in Blood Under Various Abnormal Conditions. M. L. Menten and G. W. Crile, Cleveland.
9 *Origin of Antithrombin. G. P. Denny and G. R. Minot, Boston.
10 *Chemistry of Normal Human Gastric Juice. A. J. Carlson, Chicago.
11 Content of Sugar in Blood of Cats Under Influence of Cocaine. E. W. E. Schear, New York.
12 *Digestion Contractions of Filled and Hunger Contractions of "Empty" Stomach. F. T. Rogers and L. L. J. Hardt, Chicago.
13 *Physiology of Lactation. W. L. Gaines, Chicago.

5. **Acidity Curves of Stomach and Duodenum.**—According to McClendon the acidity of the adult stomach rises rapidly during the first one and one-half to three hours after a meal, after which it remains stationary until the food has nearly all left the stomach. The rapidity of rise is less the heavier the meal and the more the protein it contains, but it seems also to depend on the efficiency of the individual stomach. The height to which the acidity rises is a personal characteristic. The adult duodenal contents are slightly alkaline. The hydrogen ion concentration is about 0.00000002. The acidity of the infant's stomach (of the first month) rises slowly during the time from fifteen minutes to one hour after nursing, after which it rises rapidly until the stomach is empty. Four hours after nursing it may be as acid as the adult stomach. The acidity is sufficient to activate the pepsinogen, but there is so little milk left in the stomach after the acidity has risen half way that the peptic digestion in the stomach seems unimportant. The infant's duodenum is more acid than the average acidity of the stomach. Pepsin is always present and peptic digestion must take place.

9. **Origin of Antithrombin.**—That antithrombin is formed in the liver is the conclusion reached by Denny and Minot. They found that venous blood taken from the liver, spleen, kidneys and intestines shows no appreciable difference from jugular vein blood in antithrombin content. When stasis is produced in these organs the liver blood alone shows a definite increase in antithrombin. Perfusion of the liver with defibrinated blood causes an increase of antithrombin in the perfusate. Perfusion of the head, spleen and hind leg shows no marked increase and generally a decrease in the antithrombin content. Attempts to stimulate the liver to production of antithrombin by means of bile, bile salts, secretin and electrical stimulation were negative. Injection of small amounts of thrombin into the portal circulation caused a slight rise in antithrombin. Dogs with phosphorus poisoning and liver destruction show a very marked decrease in antithrombin content of the blood as well as diminished fibrinogen.

10. **Chemistry of Normal Human Gastric Juice.**—Carlson reports in detail the results of his investigations made on two human subjects, in one case a gastric fistula with complete cicatricial stenosis of the esophagus and in the other a dilated cicatrix. The results are in agreement with the work of Pawlow and his pupils on dogs, and the work of previous observers on pure gastric juice of normal persons. Normal human gastric juice (appetite secretion) when secreted above a certain minimum rate shows a practically constant total acidity of nearly 0.5 per cent. hydrochloric acid, or the same as the gastric juice of normal dogs. The gastric juice (appetite as well as hunger juice) secreted by the normal stomach at a low rate shows lower than normal acidity and total chlorids. The view of Pawlow based on experiments on dogs that gastric juice is secreted at uniform and constant acidity is true for man only in regard to appetite, digestion and hunger juice secreted at fairly high rate.

Carlson directs attention particularly to the fact that normal human gastric juice is equal in total acidity to the maximum acidity reported by clinical observers for so-called hyperacidity in man, and that there is no evidence that the gastric glands under any pathologic conditions are able to or do secrete a juice of higher than normal acidity. Moreover, the presence in the stomach of gastric juice of full acid strength leads by itself and immediately to no untoward symptoms. The contents of the "empty" stomach, and the continuous or hunger secretion (when the secretion rate is low) have uniformly a lower acidity than the appetite juice. The total acidity of contents of the "empty" stomach is about 0.2 per cent.; a figure frequently given, especially by clinicians, as the acidity of pure gastric juice of normal persons. The acidity of the continuous or hunger secretion is higher, and the greater the secretion rate the higher the acidity, until it may equal that of the appetite juice. In no instance does the acidity of the continuous secretion exceed that of the appetite juice.

12. **Contractions of Empty and Full Stomach.**—Rogers and Hardt claim that both in man and in the dog, the fundic end of the stomach, during the normal digestion, exhibits a slow tonus rhythm of from one to three minutes' duration. During the emptying of the stomach and the onset of the hunger period, this tonus rhythm becomes more vigorous. In the dog after thirty-six hours' starvation the stomach is markedly hypertonic; a vigorous hunger contraction is a contraction of the fundus as a whole. In man after fifteen hours' starvation the hunger contractions are vigorous peristaltic contractions in groups of two to four, superposed on the slow tonus rhythm. They begin at the cardiac end of the stomach and sweep over the whole stomach. A given inhibiting agent does not necessarily have the same effect on the different types of gastric contractions; thus the pyloric peristalsis is the most resistant to reflex inhibiting influences; fundic peristalsis is least resistant, while the tonus rhythm occupies a position between the two.

13. **Physiology of Lactation.**—Gaines found that transfusion of blood from a pregnant goat into a lactating one temporarily inhibits milk secretion. Placental and mammary gland extracts from a pregnant cow have an effect similar to the blood. There is some indication of a subsequent accelerating action in the case of the gland extract. Transfusion of blood from a fresh, heavy-milking goat into a low-milking one fails to accelerate milk secretion. Pituitrin has a muscular action on the active mammary gland causing a constriction of the milk ducts and alveoli with a consequent expression of milk. This action holds, also, on the excised gland in the absence of any circulation. The flow of milk produced by pituitrin is dependent on the amount of milk present in the gland.

There is no evidence of any true secretory action. The nonlactating gland, up to a late stage of pregnancy, is not sensitive to pituitrin. Nursing, milking, and the insertion of a cannula in the teat, excite a reflex contraction of the gland musculature and expression of milk. There is a latent period of from thirty-five to sixty-five seconds. Milking is a stronger excitant than the cannula; nursing is stronger than milking [and the direct action of pituitrin (in some cases) is stronger than nursing]. Removal of milk from the gland is dependent on this reflex, and it may be completely inhibited by anesthesia. The adequate stimulus for the receptor in the reflex arc is the thermal and mechanical effects of nursing; but the strength of the excitation thus aroused is profoundly modified by the psychic state of the mother—especially striking are anesthesia, which greatly weakens it, and recovery of the young after separation, which greatly strengthens it.

The internal capacity of the mammary gland of the goat is greater than the volume of milk drawn at one time, and the udder shrinks in volume during milking to nearly the

same extent as the volume of milk drawn. Practically all the milk drawn is present at the beginning of the milking, and is actively ejected by a reflex contraction of the gland musculature under the stimulus of milking. Passing milk through filter paper separates it into fractions of different fat content, somewhat similar to fore-milk and strippings. A physical filtration may account, at least in part, for the rise in fat content of the milk with progress in milking.

American Journal of Public Health, Boston

July, V, No. 7, pp. 593-686

14 Some Physical Characteristics of Male Garment-Workers of Cloak and Suit Trades, Based on 2,107 Physical Examinations. J. W. Schereschewsky, U. S. P. H. Service.
15 Methods of Bacterial Air Analysis. G. L. A. Ruehle, Geneva, N. Y.
16 Statistical Treatment of Stillbirths. F. V. Beitler, Halethrop, Md.
17 Main Points of Attack in Campaign for Public Health. C. W. Eliot, Boston.
18 Scope of Nurse in Public Health Work. E. P. Crandall, New York.
19 Conservation of Life at Middle Age. I. Fisher, New Haven, Conn.
20 What Massachusetts Has Done and May Do for Public Health. W. T. Sedgwick, Boston.
21 Control of Communicable Diseases. E. R. Kelley, Seattle.
22 Relationship between State and Local Boards of Health. L. A. Jones, North Adams.
23 Health of Farmer. J. S. Hitchcock, Northampton.
24 Vacation Health Problems. A. S. MacKnight, Fall River.
25 Continuing Problem of Vaccination. S. H. Durgin, Duxbury.
26 Control of Cancer. E. Reynolds, Boston.
27 Some Problems of Health Officer of Small City. F. G. Curtis, Chestnut Hill.
28 Infant Mortality from Standpoint of State. W. H. Coon, Haverhill.

Boston Medical and Surgical Journal, Boston

August 5, CLXXIII, No. 6, pp. 187-224

29 *Treatment of Eczema with Special Reference to Use of Vaccine and Part Played by Bacteria in Its Etiology. Report of Fifty Cases. L. S. Medalia, Boston.
30 Variations in Sensory Threshold for Faradic Stimulation in Psychopathic Subjects. II. Manic Depressive Insanity. G. P. Grabfield, Boston.
31 Id. III. Dementia Praecox Group. G. P. Grabfield, Boston.

29. **Treatment of Eczema.**—Medalia's paper is based on a study of fifty-one cases of most protracted types of eczema. Practically all of these cases failed to respond to the ordinary methods of treatment, and the patients applied for vaccine treatment as a last resort. All but fourteen of these patients have been treated with autogenous vaccines. Cultures were obtained in the usual way, using a number of swabs. The material was collected from unopened vesicles and crusts, from pustules and scales. The cultural findings in the 51 cases of eczema to be reported were as follows: 34 cases showed *Staphylococcus aureus* in pure culture; 2 cases showed *Staphylococcus aureus* mixed with *Staphylococcus albus;* 6 cases showed *Staphylococcus aureus* mixed with streptococcus; 3 cases were found sterile; in 6 cases no cultures were taken. It was found early in the application of this method of treatment in eczema that autogenous vaccines were necessary, and a still more important point was the need to administer what would be considered, ordinarily, tremendous doses up to 6,000 million organisms or over, in one dose. Otherwise there would be no noticeable change in the condition clinically nor would there be much local reaction.

The results obtained in these 51 cases can be summarized as follows: Cured, 43 patients. Of these there were 8 that had one or more recurrences, which yielded readily to from two to four treatments of their autogenous vaccine. Improved, 6 patients; no improvement, 1; results unknown, 1. The minimum number of treatments was 3; maximum, 41. Minimum duration of treatment, two weeks; maximum, twelve and one-half months. Forty-five of the 51 cases were of the vesicopustular and weeping variety. The remaining 6 were of the dry and scaly type. Two of the 6 were improved. Four were cured. Medalia advises that the general condition, food idiosyncrasies, habits and occupation of each patient should be carefully studied in order to eliminate, if possible, the exciting causes of the dermatitic lesions. Ointments, powders and other topical applications, though temporary in their effect, are necessary adjuncts to the vaccine treatment to protect the raw skin and help to relieve the patient's discomfort. The use of large doses—6,000 million organisms or over—of the autogenous staphylococcus vaccine was found necessary for the successful treatment of this disease.

Delaware State Medical Journal, Wilmington

July, VI, No. 8, pp. 1-24

32 Ileus; With Special Reference to Some Acute Forms. J. H. Baldwin, Philadelphia.

Illinois Medical Journal, Chicago

July, XXVIII, No. 1, pp. 1-80

33 Mechanism of Exhaustion. F. P. Norbury, Springfield.
34 Infections of Epididymi with Their Surgical Treatment. I. S. Koll, Chicago.
35 Treatment and Prognosis of Syphilis of Nervous System. R. C. Hamill, Chicago.
36 Principles Underlying Treatment of Septic Peritonitis. J. E. Allaben, Rockford.
37 Traumatism as Etiologic Factor in Pulmonary Tuberculosis. J. W. Pettit, Ottawa.
38 Civil Liability of Physician for Malpractice. J. H. Miller, Pana.
39 Painful Manifestations of Myocardial Disease. L. C. Taylor, Springfield.
40 Unusual and Interesting Case of Carcinoma of Omentum. C. J. Whalen, Chicago.
41 Cancer Death Rate Increase in Chicago. H. G. Ohls, Chicago.

Medical Record, New York

August 7, LXXXVIII, No. 6, pp. 215-256

42 Lymphangioma and Radium. R. Abbe, New York.
43 *Roentgen Ray Treatment of Ringworm of Scalp. G. M. Mackee, and J. Remer, New York.
44 Peace and War Footing of Alcohol. E. H. Williams, Los Angeles.
45 Tuberculosis in Children. W. W. Riha, Bayonne, N. J.
46 *Influence of Autolytic Products on Tumor Growth. G. L. Rohdenburg and F. D. Bullock, New York.
47 High Calory Diet in Typhoid. K. E. Kellogg, New Britain, Conn.

43. **Roentgen-Ray Treatment of Ringworm of Scalp.**—MacKee states that the use of the Roentgen ray in tinea tonsurans is based on its ability to cause a defluvium—to make the hair fall out. The ray does not have a destructive effect on the fungus, although it is possible that in some way it so modifies the soil that the organism finds a less favorable medium on which to grow. In any event, most of the spores are removed with the hair and those remaining disappear or are destroyed by the use of antiparasitic remedies before the hair regrows, at the end of about three months. In general there are two ways in which the Roentgen ray can be employed for this purpose—namely, the divided dose and the massive or intensive dose methods. With very few exceptions the former is the procedure used in this country, while in Europe the latter method has been employed since it was advocated by Sabouraud and Noiré in 1904.

The older method (divided dose) precludes accurate direct measurements and cannot be employed to produce a defluvium of the entire scalp, at least not without considerable danger. Its use, therefore, is limited to the individual treatment of one or more areas. Even here the result is uncertain and unsatisfactory. With the older technic, permanent alopecia may occur even in the absence of a preceding erythema. On the other hand, if this amount is divided into eight treatments which are administered twice weekly, depilation will not result. The details of the method as employed by the author are described.

46. **Influence of Autolytic Products on Tumor Growth.**—An invasive rapidly growing medullary carcinoma, was the neoplasm used by Rohdenburg and Bullock in their work. Fourteen days after subcutaneous tumor inoculation, mice in groups of ten were given daily injections of 0.25 c.c. of 1 per cent. solution or suspension of one of the various products (a dosage equal to 9 gm. per diem for a 150-pound man). These injections were given subcutaneously in a region of the body remote from the tumor, and were continued for fourteen days. At the end of this period of observation the mice were killed and several tumors of each group were examined microscopically. The experiments failed to show any inhibition of tumor growth when the chemical products of autolysis are used. In particular, nucleinic acid, derived from animal cells, and protonuclein are without effect on the malignant tumors in mice; their therapeutic use in human cases can be expected to produce nothing but the psychic exaltation common to the use of every new remedy.

New Jersey Medical Society Journal, Orange

July, XII, No. 7, pp. 313-364

48 What Surgery Is and Should Be. G. K. Dickinson, Jersey City.
49 Diagnosis and Treatment of Carcinoma of Stomach. G. Woolsey, New York.
50 Diagnosis of Cancer of Pancreas—Mistake. J. Payne, Midland Park.

New Mexico Medical Journal, Las Cruces

July, XIV, No. 4, pp. 97-128

51 Plea for General Instruction in Practical Hygiene. H. R. Flanders, Las Cruces.
52 Infections of Kidney. C. M. Yater, Roswell.

New Orleans Medical and Surgical Journal

July, LXVIII, No. 1, pp. 1-76

53 Necessity for Educational Campaign for Control of Cancer. C. J. Miller, New Orleans.
54 Precancerous Stage; Predisposing Causes of Cancer, Including Hereditary Influence. W. H. Harris, New Orleans.
55 Skin Conditions Which Lead to Cancer. I. Dyer, New Orleans.
56 Early Signs of Cancer of Womb. E. S. Lewis, New Orleans.
57 Cancer of Stomach. E. D. Martin, New Orleans.
58 Use of Percy Cauterization and Internal Iliac Ligation, as Preliminary Step to Wertheim Hysterectomy. S. M. D. Clark, New Orleans.
59 Radical Operation (Wertheim) for Carcinoma of Uterus. W. Kohlmann, New Orleans.
60 Limitations of Use of Radium in Cancer of Uterus. C. J. Miller, New Orleans.
61 Cancer of Larynx. H. Dupuy, New Orleans.
62 Experimental and Vivisectional Researches, with Minute Chemical and Pathologic Observations. F. Gaertner, Pittsburgh.

New York Medical Journal, New York

August 7, CII, No. 6, pp. 273-328

63 Mouth Hygiene. E. L. Fisk, New York.
64 Teeth and Their Relation to Health. S. Seilikovitch, Philadelphia.
65 Mouth Infections; Their Cause, Treatment, and Systemic Effect. A. H. Merritt, New York.
66 Pyorrhea Alveolaris as Cause of Systemic Disturbances. A. E. Fossier, New Orleans.
67 Pyorrhea Alveolaris. F. E. Stewart, Philadelphia.
68 Relationship Between Dentist and Physician. W. B. Dunning, New York.
69 *Form of Diabetic Coma, Not Due to Acetone Bodies. J. Rosenbloom, Pittsburgh.
70 Scopolamin and Morphin in Obstetrics and Surgery. R. T. Gillmore, Chicago.
71 Importance of Rectal Examination. H. A. Brav, Philadelphia.
72 Cystitis in Women. L. W. Bremerman, Chicago.
73 Rôle of Dentist in Therapeutics of Internal Diseases. R. S. Robertson, New York.

69. **Form of Diabetic Coma.**—Three cases of diabetic coma studied by Rosenbloom were all of the severe type, with no tolerance for carbohydrate, and with a restricted protein intake there was no lessening of the glucose output. They were studied for a period which varied from one week to two months. During this time the urine contained a normal amount of ammonia-nitrogen and showed no trace of acetone, diacetic acid or beta-oxybutyric acid. There was no evidence of any kidney disease. The urine contained excessive amounts of colloidal nitrogen, neutral sulphur, and amino-acids. Death occurred in typical diabetic coma. In the last case studied 200 c.c. of blood were taken shortly before death. Only faint traces of acetone, diacetic acid and beta-oxybutyric acid were found. The nonprotein nitrogen of the blood serum was normal in amount. This case is especially interesting on account of the fact that about fifty hours before death, showers of granular casts were present in the urine. The urine was cloudy, owing to the presence of such an enormous number of casts. An intravenous injection of 600 c.c. of 6 per cent. sodium bicarbonate produced a marked improvement in the symptoms.

Rosenbloom believes that his observations show the necessity for changing our views relative to the exciting factors present in all cases of diabetic coma. The inadequacy of the alkaline therapy, he says, can be explained on the basis that the acetone bodies are not the important factors in the causation of the symptoms in all cases of diabetic coma, but that more attention must be paid to the study of the excretion of amino-acids, polypeptids, and certain unknown substances, in this disease.

Ophthalmic Record, Chicago

July, XXIV, No. 7, pp. 331-384

74 New Hand Campimeter. L. C. Peter, Philadelphia.
75 Wide-Aperture Lenses—Punktals and Katrals. C. F. Prentice, New York.
76 Hypertrophy of Conjunctiva; Case Report. W. T. Shoemaker, Philadelphia.
77 Syphilis of Conjunctiva—Fibroma of Orbit. G. H. Mathewson, Montreal, Canada.
78 Case of Gonorrheal Iritis Following Traumatism. R. S. Lamb, Washington, D. C.
79 New Retractor for Extirpation of Tear Sac Operation, Exterior Frontal Sinus Operation and Infant Mastoid Operation. D. T. Vail, Cincinnati.
80 Congenital Aphakia. W. F. Hardy, St. Louis.
81 Three Cases of Monocular Blindness Due to Sinus Obstruction with Recovery of Vision. J. A. Brophy, Philadelphia.
82 Case of Bilateral Subconjunctival Hemorrhage Apparently Due to Centrifugal Force. A. A. Bradburne, Manchester, England.

Pennsylvania Medical Journal, Athens

July, XVIII, No. 10, pp. 765-846

83 Organization of National and Local Forces in Campaign Against Cancer. C. E. Lakeman, New York.
84 Primary Carcinoma of Tonsil; Report of Cases. J. B. McMurray, Washington.
85 What Do Nonoperative Methods Offer in Treatment of Malignant Diseases of Skin. F. C. Knowles, Philadelphia.
86 Deep Roentgen Therapy. G. E. Pfahler, Philadelphia.
87 Recent Progress in Surgery. J. S. Rodman, Philadelphia.
88 Value of Early Diagnosis of Cancer. W. O. Sherman, Pittsburgh.
89 Opportunity of Large Clinics in Campaign Against Cancer. J. M. Wainwright, Scranton.
90 Dormancy of Cancer Infection. E. O. Kane, Kane.
91 Far-Advanced Malignant Disease. J. H. Gibbon, Philadelphia.
92 Hemorrhage from Nose and Throat. G. Fetterolf, Philadelphia.
93 Health Measures Affecting Factory Employees; Some Remarks on Medical Phases of Such Legislation. J. E. Tuckerman, Cleveland.
94 Digestive Tract, Factor in Health and Disease. J. A. Campbell, Williamsport.
95 Fundamentals of Cancer. J. C. Sullivan, Dubois.
96 Results of Recent Propaganda of Cancer Control. J. C. Bloodgood, Baltimore.

Philippine Journal of Science, Manila

March, X, No. 2, pp. 99-176

97 *Experimental Treatment of Human Beriberi with Constituents of Rice Polishings. R. R. Williams and N. M. Saleeby, Manila.
98 *Thymus Gland in Beriberi. R. R. Williams and B. C. Crowell, Manila.
99 Practical Experience with Some Enriching Media Recommended for Bacteriologic Diagnosis of Asiatic Cholera. O. Schöbl, Manila.
100 *Experiments on Immunization of Guinea-Pigs by Inoculation of Avirulent Tubercle Bacilli in Agar. M. A. Barber, Manila.
101 Test of Coccobacillus Acridiorum d'Herelle on Locusts in Philippines. M. A. Barber and C. R. Jones, Manila.

97. **Treatment of Human Beriberi.**—In ten cases of beriberi reported by Williams and Saleeby, 0.1 gm. of allantoin was administered from 3 to 6 times daily. It had a beneficial effect in certain cases but never amounting to a cure. The allantoin was prepared synthetically by the oxidation of uric acid with potassium permanganate. Hydrolyzed extract of rice polishings used in 8 cases in from 1 to 3 c.c. doses, three times daily, benefited all the types of beriberi on which it was tried. The authors claim that it can be of practical service, but should be used only in cases under the direct supervision of physicians and nurses. Unhydrolyzed extract of rice polishings used in six cases is said to be a safe and valuable remedy for infantile beriberi, but of little use for older cases.

As a whole, the observations on the twenty-seven cases recorded in this paper in their bearing on the etiology of beriberi are in accord with the broad proposition that the disease, in a practical sense at least, results primarily from a poor diet, deficient more particularly in specific substances of the nature of Funk's vitamins. The fact that so-called beriberi cases of whatever type respond in a greater or less degree to the same treatment would indicate that they are in reality one and the same disease. The authors believe that practically all the neuritis which is very prevalent among Filipinos, except, of course, a comparatively small percentage of cases for which some other well-known cause is assignable, may safely be regarded as beriberi.

98. **Thymus Gland in Beriberi.**—Williams and Crowell record some observations made in the course of other work, as to the atrophy of the thymus in cases of beriberi. In four beriberic pigeons which had been fed on white rice the thymus had completely disappeared in every case. Examining sixteen chickens in which polyneuritis had developed as a result of a white rice diet, it was found that the thymus had completely disappeared in seven cases, was considerably atrophied in five other cases, and apparently was slightly, if at all, altered in the remaining four. That this atrophy is not due simply to the age of the birds is shown by the fact that it took place in half-grown as well as in full-grown fowls. No relationship could be established between the atrophy of the thymus and the length of the incubation period or the duration, severity or specific symptoms of the disease. Four chickens which had been fed on milk and white rice for varying periods in the course of another experiment were examined after death. These chickens developed evidence of neuritis and were killed. Their sciatic nerves showed microscopic evidences of degeneration in Marchi preparations. The thymus of one fed with autoclaved milk and white rice was small. The thymus glands of the other three chickens which were fed on whole fresh milk and white rice were large.

Two fowls were fed on white rice with an addition of 10 mg. of dried sheep's thymus daily. It was estimated that the quantity of thymus tissue ingested during the normal period of incubation would be the same as that normally present in young fowls. This small amount of tissue noticeably retarded, but did not prevent the onset of the disease. Two fowls were fed on white rice with a daily dose of the alcoholic extract of 1.5 gm. thymus gland. Here again the protection was not complete, although the loss in weight and the onset of the disease were retarded. Two fowls were fed in the same manner, but with a daily dose of the extract of 3 gm. of thymus with less protective results. For comparison, two fowls were fed on white rice and 2 mg. of uracil daily. One contracted chicken cholera, the other was apparently partially protected by the uracil. Five fowls suffering from polyneuritis were treated with hydrolyzed extract of thymus gland in doses of from 5 to 50 gm. of the gland. No cures were obtained. Two human cases of beriberi were treated with small quantities of thymus and a slight improvement was shown in each case. This improvement did not continue after the first few days of treatment, and the patients at the close of the treatment still showed the characteristic symptoms of the disease, although in a less distressing form. The dose was 0.3 gm. of dried sheep's thymus six times daily. No change was made in the diet of the patients.

100. **Experiments on Immunization.**—Five series of guinea-pigs or monkeys were inoculated by Barber with the spleen pulp of lepers taken at postmortem. Lesions of tuberculosis or lesions very similar to those of tuberculosis developed in two of these series. In one of the two series only a part of the pigs developed tuberculosis. In one series one guinea-pig out of five showed lesions, possibly those of tuberculosis. A series of guinea-pigs inoculated with a strain of tuberculosis of leper-spleen origin exhibited at postmortem a remarkable enlargement of the spleen. The average ratios of the spleen weight to the body weight at postmortem were nearly double the average ratios of a series dying of tuberculosis of human sputum origin.

South Carolina Medical Association Journal, Anderson

July, XI, No. 7, pp. 204-236

102 Cancer of Female Genital Organs. J. R. Young, Anderson.
103 Importance of Early Diagnosis of Uterine Cancer. C. R. May, Bennettsville.
104 Organization of National and Local Forces in Campaign Against Cancer. C. E. Lakeman, New York.
105 Cancer. J. A. Faison, Bennettsville.
106 Cancer. A. E. Baker, Charleston.
107 Some Medical Needs of South Carolina. G. E. Thompson, Inman.
108 Avoidance of Shock During Surgical Operations. L. Guerry, Columbia.
109 Infected Individual Public Danger and Public Problem. G. F. Klugh, Cross Hill.

Surgery, Gynecology and Obstetrics, Chicago

August, XXI, No. 2, pp. 135-267

110 *Tumors of Bladder with Special Reference to Technic and Post-Operative Results. B. A. Thomas, Philadelphia.
111 *Fulguration in Treatment of Bladder Tumors. J. T. Geraghty, Baltimore.
112 Surgery of Urinary Bladder. L. E. Schmidt, Chicago.
113 Desiccation Treatment of Bladder Tumors. E. L. Keyes, Jr., New York.
114 *Radium Versus Surgery in Treatment of Vesical Neoplasms. J. B. Squier, New York.
115 *Pathologic Diagnosis of Tumors of Bladder with Particular Reference to Papilloma and Carcinoma. L. Buerger, New York.
116 Stricture of Deep Urethra Simulating Prostatic Obstruction. J. H. Cunningham, Jr., Boston.
117 Different Types of Fibrous Obstruction of Bladder Outlet and Their Treatment. C. H. Chetwood, New York.
118 Prostatic Obstruction without Hypertrophy. B. Tenney, Boston.
119 Goldschmidt and Wossidlo Technic in Handling Obstructions at Vesical Neck. C. M. Harpster, Toledo, Ohio.
120 Clinical Types of Prostatic Obstruction and Their Surgical Treatment. H. A. Fowler, Washington.
121 Contraindications to Surgical Intervention in Obstruction at Vesical Neck. B. Lewis, St. Louis.
122 Vesical Obstruction by Diseased Seminal Vesicles. W. T. Belfield, Chicago.
123 *Frequency of Recurrence of Stone in Kidney After Operation. H. Cabot and E. G. Crabtree, Boston.
124 Some Details in Surgical Treatment of Tumor of Bladder. G. W. Warren, New York.
125 Insufficiency at Ureterovesical Junction. H. L. Kretschmer and J. R. Greer, Chicago.
126 *Anatomy of Imperfectly Descended Testes. A. C. Wood, Philadelphia.
127 Congenital Ectopic Kidney and Hydronephrosis on Left Side, with Normal Kidney on Right. A. G. Brenizer, Charlotte, N. C.
128 Operative Treatment of Salpingitis. M. T. Goldstine, Chicago.
129 Vacuum Apparatus for Suprapubic Drainage. E. G. Davis, Baltimore.
130 Dilatation of Ureteral Fistulae. W. W. Townsend, Rutland, Vt.
131 Acute Torsion of Right Interabdominal Spermatic Cord, Symptoms of Which Simulate Acute Appendicitis. R. C. Cupler, Chicago.
132 Prolapse of Uterus of Unusual Origin. J. R. Judd, Honolulu.
133 New Operation for Colon Exclusion. A. B. Small, Dallas, Texas.

110. **Tumors of Bladder.**—Of the twenty-two cases tabulated by Thomas, 50 per cent. of the patients are dead. Of these eleven cases, nine were pronounced inoperable when first seen, except as a palliative measure; of the remaining two one was cauterized suprapubically instead of being subjected to a partial cystectomy, the other refused operation. It is notable that the patients with carcinoma (excepting the papillary form) have invariably died. Of those who died, only one patient lived longer than a year after his treatment or cystoscopy. Six patients had been previously operated on, five of whom at the time of their first cystoscopy had pronounced carcinomatous recurrence. Each patient with papilloma or cyst—with one exception in which probably a false diagnosis was made—is living and well. Two cases exhibited recurrences after treatment by the high-frequency current. In one of these, the papilloma reappeared three times, but the growth was readily destroyed by repetitions of the electrical spark. Thus the importance of the differentiation between papillomas and sessile carcinomas respecting the adoption of the proper form of treatment is a matter of first magnitude.

In the event of operable carcinoma, Thomas says, anything short of radical operation is folly. If the tumor be a papilloma, high-frequency electrocoagulation is by all odds the form of treatment productive of the best results. Even though the papilloma may recur—an event far less frequent after the high-frequency spark than the aseptic scalpel—the patient may be subjected to a repetition of the same form of treatment, while there is a limit to the number of major surgical operations.

111. **Fulguration in Treatment of Bladder Tumors.**—Geraghty states that only in tumors which were papillomas has fulguration succeeded in destroying them, and it has been possible to destroy not only the benign but the malignant papillomas. The response to treatment, however, in the benign as compared with the malignant is of considerable interest. In cases in which the tumors are cystoscopically and histologically benign the rapidity of disappearance is frequently astonishing. When, however, the papillomas are malignant the response to fulguration may be extremely slow and lead almost to discouragement. In cases in which the

histologic picture is distinctly malignant one can almost positively predict that the response to fulguration will be extremely slow. Sometimes small malignant papillomas will require many times the amount of treatment which would have been necessary to have destroyed a benign papilloma of the same size. In one case with multiple malignant papillomas covering the left lateral wall of the bladder and the tumors so fused at their surfaces that it seemed like one large tumor mass, seventy-five treatments, extending over a period of nine months, were necessary to entirely eradicate the neoplasms. The result in this case might be considered brilliant, because no radical operation could have given so complete a result. In the papillary carcinoma or sessile tumors, in which infiltration of the base is always present, the chances of eradication of the tumor by this method of treatment are practically nil, although considerable symptomatic relief may at times be obtained.

From the standpoint of ultimate prognosis it is important to have a knowledge of the nature of the growth removed, because in three of Geraghty's cases in which malignant papillomas had been successfully removed, death occurred later from metastases, although the bladder remained free from tumor. Furthermore, recurrences have been encountered only in cases in which malignant papillomas had been removed. Up to the present time recurrences have been observed in four cases. It is stated positively by Geraghty that fulguration should be the treatment selected for all papillomas, benign or malignant, in which infiltration of the bladder wall has not occurred, and that it yields results incomparably superior to the most radical operative procedures.

114. **Radium Versus Surgery in Treatment of Vesical Neoplasms.**—Cures in bladder tumors by the use of radium, Squier says, may be hoped for only in benign papillomas; although it may be possible in certain instances to render the symptoms of vesical malignancy less distressing by intra-urethral, suprapubic, rectal or cross-fire intra-urethral and rectal radiations. By the time vesical carcinoma has been made clinically manifest the growth has already extended too far to be readily influenced by the amounts of radium at present at their command. The question of the best management of a case of vesical carcinoma is no different from that of the management of carcinoma anywhere else in the body and such is, if the growth is anatomically accessible, wide surgical extirpation followed by every means known to science to treat any unremoved growth or recurrence. It may be found, however, as further experience develops more ingenious means to use radium intravesically, that radiating the tumor before operation may lessen the danger of tumor transplants occurring at the time of the operation.

115. **Pathologic Diagnosis of Tumors of Bladder.**—From a study of the pathology of 113 tumors of the bladder, among which there were fifty-five papillomas, forty-five papillary carcinomas, five squamous carcinomas, two metastatic carcinomas and six sarcomas, Buerger was able to conclude that a differential diagnosis between papillomas and carcinomas can be made in almost all instances on a pathologic basis. Certain morphologic criteria were accepted as indicating the existence or the acquisition of malignant traits in any given tumor. These criteria were found to be present in parts of the tumor that are accessible in so far as they can be reached by cystoscopic instruments, and in so far as adequate portions can be removed for histologic examination. The changes that are indicative of malignancy occur, not as heretofore assumed, in the "depth," in cases in which they may escape diagnostic methods, but manifest themselves, first, in the epithelium, not far from the surface, either with or without areas of infiltration. A test of the morphologic criteria proved conclusively that they are dependable and, if adopted, lead to correct diagnosis. Many of the other loosely accepted notions regarding the malignancy of papilloma per se were found to be fallacious. Only in one tumor out of 113 was a papilloma found to infiltrate and still retain "normal" cellular characteristics. In short, a reliable pathologic diagnosis and the possibility of differentiating between carcinoma and papilloma depend on the ability to obtain material and on the ability to recognize the criteria laid down as indicative of malignancy.

123. **Recurrence of Stone in Kidney.**—In the authors' series of 155 cases there were 5 deaths, 2 following nephrectomy, and 1 each following nephrotomy, pyelotomy and ureterotomy. On the basis of these cases one can only say to the patient that the risk of the operation is small; that the danger of progressive destruction of the kidney by the stone, if it is left, is large; that the probability of recurrence is considerable; that it depends somewhat on the age, undoubtedly somewhat on the method of operation and the skill with which it is carried out, but clearly somewhat on the entirely unknown factor—the liability or the ability of that particular kidney to form concretions. The outlook for the cases of stone in the ureter is apparently considerably better. In a series of 21 cases the probability of permanent cure seems to be about two to one.

126. **Anatomy of Imperfectly Descended Testes.**—Wood emphasizes that failure in the descent of the testis is due to developmental defects that take place very early in fetal life. The degree of the abnormality corresponds to the extent of interference in the formative period. As is well known, prior to the fifth or sixth week the sex characteristics cannot be distinguished. It has seemed to Wood that in the condition here alluded to, the impress of the stimulus that determines the sex has been deficient, so that the change from the primary indifferent stage has stopped short of perfection. As a consequence there are definite anatomic defects observed in connection with the testis which may involve other structures derived from the same embryologic source. As the majority of detained testes reach the scrotum by the time of puberty, in the absence of complications that demand relief it would seem wise to postpone operations for transplanting the testis in the scrotum until ample time has been given the organ to descend naturally. When operation is undertaken for any reason an effort should be made to trace the vas, and if it is not found to be connected with the testis an anastomosis may be performed, particularly if spermatozoa are present.

Tennessee State Medical Association Journal, Nashville

July, VIII, No. 3, pp. 117-160

134 Cancer's Predatory Warfare. E. R. Zemp, Knoxville.
135 Cancer from Laboratory Standpoint. W. Krauss, Memphis.
136 Cancer of Breast. R. Barr, Nashville.
137 Cancer of Colon. E. M. Sanders, Nashville.
138 Cancer of Stomach and Gall Passages. E. D. Newell, Chattanooga.
139 Cancer of Cervix. H. M. Tigert, Nashville.
140 Cancer of Skin. R. G. Henderson, Memphis.
141 Carcinoma of Prostate and Bladder. G. R. Livermore, Memphis.
142 Relationship of Roentgen Rays to Cancer. J. Witherspoon, Nashville.
143 Inoperable Carcinoma of Uterus. W. T. Black, Memphis.
144 Treatment of Cancer and Precancerous Conditions. J. M. King, Nashville.
145 Periosteal Sarcoma with Metastases. H. Acuff, Knoxville.

Texas State Journal of Medicine, Fort Worth

July, XI, No. 3, pp. 151-204

146 Report of Committee on Study of Cancer. H. R. Dudgeon, Waco; R. W. Baird, Dallas, and G. D. Bond, Fort Worth.
147 Facts Versus Speculation in Professional Conception of Cancer. W. C. MacCarty, Rochester, Minn.
148 What Public Should Know About Cancer. A. C. Scott, Temple.
149 Off Symptoms of Cancer of Stomach. M. Smith, Oklahoma City.
150 Cautery in Treatment of Cancer. R. R. White, Temple.
151 Cancer of Colon. J. S. McCelvey, Temple.
152 Some Rather Unusual Carcinomatous Growths. H. Hartmann, Temple.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

July 24, II, No. 2847, pp. 125-164

1 Composition and Pharmacologic Action of Spiritus Aetheris Nitrosi. C. R. Marshall and E. Gilchrist.
2 Fluid Extracts of Senna. R. Stockman.
3 Copaiba Oil and Resin. R. Stockman.
4 *Antiseptic Action of Hypochlorous Acid and Its Application to Wound Treatment. J. L. Smith, A. M. Drennan, T. Rettie and W. Campbell.
5 Hints on War Surgery. A. W. Mayo-Robson.
6 Diagnosis of Typhoid in Inoculated Subjects. G. D. Dawson.
7 *Cheap Absorbent Dressings for Wounded. C. W. Cathcart.

4. **Antiseptic Action of Hypochlorous Acid.**—Comparative tests were made by the authors to confirm the conclusion already arrived at by various investigators that hypochlorous acid is the most powerful antiseptic known. Practical methods of using this antiseptic have been devised. It can be used either as a gas or as a solution. The advantage of using the gas is that it will penetrate and will act at a distance. Both the gas and the solution, while extremely potent against organisms and their spores, cause little or no harm to the tissues. The effect of this antiseptic is purely local; the decomposition products are devoid of toxicity, and there is therefore no danger to be apprehended from absorption. A flow of lymph is induced from the wound as part of the reaction of the tissues. Fetor is rapidly eliminated. If pain and irritation occur they can easily be controlled by reducing the concentration of the antiseptic. The practical advantages of this antiseptic for field use are: (a) It can be used as dry powder and therefore obviates the difficulty of procuring water; (b) it can be introduced into the gauze pad of the first field dressing; (c) in cases in which water is available the same powder can be made up as a lotion for general use. The constituents of the powder are inexpensive and easily procured; and the preparation of the antiseptic is extremely simple.

7. **Cheap Absorbent Dressings for Wounded.**—As absorbents Cathcart says that sawdust, dried sphagnum moss, and peat moss are superior to cotton-wool in one important particular; they diffuse the discharges and retain them much better. While a mass of absorbent cotton-wool laid over a freely discharging wound will allow the discharge to pass through to the bedclothes before the greater part of the cotton-wool has been used, bags of these materials suck up the discharges and become filled with them. They are all very valuable also in cases in which there is an outflow of urine.

Lancet, London

July 24, II, No. 4795, pp. 161-212

8 *Functional Diseases of Arteries. L. Brunton.
9 *New Antiseptic Mixture for Treatment of Gunshot Wounds and General Surgical Application. P. Fildes, L. W. Rajchman and G. L. Cheatle.
10 Case of Diverticulum of Bladder. J. Everidge.
11 Treatment of Wounded Soldiers by Thermal Waters of Aix-Les Bains, Savoy. L. Blanc.
12 *Spirochetal Ulceration of Tonsils in Soldiers. W. Wingrave.
13 Case of Polyorrhomenitis. W. A. B. Young.
14 Case of Hysterical Paraplegia. A. Abrahams.
15 Two Cases of Traumatic Double Hemianopsia, with Partial Recovery. C. E. H. Milner.
16 Case of Severe Tetanus; Recovery After Intracerebral Injection. N. Scott and C. H. Barber.

8. **Functional Diseases of Arteries.**—In peripheral spasm of the vessels such as leads to chilblains or produces the symptoms of Raynaud's disease, Brunton has found salicylate of soda, either alone or combined with bromid, one of the most satisfactory of all the remedies. Another remedy which is useful in lessening a tendency to vascular spasm is thyroid gland, either in the form of tablets of the dried gland or of one of the numerous extracts made from it. When given in small doses such as 1 grain or so of the dried gland, it will prevent the occurrence of chilblains in many persons who would otherwise suffer much from them, and Brunton believes he has seen improvement from it even in elderly patients suffering from arteriosclerosis and high tension. He warns that its effects must be watched carefully and one of the first indications for its discontinuance often is the appearance of feelings of nervousness or irritability.

In cases of angina pectoris in which the tension rises during the attack he advises to keep it low by enjoining the patient to abstain entirely from butcher meat and strong soups, to be sparing of alcohol and to abstain from severe exertion of body or mind. Sodium nitrite, nitroglycerin, nitro-erythrite, nitromannite, and sodium and ammonium hippurate are all useful. Iodin, either in the form of iodid of potassium or iodid of sodium or their organic compounds, is another most useful remedy. In all cases it is most important to allow no accumulation of toxins to occur in the liver, and a mercurial pill two or three times a week, followed by a saline in the morning, is a most useful adjunct to all other remedies. In cases in which the tension remains high, notwithstanding the use of medicines, occasional bleedings may be very useful. The use of electricity sometimes gives better results than anything else. It may be used as high frequency, or by the Bergonié method. By the continued employment of a careful diet and the daily use of vascular dilators such as nitrites and iodids, and the occasional use of electricity, the tension in elderly people may sometimes be kept within moderate limits. The cerebral hemorrhage which would otherwise have taken place may thus be averted and life prolonged for years.

9. **New Antiseptic Mixture.**—Corrosive sublimate in a strength of 1:200 mixed with malachite green and applied in a spray in 80 per cent. alcohol is the antiseptic solution employed by the authors. In no case has there been any local irritation, while healing and the growth of epithelium have not been retarded. Even when the skin is already inflamed, as in an extensive pustular dermatitis involving the whole arm and hand, the solution applied daily did not irritate but rapidly alleviated the condition. Further, in no case did mercurial poisoning occur and the urine never contained albumin. The authors have frequently applied the solution to freshly cut surfaces, and it is used as a routine at the time of operation in amputations or other equally extensive operations. They warn that the solution should out quite efficient drainage.

More recently, in an endeavor to use the solution as strong as possible, the concentration of the mercury was increased to 1 per cent. Experience is too short to allow the authors to recommend this concentration definitely, although they have found it to be quite innocuous. Caution is given that this antiseptic mixture must never under any circumstances be brought into contact with the mucous membranes. The patients have received no local treatment in addition to the malachite-green mercury mixture, except fomentations in certain cases for the first few days. The mixture was sprayed on when the fomentations were changed and otherwise whenever the dressings were removed. The general effect of the treatment on the wound was excellent. The surface of the wound when "sloughy" or septic was rapidly brought to a healthy condition. The appearance of the granulations under this treatment was often remarkable. They are quite dry, pink and above all flat. There is no tendency to overgrowth or obstruction of sinuses. Although at the time of application the whole wound becomes green, the color is discharged after a few hours from the healthy tissues, but is retained in sloughs and dead bone. This is due to formation of the "leuko compound" of the stain by the action of the tissues. The growing edge of epithelium is usually intensely stained and it is thought probable that the dye has a stimulating effect on this growth.

The bulk of cases have been treated with the following formula: perchlorid of mercury (cryst.), 1 gm., 80 per cent. spirit (industrial), 100 c.c.; malachite-green (pure), 1.10 gm. 80 per cent. spirit (industrial), 100 c.c. The two solutions are kept separate in bulk and mixed for use in equal parts. It is found that if the two parts are mixed together and kept for several days a compound of mercury and malachite-green crystallizes out of solution. It is emphasized that the application of these solutions in spray must be thorough, comprising the whole wound and a wide area of the surrounding skin. A superficial sprinkling over a wound is of no value. There is a tendency to apply the mixture insufficiently owing to the smarting which results from the spirit basis in the same way as with iodin. This smarting, however, occurs only during the first three or four days of the treatment of a fresh wound, and though sometimes unpleasant does not persist for longer than one and one-half minutes. If the mixture is applied with a good spray held as far as possible from the wound and if the wound is vigorously fanned this disadvantage may be reduced to a minimum. After the first

three or four days the application is plainless. Care must be taken that the spirit has entirely evaporated from the skin before the dressings are applied, otherwise blisters may result. This is particularly important when fomentations are superimposed on the mixture; in fact, the stronger formula should not be used together with fomentations.

12. **Spirochetal Ulceration of Tonsils.**—The affection described by Wingrave is closely allied to, if not identical with, what is usually called "Vincent's angina," and is characterized by three prominent features: (1) a deeply excavated and sloughing ulcer on one tonsil; (2) offensively fetid breath, and (3) the presence of spirochetes and fusiform bodies in great numbers. It may be arbitrarily divided into two groups: (1) acute, lasting from four to seven days, and (2) subacute, a more persistent type, which lasts from two to three weeks. The *Spirocheta fetida,* or Vincent's spirochete is the exciting cause. The most efficient antiseptics are trikresol and formaldehyd solution. The slough should be thoroughly removed and the ulcer swabbed with a 5 per cent. solution of trikresol in alcohol. A frequent mouth wash of weaker solutions should also be ordered. When there is much swelling an excellent astringent wash is zinc permanganate, one-half grain in 1 ounce of warm water. These cases are often associated with pyorrhea alveolaris, which calls for frequent cleansing, and an excellent and pleasant mouth douche consists of 5 minims of English oil of lavender to the 5 per cent. solution of trikresol in alcohol. Of this a few drops may be added to half a tumblerful of water. Beyond a preliminary dose of gray powder, mercury is not called for.

Archives des Maladies du Cœur, etc., Paris

July, VIII, No. 7, pp. 193-236

17 *Therapeutic Utilization of the Eyeball-Heart Reflex. (Réflexe oculo-cardiaque dans les crises tachycardiques.) C. Lian.
18 *Participation of the Nerves in the Production of Edema. (De la part des influences nerveuses dans la production de l'œdème.) J. Heitz and S. I. De Jong.
19 Present Status of Knowledge as to the Functions of the Spleen. (La fonction érythrolytique de la rate.) H. Bénard.

17. **Eyeball-Heart Reflex Utilized to Arrest Paroxysmal Tachycardia.**—THE JOURNAL summarized Feb. 6, 1915, p. 546, Godlewski's advice not to let the heart pound its strength uselessly away in paroxysmal tachycardia, but to arrest it at once by modifying in some way the functioning of the pneumogastric nerve. He accomplished this by having the patients swallow a chunk of bread whole; its passage down the esophagus seemed to divert the attention of the pneumogastric nerve and the tachycardia was arrested. Lian here suggests that the eyeball-heart reflex might be utilized for the same purpose; this is the retarding of the pulse which follows when pressure is applied to both eyeballs. This occurs in nearly every one, the well and the sick, but the effect varies within a wide range in different persons. The pulse may be retarded by a twentieth, a tenth or even by a half of its former rate, the change becoming apparent in four or five seconds. The pressure is kept up only for about a quarter of a minute. The tracing is given of a case in which 30 gm. of syrup of ipecac caused no reduction of the pulse rate but during pressure on the eyeballs for fifteen seconds the rate dropped from 29 to 17 for that quarter of a minute. The effect is manifest for a little time afterward, and by repeating the pressure on the eyeball a few times the paroxysm may be arrested. Lian applies the pressure himself to the patient's eyeballs as he reclines with closed eyes, having first explained the procedure to him. The effect is more marked with application of considerable pressure for a quarter of a minute than of milder pressure longer continued. Swallowing the chunk of bread or other measures may also be used as adjuvants.

18. **Nervous Influences in Production of Edema.**—In one of the two cases reported a woman of 64 had long had high arterial pressure and complete arrhythmia. During the last three years there had been congestion of the liver and ascites but no edema. Then suddenly left hemiplegia and edema on that side appeared simultaneously. The edema appeared, therefore, with vasomotor paralysis set up by the cerebral lesion, and it gradually subsided with the return of volitional movements. In the second case edema developed in the leg below a gunshot wound, a month after the injury. There was complete loss of sensation in the domain innervated by the internal saphenous nerve on the side of the injury. Tests of kidney functioning revealed albuminuria and retention of water and Heitz ascribes the edema to the insufficiency of the kidneys. The paralytic vasodilatation is not sufficient alone to explain it, but served as the occasion for the development of the edema.

Archiv für klinische Chirurgie, Berlin

CVI, No. 4, pp. 559-834. Last indexed May 8, p. 1619

20 *Plastic Autodrainage of Ascites. (Klinische Erfahrungen mit meiner Methode der plastischen Ascitesdrainage.) E. Schepelmann.
21 *Solitary Blood Cyst in the Kidney Accompanied by Hematuria. O. Wulff.
22 Dermoid Cysts in the Spleen, and Wandering Spleen. (Milzdermoid und Wandermilz.) J. Kumaris.
23 *Heliotherapy at Home. (Behandlungsmethode der chirurgischen Tuberkulose in der Ebene.) E. Kisch.
24 *Endoneural Injection of Antitetanus Serum and Drainage of the Nerve in Treatment of Tetanus. F. Kempf.
25 Experimental Research on Causes and Prevention of Air Embolism. O. Kleinschmidt.
26 Arteriovenous Aneurysm in the Groin. (Aneurysma der Arteria iliaca und Vena communis dextra.) O. Orth.
27 Mechanism of Stasis Hemorrhages with Compression of the Trunk. (Entstehung von Stauungsblutungen nach Rumpfkompression.) C. ten Horn.

20. **Autodrainage of Ascites.**—Schepelmann obtains, at the slaughter house, calves' aortas which he draws over glass rods to keep in shape, and hardens and preserves in 10 per cent. formaldehyd. The end of the aorta thus prepared is introduced into the peritoneal cavity, the outer end left in the subcutaneous cellular tissue, sloping sharply downward. The details of four cases are given in which this plastic method was applied. A pronouncedly favorable influence was manifest in all; diuresis was promoted and the patients were much relieved. Two have died from the progress of the underlying disease; another is progressing extremely favorably. He uses two of these aorta drains, one on each side; the whole is done under local anesthesia and makes scarcely any demands on the strength of the patient. It is indicated exclusively for cases in which the ascites is the result of the inability of the blood from the portal vein to pass into the vena cava. This occurs preeminently with cirrhosis of the liver, passively congested liver, syphilitic liver trouble and tumors in this region. This method is contraindicated, he says, in all inflammatory forms of ascites and with generally sluggish circulation, as with kidney or decompensated heart disease.

21. **Blood Cyst in Kidney.**—Wulff's two cases have already been described in THE JOURNAL, Jan. 23, 1915, p. 379.

23. **Sunlight in Treatment of Surgical Tuberculosis.**—Kisch reports, with numerous illustrations, twenty cases of bone or joint tuberculosis in which exposure to the direct sunlight in the vicinity of Berlin, but in a region free from dust, gave extremely gratifying results. Kisch is assistant to Bier, and combines the latter's methods for inducing local hyperemia with the heliotherapy, having found that stasis hyperemia much accelerated the cure. This was particularly the case when there were fistulas. Some cases of severe tuberculous processes in ankle, knee, or elbow, with fistulas, healed completely in from four and four and a half to five or six months. The constriction hyperemia had an especially favorable influence on the functional outcome. Passive or active exercise of the joints is regarded as an indispensable element in the treatment. In the first case a girl of 15 had had lupus of the nose for four years and lupous ulcerations developed across the front of the neck, from ear to ear. Four months after beginning the heliotherapy all the lupus ulcerations were completely healed, those on the neck leaving merely linear scars, movable on their base. Photographs of this and other cases are given showing the progress under treatment.

24. **Endoneural Injection of Antitetanus Serum Plus Drainage of the Nerve in Treatment of Tetanus.**—Kempf reports two cases of tetanus in which he injected antitetanus serum into the trunk nerves innervating the region of the wound in the arm. He obtained access to them where they lie close together, in the axilla. By this means he apparently blocked the nerves and as the serum made its way upward it annulled the toxic action of the tetanus toxin already anchored in the motor centers of the medulla. This endoneural technic is much less dangerous than the subdural route, he remarks, as with the latter the cord and nerve roots are liable to injury. The infusion needle is pushed in upward after it is introduced into the trunk nerve, and the fluid is expelled under slight pressure. The nerve becomes distended at once, but this distention subsides as the antitoxin is taken up by the nerve, until very little is left at the site of the injection. The upward spread of the antitoxin can be thus followed with the eye while the nerve is left exposed.

The arrival of additional tetanus toxin from the infected wound is combated by draining the nerve directly, thus diverting out of the body the toxin and all injurious products coming from the wound. He used a straight metal tube for this purpose, fastened with catgut in a lengthwise slit in the nerve, one in the median and another in the ulnar nerve. A curving cannula might answer the purpose better, the tip being insinuated between the fibers of the nerve. Soft metal that can be bent seems advisable, and a wide lumen, the tube only a few millimeters narrower than the nerves in question. The operation was done under general anesthesia and both the men recovered. He had intended in case improvement did not follow at once, to sever all the motor nerves involved and suture them to the lips of the wound, as a radical measure to arrest further transportation of the toxin. Each stump could have been slipped into a rubber drain for convenience in handling. This would not only have interrupted all passage of toxins from the wound to the central nervous system, but would have allowed repeated injection of antitetanus serum into the central stump. When it is a question of life and death, the consecutive paralysis seems insignificant, especially as the nerve can be sutured together again later. In one of his two cases pronounced nervous disturbances have developed in the domain of the nerves which he had drained, but the wound itself and the tetanus must be incriminated for them to a certain extent. There is no reaction of degeneration. Experimental tetanus has been successfully warded off by severing motor nerves (Meyer and Ransom) and this experimental evidence sustains the theory and logic of the method. He injected at least 200 c.c. in all, distributed in the median, radial and ulnar nerves, working slowly, and changing from nerve to nerve as they bulged. His two cases were of a moderately severe type of tetanus with pronounced trismus, difficulty in swallowing, extensive stiffening of the muscles and attacks of dyspnea, developing after an incubation of eighteen or twenty days.

Berliner klinische Wochenschrift

July 5, LII, No. 27, pp. 705-732

28 Substitute for Wheat Starch. (Ersatz für Weizenstärke.) P. G. Unna.

29 *Treatment of Wounds in Prophylaxis of Infection. (Wirkung unserer Verbandmittel in ihrer Beziehung zur Infcktionsbekämpfung.) E. Gelinsky.

30 Cervical Ribs. (Zur Entwickelung der Halsrippen.) E. Falk.

July 12, No. 28, pp. 733-760

31 Principles for Treating Ulceration. (Ueberhäutung und Ueberhornung.) P. G. Unna.

32 War Wounds of the Lungs. (Pathologisch-anatomische Beobachtungen an Kriegsverletzungen der Lungen.) H. Beitzke.

33 With Gunshot Wound of the Sacro-Iliac Articulation the Pelvis Sinks Instead of Rising. (Bei Schussverletzungen der Kreuzfuge ist das Trendelburg'sche Zeichen vorhanden.) H. Coenen.

34 Localization of Projectiles in the Trunk. (Einfacher Weg zur Tiefenbestimmung von Geschossen im Rumpfe.) H. Scharfe.

35 *Importance and Variety of Information Afforded from Bedside Study of the Bile. (Klinisch-pathologische Bewertung von Gallenuntersuchungen am Krankenbett.) E. Medak and B. O. Pribram. Commenced in No. 27.

36 *Scientific Temperature Taking and Estimation. (Die ärztliche Temperaturmessung.) S. Wintritz.

29. **Treatment of Wounds.**—Gelinsky expatiates on the five principles necessary to bear in mind with wounds of all kinds: (1) invariably aseptic work to keep off new infection. The tissues are generally able to take care of the germs that get in with the projectile. It is the subsequent infection that sets up the mischief; (2) repose, not only leaving the wounded in repose but ensuring repose by bed rest, posture or splints, for wounds in soft parts as well as fractures; (3) checking the further development of infection with antiseptic powders. For this he regards pulverized sugar as one of the best. Its powerful disinfecting action has been utilized for ages in the kitchen. Disinfectants are most effectual during and shortly after the incubation period. When this is past before antiseptics are applied, they are far less useful. The fourth principle is to provide ample means of escape for the secretions and facilitate this in every way. The fifth and last principle is the necessity for inducing local hyperemia by every known means. The earlier and the more intensively these measures are applied, the quicker the organism will conquer the infection, and with the least damage.

35. **Bedside Study of the Bile.**—Medak and Pribram comment on the ease with which bile can now be obtained with the duodenal tube for examination, and they emphasize the value of the information thus to be derived from its presence or absence and the proportions in it of cholesterin and bile pigment. They discuss the findings and their significance in cases of anemia, kidney disease, affections of the bile passages, arteriosclerosis with high blood pressure, cirrhosis, heart disease and in patients with tumors, and in pregnant women. They give summaries of several typical cases in each category to illustrate the light thus thrown on the nature of many puzzling disturbances, particularly those resulting from excessive destruction of red corpuscles. An abnormally high content of bile pigment in the bile is a certain sign of excessive destruction of reds, and, if anemia begins to be apparent, splenectomy is called for.

In regard to infection of the bile passages by way of the intestines, tests for urobilin in the duodenal juice are instructive only as the absence of urobilin testifies absolutely against such infection. The physiologic increase in the destruction of red corpuscles during the menses is reflected in the increased bile pigment content. The cholesterin content of the blood is increased and the cholesterin content of the bile decreased in cholelithiasis, kidney disease with high pressure and uremia from degenerative processes, cirrhosis of the liver with hypertrophy, catarrhal jaundice and diabetes. There is evidently retention of cholesterin in these conditions. After splenectomy, the cholesterin content of the blood increases while that of the bile diminishes; this occurs likewise from month to month during pregnancy. Only traces of cholesterin were found in the bile in one woman nine months pregnant.

36. **Importance of Precision in Taking the Temperature.**—Wintritz urges physicians to study their own temperature and that of others in health declaring that they will find that the normal range does not reach 37.5 C. (99.5 F.). Only 37 C. (98.6 F.), or not much above 36 C. (96.8 F.) is the normal temperature in health. They will also learn that there is no regular ratio between the temperature in the axilla and in the rectum; the difference betwen them may range from a small fraction of a degree to one or two whole Centigrade degrees. His article is an earnest plea for precision in taking the temperature, and he shows the extreme importance of the knowledge thus derived in regard to the existence of abnormal temperature when there is nothing else to suggest it, but which gives the clue to many a medical problem.

A particularly illustrative case was that of a woman with what seemed to be Banti's disease, the spleen very much enlarged, the liver thick, with gallstone colics, diarrhea and slight fever. Splenectomy was done and the woman died. She had had erysipelas several months before, with sepsis, and the temperature had kept a few tenths above 37 C. As

this was within the alleged normal range the physician paid no heed to it. The real trouble proved to be cholangitis and the sepsis explained the diarrhea. The temperature can never be taken with precision, Wintritz insists, except in the rectum or vagina, this alone is reliable. When the temperature here is found over 37 C. (98.6 F.) the patient should be kept in bed for the benefit from the rest, warmth and regular diet and measures for stimulation of the skin and kidney functioning. Not until the temperature in the rectum is permanently 37 C. is actual convalescence established. Precision in taking the temperature is particularly valuable in examining for life insurance, in detecting simulation, and in sustaining the diagnosis in many cases. Since he has made a practice of it, he is convinced that his medical horizon has been materially widened with resultant benefit to his patients.

Deutsche medizinische Wochenschrift, Berlin

July 1, XLI, No. 27, pp. 785-816

37 Orthopedic Prophylaxis for the Wounded. (Kriegsorthopädisches.) O. Vulpius. To be continued.
38 Welfare Work for the Blinded. (Kriegsblindenfürsorge.) E. Krückmann. Concluded in No. 28.
39 *The Neuropathic Child. (Abgrenzung und Begriff des neuropathischen Kindes.) E. Stier.
40 Technic for Measuring Roentgen Rays. (Eine Methode zu quantitativen und qualitativen Messungen von Röntgenstrahlen.) E. von Seuffert.
41 Russian and English Bullets. (Das neueste russische Infanterie-Explosionsgeschoss.) B. Riedel. (Ein von den Engländern benutztes explosives Gewehrgeschoss.) E. Senger.

July 8, No. 28, pp. 817-844

42 *Yeast as Food. (Nährhefe.) M. Schottelius.
43 *Indications for and Results of Operative Treatment of Exophthalmic Goiter. (Morbus Basedowii und Operationserfolge.) H. Starck.
44 Blood Count Apparatus. (Neuer Blutkörperzählapparat.) C. Metz.
45 Vaccination Against Typhoid. (Eine Typhusvakzine mit milderer Reaktion.) B. Johan. (Vergleichende Typhusschutzimpfungen.) M. K. John.
46 *Serous Meningitis from Lying on the Sand in the Sun; Two Cases. (Sonnenbäder und Nervensystem.) C. Römer.

39. **What Is Meant by a "Neuropathic" Child.**—Stier presents arguments to sustain his views as to the limitation of this term and its exact definition. The last ten years, he says, have focused attention on the psychic-nervous disturbances of children and cleared up the subject in many points, both neurologists and pediatrists having contributed to this. The conception of the spasmophilic diathesis has been an important factor in the progress realized. He emphasizes that the somatic disturbances in children after the first year or two are on the whole the same as in adults, varying only in degree or frequency. The child is a practically finished somatic organism at its birth, but in the psychic sphere it is entirely unfinished. Childhood stands in about the same relation to the psychic development of the adult as, in the physical sphere, the relation of the intra-uterine existence to life after birth. As proof that the cerebrum does not functionate at once after birth, he cites the child at Heubner's clinic born without any cerebrum but which acted and behaved during its brief span of life exactly like any normal infant. Another proof of this is that hemorrhage or other lesion in the cerebrum does not cause any functional disturbances at first. Only when the infant begins to make conscious movements, to grasp objects or stand, do functional disturbances become manifest. The simple nervous reflex mechanism is complete at birth, in normal conditions, and it is to disturbances in this sphere that he restricts the conception of neuropathic disturbances.

From study of sixty-five cases, mostly under observation for several years, he thus defines as neuropathic those children who suffer from functional disturbance of the phylogenetically oldest part of the nervous apparatus, an exaggerated reflex excitability of the central or vegetative nervous system or both. The resulting disturbances are abnormally easily elicited, or abnormally extensive or intensive motor reactions to slight or moderately severe stimuli. Or the unpleasant sensations from these stimuli may occur abnormally early. In the sphere of the conditional reflexes, there may be abnormally prolonged and intensive clinging to so-called bad habits, such as sucking the thumb or rolling the head back and forth during sleep. In themselves these habits cannot be regarded as pathologic in an infant, but only when they keep up after the age of 4 or later and resist efforts to break the child of the habit, they come into the category of pathologic perseverations. Psychopathic disturbances in children he defines as those on the part of the phylogenetically younger impulse and instinct life, as it develops early, constant to the species.

42. **Yeast as Food.**—The yeast powder described is a by-product of the breweries and averages 54 per cent. albumin, 7 per cent. ash, 3 per cent. fat and 28 per cent. nonnitrogenous extractives. A quarter's worth represents in the yeast food 904 calories to 623 in meat, while 1 kg. is said to represent in food value 3.3 kg. of moderately fat beef. Out of nine persons taking it systematically, five increased in weight; in two the weight remained stationary, and in two it declined. The tests were made with government authority and, with the consent of the subjects, on ten convicts. The daily ration of bread had been reduced at that time in the penal institutions from 750 gm. to 250 gm., and the yeast was given a trial in the hope of thus usefully supplementing the inadequate bread supply. The total gain in weight of the group taking the yeast was 4 kg., while a corresponding group without the yeast lost 9 kg. The difference thus in favor of the yeast food was 13 kg., or 28.6 pounds among nine persons. All seemed to find the yeast palatable and all felt better during the month while they were taking it.

43. **Results of Operative Treatment of Exophthalmic Goiter.**—In 450 cases of exophthalmic goiter in the last few years, which Starck has had in his charge, operative treatment had been applied in sixty-nine. In some the operation had been done five or six years before. A cure was realized in the operative cases only in about 30 per cent., but from 35 to 40 per cent. were benefited more or less; the others were not improved or the condition was aggravated, and 9 per cent. did not survive the operation. The choice of the anesthetic is important. The type with predominant nervous, myasthenic and psychic symptoms does better under general anesthesia, while with all others local anesthesia is preferable. The status lymphaticus contraindicates any operation; if it has to be done, local anesthesia must be used. In many cases the operation merely prepares the way for successful internal treatment. The most unfavorable time for an operation is when the affection is progressing, the stadium incrementi. A latent period or stationary stage is the most favorable. The prospect of improvement under operative measures is best with the type of exophthalmic goiter called "Kraus goiter heart" and many cases of the classic type of Basedow's disease. Little benefit can be anticipated in the nervous, myasthenic-psychic type with only moderate cardiovascular symptoms. The palpable size of the goiter is no criterion for an operation. Small soft goiters are often more important for the syndrome than large tough ones. The blood picture also is of no moment in considering operative treatment, and it is not materially influenced by the operation.

46. See current comment, THE JOURNAL, Aug. 14, 1915, p. 629.

Jahrbuch für Kinderheilkunde, Berlin

July, LXXXII, No. 1, pp. 1-86

47 Progressive Wasting Away of Adipose Tissue in Certain Regions and Extra Growth at Others; Two Cases. (Lipodystrophia progressiva.) E. Feer.
48 *Influence of the Food, Especially of Carbohydrates, on the Secretion of Urine in Infants. (Einfluss der Nahrung auf die Harnsekretion beim Säugling.) A. Niemann.
49 *Levulose Test of the Functional Capacity of the Liver in Infants and Children. E. Schede.
50 Rumination in Infants. Wanietschek.

48. **Influence of the Various Elements in Infant Feeding on the Production of Urine.**—Niemann protests that the profession is inclined too much to use a standard dietary formula for infants and force it on all alike, without considering the individual variations in the capacity to utilize it. His study of the effects of carbohydrates on the secretion of urine shows a wide range in the effect on different children, even with this universally used element of the food. A

number of illustrative cases are described in detail. After adding to the infants' test ration, a given amount of carbohydrate, such as 40 or 50 gm. of sugar or rye flour, distributed in three feeding bottles during the day, the amount of urine voided dropped by one-half in some of the infants, while others showed no difference in the output of urine. There was unmistakably in the first group a retention of water, evidenced further by an increase in weight. On suspending the carbohydrate, the urine increased again and the weight declined to their previous figures. He never observed any influence on secretion of urine from cane sugar, even in the babies who had responded with diminished production of urine to ingestion of milk sugar.

The humidity of the air was kept under control in his tests to eliminate any disturbing element from this cause. Borrino reported in 1910 that certain sugars reduce the production of urine in infants and children. She found the effect of cane sugar much more pronounced than that of milk sugar on older children. But her experiments were not conducted on a test diet and consequently the influence of the mixed diet detracts from the precision of the tests. Niemann queries which group of infants is to be regarded as normal: those whose urine output is unaffected by ingestion of certain carbohydrates or those in whom it is reduced. The infants in the latter group all seemed to be thriving particularly well on mixtures containing carbohydrates, notwithstanding that an added 40 or 50 gm. reduced the urine output. The six other infants, who were unaffected by the added carbohydrate, did not seem to thrive on the ordinary food mixtures containing carbohydrates. He thinks that this suggests that this latter group are unable to utilize carbohydrates.

49. **Levulose Test for Liver Functioning in Children.**—Schede tabulates the findings in fifty-nine cases, mostly infants, after ingestion of a test dose of levulose. The power of assimilating levulose seems to be greater in proportion in infants than in adults, growing less with age. The infants bore 4 gm. per kilogram of weight without its appearance in the urine.

The liver was supposedly healthy in all of the children with a few exceptions in which the condition was dubious and the findings inconclusive.

Medizinische Klinik, Berlin

July 4, XI, No. 27, pp. 741-768

51 *Trauma and Neoplasms. (Trauma und Gewächse.) E. Schepelmann.
52 *Research on Tetanus. (Ueber die "Fibrillentheorie" und andere Fragen der Toxin- und Antitoxinwanderung beim Tetanus.) L. Aschoff and H. E. Robertson. Commenced in No. 26.
53 Immediate Operative Treatment of Wounds of the Chest. (Chirurgische Behandlung bestimmter Formen von Brustverletzungen im Felde.) W. Jehn.
54 *Natural and Artificial Heliotherapy of Psoriasis. (Behandlung der Psoriasis mit ultraviolettem Licht.) P. Linser.
55 *By-Effects of Antitetanus Serum. (Serumexanthem mit Grünsehen nach Einspritzung von Tetanus-Antitoxin.) F. Callomon.
56 Epidemic of Mumps with Unusual Localizations. (Ueber epidemische Speicheldrüsen- und Nebenhodenentzündung.) E. Schalit.
57 *The Thermoprecipitin Reaction in Diagnosis of Pneumococcus Infections. W. Schürmann.

July 11, No. 28, pp. 769-794

58 *Infant Mortality During the Heated Term. (Sommersterblichkeit der Säuglinge.) H. Kleinschmidt.
59 Summer Skin Diseases in the Active Army. (Sommerhautkrankheiten im Felde.) E. Saalfeld.
60 Ear Affections in the Active Army. (Als Ohrenarzt bei einer Sanitätskompagnie.) K. König.
61 Vermin Extermination. (Anleitung zu Improvisation und Betrieb von kleinen und mittleren Entlausungsanstalten) P. Uhlenhuth and Olbrich.
62 *Prophylaxis of Heat Stroke. (Vorbeugungsmassnahmen gegen Hitzschlag.) H. Richter.
63 *One-Man Litter for the Wounded. (Die Kufentrage.) M. Lonicer.
64 Research on the Laws of Heredity. II. (Abstammungs- und Vererbungslehre im Lichte der neueren Forschung.) W. Wangerin.
65 Urethra Disease. (Erkrankungen der Harnröhre.) E. Portner.

51. **Trauma and Neoplasms.**—Schepelmann comments on the emancipation of the neoplasm from its mother soil; the nonmalignant growths manifest this by killing off the cells in the mother tissues, and the malignant ones by infiltration besides into the adjacent tissues. He reviews the evidence that proves the importance of mechanical irritation as a factor in neoplasms, as well as chemical irritation and chronic inflammation. On the whole, however, only about 2 per cent. of all the cases can be traced to injury of these kinds. Lubarsch declares that no authentic case has yet been reported of cancer developing as a direct consequence of a single trauma. The pathologists know that even quite large tumors may exist without inducing the slightest symptoms. A trauma affecting the region would first make the tumor manifest. On the other hand, the region most frequently injured, the fingers, elbows and legs, are rarely the site of cancer. A causal connection between the trauma and the tumor is out of the question if the interval between the injury and the first symptoms is less than three or four weeks. Several months are required for the development of a neoplasm to the size of a walnut or hen's egg. While admitting that a trauma might accelerate the course of a neoplasm, Lubarsch concludes from his exhaustive research that this is possible only when the injury was such that it exerts a powerful influence on the tumor, modifying its cell metabolism; when the growth was accelerated beyond what is usually observed in such tumors, and, finally when histologic examination of the tumor reveals traces of direct injury, bleeding, necrosis, and unusual acceleration of the growth.

Metastases, on the contrary, are extremely liable to locate and develop at the site of even a single trauma. The daughter tumors are particularly liable to locate in the more vascular organs, such as the bone marrow and liver. It is not yet decided whether a trauma is able to modify the growth of a tumor from a benign to a malignant character. But it seems probable enough to be assumed as possible in workmen's compensation cases. Cohnheim insists that no tumor is malignant from the start but becomes so only by the dropping out of inhibiting influences; this assumption renders the acceptance of traumatic metaplasia still more plausible. Retrogressive processes in tumors, cavity formation, etc., occur without intervention of trauma, but the latter may be incriminated for rupture of cystic tumors and for hemorrhages or torsion of the pedicle.

52. **Treatment of Tetanus.**—Aschoff and Robertson report the results of extensive experimental research and clinical experience with tetanus which apparently establish that when the symptoms of descending tetanus have already appeared, subcutaneous injections of antitoxin are absolutely ineffectual. A subarachnoid or intravenous injection of 20 units is called for, possibly supplemented by a cervical or lumbar immediate injection of from 20 to 100 units. If the lumbar route is taken, the pelvis should be elevated afterward or the injection will do no good. Repetitions of the injection at weekly intervals can be done by the subcutaneous route or by local application of antitoxin. The most economical and convenient method for local application is to soak cotton in the antitoxin and then dry it. Just before applying it to the wound, the dried cotton is moistened with salt solution. The antitoxin is promptly absorbed by the wound from the moist cotton. This or a subcutaneous injection of the antitoxin should be the routine procedure preliminary to any operation on the injured limb. The preventive injection should be given the same day as the injury or, at least, the dressings should have antitoxin poured on them. Their experience indicates that the preventive injection protects practically for one week only. If the wound has not cleaned up by that time, the antitoxin dressing should be applied. If an operation is contemplated the eighth day or later, and the wound has not cleaned up, a subcutaneous injection of 20 units should be made from twenty-four to forty-eight hours beforehand, or an intravenous injection shortly before the operation. By "antitoxin" they mean antitetanus serum.

54. **Phototherapy in Psoriasis.**—Linser refers to the excellent results from direct sunlight in treatment of psoriasis that have been reported from mountain health resorts. He began applying this treatment in 1911 and obtained unmistakably favorable effects, but as the sunlight in Tübingen is so undependable he soon supplemented it with the "artificial mountain sun," the mercury vapor light. His experience

with over 100 cases of psoriasis in the last two years has amply confirmed the value of this method of treatment as one of the most successful at our disposal. No untoward by-effects were ever detected, and the patients prefer the artificial ultraviolet rays technic to all other measures. Petrolatum and warm baths were the only adjuvants used. The aim is to induce a distinct inflammatory reaction in the patches of psoriasis. If the environment shares in the reaction, this does no harm. The most favorable reaction is when slight serous exudation occurs. Blistering does no harm but is more painful and takes longer to heal. When the phototherapy is applied so cautiously that there is no pronounced reaction, the treatment fails to modify the psoriasis. In unusually rebellious cases the Roentgen rays may be preferable. There have been no signs of recurrence in part of the patients. The psoriasis has returned in some but in a milder form and with a longer interval of freedom than previously under other measures. In short, he regards heliotherapy, natural or artificial, as essential progress in the management of psoriasis.

55. **By-Effects of Antitetanus Serum.**—The robust young soldier eighteen days after he had been wounded in the leg developed symptoms of tetanus and was given a subcutaneous injection of 100 units of antitetanus serum. The tetanus symptoms subsided, but thirteen days after the injection the temperature ran up to 38.1 C. and the man saw everything bright green, "green as a meadow," even the sky. This was soon followed by an itching, bright red exanthem over the entire body. The disturbance in vision had all passed away by the next day, but the exanthem persisted for a few days, and during this period there was a mild and brief return of the tetanus symptoms. No drugs had been given and there was nothing but the antiserum to explain the disturbances. Callomon has found records of "green seeing," with other symptoms of poisoning, from cannabis, quinin, santonin, etc. It was observed alone, following a week of amaurosis, only in one case of santonin and two of digitalis poisoning on record. There is also a case on record in which after eating spoiled sausage, ptosis and pupil symptoms developed, along with "seeing everything green."

57. **Thermoprecipitin Reaction Differentiates Pneumococcus Infection.**—Schürmann adds the extract of the organs to be tested, the effusion, pus or cerebrospinal fluid to a strongly precipitating pneumococcus serum. With a positive reaction a white ring forms within fifteen minutes at the line of contact of the two fluids. Attention was called to this thermoprecipitin reaction in 1911 by Ascoli and Valenti, and it has amply proved its value for the differential diagnosis of anthrax, etc. Schürmann found the test decisive by the seventh day onward in the five cases of pneumonia in which he has applied it.

58. **Infant Mortality during the Summer.**—Kleinschmidt emphasizes the necessity for regarding all the numerous separate factors in infant mortality during the heated term, his idea being that a chain is only as strong as its weakest link. The danger lies in overlooking some insignificant weak link. He denounces the rubber diaper during the hot weather as liable to keep a child unnecessarily and dangerously hot, while checking the normal escape of moisture from the skin. The parts where the child sweats most are liable to become clogged with sweat and decomposing products and thus afford a predisposition to infectious processes. This is one reason why such processes are more common in summer and explains them without assuming a loss of immunity from the heat.

Serious results may follow feeding infants with too acid buttermilk. The acid seems to be a stimulant in small amounts, promoting the physiologic functions; in larger doses it induces pathologic overfunctioning, thus doing direct harm. In certain institutions for infants where great pains are taken to have the bacterial content of the milk reduced to the minimum, much sickness has prevailed when buttermilk was given during the heated term. This happened too often for a casual coincidence, and it was traced to the overacid buttermilk.

62. **Prophylaxis of Heat Stroke.**—Richter remarks that often it is the apparently most robust who are affected by heat stroke. Sometimes loss of sleep, hunger or nervous strain seem to be predisposing factors. The clothing is an important element in bringing on heat stroke. It is fortunate, he adds, that the uniform has been changed so that the old high stiff collar is done away with, and the shirt can be left open on the chest. He advises keeping the shirt wet over the region of the heart or pinning with a safety pin a wet folded handkerchief inside the shirt at this point. Better still is a compress with perforated waterproof outer cover to suspend over the heart. A wet cloth in the soldier's helmet is felt as gratefully cool at first but it soon begins to generate heat and oppress the head. To obviate this he has devised a spring contrivance holding a perforated sheet of felt. This is thoroughly wet and fastened in the helmet with the springs which hold it above contact with the scalp while air circulates freely below, above and through its openings.

63. **The Vertical Stretcher.**—Lonicer gives an illustrated description of a one-man stretcher for carrying a wounded soldier in the trenches. It looks something like a toboggan stood on one end. The side bars are extended to curve forward and pass over the bearer's shoulders. There is a small seat for the wounded man, and he is fastened to the litter with straps around the chest and above and below the knee, while the feet rest on the curve of the toboggan, which drags on the ground.

Mitteilungen a. d. Grenzgeb. der Med. und Chir., Jena

XXVIII, No. 4, pp. 619-748. Last indexed May 8, p. 1622

66 *Gangrene of Lung from Concrement in Bronchus. (Lungengangrän bei Bronchialsteinen.) Blecher.
67 *Operative Treatment of Chronic Constipation. F. Rost.
68 *Diverticulum Formation in Stomach. (Divertikelbildung am Magen, insbes. funktionelle Divertikel.) F. de Quervain.
69 *Aminolytic Ferment in Stomach Content with Cancer. J. Halpern.
70 *Banti's Disease. J. Krull.

66. **Primary Bronchus Stone.**—Blecher summarizes from the literature three cases in which the lung became gangrenous in consequence of the presence of a concrement in a bronchus. Necropsy showed one stone in the bronchus in one case, two stones in the second and three in the third. In a fourth case a man of 45 had pneumonia at 35, a catarrhal pulmonary affection at 36 and pleurisy at 40. At 43 a dry cough developed which has kept up constantly since. Finally he expectorated a large quantity of fetid masses and afterward coughed up several concrements the size of peas, but no tubercle bacilli were found. After resection of the fifth and sixth ribs there was some but not much improvement. The lung tissue looked gray and felt tough, and roentgenoscopy showed a number of small shadows probably cast by concrements. The further course of the case is not known. Blecher then reports a somewhat similar case from his own experience. The patient was a man of 23 who in 1913 had a brief attack of what seemed to be pleurisy, but had apparently entirely recovered when about a month later he began to cough and had pain in the right side. The trouble proved to be a primary stone in the bronchus of the lower lobe, entailing gangrene and pyopneumothorax from gas-producing suppuration. The diaphragm and the base of the lung became adherent and bacteria made their way into the pleura and peritoneum without actual perforation. The eighth rib was resected and quantities of pus released but the improvement observed at first became overshadowed with symptoms of peritonitis which soon proved fatal. In such cases the gangrenous process may mask the calculus, its shadow blending with that of the concrement. The prospects for operative relief are better with a solitary stone.

67. **Operative Treatment of Chronic Constipation.**—Rost reviews the physiology of the large intestine and its functioning, and especially of the act of defecation. Disturbances in the latter may be from mechanical obstacles, malformation in the rectum, from spasm of the sphincter, or from derangement of the motor functioning of the lower colon from reflex impulses generated in the sensory tracts. These

three groups may be combined or overlap. The spastic form of constipation is generally located in the middle or distal colon. This causes fecal matters to accumulate in the proximal colon, and absorption of toxic substances here is the cause of the general symptoms observed with this form. Resection of the proximal colon puts an end to this absorption. The feces then enter the distal colon in fluid form, which may reduce the tendency to spasm, but, unfortunately does not always do this. The obstipation may likewise be due to mechanical causes, abnormal course of the parietal peritoneum, stretching of the serosa as the proximal colon increases in size, or to adhesions from pericolitis. The constipation is primary but the secondary disturbances set up a vicious circle.

The majority of cases of obstipation belong in neither of these categories but are the result of disproportion between the proximal and the middle and distal parts of the colon. Necropsy in two such cases clearly revealed a relative hypertrophy of the proximal, and atrophy of the other parts of the colon. The middle and distal portions thus are the true source of the trouble, but the seat of the disturbance resulting therefrom is located in the proximal colon. Hence removal of this portion cures the disturbances although the actual cause is not thereby done away with. Whether the obstipation is permanently cured at the same time depends on the degree of the insufficiency of the middle and distal colon.

In still another type of obstipation, the colon lacks reserve power, and thus becomes readily exhausted when it has to work under unfavorable conditions, such as inflammation, movable colon or adhesions. In these cases removal of the unfavorable conditions, curing the inflammation, fastening the colon in place, or breaking up adhesions is sufficient to put an end to the piling up of feces in the proximal portion. It is usually such a difficult matter to determine the exact degree of insufficiency in such a case, that it is generally safer to exclude the proximal colon than to trust to these minor procedures.

He reports two typical cases in which they answered the purpose, however, one patient being cured by cecopexy of painful oppression in the right lower abdomen and obstipation for a year. During the nearly five years since, there has been no return of the pain or tendency to extreme constipation. In the other case the inflamed appendix was removed in addition to cecopexy. Rost is assistant at the surgical clinic of the University of Heidelberg, in charge of Wilms, and this study of the indications and results of operative treatment of extreme constipation fills sixty-four pages, with twelve roentgenograms of the principal types encountered.

68. **Diverticulum in the Stomach.**—In both the cases reported the diverticulum was discovered in operating for gallstones. The patients were a woman of 60 and a man of 76, and the Roentgen rays showing the air bubble in the diverticulum also showed that the latter must be adherent to the spine. De Quervain reproduces the roentgenograms, accompanying most of them with explanatory diagrams.

69. **Early Diagnosis of Gastric Cancer by Aminolytic Ferment.**—None of the methods proposed for this purpose indicate more than that the chemistry of the cancerous stomach varies from normal in different directions. Halpern has been seeking for some pathognomonic element in the stomach findings, and here reports the discovery of a ferment, an enzyme which splits the amino group out of monoaminoacids, under formation of formic acid. He has been studying the rôle of formic acid in the production of diabetes, and in the course of this research had occasion to test the stomach content for it in a large number of cases. By this empiric means he established that the gastric juice in cancer cases possesses in a high degree the property of splitting aminoacids with production of formic acid. This characteristic proportion of amidase has been found to date in only twelve of thirteen cases of gastric cancer or suspects, and he regards it as probably a product secreted by cancer cells. Further research will show whether the presence of this ferment can be regarded as a dependable early sign of cancer or whether it occurs with other affections. He describes the glycocoll, phosphoric acid and calomel technic for its detection.

70. **Banti's Disease.**—Krull gives full details of three cases which correspond to Banti's description twenty years ago of the syndrome characterized by enlargement of the spleen with cirrhosis of the liver, ascites and anemia. But he denies that it is a separate morbid entity, and his review of the literature confirms his stand. He insists that Banti's disease is merely one form of Laennec's atrophic cirrhosis of the liver; the spleen is only a little more enlarged than with the latter. The primary cause may be acquired or inherited syphilis, malaria or gastro-intestinal disturbances, but the liver, not the spleen, is the organ mainly responsible. The red corpuscles are often present in numbers up to 4,000,000 but the hemoglobin percentage is low, and there is every reason to assume that a long latent stage of cirrhosis of the liver has preceded the clinical manifestations. Gastro-intestinal hemorrhages may occur repeatedly, and this explains the anemia.

Münchener medizinische Wochenschrift, Munich

June 29, LXII, No. 26, pp. 873-904

71 *"Open" Puncture of the Pleura. A. Schmidt.
72 Rigor Mortis. (Zur Kenntnis der Totenstarre und der physiologischen Vorgänge im Muskel.) L. Wacker. Concluded in No. 27.
73 The Agglutinating Reaction in Typhoid. (Die Gruber-Widalsche Reaktion und die Beschränkung ihrer praktischen Verwertbarkeit für die Typhusdiagnose.) W. Gaehtgens.
74 The Mechanics of Nerves. (Ueber Nervenmechanik und ihre Bedeutung für die Behandlung der Nervenverletzungen.) A. Stoffel.
75 Extension and Support for Fractures. (Vereinfachte Streckbehandlung der Knochenbrüche der Beine.) A. Wildt. (Mitellabehandlung der Oberarmschaftbrüche.) A. Nussbaum.
76 Technic for Amputations. (Zur Amputationstechnik bei Kriegsverletzten.) H. Matti.
77 Shell and Grenade Wounds. (Gehirnverletzungen durch Granatsplitter.) H. Goetjes. (Verletzungen durch Minenwerfer und Handgranaten.) M. Strauss.
78 *Treatment of Extensive Wounded Areas. (Zur Behandlung grosser Wundflächen.) H. Schaedel.
79 *Chlorinated Lime in Treatment of Wounds. (Eine einfache, wirksame Behandlungsmethode bei infizierten Wunden.) W. Münch.
80 Stretching Sciatic Nerve for Neuralgia After Gunshot Wound. (Behandlung der Ischiadikusneuralgie nach Schussverletzung mit Nervendehnung.) H. F. Brunzel.
81 *Phototherapy for Wounds. (Wundbehandlungen mit Licht.) E. Schottelius.

71. **Simplified Puncture of the Pleura.**—Schmidt has discarded all complicated apparatus and uses merely a trocar, placing the patient on his side across two beds so that the chest region forms the bridge between. The trocar is introduced at the lowest point of the pleura and the effusion is allowed to drip freely into a vessel below, with no attempt at aspiration or effort to prevent entrance of air into the pleura. The air will automatically fill the space left by evacuation of the fluid under the influence of gravity, and this is rational and all that is needed. There is no reflex disturbance from the puncture, and it is so simple that any physician can apply it anywhere. He has never witnessed the slightest injury from admission of unfiltered room air in this way. He uses a trocar about 8 cm. long and 0.4 cm. wide, and introduces it after the patient has been made comfortable with pillows, with his shoulders on one bed and the buttocks on the other. The trocar is gradually withdrawn until it just enters the chest, to ensure the draining away of the last of the fluid. Then the patient is asked to breathe deep or cough, and the trocar is finally removed at the acme of the expiration phase, and the wound closed with a broad strip of adhesive plaster. He urges the physician to emancipate himself from more complicated technics and lose his dread of puncture of the pleura. The admission of air aids in interpretation of the Roentgen-ray findings, while the open puncture drains away all the fluid, and the simplicity of the technic invites its early application, which forestalls development of adhesions, compression of organs, etc. This is especially important with hemothorax after a gunshot wound of the chest. With this, however, the fluid should be drawn a little at a time, and the patient should not be on his side. Recently he has been injecting a little iodoform glycerin into

the chest just before removing the trocar, but is unable to say whether this benefits or not.

78. **Treatment of Extensive Wounds.**—Schaedel is in charge of a base hospital and relates that the "epidemic of trauma" now prevailing has enabled the various methods of treating wounds to be compared and the advantages of some to be recognized. The methods that have stood the comparison best are with gloves, washed in hot soapy water for two minutes after each change of dressings, then scrubbing in mercuric chlorid and alcohol for half a minute each. The dressings are handled with forceps. The environment of the wound is cleaned with benzin, shaved with alcohol and swabbed or sprayed with tincture of iodin. The surface of the wound is sprinkled with 10 per cent. hydrogen dioxid. The dressings are changed every day and the wound is generally clean in three or four days. After this sugar is scattered on the wound, and this aids in the further cleansing, while reducing secretion. He ascribes its action to the nascent acids split off from it, and has long proclaimed the worth of sugar in treatment of leg ulcers. It is a further principle with him to refrain from anything that might injure the young epithelium. Whenever there is danger of its being rubbed off, he applies a rolled compress as a wall around it and, after strewing with sugar, another compress is applied over the whole, not touching the wound. When the wound was exceptionally long in healing, chronic lead poisoning or syphilis or abuse of tobacco was often found responsible for this.

79. **Chlorinated Lime in Treatment of Wounds.**—Münch dissolves two tablespoonfuls of chlorinated lime in a dish of warm water and bathes all parts of the wound with it for twenty or thirty minutes twice a day, then fills the wound with dry gauze. He supplements this local treatment with horsetail (scouring rush) tea internally, being convinced that the silicic acid in this is an important aid in the healing of tissues. The decoction is taken like other tea, several times a day.

81. **Light in Treatment of Wounds.**—Schottelius uses an ordinary incandescent electric light bulb and exposes the wound to it several times a day to a total of eight or nine hours. The immediate local effect, he says, was as striking as the general effect from day to day later. All the patients told of relief of pain from it. Paper and a sheet are thrown over the whole and the temperature of the enclosed space grows high, but he ascribes the benefit to the light rather than to the heat. The bulbs were of 30, 50, or 100 candle power.

Zentralblatt für Chirurgie, Leipzig

July 3, XLII, No. 27, pp. 473-488

82 Utilization of the Heel or the Patella in Secondary Covering of Stump After Amputation on Account of Suppuration. F. Oehlecker.
83 Roentgen Localization of Foreign Bodies. (Zur Lokalisation der Fremdkörper nach Levy-Dorn.) Weischer.

July 10, No. 28, pp. 489-504

84 Osteoplastic Restoration of Edges of Orbit After Wounds in War. W. Levy.
85 *Irritation of the Kidneys After Novocain Anesthesia. (Nierenreizung nach Novokainanästhesie.) R. Morian.
86 Lever for Fractured Bones. (Frakturenhebel.) Ansinn.

July 17, No. 29, pp. 505-528

87 Simplification of Extension Treatment. A. Wildt.

85. **Irritation of the Kidneys from Novocain.**—Morian declares that irritation of the kidneys is by no means uncommon after application of novocain for local anesthesia. In from 5 to 10 per cent. of the cases in which he has used it, albumin became evident in the urine within a few hours after the injection of novocain, and it could be detected afterward up to a maximum of forty-eight hours. The amounts ranged from merely traces to 0.5 per thousand. Formed elements were also present in the urine. The output of urine did not seem to be materially modified by the irritation of the kidneys, but sometimes it was irregular and sometimes scanty. The adult patients had been injected half and quarter of an hour before the injection with 0.01 gm. morphin. The albuminuria did not seem to be dependent on the amount of novocain used, or the site of the injections. Almost every one of the patients operated on under local anesthesia suffered from vomiting later; it usually came on a few hours after the operation. He adds that neither morphin nor epinephrin induce albuminuria, so that only the novocain can be incriminated, although albuminuria as a by-effect of novocain has not been recorded hitherto, to his knowledge. He repeatedly tested the blood pressure during the novocain anesthesia, and found that it was not affected by the novocain. Hence the albuminuria cannot be ascribed to fluctuation of the blood pressure. Schwarz reported in 1907 that he had observed albuminuria up to 7 per thousand after stovain anesthesia.

Zentralblatt für Gynäkologie, Leipzig

July 3, XXXIX, No. 27, pp. 457-472

88 Treatment of Pregnancy Kidney and Eclampsia. W. Gessner. (Reply to Stoeckel's article in No. 17.)

July 10, No. 28, pp. 473-488

89 Duration of Pregnancy. (Zur Diskussion über Schwangerschaftsdauer.) B. S. Schultze.

July 17, No. 29, pp. 489-522. H. Fritsch Memorial Number

Gazzetta degli Ospedali e delle Cliniche, Milan

June 24, XXXVI, No. 50, pp. 785-800

90 Temporary Compensation to Workmen After Industrial Accident. (Per la liquidazione della parziale temporanea da infortunio sul lavoro.) G. de Luna.

Policlinico, Rome

July 11, XXII, No. 28, pp. 925-956

91 *Vincent's Angina; Two Cases. (L'amigdalite ulcero-membranosa.) C. Taccone.

90. **Ulcerative Membranous Tonsillitis.**—Taccone reports two cases of Vincent's angina in children of 10 and 12 and emphasizes the importance of getting rid of the false membrane. He advises washing it out, using a liter of water at least, under pressure as from an ordinary irrigator. This lavage with boiled tepid water should be repeated every three hours; it is not necessary to make it strongly antiseptic. The patches of membrane can be wiped off with a cotton wad dipped in ether-iodin solutions. By gently twisting the cotton, the patch comes away with it without eroding the tissues below. The moment the patch has been removed, the region beneath must be sterilized with some strong antiseptic. He prefers hydrogen dioxid, undiluted for this, but some use salicylic acid, potassium permanganate, copper sulphate or salvarsan for this local treatment. In his two cases, under local measures, recovery was complete in about three days.

Riforma Medica, Naples

July 10, XXXI, No. 28, pp. 757-784

92 Treatment of Typhoid in the Active Army. (Sulla cura della febbre tifoide in campagna.) M. Ascoli. Commenced in No. 27.
93 *Hypertrophic Cervical Pachymeningitis. S. Rizzardo.
94 *Artificial Pneumothorax; Indications and Contraindications. G. Cicconardi.

93. **Cervical Pachymeningitis.**—Rizzardo's patient was healthy until the age of 20, when he fell on the stairs while carrying a heavy weight and struck on his back and neck. Besides local pain in the neck and stiffness, he had girdle sensations and other symptoms of irritation of the cervical nerve roots, and during the nine following years these symptoms continued a chronic course, interrupted by long periods of improvement. The ninth year symptoms of compression of the spinal cord became superposed on the radicular syndrome. The symptoms indicate that the trouble is multiple and diffuse; nothing abnormal in the vertebrae can be detected by roentgenoscopy. The spinous processes are nowhere tender. The cerebrospinal fluid is slightly turbid and coagulates *en masse*; it contains 1.7 per cent. albumin and the globulin reaction is intense; with lymphocytosis and a few colorless red cells. Inoculation of guinea-pigs had proved negative but the Pirquet tuberculin test was intensely positive. Treatment as for syphilis produced no effect. The case is thus one of the very few on record in which hypertrophic pachymeningitis developed in the neck region in

consequence of a trauma, and a fall from a bicycle the ninth year brought on the final severe aggravation of all the symptoms which now confine the man to bed. Rizzardo thinks there can be no question of the diagnosis. He compares it with all the other affections which might be responsible for the syndrome.

94. **Artificial Pneumothorax.**—Cicconardi cites various authorities in regard to this "ingenious therapeutic compensation," the "only true means of probable cure in appropriate cases," as he says of it, and discusses the indications and contraindications. Only about 2 or 3 per cent. of the cases of pulmonary tuberculosis are suitable for this treatment. It is not adapted for the rapidly acute cases, nor for the cases with cheesy lesions, on a hereditary basis. It should be reserved for the chronic forms, preferably during the period of infiltration, with destructive lesions scarcely initiated, and positively unilateral. Laryngeal involvement need not be regarded as a contraindication. The method is ideal in treatment of incipient infiltration and ulcerative forms. It is indicated further with cavity formation if the cavities are not extensive or superficial. With a superficial cavity there is danger of rupture of the lung tissue under the compression, and this would complicate the artificial pneumothorax. He insists that the artificial pneumothorax is strictly obligatory and urgent for patients with hemoptysis, and it is always a certain and effective method of arresting the tendency to bleeding in the lungs. The contraindications are adhesion of the pleura, tuberculous foci elsewhere in the organism, especially in the bowels. Intestinal tuberculosis is generally rapidly aggravated by artificial pneumothorax. Disease of the cardiovascular system is the third contraindication. The consensus of opinion seems to be that the measure should be applied as soon as possible after the discovery that destructive lesions have become installed. This benefits not only the patient but his environment, as the dissemination of tubercle bacilli in his sputum is thus arrested.

Russkiy Vrach, Petrograd

January 31, XIV, No. 5, pp. 97-120

95 Individualization in Therapeutics. (Sushchnost liechenia i individualnia yavlenia.) V. N. Nikolsky.
96 Serotherapy in Scarlet Fever; 1,335 Cases. L. W. Aksinoff. Commenced in No. 4.
97 The Cause of Rhythmical Tremor in Hysteria. V. Y. Anfimoff.

February 7, No. 6, pp. 121-144

98 *Plastic Surgery of Dura Defects. P. P. Zdrodovsky.
99 Psychologic Factors in the Development and Repression of Alcoholism. J. V. Sajin. Commenced in No. 1.

February 14, No. 7, pp. 145-168

100 Explosive Bullets. E. V. Pawlow.
101 Apparatus for Sterilizing Dressings and Instruments. I. P. Ilin.
102 Salt Dressings for Treatment of Wounds. P. G. Zagorovsky.
103 *Poisonings with Denatured Alcohol or Varnish in Petrograd after Prohibition of Sale of Vodka. N. V. Kuznetzoff.
104 Pathologic Changes in Denatured Alcohol and Varnish Poisoning. V. N. Lukin.
105 *Lavage of the Stomach in Catarrhal Jaundice. D. G. Orndieff.

98. **Plastic Surgery for Dura Defects.**—The question as to the best method for patching a gap in the dura was studied by Zdrodovsky. He used Kirschner's method, transplantation of fascia lata. He experimented on eighteen dogs, in which he made trephining openings, 2 by 3 cm., and 4 by 2.5 cm. The openings were covered with fascia flaps and the latter were sutured to the edges of the dura. He thus succeeded in closing the defect of the dura, but did not always succeed in preventing adhesion formation. Only in 3 cases were there no adhesions between the fascia and dura. In 13 of 18 dogs he experimented on the dura mater of the brain; in 5 on the dura of the spinal cord. Four dogs succumbed to the operation. The animals were kept under observation from thirty to eighty days. In 6 cases the adhesions were friable, and in 3 they were solid. The adhesions are due partly to injury of brain tissue, of pia vessels or to coarse sutures, and partly they are the manifestation of the biologic reaction of the brain against the presence of a foreign tissue (fascia). Therefore he considers adhesion formation as an inevitable occurrence even when the pia and the brain are not damaged.

103. **Poisonings from Substitutes for Vodka.**—Kuznetzoff states that after the prohibition of the sale of vodka in Russia last August, cases of poisoning from denatured alcohol, varnish and other substitutes for the Russian whiskey began to crowd the hospitals. At Petrograd the number admitted to one large hospital had reached 1,292 by the end of the year, namely, 861 cases of poisoning from denatured alcohol and 382 from varnish and 48 from both combined. In 144 cases the patients were between 15 and 20; there were 2 aged 14 and one child of 12. There were 11 deaths from the denatured alcohol, all within the first twenty-four hours, and 4 in the varnish cases. The cases are classified by trade or profession, and Lukin discusses the pathologic anatomic findings.

105. **Treatment of So-Called Catarrhal Jaundice.**—Orndieff obtained excellent results in the treatment of this disease from lavage of the stomach in the morning before breakfast. The temperature of the water was 96 F., and the irrigation was kept up until the returning fluid did not contain bile. He used this method on thirteen patients (soldiers) and the improvement was rapid. No special diet was ordered. The yellow tint of the sclera and skin and the dark brown of the urine rapidly disappeared with the improvement in the general condition of the patient, of the blood, etc. On the second and third day of the treatment the free hydrochloric acid showed an increase, with a rapid decrease in the size of the liver and spleen, followed by normal temperature and gain in weight.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 19, I, No. 25, pp. 2119-2222

106 Distribution of Blood Explanation of Degeneration of One Half of the Liver. (Halfzijdighcid van leverontaarding als gevolg van de verdeeling van het bloed der poortader.) W. F. Wassink.
107 Dementia Praecox and the Internal Secretions. W. M. van der Scheer.

Hospitalstidende, Copenhagen

July 7, LVIII, No. 27, pp. 661-684

108 Modern Treatment of Tetanus. K. Schroeder.
109 *Incongruence Between Hemianopic Defects in Visual Field and Asymmetry of the Hemianopic Border Line as Local Sign of Brain Lesions; Eight Cases. H. Rønne.

109. **Defects in Visual Field with Brain Tumors.**—The defects in the visual field are reproduced for each of the eight pairs of eyes, and the findings are correlated with the special location of the lesion in the brain in each case.

Hygiea, Stockholm

LXXVII, No. 12, pp. 641-704

110 *Photophobia in Scrofulous Children. (Om ljusskygghet hos skrofulosa barn.) P. Silfverskiöld.

110. **Blepharospasm and Photophobia in Scrofulous Children.**—Silfverskiöld has had extensive experience with phlyctenular conjunctivitis and other forms of scrofulous ophthalmia and has become convinced that the blepharospasm is in reality photophobia, the result of irritation of the optic rather than of the trigeminal nerve. In 129 of his 145 cases there were tuberculous antecedents or existing tuberculous lesions, and the findings were strongly suggestive of this in 16 other cases. The tuberculin skin test was positive in nearly all the children examined. In 115 of the cases there were complicating suppurative affections including 8 children with adenoid vegetations. These findings confirm the view that the combined action of the toxins of both the tubercle bacilli and of other pyogenic bacteria is as a rule responsible for the eye trouble. There were 50 boys to 95 girls thus affected; he ascribes the greater prevalence in girls to the fact that girls stay indoors more than boys, while their long hair is harder to keep free from vermin, and the scratching opens the portals to infectious processes. He declares that tuberculin is an actual specific for this photophobia in scrofulous children, and reports a number of illustrative cases to sustain this assertion. Three injections at most of "old" tuberculin banished permanently the so-called blepharospasm.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 9 CHICAGO, ILLINOIS AUGUST 28, 1915

ORTHOPEDIC SURGERY AND THE CRIPPLED *

NATHANIEL ALLISON, M.D.
ST. LOUIS

There are certain obvious truths concerning orthopedic surgery and the orthopedic surgeon to which it is my privilege as your chairman to call your attention. Orthopedic surgery is best defined as the special branch of surgery which includes the consideration of the deformities of the framework of the human body; of the diseases and lesions of the bones and joints; and of the peculiarities or defects in the muscular system. The orthopedic surgeon takes an especial interest in the surgical problems which arise within the boundaries just defined. Of necessity he finds the major portion of his work in lessening the difficulties that face the cripple. In not so very remote times our specialty considered only the correction of deformities which had been established by either accident or disease. At present we may divide the crippled into two classes: the actual cripple, that is, he who is either deformed or made lame and will remain so; and the potential cripple, he who is diseased or injured in such a way that before him lies the possibility either of becoming an actual cripple or of having such a condition prevented or alleviated.

In our various relations as orthopedic surgeons to the cripple it might be said that we are chiefly interested in the potential cripple. Here we still have the chance to prevent deformity, and we spend our efforts in the careful analysis of the causes of disease and disability with this end in view. We attempt constantly to improve our methods of surgical treatment which are focused on repair and restitution of function. Indeed, our minds become so absorbed in these surgical problems that we for the time may lose sight of the fate of those of our patients who are doomed to a greater or less degree of crippledom throughout life.

Orthopedic surgery may be said to be essentially conservative in its character. For those who are potentially crippled we have our hospitals and convalescent homes, our fresh air and sunshine wards in the open country, in the mountains and at the seaside. We are familiar with the work accomplished in this way, but we realize that, nevertheless, from these places, after all our care and skill have been exerted, there comes a varying percentage of the actually crippled. Again, from the more inaccessible districts of our country and from the metropolitan slum there also comes the neglected case, either an actual or a potential cripple, and we realize that it is in our province to determine the exact status of this cripple; his possibilities for recovery; his chances for assuming a normal place with his fellows in life. We realize our responsibility in believing that well-trained, competent orthopedic surgery must pass both verdict and sentence in this case and that on it falls the burden of decision in separating and classifying the various types and degrees of crippledom, and in being sagacious enough to so judge that even the more remote possibilities of return of physical function and usefulness are included in the vision.

It is to the status of the actual cripple that I wish to call your attention. In former times the cripple remained a cripple, was dependent either on his relatives or the community, and was reduced to the submerged position in society. He became a professional beggar or worked at some occupation that threw into the foreground his pitiable condition and his appeal for sympathy and charity. We realize more fully today the set of problems that faces him and those on whom he naturally depends, but we must realize also the moral claim he has on us as orthopedic surgeons.

Most of us are familiar, I believe, with the excellent report written by Miss Edith Reeves for the Russell Sage Foundation, on the care and education of crippled children in the United States. In this volume is set forth what is being done today in this direction. Among the more important factors brought to light are the following:

There are in the United States thirty-seven places where especial attention is given to the care of crippled children. Four of our states have taken on themselves the establishment of state institutions for their care. Minnesota, New York, Massachusetts and Nebraska have set aside funds and established modern hospitals and schools devoted to the conservation of their crippled children. Primary legislation for institutions of this kind has been adopted in Ohio and Illinois. Michigan and Wisconsin are caring for a small number of cripples in their state homes for dependent children.

The distribution of the thirty-seven institutions listed in this report is as follows: Maine 1; Massachusetts 2; Connecticut 1; New Jersey 3; New York 12; Pennsylvania 6; Maryland 2; Ohio 1; Illinois 4; Michigan 1; Minnesota 2; Nebraska 1; and Washington 1. Ten of the thirty-seven institutions are in two cities; namely, in New York and Philadelphia. Of the thirty-seven ten are classed as hospitals, fourteen as convalescent hospitals and

* Chairman's address, read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

homes, and thirteen as asylum homes. Seven of these thirteen homes care only for white children, and there is but one asylum home for colored children. There is no institution for crippled children west of Omaha, except in Seattle, and none south of Baltimore. Orthopedic surgery is done in the general hospitals in the South and West in cities like Charleston, Atlanta, New Orleans, Galveston, Los Angeles and San Francisco, but the work leaves the rural districts practically untouched.

As to the number of children cared for during the year, it is stated that in ten hospitals 662 were treated; in the convalescent hospitals and homes 945; and in the asylum homes 361; making a total of 1,968.

Let us turn now to the actual number of crippled persons in the United States. H. Winnett Orr has stated that with a population of one million there are cripples to the number of 3,500. According to Sir John Beyers there are a half million cripples in Germany, and the census of England shows that there are over 400,000 in that country. Professor Lange has stated that there are 98,000 crippled children in Germany. We have no accurate means of knowing what the numbers are in the United States, as our present census arrangement does not consider the taking of this information, but, according to the proportion of crippled persons in Germany, we should have about 133,000 crippled children under 14 years of age. Estimates run from 50,000 to 250,000 and vary with the enthusiasm of the person making the calculation. Of this, however, we are certain, that only about 2,000 annually are being cared for in properly equipped institutions. It seems, therefore, that what work is being done is located in our large centers, that orthopedic surgeons are collected in these centers, and that the rural districts are uncared for, and that on the whole the work in behalf of the cripple is truly in its infancy.

Much information on this subject is set forth in the excellent journal published by the Federation of Associations for Cripples and edited by Douglas C. McMurtrie of New York. This valuable adjunct to the work is also young, the first volume having appeared in 1914. In the pages of this journal one may trace the history of the effort in various countries of the world to better the physical and economic condition of the cripple. We as orthopedic surgeons may take considerable pride in the fact that always the orthopedic surgeon has inspired and advanced this effort. In our own land most of the work so far done has been accomplished by a comparatively few men. In the introduction to the report of the Russell Sage Foundation the following statement is particularly pleasant and gratifying to us:

> It is fair to say that the credit for this unique spirit in institutions for crippled children is due chiefly to the unselfish devotion of the orthopedic surgeons who lead the movement. Their spirit does not differ in kind from that of their brothers in other hospitals and other kinds of medico-philanthropic work, but this particular field offers a peculiar opportunity for the development and manifestation of altruism in its highest perfection. The patients are under care for a longer period than those in other hospitals, and the results are notable because of the special handicap.

To accept this praise is to admit our responsibility. The Section on Orthopedic Surgery of the American Medical Association has peculiar possibilities for the advancement of this most human of works. To me it seems that each member of this section who calls himself an orthopedic surgeon should realize the obligation that rests on him to educate his community and his state to the realization of the following facts: First, that the education of crippled children should be a special education, and second, that vocational training suited to the individual's capacity should be carried out and that this training should be given in a place suited to the physical condition of the cripple. Above all, that this special education is not an affair of private charity or philanthropy, but that it is the duty of the state—a duty made imperative not only by humanitarian considerations, but also by economic reasons.

It will be our privilege as orthopedic surgeons to stimulate proper legislative measures in our various states and to direct and advise the state authorities in this field of administration, and we must fit ourselves for this great mission.

If 50,000 crippled individuals lead lives of dependence and economic uselessness in our country, the fault is due to ignorance, and if ignorance exists on this vital topic the fault is largely ours. When we as orthopedic surgeons fully realize our place in the scheme of things, when we see with clear eyes our privileges, our duties, and our possibilities, then we shall have justified our position and our claims.

Humboldt Building.

MALIGNANT DISEASE OF THE LARGE INTESTINE

A PLEA FOR EARLY DIAGNOSIS AND EARLY RADICAL OPERATION *

H. BEECKMAN DELATOUR, M.D.
BROOKLYN

The study of malignant disease has been diligently pursued for many years. Large funds have been set aside for the purpose of research and much experimental work has been done in these diseases, but as yet we are not in possession of any positive knowledge as to the cause. Not knowing the cause little can be done in the way of prevention. As we can not exert the ounce of prevention we must strive to obtain the pound of cure. In all cases of malignancy the probability of cure is directly related to the earliness and thoroughness of removal.

Childe[1] insists that further improvement in the results of operations for cancer is chiefly to be looked for in the systematic education of the public; that it should be taught that early cancer is curable by operation, and that early cancer produces no symptoms of pain or ill health. We believe that these facts must also be more forcibly placed before the family physician, and those so unfortunate as not to believe in operative procedures must be converted. In cases of doubt exploration should be urged, for the clinical evidences of internal cancer become manifest only in the later stages of the disease.

It is easy to educate the public as to superficial growths, tumors in the breast and possibly ulcer and cancer of the stomach. Growths in the intestinal tract

---

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Childe: Brit. Med. Jour., July 20, 1907.

are so insidious in their development that the patient cannot be expected to aid in its discovery. We must look to the general practitioner for the early recognition of these tumors.

Cancer may occur at any point in the large intestine, but is most common at the sigmoid and the rectum and next at the cecum. The growth may be either carcinoma or sarcoma, but the former is by far the more common.

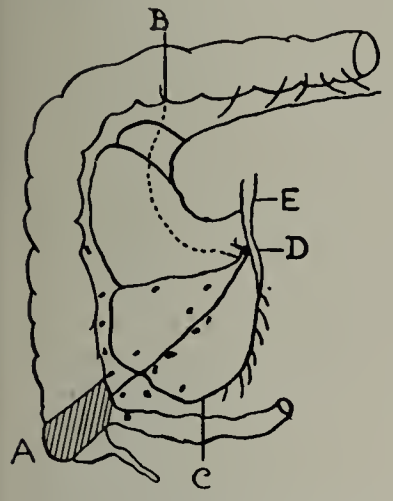


Fig. 1.—Excision of growth in cecum. *A*, growth; *B*, line of section of colon; *C*, line of section of ileum; *D*, point of ligation of ileocolic artery; *E*, middle colic artery. (After Jamieson and Dobson, Ann. Surg., L.)

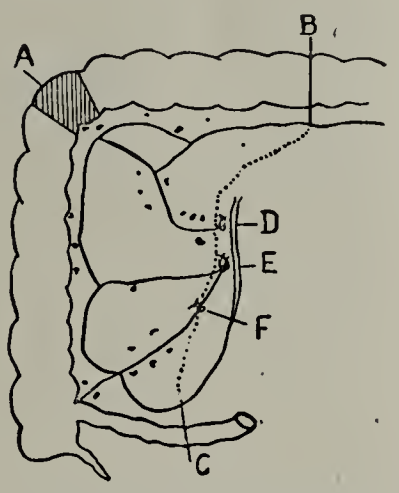


Fig. 2.—Excision of growth at hepatic flexure. *A*, growth; *B*, line of section of transverse colon; *C*, line of section of ileum; *D*, point of ligation of middle colic artery; *E*, point of ligation of right colic artery; *F*, point of ligation of ileocolic artery. (After Jamieson and Dobson.)

Tuberculosis of the hyperplastic form may easily be mistaken for cancer and is equally as serious a condition to deal with.[2] It is most likely to occur at the ileocecal junction and frequently involves the bowel at more than one point.

SYMPTOMS

Unfortunately the symptoms of cancer of the bowel are not very definite and many cases are brought to our hospitals as emergency cases to be operated on for acute intestinal obstruction, while the cause of the obstruction is a tumor which has been growing for many months, or perhaps one or two years.

No single or special group of symptoms appear in all cases, but the diagnosis must be deduced from a careful analysis of the entire case.

The disease occurs in patients beyond the age of 35, rarely earlier than this and most frequently beyond 50 years.

One of the most constant symptoms is constipation accompanied by flatulence. Constipation is usually obstinate and the patient finds it necessary to constantly increase the amount of physic to get the desired results. As the constriction of the bowel becomes more marked, pain or cramps develop, caused by the efforts of the intestine to overcome the obstruction. Diarrhea frequently alternates with constipation.

If the patient is thin or has lost much flesh the peristaltic waves may be easily observed through the abdominal wall. The pains are usually intermittent and the point of greatest intensity is at the site of the obstruction.

Obstruction of the bowel comes on so gradually that frequently it becomes complete before the true condition is suspected. In some instances this is due to the lodging in the small opening of the intestine of some solid or undigested particle of food.

2. Kandt: Long Island Med. Jour., April, 1915.

The symptoms of intestinal toxemia are present in nearly every case, and it is not easily remedied by the usual medical means. This is due to the stasis produced by the partial obstruction. Anorexia is frequently a prominent symptom and occurs quite early.

Loss of flesh and weight are present, as in all cases of cancer, but we have seen cases in which the patients have apparently retained their normal weight. Increasing weakness is present in most cases.

Cachexia does not usually appear until the disease is well advanced.

Vomiting does not usually appear until obstruction has developed.

Blood and mucus in the movements are valuable signs when present, but unfortunately are not observed unless the growth is in the rectum or lower sigmoid.

Ulceration with perforation may take place in the bowel wall immediately above the growth before obstruction has become complete. We have seen this in a number of cases in which a localized but spreading peritonitis caused the patient to seek medical aid.

Diagnosis in the early stages is not easy and, as we have already stated, is often not made until signs of complete obstruction appear.

Blood analysis is of some aid. In obstruction of the bowels the leukocyte count is always higher than normal, and when obstruction is nearly complete may be as high as 20,000 to 25,000, while the polymorphonuclear count may not be above 65 or 70 per cent. The changes of secondary anemia will be present.

Carcinoma skin reaction as proposed by Elsberg, Neuhof and Giest, and later studied by Lisser and Bloomfield,[3] is said to give a positive reaction in from

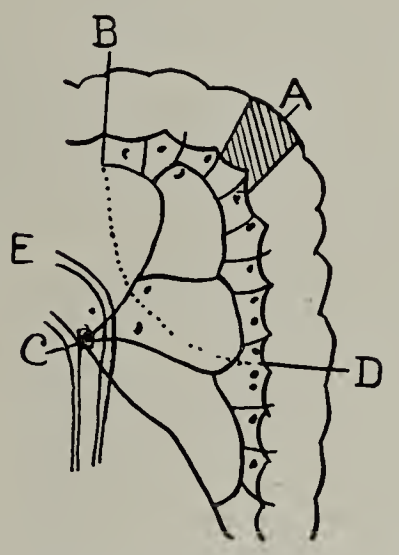


Fig. 3.—Excision of growth at splenic flexure. *A*, growth; *B*, line of section of transverse colon; *C*, point of ligation of left colic artery; *D*, line of section of descending colon; *E*, inferior mesenteric vein. (Jamieson and Dobson.)

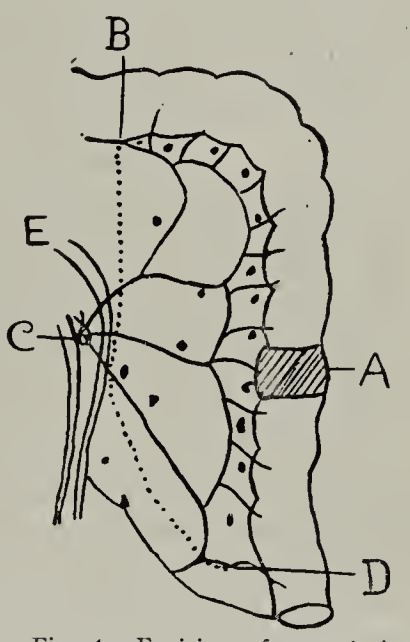


Fig. 4.—Excision of growth in descending colon; *A*, growth; *B*, line of section of transverse colon; *C*, point of ligation of left colic artery; *D*, line of section at sigmoid flexure; *E*, inferior mesenteric vein. (Jamieson and Dobson.)

70 to 89 per cent. of cases of cancer and in only 8 per cent. of noncancerous cases.

Abderhalden's ferment diagnosis may be of considerable help. Goodman[4] has reported thirty successful diagnoses in thirty-three cases of suspected cancer.

Observation of the abdomen will frequently disclose to sight and touch the exaggerated peristaltic

3. Lisser and Bloomfield: Bull. Johns Hopkins Hosp., 1912, p. 356.
4. Goodman: Surg., Gynec. and Obst., December, 1914.

action of the intestine. When present this is a positive sign of stricture.

The absence of a palpable tumor is not to be taken as a negative point in diagnosis.

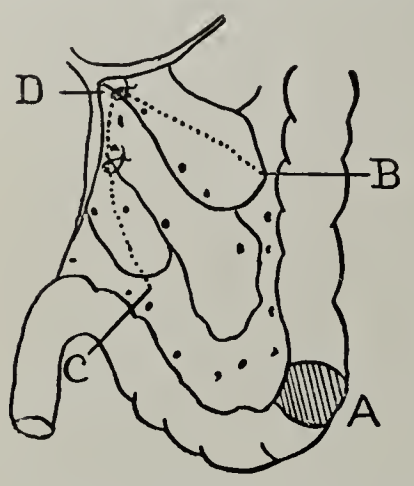


Fig. 5.—Excision of growth in middle sigmoid; *A*, growth; *B*, line of section above the growth; *C*, line of section below the growth; *D*, sigmoid arteries tied at their origin. (Jamieson and Dobson.)

Roentgenographic examination, combined with the use of bismuth by mouth and by injection, is frequently of great value. Case[5] states that when cancerous obstruction is present the following may be observed: (*a*) Delay in the passage of the bismuth varying from forty-eight hours to several days; (*b*) arrest of the bismuth given per anum; it must be shown that failure to fill the colon beyond a certain point is not due to want of pressure or to the presence of fecal masses; (*c*) dilatation of the bowel on the proximal side. The shadow may end in a funnel-shaped process when the obstruction is by ring stricture or by irregular lines due to the obstruction of a fungaceous mass in the lumen.

In using the enema the progress should be watched on the screen and any point of obstruction noted.

Even in early carcinoma it will be found that the head of the column halts at the site of the tumor and the distal colon distends under the pressure. Later the bismuth may be seen to slowly pass through the point of observation.

PROGNOSIS

After removal of cancer of the bowel we believe the prognosis is better than for carcinoma in other parts of the body, the superfiicial cancers of course excepted.

The infected lymph nodes, as a rule, lie close to the bowel and visceral metastasis is very rare.

The nearer the anal margin the growth is situated the less favorable is the prognosis, for the last portion of the rectum is directly connected with the inguinal glands and these early become infected.

Treatment is surgical and consists in a thorough removal of the growth with the adjacent lymphatic glands. The exact procedure must vary according to the location of the tumor. In cases in which complete obstruction has already developed no attempt at removal should be made until the bowel is emptied of its contents. In some the bowel above the point of obstruction may be cleared by repeated lavage combined with abstinence of food by mouth. If the patient's condition permits, the lavage may be repeated several times. In the cases in which a small opening through the tumor has become blocked, this reversal of peristalsis will occasionally dislodge the small mass and reestablish the flow through the intestine. Should this occur, further attempts to clear the bowel may then be made by administration of full doses of castor oil.

5. Case: Interstate Med. Jour., xx, 1103.

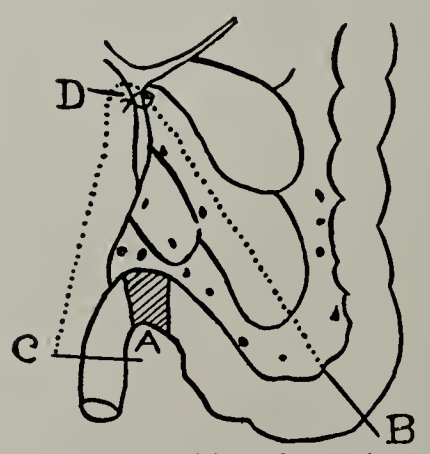


Fig. 6.—Excision of growth at the junction of sigmoid and rectum; *A*, growth; *B*, line of section through sigmoid; *C*, line of section through rectum; *D*, point of ligation of inferior mesenteric artery. (Jamieson and Dobson.)

In other cases the distention is very great and immediate relief must be afforded. In these a colotomy should be done on the proximal portion of the large bowel and then after a few days of thorough drainage combined with irrigation of the lower bowel the more formal operation for the radical removal of the tumor may be made.

In the presence of marked distention or impaction of the bowel above the tumor, resection should never be attempted until this condition has been relieved.

Removal of malignant growths in the large bowel may be successfully accomplished even after they have reached a considerable size, as they do not tend to form early metastases. Even with a knowledge of this fact we should make a thorough removal, including with the growth as much more of the intestine as may be necessary to include all glands that might possibly be infected. In determining how much bowel is to be removed we may well be guided by the studies of Jamieson and Dobson[6] into the distribution of the lymphatic vessels and glands, and of Clogg[7] on the arterial supply of the large intestine as indicating the limits of resection. The lymphatic glands of the large intestine are scattered along the course of the blood vessels, namely, the ileocolic, the right colic, the middle colic, the left colic and the inferior mesenteric.

In malignant disease of the cecum or ascending colon the portion of the bowel supplied by the ileocolic artery should be removed, that is, the terminal 6 inches of ileum together with the ascending colon to the hepatic flexure (Fig. 1).

If the growth be at the hepatic flexure the removal must include, in addition to the preceding, that portion of the bowel supplied by the middle colic artery, that is, to the middle of the transverse colon. In removing these portions of the large bowel care must be taken not to injure the duodenum, which is immediately behind (Fig. 2).

Growths at the splenic flexure require ligature of the left colic artery and as much of the bowel as is supplied by this vessel. These growths are rather difficult to remove because of the high attachment of the colon at this point, but it usually can be accomplished through mobilizing the bowel by division of the peritoneum as it passes on to the lateral abdominal wall (Fig. 3).

In all cases that portion of the fatty tissue adjacent to the intestine and blood vessels must also be removed, for in this are the lymphatic glands (Fig. 4).



Fig. 7.—Author's colostomy apparatus.

The sigmoid flexure and first portion of the rectum are to be considered together as they have the same blood supply, the inferior mesenteric, and develop from

6. Jamieson and Dobson: Ann. Surg., 1909, L, 1077.
7. Clogg: Lancet, London, Oct. 3, 1908.

the same embryonal tissue. The inferior mesenteric glands drain this area and a free removal of the intestine both above and below the growth should be resorted to (Figs. 4 and 5).

In case of growths of the rectum there has been a division of opinion as to the best method to follow and as to the production of an abdominal or a perineal anus.

As experience has grown, the almost unanimous verdict is now in favor of abdominal colostomy with the intestine brought through the rectus muscle. The successful production of a functionating perineal anus is so rare after a sufficiently radical removal of the disease that it is not to be considered. In an attempt to obtain it one is liable to fall short in the removal of the disease. With a properly fitted receptacle, such as we have devised, patients can be perfectly comfortable with the bowel opening on the abdomen.

As to the method of operating for rectal cancer my own preference is for the combined abdominal and perineal routes, preferably done in two stages. The technic of operation is not here described because many excellent articles have been already devoted to it.

Our object in presenting this communication is to draw the attention of the profession to the frequency with which cancer occurs in the large bowel, to the relatively low degree of malignancy and consequently high percentage of permanent cures after radical operation.

I desire to urge the general practitioner to investigate thoroughly all cases of obstinate constipation; to study carefully the cases of intestinal indigestion with symptoms of toxemia, especially in patients over 35 to 40 years of age; not to regard lightly the escape of blood from the anus, and not to think that hemorrhoids alone may be a cause; to examine more frequently the rectum with finger and speculum, especially when there is obstinate constipation or bleeding from the bowel, and in cases suspected of constriction of the bowel to employ roentgenoscopy by both plate and fluoroscope combined with bismuth injection.

Finally I urge exploration in suspicious cases that, if necessary, early radical operation may be performed.

73 Eighth Avenue.

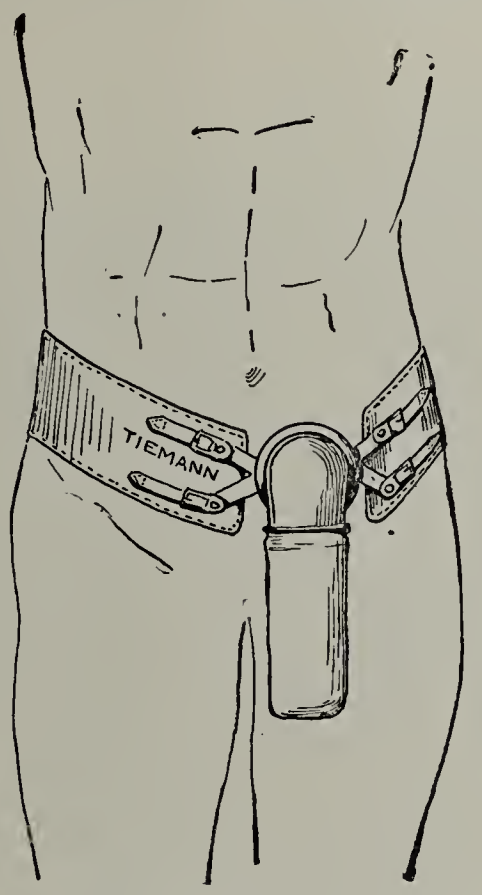


Fig. 8.—Author's colostomy apparatus with receptacle in position.

Exercise and Recreation.—These are, or should be, inseparable. Whether one walks, gardens, attends a gymnasium or plays golf, the exercise should be free from the spirit of drudgery and filled with the zest of enjoyment. A man's exercise should, if possible, be his hobby. No matter how poor the hobby, if it induces outdoor exercise, it is justifiable. The amateur geologist, botanist or ornithologist is perhaps less fortunate than the man who has a chicken yard or a garden, because one hobby can be cultivated only on favorable occasions and in selected places, whereas the other is an urgent daily absorption. The woman who has no maid to take the baby out for its two-hour airing is fortunate. Lacking the necessary baby, the influence of the poodle is not to be despised.—*Public Health Reports,* May 7, 1915.

A TWO-STAGE COMBINED ABDOMINO-SACRAL OPERATION FOR CARCINOMA OF THE RECTUM*

DANIEL FISKE JONES, M.D.
Fellow of the American College of Surgeons
BOSTON

There has probably been more discussion of carcinoma of the rectum in England, during the last two or three years, than in any other country, largely because of Mr. Sampson Handley's[1] statement that in a particular case, which he reported, the disease very early invaded the perirectal tissue, and the lymphatics of the bowel wall itself, for as much as 5 inches from the primary growth. In a letter published later, he calls attention to the fact that he did not state that carcinoma of the rectum always did this, but was very much pleased that his statement had brought about the discussion which he had hoped it would.

This statement has given rise to discussion of the relative values of the posterior operation, and the combined abdominoperineal operation; also many statements as to the comparatively benign character of these growths.

It has been stated by some of the older men that, because of this comparatively benign character, and because metastases take place late in the course of the disease, the simpler posterior operations are sufficient.

Mr. Paul[2] of Liverpool said, "Why should we undertake an extensive excision of the mesentery, for the removal of glands, which in all probability are not infected?"

Mr. Harrison Cripps,[3] in support of his statements, quotes his own excellent statistics, that is, 39 per cent. of three-year cures, but is this a fair impression, unless we go farther and consider that he examined 445 cases, and operated in only 108 of them? In other words, of the patients seen by Mr. Harrison Cripps, only 9 per cent. may be said to be alive three years later.

Henri Hartmann[4] collected 1,665 cases, with a mortality of 16 per cent. The result known in 982 cases was: Sixteen per cent. died from immediate effects of the operation, 58 per cent. died within three years of metastases, and 26 per cent. lived three years or more. That is, if the same proportion of patients seen were operated on, as in Mr. Harrison Cripps' series, but 6 per cent. of the patients seen were alive three years later.

May we not say, then, without exaggeration, that while carcinoma of the rectum may be a comparatively benign disease when seen early, and that metastases

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* From the East Surgical Service of the Massachusetts General Hospital.

1. Handley, Sampson: Brit. Med. Jour., 1910, i, 927.
2. Paul: Brit. Med. Jour., July 27, 1912.
3. Cripps, Harrison: Brit. Med. Jour., Oct. 5, 1912, p. 843.
4. Hartmann, Henri: Jour. de chir., December, 1913.

may take place late in its growth, it is one of the most fatal forms of carcinoma, when seen by the surgeon, and operated on by the posterior operation?

If I may be allowed to, I should say that the posterior operations have been popular because of two fallacies: First, they have been adhered to by some of the older men, because these men have deluded themselves into believing that carcinoma of the rectum is a comparatively benign disease, and rarely invades the surrounding tissue. Secondly, men have been led to believe that because they could get sufficient bowel to make a sacral anus, or do an end-to-end suture, after resecting the growth by a narrow margin, they were doing an extensive operation, and did not stop to consider that they were leaving the mesentery, with its lymphatics.

The first of these fallacies I have already disposed of. The second can be demonstrated by calling attention to the fact that the inferior mesenteric and superior hemorrhoidal arteries make a straight line, from the aorta to the fixed portion of the rectum, just below the promontory. It will be evident, also, that it is impossible to tie the vessel above the promontory; therefore, in order to bring the bowel down, the vessel must be tied and cut close to the bowel, and below the promontory. In doing this, the main lymphatics from the rectum are cut across, and left in situ with the artery, from the promontory up. It has been my misfortune to find perirectal growth, or metastatic glands in this region, in quite a proportion of cases, which must have been left by the posterior route. Mr. Harrison Cripps admits that his recurrences took place at the line of suture, and in the glands in the immediate neighborhood.

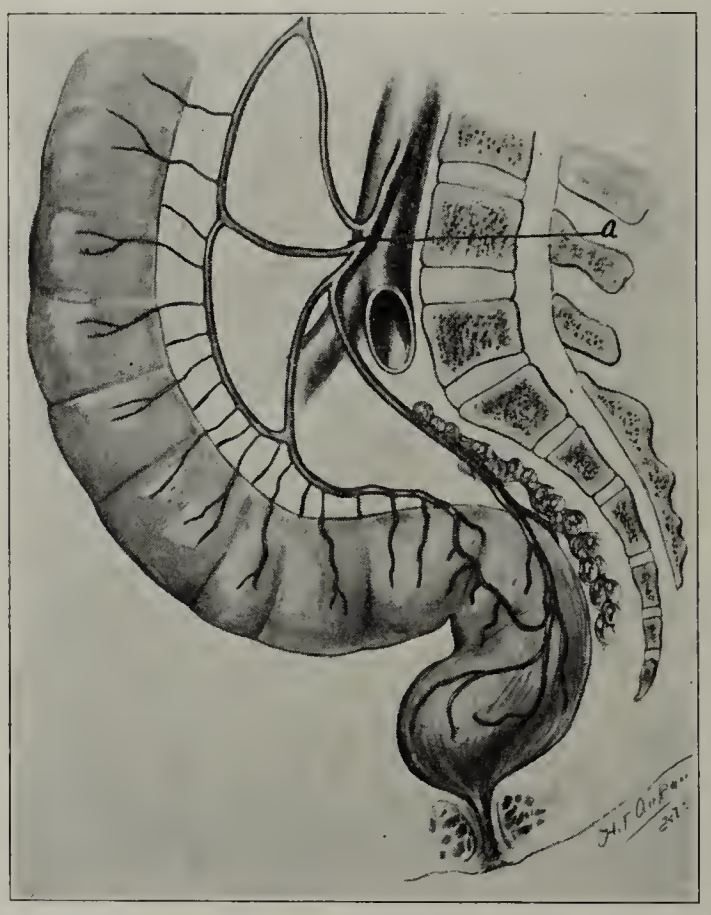


Fig. 1.—Diagrammatic sketch of the blood supply of the sigmoid and rectum through the inferior mesenteric; *a*, point at which the inferior mesenteric artery is tied.

Would it not be reasonable then to take a stand between that of Mr. Sampson Handley, and those who believe that a limited operation is always sufficient, and accept Mr. Cheatle's[5] view, who, after a careful study of serial sections of the whole rectum and surrounding tissue said, "I would advise extensive removal of the bowel where possible, but the result of the examination of my cases gives definite scientific reason to hope for a successful issue from a limited removal of the intestine, in cases which are obviously unfit for extensive and dangerous operations."

We will all agree that the posterior operation is the operation of choice in many cases, but must we not admit that our results with the posterior operations were not satisfactory; and if we do admit this, what can be done to improve them?

There are two methods open to us, first, the education of the laity, and profession; second, improvement of our technic. The first of these is of far greater importance than the second; a little education will save a great many more lives than a great improvement in technic.

Can any one doubt the necessity of educating the laity, and profession, when the average duration of prominent symptoms in patients entering the Massachusetts General Hospital was eleven months; that 75 per cent. of the patients had been treated for a longer or shorter period, for hemorrhoids; and that the other 25 per cent. were treated for diarrhea? Cancer of the rectum may be a comparatively benign disease, and probably does metastasize late; but is not eleven months of definite symptoms longer than one could expect even a carcinoma of the rectum to remain local? It should not be understood from this that there is any definite time limit in which a carcinoma becomes inoperable, for cases which give a history of symptoms for two years are not infrequently operable.

To improve this condition, the laity and medical profession must be taught to consider every case of hemorrhage from the rectum as cancer of the intestinal tract, until it is proved not to be.

The medical profession and laity know that hemorrhoids are the usual cause of bleeding from the rectum. The laity, therefore, delays about going to the physician, he in turn hears the story, and says without thought or examination, "hemorrhoids," and delays until the patient's condition is such that he knows there must be something more than hemorrhoids wrong with his patient; and finally, when it is too late, the physician sends the patient to the surgeon, or simply palliates the symptoms, because of his, the physician's, dread of a colostomy.

Physician after physician has excused himself on the ground that he could not make a rectal examination, for fear of losing his patient. On the other hand, patients have told me that they have threatened to leave their physician unless a rectal examination was made.

In passing, may I call attention to the manner of making rectal examinations? The "routine" examination of the rectum, as it is generally made, is worse than useless; because so superficial, it is often misleading. Mr. Harrison Cripps says that no protoscope is needed to make a diagnosis of carcinoma of the rectum, as any carcinoma of the rectum can be reached by the examining finger. I would add to this that few carcinomas can be felt by the examining finger, as the examination is ordinarily made.

Besides fighting against this ignorance of the public in regard to the seriousness of blood from the rectum, and the carelessness of the profession in regard to rectal examinations, we must educate the physician to believe that the artificial anus is not so terrible as

5. Cheatle: Brit. Med. Jour., 1914, i, 303.

he at present believes. This dread, we believe, is exaggerated beyond reason, as patients rarely complain seriously of the discomfort of the artificial anus, if they are relieved of their former symptoms. Many contented patients are doing their regular work cheerfully, with an abdominal anus; it is usually the ignorant who do not appreciate their hopeless condition, before operation, who complain.

I believe that many patients are never brought to the attention of the surgeon by the physician, because of this dread of an artificial anus. It is not at all an infrequent occurrence for patients, with seemingly favorable cases, to refuse operation, because they are seconded by the family physician in their idea that death is preferable to a colostomy. Is it fair for those who are in excellent health, and especially physicians, to decide, without sufficient data, such a serious question? I believe not, for the great majority of those who have actually been placed in this position seem contented after the colostomy has been done.

Education must be the means by which we make our greatest strides in the treatment of cancer of the rectum; but we must at the same time see that the technic of our operation is the most effective possible.

That the earlier, or posterior operations, were not entirely satisfactory is evident. The combined abdominal and sacral operation is, I believe, admitted to be theoretically superior, but has yet to be proved so practically.

There is very little use in quoting statistics in regard to the combined abdominosacral operations, for these operations appear to be of little real value as yet. It may be stated, however, without exaggeration, that the proportion of three-year cures is larger than with the posterior operation. It is quite evident also that the mortality is much higher.



Fig. 2.—Reflection of the peritoneum from the mesentery of the sigmoid and from the rectum. Ureters pulled back with peritoneal flaps. Pelvis dissected.

Chalier and Perrin[6] collected 187 cases, with a mortality of 44 per cent.; they also collected 208 cases, by surgeons who had operated on from six to twenty-six patients with a mortality of 40 per cent. When I quoted these statistics to a friend from Chicago, he said that they were absurd. Perhaps they are today, but if they are, it is largely because of a more careful selection of cases.

Granted, however, that, in a condition such as this, the mortality is high, what does it matter if we can cure a larger percentage of cases than by the posterior route?

Perhaps the most important consideration, in connection with the abdominosacral operation, aside from its greater extent, is that a very much larger proportion of cases seen will be found operable than by the posterior operation, the percentage of operable cases with the posterior operation probably ranged between 20 and 30 per cent.; with the combined operation, this should be increased to 50 per cent. It is worthy of note, in this connection, that many cases which appear to be favorable for operation when examined below, have metastases which make them inoperable, when the abdomen is opened, and many of those which appear inoperable at the examination below are quite favorable when examined through the abdomen.

If we are to carry out the technic for malignant disease, as we do in other parts of the body, we must remove the growth by a wide margin, and with it, *en bloc*, the lymphatic systems connected with the region. This, as I have shown above, cannot be done by the posterior operation, so well as by the combined. While this is true, it must be admitted by all that the posterior, or Kraske operation, is the operation of choice in the obese, the feeble, and those over 60 years of age.

There would be very little argument, we think, against the more extensive operation, that is, the combined abdominosacral, provided we could reduce the immediate mortality to that of the posterior operations. This can be done, we believe, by the two-stage operation, without losing any of the important benefits of the one-stage combined operation.

Several two-stage operations have been devised. Among the more important are those by W. J. Mayo,[7] Dalghren,[8] and Coffey.[9] The simplest form of the two-stage operation is that of W. J. Mayo, in which the first stage consists of colostomy. The second stage is an amputation of the rectum by the sacral route. The distal portion of the sigmoid is left as a pouch, with its lower end closed, attached to the colostomy wound. This idea was essential, as will be seen later, to the two-stage operation to be presented.

In any two-stage operation we must find some method by which the extent of the operation shall be essentially that of the one-stage combined abdominosacral operation; that is, it should include as much of the lymphatic systems of the rectum as possible, and still leave sufficient blood supply to make it positive that the distal portion of the sigmoid shall not become gangrenous, between the first and second stages of the operation, and sufficient to supply the sigmoid, if that is to be brought down after resection of the growth. Practically all the two-stage operations with which we are familiar fall short in one of these two particulars. Dalghren, in order to avoid gangrene of the distal sig-

6. Chalier and Perrin: Lyon chir., February and March, 1913.

7. Mayo, W. J.: Ann. Surg., August, 1912.
8. Dalghren: Zentralbl. f. Chir., March 29, 1913.
9. Coffey: Ann. Surg., April, 1915.

moid, left the vascular arches intact. At the same time he left the main course of the rectal lymphatics by leaving the superior hemorrhoidal and inferior mesenteric arteries untouched above. Coffey avoided the dangers of necrosis after tying off the vascular arch by invaginating the distal portion of the sigmoid into the rectum, a process hardly possible in many cases. It will be seen that in both these operations very little more is accomplished than can be accomplished from below. In both, a sufficient length of bowel can be removed with ease, but there is no more extensive extirpation of mesentery and lymphatics than with the Kraske operation.

In what may be called the second type of two-stage operation reported by Dr. W. J. Mayo,[7] there is some dissection done from the abdomen, the superior hemorrhoidal is tied high, and the vascular arch is tied. In order to avoid gangrene of the upper rectum and lower sigmoid, he leaves the sides of the pelvis untouched, that the lateral sacral and middle hemorrhoidal arteries may supply the bowel above. He reports one case of perforation of the bowel, among the cases in which he used this method.

It has been my effort, therefore, to devise an operation in which an extensive operation could be carried out and still maintain the blood supply to the bowel between the first and second stages of the operation, and to supply any portion which it might be desired to leave.

I wish to present a two-stage combined abdominosacral operation which I now use with the greatest satisfaction.

The first stage begins with a median abdominal incision under ether anesthesia. The sigmoid and descending colon are mobilized, and the inferior mesenteric is tied just below the left colic branch. A long silk tie is left on the distal end, in order to identify it in the second stage of the operation. The peritoneal flaps are next dissected from the mesentery of the lower sigmoid and rectum, care being taken to keep at least an inch from the bowel, as recommended by Miles,[10] to avoid the chain of glands just beneath the bowel. These flaps are dissected back to the ureters, which are identified. The whole pelvis from the point at which the inferior mesenteric is tied, to the levators below, and from the ureters down on the lateral walls, is dissected as clean as possible.

The peritoneal incision is carried across the bowel at the rectovesical fold, and the bladder freed from the rectum for an inch or more. The rectum and sigmoid, with their mesenteries, are now held forward, and the peritoneum sutured behind the bowel and close about it.

If the sigmoid is to be brought through the sphincter, nothing more is done. If a colostomy is to be done, the loop of sigmoid is brought out through a rectus incision, or through a gridiron incision just above the anterior, superior spine, double clamped, and cut with the cautery, great care being used not to injure the vascular arch, at this point. The clamps are left on the bowel for twenty-four, forty-eight or seventy-two hours, depending on the comfort of the patient.

From five to seven days later, under spinal anesthesia, the second stage of the operation is carried out. The patient is put in the reversed Trendelenburg position, as used by the Mayos, a median incision is made, and the coccyx removed. If the rectum is to be amputated, the sphincter, ischiorectal fat, levators and all tissue between the ureters are freed, and the dissection carried up to the first-stage dissection. The bowel is clamped at the peritoneal floor, the vascular arch is tied, and the incision carried down through the mesentery to the incision in the mesentery made above, where the inferior mesenteric was tied. The bowel is now amputated with the cautery, the proximal end inverted, and a drain put in down to the stump.



Fig. 3.—Peritoneal flaps closed over pelvis and about the rectum.

If the sphincter is to be left, the sigmoid is pulled down and amputated at the desired point, between a wire and a clamp, with the cautery, the bowel cut off just above the sphincter, the mucous membrane dissected from the remaining bowel, and the sigmoid, closed by a wire, is pulled down through the sphincter. A large drain is put into the pelvis to fill up the cavity left by the removal of so much tissue.

The essential points in this operation are: 1. The inferior mesenteric is tied high, and removed with the lymphatic channels accompanying it. 2. The sigmoid and rectum can be left in situ, after tying the inferior mesenteric and dissecting the pelvis, without fear of gangrene, as the vascular arches from the middle and left colic arteries are left intact to supply the bowel. 3. A thorough dissection of the pelvis is made, including most of the lateral glands, into which some lymphatics of the rectum drain. 4. By closing the peritoneal flaps about the intestines, the second stage of the operation is entirely extraperitoneal. 5. The effect of sepsis is much diminished. The five days between the two stages seem to be sufficient to seal the lymphatics of the pelvis, which reduces the immediate effects of the infection. Those cases which become infected show a comparatively mild course. This is of considerable importance, for, in the combined operation, there is a very large cavity left in the pelvis, after removal of the rectum, which it is almost impossible to keep clean. 6. In cases with partial obstruction, the dissection can be done before doing the colostomy, with little more effect than by doing the colostomy alone. In those cases in which it is desired to do a resection, the freeing up of the bowel, and then leaving it for five days,

10. Miles: Brit. Jour. Surg., October, 1914.

seems to diminish the obstruction, rather than to increase it. The contents will move through the section of bowel, the mesentery of which has been freed for 18 or 20 inches, fully as easily as through a normally attached bowel.

Some of the disadvantages of this operation as compared with the single-stage operation are: 1. A wide dissection is made and left exposed for five or seven days. Many lymphatics coming from the region of the growth are cut across, making it possible for cells from the growth to be deposited in the denuded pelvis. How great this danger is, I do not feel in the least certain of. One might say that if cells are running about in the lymphatics, they may as well be dropped into the denuded pelvis, as to be carried beyond into normal tissue. However, to obviate this difficulty, I have seared with the cautery as much of the surface of the mesentery as possible, to close the lymphatics. 2. Another disadvantage is the thickening and hardening of the fat, which takes place during the period of waiting, which makes an end-to-end suture somewhat more difficult. 3. The prospect of two operations is not pleasant to many; this is partially obviated by the use of spinal anesthesia for the second stage.

After using the combined abdominoperineal operation in one stage for two years, the advantages of the two-stage operation have so impressed me that I feel justified in offering this operation as one which will give the greatest satisfaction and solve many of the problems of this difficult surgical procedure.

Perhaps one of its greatest advantages is the fact that sufficient time may be taken to do a thorough dissection of the pelvis, both above and below. That this is important, I am convinced, because metastases which I have seen have been in the glands immediately beneath the bladder, and on the lateral walls of the pelvis.

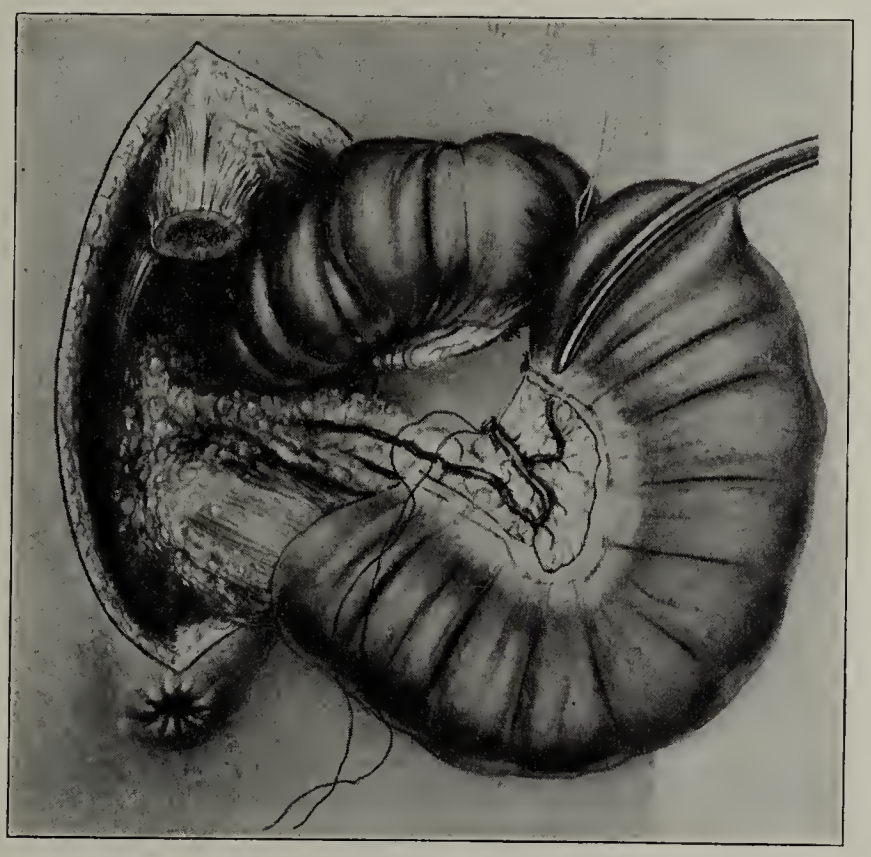


Fig. 4.—Dissection completed below for a resection of the rectum. Sigmoid tied off above with a wire and clamped below.

Judging by the course of my cases, I am convinced that the mortality can be reduced to that of the Kraske operation. I say "judging by the course of my cases," for my statistics are not sufficiently good to warrant this statement from them alone. I have operated on sixteen patients by the two-stage combined operation, with three deaths, a mortality of 18 per cent. In extenuation of these figures, it may be said that no effort has been made to choose proper cases. because I was trying to convince myself as to its value. The three patients who died were all over 63 years of age. It may also be mentioned that a radical operation of some sort was done on 54 per cent. of the cases entering the hospital.

If under such circumstances we can reduce our mortality to 18 per cent., it is fair to assume that with proper selection of cases, it may be reduced to 15 per cent. or even 10 per cent.

A very important question to decide in the operation is as to whether there shall be a resection of the rectum, or an amputation. Statistics show that amputation gives a lower mortality, and a higher percentage of three-year cures. Miles of London believes, after careful investigation of recurrences of cancer of the rectum, that the only logical method is to remove the sphincter, ischiorectal fat and levators in all cases.

This I believe to be true, because of the recurrences I have seen in the last two years, in all of which there has been a local recurrence in the neighborhood of the suture, and metastases in the pelvic glands, in the immediate neighborhood. It is my firm belief that amputation of the rectum, with a permanent colostomy, is the method of choice, except in very rare instances.

Moynihan[11] and Bloodgood[12] both state that there are too many colostomies done, while it is my conviction, which is made stronger with every operation, that there would be a very much lower mortality, and a much higher percentage of three-year cures, if a permanent colostomy were done in all cases.

I have tried in vain to avoid the pitfalls which seem to be present in the operation for resection, without avail, and each attempt at resection has convinced me more and more that amputation should be the operation of choice. Some of my difficulties have been: the necessity of resecting nearer the growth than is desirable; the sloughing of the distal portion of the sigmoid, which occurred in spite of the fact that the bowel had been well nourished between the first and second stage, a period of five days. In another case, an opening was made into the bowel in separating it from the prostate and urethra. The patient was fat, and the distance between the ischia was very narrow. In still another, after two weeks of apparently solid union, a sinus opened at the line of union.

In addition to these dangers, there is the added risk of infection, which must always take place to a greater or less extent in every resection. As Mayo has said that 90 per cent. of the deaths in operations for cancer of the rectum are owing to sepsis, this must be an important consideration. It is certainly a much more attractive proposition to feel that you are to leave your patient with a sphincter than without, but

11. Moynihan: Surg., Gynec. and Obst., May, 1908, p. 463.
12. Bloodgood: Surg., Gynec. and Obst., 1906, iii.

it must be remembered that it is impossible to be sure of a useful sphincter, in these cases. The extensive dissection, the large amount of cicatricial tissue and the disturbed sensation of the anal region are very likely to leave a sphincter which is useless, and, as has been said, "An abdominal anus is much better than an uncontrolled anus in its normal position."

A permanent colostomy no doubt has many disadvantages. Chief among them is the impossibility of getting the consent of the patient to the procedure in some cases. I cannot urge operators too strongly, however, to do in the great majority of cases the operation which will give the patient the best chance for a permanent cure, and the lowest mortality. This, I believe, is obtained by amputation rather than resection. To quote Chalier and Perrin, resections gave 11 per cent. of three-year cures, while amputation gave 22 per cent. That there is an occasional case in which resection should be done, cannot be denied. This should not alter the rule, however, that a permanent colostomy should be done in all cases.

A word as to the treatment of inoperable cases: A colostomy, in spite of its disagreeable features, relieves most of these patients tremendously, while in some other cases, the tenesmus and constant discharge of pus and blood continues. This measure of relief is often denied patients, because it is believed that the patient will live only a short time. But these patients live on and suffer for a much longer time than is generally counted on. Mr. Harrison Cripps has shown that among his patients, those on whom he did a colostomy lived twenty-two months, while those without a colostomy lived 7.8 months.

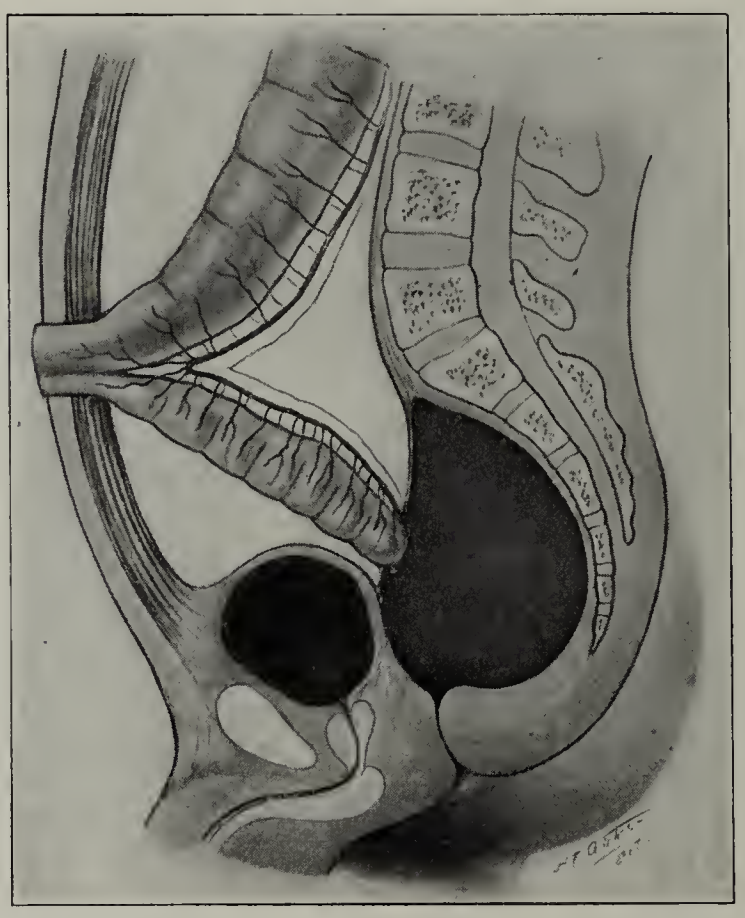


Fig. 5.—Completed second stage with amputation of the rectum.

It has been hoped that radium tubes, placed in the bowel in direct contact with the growth, would give some relief, but the cases treated here have thus far been disappointing. Sampson Handley reports a case, apparently inoperable, which became operable, after the use of radium, and in which the patient was well at the end of a year after operation. We may hope for some relief from this source before long.

At the present time, we have hopes that the heating of these growths, with the Percy cautery, will be of benefit in lessening the discharge and pain. In the male, we have carried out a technic similar to that of Percy for carcinoma of the uterus. The abdomen is opened, and a small opening just large enough to admit the index finger is made in the posterior wall of the bladder; one finger is put through this opening into the bladder, and the rest of the hand about the rectum to control the heat and guide the cautery. A Boldt water-cooled speculum is placed in the rectum, and the cautery pushed upward through the growth, until the whole growth is heated and melted away, as in the uterine growths.

We have used this method but twice, but have been very favorably impressed with the results thus far, in that the discharge has diminished, and the tenesmus has been lessened. Any improvement, however slight, seems worth while in this deplorable condition.

I cannot close this paper without emphasizing the fact that if the combined abdominosacral operation has any advantage over the posterior operations, it is so slight that it amounts to nothing compared to the advantage that would be gained if cancer of the rectum could be recognized earlier. There is a long period, I am sure, when the disease is local, and when a local or posterior operation would be sufficient to cure.

195 Beacon Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. H. BEECKMAN DELATOUR AND D. F. JONES

Dr. Miles F. Porter, Fort Wayne, Ind.: A few pertinent figures will serve to emphasize the importance of this paper. More than one person in every 1,200 in the United States dies of cancer every year (Rodman: The Journal, 1908, li, 1542). In the mortality list of the United States cancer ranks sixth (*Med. Rev. of Rev.*, 1911, xvii, 166). Stierlin (*Ann. Surg.*, 1890, xi, 206) says that of all deaths from cancer 3⅓ per cent. are due to cancer of the rectum. About half of all cancers originate in the hollow viscera of the abdomen exclusive of the bladder. Mistakes in diagnosis are common. Benign conditions have been mistaken for malignant ones and vice versa by many. In the absence of microscopic examination diagnosis is sometimes impossible. And in this connection it should be remembered that some parts of a given tumor may be benign and other parts malignant, and that multiple growths may be found, some of which may be innocent and others malignant. Also the possible coexistence of syphilis, tuberculosis, and cancer should constantly be borne in mind. Possibly we may in the near future get some help in diagnosis from the serum (Abderhalden) test. Goodman and Berkowitz diagnosed 30 out of 33 cases by this method, and Cytronberg's experiments seem to confirm the correctness of the principle of the reaction in the dialysis method (*Am. Jour. Med. Sc.*, May, 1915, p. 761). Unfavorable results obtained from treatment are chiefly due to delay. Only about 50 per cent. of these cases are operable when they first present themselves to the surgeon, usually after two or three years' duration of the disease. Routine roentgenographic, sigmoidoscopic and digital examinations, the latter done with the patient standing, will do much to help in the diagnosis of these cases. The arrangement of the lymphatics makes metastasis slow and accounts for the relatively good operative results as pointed out by Madelung, Mayo and others. However, this arrangement of the lymphatics should not lead to less wide excisions than obtain generally in cancer, for the local spread of the disease may be quite wide, and, indeed, usually is, because most patients do not present themselves to the surgeon until

two or three years after the commencement of the disease.

Kelling succeeded in producing tumors in hens by injecting into their abdominal cavities chicken embryos. He found it essential to success, however, to sensitize both the donor and the recipient. These experiments sustain the theory of Cohnheim and show that alien albumin favors the development of tumors. Hence patients after the removal of cancers should avoid raw albumin as food, and it should also be avoided by those who have conditions predisposing to cancer, and by patients with gastric and intestinal lesions, for those lesions render the alimentary wall permeable to alien albumin.

DR. C. B. DAVIS, Chicago: The paper of Dr. Jones represents the accepted view of the majority of men doing any considerable amount of work in cancer of the rectum. No single procedure either low or high should be selected for all cases. It is along these lines that we have had the greatest variety of opinion in this field, one man insisting on the lower or perineal route and another on the sacral route, and others advising a combined operation. There is a feeling now that the abdomen should be opened to determine operability, the extent of the growth, and to mobilize the bowel preliminary to the work by the sacral route. Dr. Mayo summed this up well when he suggested that all operative procedures in this region should be judged from the immediate mortality, a functionating anus and the ultimate prognosis. Preservation of the anus is ideal of course, but an anus not controlled by its own nerve supply is not comparable with an anus in the abdomen. The sacral anus has been employed more frequently in the past than the abdominal anus. With the abdominal anus, if the bowel is brought down in a large loop and then brought through the abdomen, greater security and comfort are given to the patient. The abdominal anus will never be chosen voluntarily by the patient, but we should insist more often on the bowel being treated in this manner. The ultimate prognosis of the two types of sacral operation and the abdominal procedure have been worked out by Hartman of Paris. He showed that recurrence following operations treated by the abdominal route were 18 per cent., while recurrence in cases handled by the sacral route showed a recurrence in 68 per cent. of the cases. Thus in attempting any given case we should have constantly in mind the two alternatives, a low immediate mortality with a high percentage of recurrence, or a somewhat higher mortality with a tremendously reduced recurrence percentage.

DR. ALEXIUS MCGLANNAN, Baltimore: About two years ago we studied ninety cases of cancer of the colon of which there were specimens in the laboratory. The clinical history of the cases, particularly the history of the early symptoms of the disease, was exactly in accord with the symptoms noted by Dr. Delatour. The cases were divided into two large groups having nearly the same number of cases in each. In the first group we had the symptoms of obstruction and in this series if the patient did not die as the result of the obstruction, we had good results as far as permanent cure was concerned. In the second group the prognosis was bad, as most of the patients died from the tumors. When looked into pathologically we found in the group of cases with obstruction that the tumors were cylindrical cell cancers, growing into the lumen of the intestines and with metastasis largely limited to the nearest group of lymphatic glands; while on the other hand in the fatal group of cases we found cuboid cell carcinoma, soon growing into the subperitoneal tissue of the bowel, and then early and widespread metastasis. This relation of clinical course and pathologic picture was probably the most interesting thing in the study.

DR. LOUIS J. HIRSCHMANN, Detroit: The important point regarding carcinoma of the large bowel and rectum which should be emphasized is this question of early diagnosis. Dr. Delatour spoke of care used in examining these patients. No matter if you find hemorrhoids, fistula or fissure, don't be satisfied, because often you may find a carcinoma higher up accompanying the lower minor condition. I have examined several patients after minor operations had been performed in good hospitals by competent men and carcinoma within reach of the finger was undiscovered. Always look higher up no matter how apparently simple is the case. In the diagnosis of carcinoma of the large bowel, use fluoroscopic palpation. If there is an impaction in the large bowel, fluoroscope and then palpate. Where the fluoroscope shows narrowing, irrigate and feel the spot and examine closely and a haze will be seen around the narrowing which is diagnostic of carcinoma. In resection, we have more or less narrowing of the lumen, usually less in good surgery, but where this exists we have some obstruction to the fecal current even in the best operation. If we will just do the same thing in a carcinoma as in intestinal stasis and short-circuit, we will reduce the operative mortality and percentage of recurrence.

DR. ROBERT C. COFFEY, Portland, Ore.: I am very glad nearly all agree that the two-stage operation is the one of choice and gives the best results. I have always been content to follow Dr. Mayo in this work because of his results. We have somewhat modified the technic, however, by doing the major procedure first as follows: (a) Pass a rectal tube with an eye on each side up through the rectum past the growth, and let this remain so that the sigmoid empties itself during the progress of the operation. (b) Mobilize the sigmoid and rectum down to the bottom of the culdesac, as shown in the original article published in the *Annals of Surgery*, April, 1915. Cut the intestine in two between Payr clamps. Sew up the two ends. Cut and tie the superior hemorrhoidal artery. Dissect the pelvic fat down as Dr. Jones has recommended here. Now push the rectal tube up to the end of the distal segment, pass a silk suture through the upper end of the intestine and through the two eyes of the colon tube. Swab the sutured end of the distal segment with iodin, and invert the intestine by pulling on the rectal tube until the intestine is brought out through the anus, making an intussusception. Suture the peritoneum over the raw edges and draw it over the intussuscepted end, making the growth extraperitoneal. Bring the proximal end of the sigmoid out through a stab wound, making a permanent anus through the left rectus. This gives the best results even if objected to by the patient. We now refuse to make a sacral anus, because we know it is not so good. At the next operation simply do the Kraske operation, removing the growth whole, and it is a perfectly simple operation. Our results have been much better and we have had less shock by this method than by any other method which we have tried. We have operated on nine patients by this method with one death, and we have one in the hospital now who is ready for the second operation. By doing the major portion of the operation first there seems to be less shock, in our hands, and we believe it is an improvement over other methods.

DR. JOHN RAWSON PENNINGTON, Chicago: In cancer of the rectum we can by proper proctoscopic examination determine conditions just as well as on the surface of the body. We cannot do it with the finger and speculum, but must use the protoscope and locate it properly. Examinations should be made of all patients over 40 years of age in order to detect conditions of this kind. In regard to the abdominal operation, the last speaker said that we were united in doing the two-stage operations, but I have used only the one-stage operation, and in doing this I have followed the technic advised by Miles. When doing the operation, after the abdomen is opened, with the patient in the Trendelenburg position, locate the ureter and the inferior mesenteric artery and divide the peritoneum down on either side with your hand and scoop out all lymphatics down to the coccyx and in front separate the rectum from the tissues half way down to the vagina or prostate; separate the rectum, going down to the levator ani on either side; at this junction close by purse-string suture and stitch the wound on the side and close the peritoneum over this. Close the abdom-

inal wound and put a purse-string suture around the anus, and the operation is completed in a very few minutes. I see no reason why we should make a two-stage operation of that condition.

DR. H. B. DELATOUR, Brooklyn: During the past winter I had five cases of acute intestinal obstruction due to malignant disease. This has prompted me to present to you today the paper which I have read: Three of these cases were inoperable; one had perforated bowel above the point of the cancer and general peritonitis resulted. The other two cases were sent in as appendicitis with vomiting, and in both cases it was easy to make out on examination and history that the mass was not due to appendicitis but was due to carcinoma in the colon, and resection was done with a successful result. I believe we should try to educate persons into the feeling that artificial anus is not such a terrible thing. Some say they would rather die than have an artificial anus. I believe with a properly placed anus and proper instructions given the patient as to its care, that these people can go through life with comfort. I have a patient wearing a colostomy cup and attending to business for eight years. He finds no distress due to the presence of the anus. I believe the anus should be placed in the median line rather than to one side.

DR. D. F. JONES, Boston: I agree entirely with what Dr. Delatour has said about the artificial anus. The great difficulty at present is that we frequently have to persuade the patient to consent to a permanent colostomy, after they have been advised by the family physician not to consent to one. In regard to carcinoma of the rectum, I do not mean to convey the idea that all cases should be submitted to the two-stage combined operation, but would like to impress on you that the location of the growth has nothing whatever to do with the decision as to what operation shall be used. If the patient is over 60 years of age, the posterior operation should be done.

The Hampton Leaflets.—We have received from the Hampton Normal and Agricultural Institute at Hampton, Va., a number of pamphlets printed and distributed by the institute for the benefit of the students, graduates and patrons of that institution. Among the titles of these valuable and interesting publications are: "Injurious Insects"; "The House Fly as a Carrier of Disease"; "Hookworm Disease and the Negroes"; "Housekeeping and Sanitation for Rural Schools"; "Mosquitoes"; "The Prevention of Tuberculosis"; "Responsibility of Teachers for the Health of Their Children." One of the pamphlets is, "Patent Medicines and the Negro," in which a warning is given as to the worthlessness and danger of all sorts of nostrums. These pamphlets have a practical educational value and their influence among the patrons of the institute cannot help but be good. Accompanying the pamphlets are the Forty-Seventh Annual Report of the Principal and the annual catalogue of the institute, which show the institution to be in a prosperous condition and doing good work.

AN UNCOMMON CASE OF MULTIPLE BENIGN SARCOID OF THE SKIN*

JOSEPH ZEISLER, M.D.
Professor of Dermatology, Northwestern University
CHICAGO

Etymologically the term "sarcoid" would seem to convey the conception of a tumor formation resembling sarcoma. It was first employed by Kaposi to comprise a number of cutaneous disorders, including mycosis fungoides, lymphodermia and even true sarcoma. Its more general and exact use dates from Boeck's publication in 1899. He there described as multiple benign sarcoid and later, in 1905, as benign miliary lupoid, cases presenting numerous deep-seated cutaneous nodules or tumor-like formations of varying size, situated on the face and other parts of the body, presenting a characteristic histologic picture and thought to be due to a modified effect of the tubercle bacillus.



Fig. 1.—Sarcoid of the skin; lesions on face.

Far from strengthening or clarifying this new clinical and pathologic entity, further observations have rather complicated the situation, not only in morphologic respect, but also in regard to the histology and etiology. Thus we find Darier in 1910 giving us four types of sarcoid, based on a careful analysis of about thirty-five cases, viz.:

1. Boeck's type: Tuberous, papular and diffuse infiltrating form.
2. Darier-Roussy type: Subcutaneous sarcoid, symmetrically distributed on the trunk, histologically resembling tuberculosis.
3. "Sarcoides noueuses et nodulaires," resembling erythema induratum.
4. Spiegler-Fendt type: Round cell, nontuberculous tumors.

Since 1910 there have been reported probably less than thirty cases.

Plancherel collected reports of twenty-two instances of sarcoid, of which fifteen were of Boeck's type, seven of the subcutaneous variety and of the erythema nodosum type. Sutton has recently reported an unusual case in a child 2½ years old, showing lesions on the face. At the last meeting of this Association Sweitzer[1] reported, together with a review of the whole subject, a case of supposedly typical Boeck's sarcoid. In view of this recent contribution, a detailed survey here of the literature would seem superfluous.

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Sweitzer, S. E.: Sarcoid of Boeck, THE JOURNAL A. M. A., Sept. 19, 1914, p. 991.

That many cases of sarcoid bear a more or less intimate relationship to tuberculosis must be admitted from a study of the material collected so far. But whether we should readily identify sarcoid and tuberculosis, as Fordyce recently suggested in a discussion before the American Dermatological Association, seems as yet open to debate. Let us briefly analyze the last twenty-eight cases reported. In five of them a family history of tuberculosis is recorded. Ten cases presented concomitant features of tuberculosis, such as iridocyclitis, glandular affections and other signs. Stümpke reported a case of sarcoid associated with generalized tuberculosis. Kyrle emphasizes the resemblance of the histologic picture in real tuberculosis of the skin to that of benign miliary lupoid. Tuberculin injections produced a general reaction in five, a local reaction in two cases. The Pirquet test proved positive in three instances. Animal inoculation, undertaken by various investigators, has in most instances given negative results, though Morovetz, Kyrle, Volk and Sweitzer report positive effects. In twelve cases careful searching for tubercle bacilli was unsuccessful. So were stains for Much's granules. Most of the cases of the erythema induratum type showed unmistakable evidences of their tuberculous nature.

These apparently divergent findings need not surprise us, when we look back at the history of lupus by way of analogy. Here also, in this classical form of cutaneous tuberculosis, as we regard it today, demonstration of bacilli is very difficult and if at all successful, only in very small numbers. Here, also, the subjects affected by it often enjoy robust health and present no vestige of other foci of tuberculosis. And it has taken many years of struggle to establish its etiologic position.

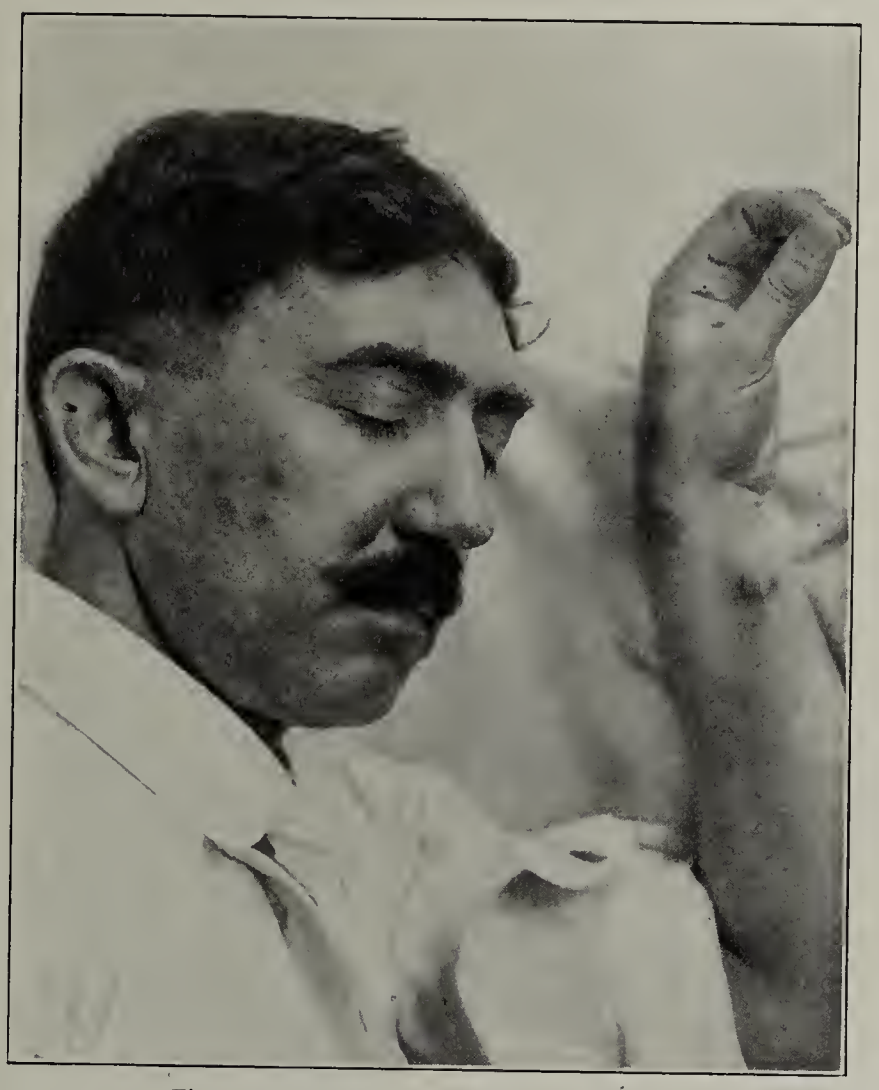


Fig. 2.—Sarcoid lesions on hand and face.

A somewhat different attitude may be justified as regards the supposed relationship of sarcoid to syphilis, which has been brought out by some recent observations. Ravaut reports two cases of angiolupoid, one of the patients giving a positive Wassermann, and both cured by salvarsan. Similar experiences are recorded by Brocq, Tzank and Pelbois. Pautrier noted the simultaneous occurrence of a serpiginous syphilid with a sarcoid tumor of the nose, clinically and histologically typical. The Wassermann was positive and both kinds of lesions responded to salvarsan. He also describes another case of ulcerative sarcoid of the Darier-Roussy type of the upper arm showing epithelioid cells; giant cells and lymphocytes histologically, which was eventually cured by injections of sodium benzoate. A similar observation was made by Plancherel. Pautrier insists on the necessity of revising the sarcoid group, and its division into two classes, the one belonging to the tuberculids, the other related to syphilis.

It may be permitted to point, in this connection, to the remarkable capacity of syphilis for imitating other well-defined clinical pictures. We know this to be true with reference to lichen planus, to lupus vulgaris and lupus erythematosus, to psoriasis, erythema induratum and many other diseases. On the other hand, it must be insisted that a positive Wassermann and even response to salvarsan do not of necessity establish as syphilitic any lesion happening to be present on the skin. For a patient with latent syphilis may be yet capable of developing on the skin lesions which in themselves are not the products of syphilis. And salvarsan on account of its arsenical effects will often cure cutaneous disorders other than syphilis. It therefore seems not improbable that some cases reported as sarcoid do not really belong to that class. Similar errors are liable to occur, after all, in the case of any unusual dermatosis, for the human eye is not infallible, and even the microscope and the test tube do not protect us against errors. To establish finally the clinical and pathologic entity of a so-called new disease we must continue to study each case carefully and record our findings. It is to this end that the following report is here submitted.

REPORT OF CASE

History.—Giacomo F., aged 36, saloonkeeper, presented himself, Oct. 31, 1914, for examination, through the kindness of Dr. W. P. Curtis of Chicago. Patient was born in Italy, lived in Brazil from 1892 to 1897, when he came to this country. He has been married for ten months to an 18-year-old, perfectly healthy woman. A baby, 4 weeks old, is in every respect well. Patient had gonorrhea and soft chancres eighteen years ago, but no cutaneous eruption at the time. While in South America he had yellow fever. He has had sore throat repeatedly and has been treated for it with mercury and iodids. There is no evidence of tuberculosis in his family history.

Present Illness.—In May, 1914, he noticed a red spot on his left buttock, and on the following day a similar one appeared on his cheek, causing some itching and burning. At the same time he had a sore throat and a painful cord formed at the angle of the right jaw. New spots followed in rapid succession on the face, the arms, legs and the back, while the older ones became larger. He describes them as pinkish nodules or swellings of the skin. The family physician pronounced his case syphilis. Two salvarsan injections were given intravenously, followed by ten intramuscular injections of mercury with no improvement whatever, but a continued

multiplication of the lesions. A Wassermann test made at the beginning and again in August proved negative. The patient's general health has continued good and there has been no loss of weight. Appetite is good and bowels regular. Formerly a heavy drinker, he has become very temperate.

Examination.—Well-nourished man of short stature, weighing 136 pounds. There is an external strabismus of the left

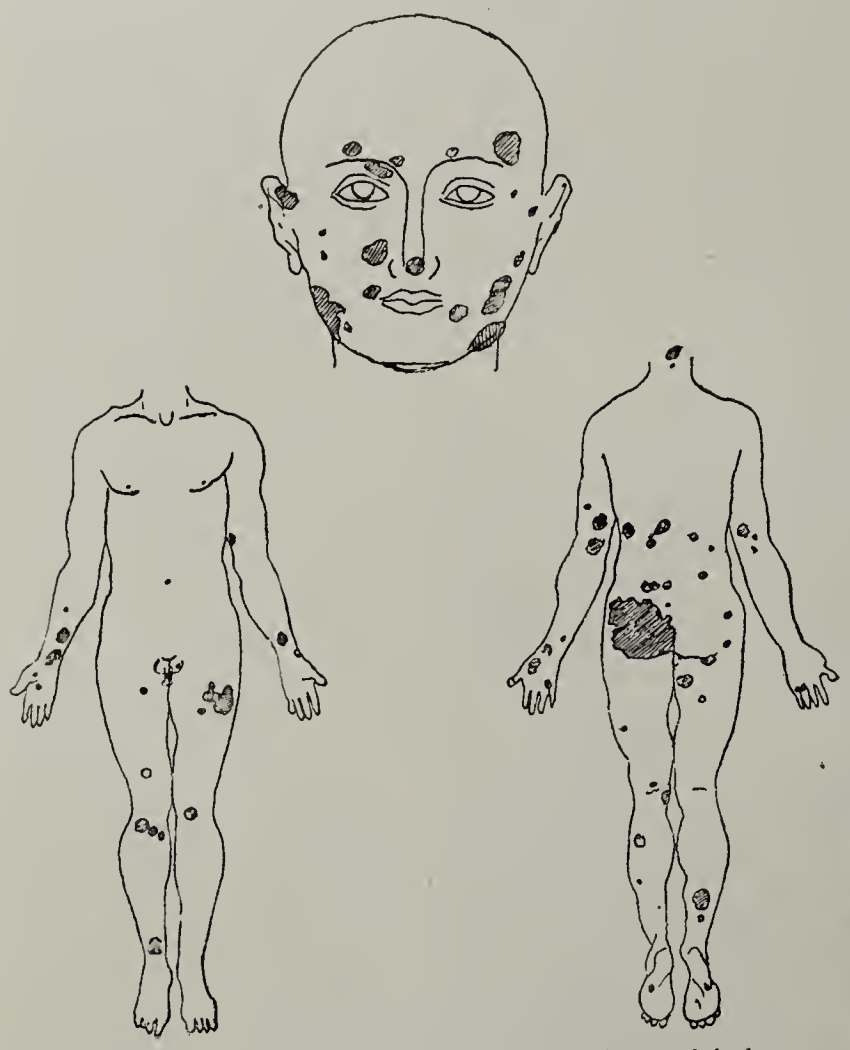


Fig. 3.—Distribution of sarcoid lesions on face and body.

eye and a deformed iris due to an old injury. Careful examination of the chest and abdomen revealed nothing abnormal. The genitalia are normal with exception of very small meatus. The ulnar nerves show no enlargement at the cubital region. The knee reflexes are normal.

The urine shows a few shreds, a faint trace of albumin and microscopically a few hyaline casts and leukocytes.

A blood count made on two occasions showed: hemoglobin, 90; red blood cells, 5,250,000; leukocytes, 4,800; differential count: neutrophils, 62; small mononuclears, 30; large mononuclears, 5; eosinophils, 2; basophils, 1.

The mucous membranes are pale and free from any lesions. The tongue is moderately coated. The teeth are in good condition. At each angle of the jaw a hard subcutaneous cord is palpable, running in the direction of the sternomastoid. A few small movable cervical glands can be felt. The suboccipital glands are markedly enlarged. The axillary glands are barely noticeable. A distinctly enlarged cubital gland is present at the right elbow, none in the left. The inguinal glands are firm and bean-sized.

Cutaneous Manifestations.—The eruptive features present an unusual, almost grotesque picture. Their distribution may be best seen in the accompanying illustrations. The lesions on the face (Figs. 1 and 2) are sharply circumscribed nodules and infiltrated plaques varying in size from a split pea to a half dollar. They are brownish red in color, at times almost bluish red. Situated superficially, they are markedly raised above the level of the skin, easily movable, and of a tumor-like, firm consistence. Under glass pressure their color changes to a yellowish brown, and occasionally there can be seen miliary foci. A few of the lesions show fine telangiectases. There is no tendency to scaling. Chest, upper abdomen and shoulders are not invaded. In the lumbar regions are about ten round tumors, dark red, sharply demarcated and varying in size, from 0.5 to 3 cm., in diameter. The left gluteal region is almost totally occupied by an irregularly outlined plaque, whose borders show a distinct infiltrate, while the center is flattened, suggesting a peripherally progressing, somewhat serpiginous development. The color on the borders is dark red while the center is light brown. On the lower extremities are a few scattered symmetrical infiltrates of irregular contour, rather yellowish brown in color and lichenoid in type. On the sole of each foot is a small brownish nodule. Near the elbows and wrists of both arms several irregularly shaped plaques with raised borders and depressed centers. The back of the right hand shows some small infiltrates and two brownish nodules on the thenar eminence of the palm. There is one small lesion on the scrotum and several flat lichenoid efflorescences on the glans Nowhere is any tendency to ulceration evidenced. The subjective features of the eruption are insignificant, but the cosmetic disturbance is greatly annoying to the patient.

Microscopic Study (Fig. 4).—Two lesions were excised from the back for purposes of histologic study and hardened in Zenker's fluid and formaldehyd solution. The sections were subjected to the usual stains, and in addition special stains for acid-fast bacilli were made.

The epidermis was unchanged except for a slight parakeratosis. The corium was occupied by infiltrated areas in the perivascular and perifollicular spaces. The infiltration was diffuse in some sections, more sharply demarcated into nodes in others, and extended down to the subcutaneous layer. The nodes were separated by connective tissue without evidence of inflammatory reaction. The infiltrates were composed of epithelioid cells, round cells and giant cells of the Langhans type. There were no evidences of caseation. The



Fig. 4.—Section of sarcoid lesion; from photomicrograph.

blood vessels showed varying degrees of endarteritis. Plasma cells were absent. The elastic tissue was thinned out. The glands were not affected. Numerous sections were stained for tubercle bacilli and Much's granules without success. The sections were submitted for inspection to Prof. Robert Zeit of the Northwestern University Medical School, who, without any reference to the clinical phases of the case, unhesitatingly pronounced them as presenting the picture of tuberculosis.

I desire here to express my sincere thanks to him for his kind interest.

Animal Inoculation.—Two guinea-pigs were inoculated with pieces of tissue from the tumors, one subcutaneously and one intraperitoneally. Three months later both pigs were necropsied and found to be perfectly healthy.

Tuberculin and Luetin Tests.—The Pirquet and Moro tests were negative. The luetin test was also negative. No reaction was obtained from 0.5 mg. of Koch's O. T.; 2 mg. caused a rise of temperature to 99 degrees, general reaction with headache and malaise but no local reaction in the lesions themselves.

Much of the work above recorded was done by my son, Dr. Erwin P. Zeisler, to whom I desire here to give credit due him.

Diagnosis.—At first sight the cutaneous picture seemed so unusual that, while sarcoid was at once suggested, a careful differential diagnosis became important. Syphilis, for which the patient had been treated, could be excluded without difficulty, not merely through the negative Wassermann and the lack of response to specific medication. The protuberant lesions, if syphilitic, would have to be addressed as gummas; as such they would show a tendency to break down and ulcerate. The large flat plaque on the left buttock (Fig. 5) was entirely foreign to the usual appearance of syphilitic lesions. Nothing in the history of the case pointed to that diagnosis. The freedom of the mucous membranes and the healthy condition of the baby were further arguments against it.



Fig. 5.—Sarcoid lesions on buttocks.

Lepra was considered on account of the patient's sojourn for a long time in South America. The absence of the characteristic leonine facial expression, thickened ulnar nerves, anesthetic areas, any tendency to ulceration and bacilli in the sections seemed sufficient to dispose of that possibility.

Lupus does not appear at so late a period in life, in such rapid development, or in the form of such large flat plaques as in this case, and only rarely in such large numbers of lesions on the body.

Mycosis fungoides, also, develops much more slowly, usually after a long period of precursory phenomena, shows great tendency to breaking down of the lesions, general cachexia with itching and burning of the skin and a progressiveness which was markedly lacking here.

Lymphodermia could be excluded on the ground of the blood count. Against generalized sarcomatosis speaks the distinctly benign character of the affection.

Further observation of the case for a period of many months strengthened in every way the original diagnosis of multiple benign sarcoid.

Treatment.—A variety of measures, both local and constitutional, were employed in the treatment of the patient.

Roentgen rays were used over many of the lesions, and while there resulted a marked reaction, the effect seemed slight and nowhere was there a complete involution.

Mercurial plaster and various salves made little impression.

Freezing with carbon dioxid snow, which was practiced on a number of the tuberous lesions, caused a violent reaction, followed by an almost complete disappearance of the same.

Radium was consistently applied to a few selected small tumors, with moderately beneficial effect.

Arsenic was employed both internally and by way of injection. At first elarson was used in large doses for several weeks; then Fowler's solution in increasing strength, both without much apparent benefit. Only the intravenous injection of sodium cacodylate, used in weekly intervals for several months, seemed beneficial. But while the patient at the present time (June 1, 1915) is greatly improved, particularly as far as the facial appearance is concerned, he seems far from a perfect recovery.

The case was presented before the Chicago Dermatological Society at its annual meeting last January, where the unusual picture was commented on and the diagnosis concurred in by most of the members.

32 North Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. RICHARD L. SUTTON, Kansas City, Mo.: A few years ago I had an opportunity to make a differential study of Boeck's sarcoid and subcutaneous tuberculosis. In addition to sections from my own cases, Dr. Udo J. Wile was kind enough to loan specimens from three cases of Boeck's sarcoid which had previously been studied by Dr. George Henry Fox and himself, and Dr. Wende's preparations from his rare case of nodular tuberculosis of the hypoderm. At that time I concluded that the disorders which Darier has placed in the so-called "Sarcoid Group" may be separated into two distinct groups: (1) true sarcoids: Boeck; Spiegler-Fendt; (2) subcutaneous tuberculosis: Darier-Roussy; Wende. The first two are probably separate and distinct diseases; the last two are probably identical, and bear no relation whatever to the true sarcoids. Therapeutically, true sarcoids respond favorably and fairly promptly to arsenic, a drug which has little or no effect on tuberculous lesions. I think those two facts alone separate and identify them from the tuberculosis group.

Tuberculosis Immunity.—Gilbert and Webb in a paper read at the Seattle meeting of the National Association for the Study and Prevention of Tuberculosis say that human tubercle bacilli possibly vary in virulence in different patients. Ten bacilli have been found sufficient to infect a guinea-pig in some instances, and in others 100 have been found necessary. The addition of emulsion of blood platelets to minimum deadly doses or the addition of lymphocytes or mononuclear cells from the peritoneal cavities of tuberculous guinea-pigs does not constantly prevent infection. They say immunity in animals may be obtained by the injection of increasing numbers of tubercle bacilli, beginning with one or two and cautiously increasing the number from a culture the minimum fatal dose of which is about 100, or by the injection of, say, 100 or 200 bacilli of a virulent culture to cause a local lesion which can be cut out, preliminary precautions having been taken to prevent the spread of infection.

CHRONIC INTESTINAL STASIS WITH INFECTION FROM A SURGICAL POINT OF VIEW *

W. B. RUSS, M.D.
SAN ANTONIO, TEXAS

Patients with chronic intestinal stasis with infection who reach the surgeon, have, as a rule, exhausted the ingenuity and patience of the family physician, the gastro-enterologist, the neurologist and even the oculist. They have been victims of the patent medicine habit, and have tried all the isms and pathies in medicine. They may have resorted to a change of climate and some of them even to a change in religion. During their dreary pilgrimage many of them have acquired surgical experience, including, perhaps, as some one has aptly said, "mobilization of most of their fixed organs and fixation of most of the movable ones."

In dealing with one of these patients it is important to know whether, prior to the development of the present illness, he or she was a comparatively normal individual, as rarely happens, or, as is usually the case, a neurotic subject with deformed body, and viscera presenting wide variations from the average normal in position, size, structure and function. The previously healthy individual whose illness has its origin in some serious constitutional disease, or is due to a break in the general health from some other cause, such as a severe infection of the intestinal canal, perhaps involving the appendix, is not likely to require any more serious operation than an appendectomy, or, possibly an appendicostomy to allow complete flushing of the bowel. The tendency in such cases is to recover under good management. They present no very serious problem. In considering intestinal stasis from a surgical point of view, therefore, we are concerned almost exclusively with physically deformed patients whose nervous systems are unstable and who suffer from a general visceroptosis and who show in varying degree the evolutionary bands, kinks, folds and membranes about the terminal ileum and colon concerning which so much has been said. These individuals, of course, present a lowered resistance to morbific influences in general, and are unable, except under favorable conditions, to withstand the ordinary wear and tear of life.

In spite of gross abnormalities, the colon and terminal ileum, in such a case may, within reasonable limits, meet all of the individual's needs from the point of view of functional usefulness. That such is the case is amply attested by the fact that most visceroptotic persons live to old age in comparative comfort unless their feeble powers of resistance are overtaxed in some way, as for example, by severe infection, an improperly balanced diet, or prolonged mental or physical strain. Constipation, from which most of them suffer, of course, predisposes to infections in the intestinal canal, yet a vast majority of these patients apparently suffer no ill effects from constipation even when their bowels are not emptied more than once or twice a week. The constipation, per se, does not seem to make the patient ill.

The dire results said to be due to downward dragging of a displaced and overloaded colon and terminal ileum on the mesentery, in cases of visceroptosis, are probably greatly exaggerated, for the reason that the weight of the abdominal viscera is not supported by their mesenteric attachments.

It seems probable that the constipation, the atony and distention of the cecocolon and the stasis in the terminal ileum from which these patients suffer, are all the result of imperfect development of the musculature of the bowel, mobility and displacement of the cecocolon, and a defect in the nervous mechanism which controls the intestinal movements.

It has been suggested by E. A. Barkley, A. F. Hertz and others that the deformed, atonic, distended and displaced cecocolon is unable to supply the muscular contraction necessary to make the constriction point or temporary sphincter at the junction of the cecum and ascending colon, which normally forms during the occurrence of a general peristaltic wave, and by thus holding the back pressure, prevents regurgitation, and that as a result of the defect, these patients suffer from back pressure and stasis in the terminal ileum and cecum. However this may be, it seems that the individual does not suffer any ill effects from constipation until the walls of the colon or ileum have, from some cause, become infected. Even in the presence of infection it is not likely that the patient's health will be seriously broken unless the local immunizing mechanism of the bowel wall is overcome and the protecting influence of the other body defenses, such as the liver, spleen and glandular system, has been impaired by some cause, which may not necessarily be directly associated with the bowel condition.

Many of these patients, after they have been infected, in time reach a point where they can be helped only by surgical means. It is a problem to decide when they have reached this stage.

Surely the mere fact that an individual is the possessor of deformed and displaced viscera does not mean that he is a subject for surgery as soon as he becomes ill from the results of intestinal infection, nor does the fact that he suffers from obstinate constipation, associated with intestinal infection and toxemia, mean that he is beyond nonsurgical help. The study of the history will show that he has been constipated all his life, and that never until the development of his present illness has the intestinal stasis seemed to cause any serious trouble. Furthermore, investigation will often show that in the immediate family there are other individuals of the same type who also suffer from constipation and yet are about as well as neurotics can expect to be. The fact that the family physician has not properly understood the problem this case presents, and has therefore not obtained a good result, does not prove that the patient requires a surgical operation, and lastly, the mere fact that the patient has become demoralized and demands an operation should not influence us.

Surgical interference should be avoided in these cases as long as possible. Fortunately, much can be done for them by nonsurgical means, but they are preeminently institutional cases and require careful study and prolonged treatment. Many of the most markedly deformed and visceroptotic and apparently hopeless patients can, as J. E. Goldthwaite suggests, be cured by braces, posturing, massage, exercise, stimulating, bathing, etc. They can be relieved of intestinal stasis and from the infection, and be made comparatively strong, well-poised and vigorous. A voluminous laxative diet and the intelligent use of

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

psychotherapy will produce regular and normal bowel movements and great improvement in a surprisingly large number of cases. Strapping of the abdomen for support, or the use of close-fitting, well-constructed corsets with abdominal pads, will solve the problem caused by diminished intra-abdominal pressure and compensatory dilatation of the abdominal blood vessels, as suggested by E. Schulz. Frequent colon irrigation and the liberal use of paraffin by mouth and by rectal injections left in the bowel to be carried to the upper colon by antiperistalsis, are useful. Dilatation of the rectum and sigmoid is to be employed in cases in which there seems to be a tendency to obstruction in the lower bowel.

It must be borne in mind that in many cases the enteroptosis and intestinal stasis and infection are not the sole cause of the patient's ill health. For example, some are suffering from unsuspected syphilis or other constitutional disease. Cases of intestinal stasis with infection and toxemia are primarily not surgical cases and if properly treated, very few need ever become surgical. It seems that in the treatment of these cases we are going through another surgical fad period that will end as did the oophorectomy craze, the nephropexy mania and the round ligament round-up.

There are, of course, some cases in which surgical interference offers the only hope, and in these cases the selection of the surgical procedure to be employed is of the utmost importance.

There doubtless are cases in which a colectomy, either complete or partial, offers the only possible hope for relief. It is likely, however, that if these operations were reserved for cases that could not be helped by any less radical means, the results would be disappointing.

In considering short-circuiting operations we must bear in mind that we are dealing with a problem in physiology and not one of simple gravity or plumbing. Colon stasis and infection are not always relieved by such an operation, and ileum stasis and regurgitation are apt to be increased. This work is still in the experimental stage. To be sure, there are many reports testifying to brilliant results, but certainly the number of these does not yet equal the enormous number of cures formerly obtained by kidney fixation, kidney decapsulation, round ligament suspensions, removal of the ovaries and many other surgical triumphs of the recent past. Already warnings against useless mutilation of the intestinal tube are coming from every section of the country, where the end results of short-circuiting operations are being observed.

The ideal operation in these cases must, of course, be one that will secure easy and complete emptying of the bowel, thus relieving the toxemia; it must relieve the back pressure and reflux into the ileum; it must provide a means for the treatment of the infection; it must effect a cure of the chronic appendicitis; it must avoid any unnecessary mutilation that will destroy the future functional usefulness of the colon and ileum.

To accomplish all this, the distended, atonic and displaced cecum must be restored to its normal position and fixed there. It must be reduced to its normal size and some means provided by which infection in the entire colon and terminal ileum can be treated, and by which back pressure can be relieved. If the bowel is obstructed by bands of either evolutionary or inflammatory origin, these must be removed. Blake's method for reefing the cecum down to normal, and Wilm's plan for fixing it in position, do not meet all the indications for the reason that the cecocolon is still atonic, its walls infected and in no condition to withstand back pressure, or to offer any adequate assistance to the forward movement occurring during peristalsis. A simple appendicostomy, even when done in addition to a reefing down and fixation operation on the colon will not do, for the reason that the tendency of the cecum to a downward displacement stretches the attachment made by the appendix to the abdominal wall, and allows the anterior and external wall of the cecum to bulge forward again, and soon the cecum is out of its fossa and in the pelvis.

All indications for surgical treatment in these cases seem to be covered by the following very simple procedure, which it has recently been my practice to follow:

Through a long right rectus incision the entire colon and terminal ileum are carefully freed from adhesions or bands that seem to threaten obstruction. The cecocolon is pleated down to normal by Blake's method, and the appendix, with, if possible, a tent-like portion of the cecum around its base, is drawn up into a large stab wound so placed that the cecum is *firmly fixed* in the abdominal wall. The parietal peritoneum is dissected back from the margins of the stab wound to make sure of a firm fixation. The base of the appendix being well up in the wall, it is possible to dilate the lumen until it will admit a large catheter through which the bowel can be rapidly flushed and through which the fluid remaining after flushing can be siphoned off. By this plan we (1) overcome obstruction; (2) replace the cecocolon; (3) reduce it to normal size; (4) fix it in position; (5) provide a means by which back pressure on the atonic bowel wall can be relieved; (6) provide a means by which the infection in the bowel can be successfully dealt with, and (7) dispose of the diseased appendix.

This method is simple and free from risk, and, while it perhaps presents nothing very new, it at least has the merit of seeking to preserve the functional usefulness of the colon and the ileum.

CONCLUSIONS

1. In considering intestinal stasis from a surgical point of view, we are concerned almost exclusively with neurotic and visceroptotic subjects who are unable, except under the most favorable conditions, to withstand even the ordinary wear and tear of life.

2. Obstinate constipation and lowered resistance predispose these patients to infection, which, however, may not do serious harm unless the local immunizing mechanism of the bowel wall and the protecting influence of the other body defenses have been overcome.

3. Cases of intestinal stasis, even though infection and toxemia are present, are primarily not surgical cases, and if the patients are properly treated, very few need ever become surgical. They are, however, preeminently institutional cases and require prolonged and careful treatment.

4. No operation that will destroy the future functional usefulness of the bowel should be done in the cases that can be helped only by surgical interference.

5. The cases which colectomy, either partial or complete, seems to relieve for a time, could probably be relieved permanently by much less radical means.

6. Short-circuiting operations are, as a rule, to be condemned. These operations are still in the experimental stage and the number of brilliant results apparently obtained, do not yet equal the number of "cures" formerly reported from kidney fixation, removal of the ovaries and other now discredited surgical triumphs of the past.

7. The ideal operation must: (1) secure easy and complete emptying of the bowel; (2) relieve back pressure, and reflux into the ileum; (3) provide a means for the treatment of the infection; (4) effect a cure of the chronic appendicitis, and (5) preserve the functional usefulness of the colon and ileum.

1516 Main Avenue.

ABSTRACT OF DISCUSSION

Dr. J. N. Jackson, Kansas City, Mo.: As a result of interest inspired by Metchnikoff and the doctrine of Lane, has come our interest in this field of surgical endeavor. I believe no one of experience or intelligent observation has reached the stage in which he is willing to declare that any fixed decision of this matter has been made. We are going now through a stage in which there are some factors of progress, and, on the other hand, there are some things we do not know and which we must be careful in coming to a conclusion about. We must be conservative in dealing with these cases of intestinal surgery. We know more about the physiology of the colon, and it must be dealt with as a piece of mechanical plumbing. We may have colonic stasis from several different fundamental conditions. We have a certain class of cases in which the defect is in the nervous mechanism of the individual, which defect is inherited, and it is impossible for any one by mechanical means to alter it. There are classes of cases in which the trouble is due to a primary and mechanical obstruction to the outlet of the intestine, and I have found many cases in which there was a positive mechanical interference with the action of the colon. I have seen a true toxic condition without any interference with peristalsis. There are classes of cases in which there is a positive derangement of a toxic type. We find cases of old chronic appendicitis in which the person never had an acute attack, with a raised leukocyte count, etc., and after the appendix has been removed we have seen the most remarkable transformation of the person. A great many acute surgical conditions of the appendix become surgical because of the inability of the appendix to expand and supply blood to take care of the nutrition of that part, and we have chronic appendicitis. There are many cases in which we have chronic septic infection of the colon. Are they suffering from intoxication or infection? I think there are both types of cases. Ordinarily they can be recognized by the history. The cases of septic infection are the doubtful cases, and I believe that surgery should not be applied in any condition in which we can get results from conservative methods, by internal medication, etc. It might not have been fully demonstrated that these cases are of chronic septic infection of the colon; then anything done to the outside is going to do good. We must do something to get rid of the infected segment of intestine. We are dealing with a class of patients who have been sufferers from a medical standpoint, and who will ultimately yield to some surgical measure.

Dr. Robert C. Coffey, Portland, Ore: In 1906 I reported in The Journal a case of severe intestinal stasis as having been cured by ileosigmoidostomy. A year later I had to remove the colon because of reverse peristalsis into the cecum. A year later the patient came back and wanted the rectum taken out. A friend of mine circumcised him instead and claimed he produced a cure. Since that time I have done a good many operations of the colectomy type and some few of the short circuit type, but have come to the conclusion, by seeing a considerable number of these cases both from the medical and surgical standpoint, that any operation which involves the opening of the lumen of the intestine is to be avoided except in very rare and extreme cases. From Dr. Jones, my partner, we have learned that most of these cases can be cured without any surgical interference, by proper dietary and forced feeding treatment. In postoperative Roentgen-ray examinations of these patients who have been short circuited for true intestinal stasis, there has been reverse peristalsis, later requiring removal of the colon. The normal patients who have been short circuited for ordinary habitual constipation do not need removal of the colon and do not have reverse peristalsis. There are a number of patients whom we have short circuited for fistulas, high obstruction, etc. In these cases we have had no backing up into the cecum. We have noticed that the ileum is always dilated following the short circuiting operation, whether it has been cut off from the cecum or not. When we have operated the second time in cases in which the cecum and first half of the transverse colon had been removed at a previous operation, we have always found a dilated ileum and in some cases fecal matter extending up into the ileum three feet or more. There is undoubtedly a difference of intestinal pressure in the large and small intestines, and the ileocecal valve is of importance. While we have brilliant results in some cases after short circuiting or colectomy, we find we must follow our surgical methods up by medical treatment and by regulation of habits and diet. As soon as normal intra-abdominal pressure is established, followed up by hygienic measures, most cases of stasis are relieved without any surgery at all. They cannot be handled in the private home and hospital; they must be handled by specially trained people. We have had a few cases which have not been cured by medical means before operation, but which have been cured by the same means as soon as the hepatic flexure and first part of the transverse colon had been replaced and held by sutures. They do not need a short circuiting operation or colectomy of any kind, except in very rare and exceptional cases.

Dr. Rea Smith, Los Angeles: I wish particularly to indorse the statement of Dr. Russ that most cases of intestinal stasis are medical, and I agree that operation should be reserved for the medical failures. I want here to make a plea for a better understanding of the indications for short circuit. When anyone mentions short circuit and colon constipation in the same sentence he is making a mistake. Short circuit of the ileum is designed to relieve stasis in the ileum and will have no effect on stasis in the colon (or constipation). When you deal with stasis in the small intestine you must drain the ileum in order to get rid of toxemia, and if the colon evacuates itself every day before operation it will continue to do so afterward. You cannot, however, expect to relieve colon stasis, which is constipation, by a procedure designed solely to drain the ileum, and if marked constipation exists before short circuit it will probably continue afterward.

Concerning fixation of the cecum, we have found that when the cecum and ileum are prolapsed together and movable, the resulting stasis can usually be cured with a properly fitting corset. Any stasis in the ileum and cecum that can be controlled by mechanical supports does not need surgery, and these results are more brilliant than the surgical ones. When the cecum is bound down by adhesions it is much more difficult to lift the prolapsed ileum with a mechanical support than when both cecum and ileum are freely movable. I rather doubt the wisdom of fixing the cecum unless something is done with the prolapsed ileum at the same time, as I think it would be more likely to cause stasis in the ileum than cure or prevent it.

Dr. F. W. Rinkenberger, Los Angeles: After some time spent with Mr. Lane in 1911 I could not believe all the ills of the human body are caused as he believed. I took a series of healthy young men and demonstrated with the Roentgen ray absolutely the same pictures as he was showing as stasis. This report was never published. Now remembering that the stomach is a movable organ and the colon also, I have never convinced myself it was proper to operate where an obstruction was not demonstrable to the eye, any more than in the past to operate on so-called mucous ulcers of the

stomach when they could not be demonstrated. Most of these persons have what I call unstable nervous systems, and no matter what you do for them they are like cases of epilepsy which are reported cured, but come back. I believe that the great majority of cases of short circuiting are rarely justified.

DR. JOHN WILLIAM DRAPER, New York: In collaboration with my associate, Dr. J. M. Lynch of New York, I made a careful study of the cecum and the ascending and transverse colon in thirteen human specimens, and it may be of value to this section to know what were the anatomic and microscopic findings in these cases. Without going into detail, I will say in the first place that we found the arrangement at the ceco-ileac junction to be very similar in all cases, in that the mesenteries were all of the nonfused type, being unusually long and common to both the small and the great intestine. In some cases there were other variants which could be ascribed to heredity. We were unable to find any means of discovering these anatomic conditions before opening the abdomen, but perhaps later on the Roentgen ray will give some further assistance along this line. Microscopic conditions were interesting: three of the cecums showed almost entire absence of mucous membrane; three showed well-defined papillosis, and in all, the musculature was very much attenuated. Not a single one corresponded to our conception of normal. The defensive mechanism was evidently greatly weakened. These cecums were large and of the herbivorous type. In contradistinction to the cecocolons of this type, we believe that the terminal colon is of very great importance to the economy. Some experimental work in the lower animals which we have done has shown that it plays an important part in the excretion of certain poisons, some of which, as in acute intestinal obstruction, are undoubtedly liberated by the economy itself. While it may be true that the cecocolon may and probably does under normal conditions take active part in water absorption, and to an inconsequential degree in food absorption, these functions are easily vicariously assumed by the terminal ileum. This we have proved by animal experimentation and by the study of six ileostomies made in human beings. We therefore feel that total colectomy should be avoided on physiologic grounds, except in certain very rare instances. The individuals in which we did the partial resection of the cecocolon were all human derelicts and had been treated medically for many years before operation.

DR. ROBERT T. MORRIS, New York: Most of these patients who are subjected to the short circuiting operation are patients who should have had their ancestry short circuited by one or two generations. You are dealing with a class in which there are many other stigmata; you are dealing with patients with defective ductless glands; with patients who do not maintain a proper balance between their organs. You have in these cases an example of the fact that function is closely associated with structure. Many of these patients are "cured" by the various cults, and you have brilliant results no matter what you do if only you report your cases quickly enough. The fact is that these patients are very amenable to suggestion, and suggestion is potent in helping for the time being in restoring the tone and balance of the innervation of the enteron. We are going to have more and more of these cases for the reason that our nation is approaching cultural limitations. In the history of evolution every former nation has reached cultural limitations and then declined. We begin to have certain anatomic defects classified as stigmata associated with a psychology which is the expression or manifestation of the anatomic defects. These cases, many of them, are really cases for surgery for the reason that we often have a secondary group of toxic manifestations which are amenable to surgery. We now know from our study of focal infections that a focal infection in the colon may give rise to distant effects. It is merely a question of properly making an analysis, and in the cases in which the focal infection may actually be located in the colon, the patient may be relieved by some of our resources, either medical or surgical, which will allow us to gain control of that feature of the case.

In regard to adhesions, many of them are due to toxins, with distant manifestations. We have adhesions which require surgery sometimes. Lane and I happened to publish our studies on these subjects in the same year, 1903. His paper appeared in the London *Lancet* and mine in the *Medical Record,* but Lane received most of the attention, because his kink was where it was easily observed. The cobwebs up in the attic of the abdomen which I described are worthy of attention, which will be given them in due time. These cases are more often medical than surgical; but do not neglect the surgical features.

DR. W. B. RUSS, San Antonio, Tex.: The so-called neurasthenic patient who suffers from a general visceroptosis and obstinate constipation presents a lowered resistance to morbific influences in general. Infection originating in the bowel wall may, if neglected, result in a condition that will require surgical interference for the purpose of securing easy and complete emptying of the bowel, the relief of back pressure, for providing a means for the treatment of the infection, and for curing the chronic appendicitis from which they all suffer. No operation should be employed that will destroy the future functional usefulness of the colon or ileum. The simple method I propose seems to meet the indications.

ILEOCOLOSTOMY AND COLECTOMY FOR ARTHRITIS DEFORMANS*

REA SMITH, M.D.
LOS ANGELES

The limited number of successful results obtained in the treatment of arthritis deformans by less radical measures than an intestinal operation has prompted me to report this small series of cases. For the last two years I have been studying from the point of view of Sir Arbuthnot Lane, all the cases of chronic arthritis which have occurred in my practice, and have followed Lane's method of treatment in a number of them.

Briefly stated, Lane's theory is that intestinal stasis, with a resulting toxemia, lowers the general resistance and makes possible the microbic invasions which cause chronic arthritis, and that the relief from toxic absorption attendant on perfect intestinal drainage is followed by increased resistance on the part of the patient, with a disappearance of the infection.

I have had the opportunity of examining with the fluoroscope eighteen cases of arthritis deformans and in each case have found a marked ileal stasis, usually associated with a dilated, prolapsed cecum and evidence of colon stasis as well.

While Lane's theory regarding the formation and absorption of toxins from the small intestine is undoubtedly right, Rosenow's work on the transmutation of streptococci has suggested to me the possibility that we might also find the portal of entrance of the invading organism in the intestine, and that the head infections were merely local evidences of the same general infection that was present in the joints, especially as the clearing up of these infections, by removing tonsils and pulling teeth, has not been attended with the striking results it promised when first suggested.

The terminal ileum is the natural habitat of the *Streptococcus viridans*[1] and it seems more logical to look for its portal of entrance into the blood stream through the wall of an intestine, congested, edematous

---

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Schottmüller: Handbuch pathogenischer Microorganismen, iv, 467.

and continually filled with culture mediums, than to go out of our way to find some obscure and less obvious source of infection. We have made bacteriologic examinations of the walls of the ileum and colon in two cases, and of the ileum alone in a third. The mucous membrane was stripped off, the wall macerated and cultures made. In the first case we obtained a growth of *Streptococcus viridans* from both ileum and colon. In the ileum the *Streptococcus viridans* was the predominating organism, while in the colon the *viridans* colonies were more scattered. In the other cases we grew a hemolyzing streptococcus in each instance. Cultures from the walls of three other colons, removed for other causes than arthritis, showed no *viridans;* two of them showing a hemolyzing streptococcus.

Before presenting this report I wish to say that no operations have been performed in borderline cases. These patients have been through all the modern lines of treatment, by medicines, vaccines, baths and electricity, as well as removal of tonsils and, in some instances, pulling of teeth, with no more than transient good effect, and were in each instance willing to accept any operative form of treatment, no matter how serious, which held out even a chance of staying the disease and lessening the pain.

In the typical case, following ileocolostomy the pain in the joints disappeared in less than forty-eight hours, and the movement of the joints returned up to the point of limitation by contracted muscles. The crepitations disappeared day by day until, at the end of three or four weeks, old dry creaking joints moved as freely and quietly as if they had never been infected. This condition, which was so encouraging to both patient and surgeon, was followed by a recurrence of the joint symptoms in more than half the cases, as I will show in my detailed report. In the recurrent cases the removal of the colon down to the point of anastomosis was again followed by the disappearance of all joint symptoms, and while some of these patients have had joint pains, but one of them has returned to the former condition of helplessness.

I have operated in fourteen cases. In two I did ileocolostomy and colectomy at one operation; both patients made good recoveries from a surgical point of view and were markedly benefited from the point of view of their disease. Of the remaining twelve patients on whom short-circuiting operations were done, one died on the fifth day of uremic convulsions, having passed no urine for seventy-two hours. This, the only mortality in the series, should be attributed to bad judgment in selecting the case for operation rather than to the surgery itself. The patient had nephritis, was bedridden with arthritis deformans, and was operated on as a last resort, both patient and surgeon realizing the chances that were being taken. Of the remaining eleven patients on whom short-circuit operations were done, five made good recoveries, the joint symptoms disappeared and three of the patients were able to resume their occupations with little or no pain and much less disability than it would seem possible from their previous condition.

One, a girl of 26, was operated on at the County Hospital at the meeting of the Southern California Medical Society in November, 1914. This patient, who had had arthritis since she was 4 years old, and was a helpless cripple, unable to move from her wheel chair, is now earning her living as a child's nurse.

The remaining six patients all made an early improvement, which was only temporary, and returned to their former conditions within a few weeks. Four of these patients have since had a secondary colectomy. One case has turned out a failure, the patient being no better now after six months than she was before the original short circuit, with the single exception that an obstinate constipation has been relieved. Recent roentgenograms of this patient show a marked eighteen-hour stasis still existing in the ileum, evidently from a narrow anastomosis due to adhesions, as the opening was patulous at the time of the secondary colectomy. Of the remaining three patients on whom colectomy was performed, two were bedridden, and the third was on crutches at the time of the secondary operation. All are now greatly improved; the disease has been arrested, and in each case the patient is able to walk without assistance. Of the remaining two patients with short-circuits, who have relapsed to their former condition, I can make no further report until they have their colons removed. I shall include them, however, in the list of cases receiving no benefit, hoping that a supplementary report may place them on the other side.

I have then to report fourteen patients with twelve ileocolostomies, two ileocolostomies with accompanying colectomy and four secondary colectomies, with one death, a mortality of 7.15 per cent. The disease has been arrested, and the patients have been cured or greatly benefited in ten of the remaining thirteen, making 76 per cent., or ten of the series of fourteen, making 71 per cent. In no case in this series have there been any of the ill effects of the so-called bad mechanics of which we hear so much in all discussions of Lane's work. There has been no case of persistent diarrhea, and no persistent backing up into the blind pocket of the colon causing impaction, and no development of a giant ileum.

I am convinced that by a careful analysis of the intestinal condition, as shown by repeated roentgenoscopy before operation, it is possible to avoid impaction of the colon after short circuit. The success of short circuit depends on proper understanding of the mechanics and physiology involved and careful selection of cases. If any obstruction exists in the colon between the cecum and the point of intended anastomosis this obstruction must be relieved or the colon removed. Impaction of the colon depends on interference with normal peristalsis and will not develop in the side-tracked segment if it is freely open. The fluid contents of the ileum easily pass back to the cecum through a narrow colon, where the fluid is absorbed and the residue is unable to return. The short circuit of Lane is designed to relieve a partially obstructed ileum, and is not to be used to correct an obstruction in the large bowel. If it is so employed, it will surely be followed by a bad mechanical result. It has been repeatedly shown by various men that any fluid thrown into the terminal segment of the large bowel will be carried immediately to the cecum by reverse peristaltic waves. Here the fluid is absorbed and the presence of the residue excites the normal peristaltic waves which carry it back to the lower segment or container. This is precisely what happens after short circuit, and there will be no difficulties with either diarrhea or impaction of the blind pocket so long as the colon is unobstructed. I am satisfied that the ileal contents in all *successful*

short-circuit cases back up into the blind pocket, and the only ones that get into trouble are those with a partially obstructed colon from which the solid residue cannot return.

CONCLUSIONS

1. The portal of entrance of the streptococcus, in all the cases of chronic arthritis that I have had an opportunity of studying, is the ileocecal coil; and the stasis in the terminal ileum is the predisposing cause.
2. Drainage of the ileum will cure this infection in a large proportion of cases. The colon will have to be removed as well, if the cecal walls have become infected.
3. The operation as described by Lane is a proper surgical procedure, not necessarily attended with an undue percentage of bad postoperative sequelae, if done in properly selected cases.
4. The operative mortality is not prohibitive.
5. That ileocolostomy or colectomy will effect a cure in a higher percentage of cases of arthritis deformans than any other method of treatment heretofore suggested.

Brockman Building.

ABSTRACT OF DISCUSSION

DR. J. F. PERCY, Galesburg, Ill.: There are two things in this paper that should be noted. First, that infections of the teeth and tonsils may be intestinal in origin and that these easily recognized local conditions may only be a part of a general infection of which arthritis deformans is the most serious expression. Second, the author tells us that he has had no persistent backing up into the blind pocket of the colon causing impaction and no development of a giant ileum. This statement is important because the knowledge of this sequel to an ileocolostomy has made many surgeons hesitate to follow Mr. Lane in his advocacy of this operation. The author also tells us that in order to avoid this impaction there must be no obstruction between the cecum and the point of intended anastomosis; that if there is, the colon must be removed. This point, if true, and we have no reason to doubt it, is most important. In other words, if normal peristalsis is not interfered with, the colon will not become impacted. This simply means that in doing this operation we should see that not only a previously existing obstruction to peristalsis is not left uncorrected, but that our method of operating does not interfere with the physiology which permits the liquid contents of the bowel to pass into the colon in order to be deprived of its water, and when so altered to pass out again through an unobstructed channel. Lane's short circuit, therefore, will relieve a partially obstructed ileum but has no place in an attempt to correct an obstruction of the large bowel.

While visiting Rollier's Sanatorium in Leysin, Switzerland, two years ago, I was greatly impressed with his end-results in what we have heretofore considered utterly hopeless tuberculous joints. His exposure of these joints and of the whole body to sunlight and the open air cleared them up even when involved in secondary infections, and with a movable joint, in a most astonishing way. If this type of tuberculous joint infection will yield to appropriate treatment and become practically normal in function, I am ready to believe that the essentially ankylosed joints of arthritis deformans can again be made movable as is most strikingly shown by the patient exhibited here. This is a subject that will not down. We are all convinced that there is something to it. What we need are papers such as this one and others on the program of this meeting to clear up what is obscure in meeting the indications, not only of technic, but of physiology as well.

DR. M. CASPER, Louisville, Ky.: Did any of these patients have Lane kink or adhesions?

DR. REA SMITH, Los Angeles: Almost all of these patients were operated on before and had marked adhesions and distinct bands. The patient whom you have just seen had three loops of ileum bound down to the stump of the uterus, which had been removed a number of years before. I have one patient now, being treated with a support, who has as marked a stasis as you saw on the screen, but in whom the intestines are all movable; she has had the same results as though operated on, because she is now getting thorough drainage of the ileum.

LUPUS ERYTHEMATOSUS OF THE MUCOUS MEMBRANES*

GEORGE D. CULVER, M.D.
SAN FRANCISCO

The cutaneous lesions of lupus erythematosus are so deforming that they occupy the attention of both the physician and the patient to the exclusion of the manifestations of the disease on the mucous membranes. Furthermore, the lesions on the mucous membranes, although generally erosions, and therefore raw surfaces, do not usually give the same discomfort as do, for instance, herpes or mucous patches, and the patient rarely draws the physician's attention to them. They are important, however, as giving one an insight into the nature of the disease as being something more than a mere local cutaneous affection, and they are also important because it is occasionally necessary to differentiate them from other affections of the mucous membranes, especially those occasioned by syphilis. The following eleven cases show lupus erythematosus in seventeen locations on the mucous membranes:

Case 1.—A woman, aged 38, consulted me, July 23, 1909, on account of a lupus erythematosus that had appeared three years previously over the right malar eminence, and that had disappeared, leaving only a slight capillary dilatation but no scar. Just below this, however, there was a scar, the result of another eruptive patch. Other patches had appeared over the frontal eminences and had vanished, leaving almost no trace.

When she consulted me there were six patches on the face, one on the vermilion border of each lip, and two in the right cheek pouch and one in the left. The lesion on the nose was fungating and bled easily; the others were bright red, of irregular shape, and were level with the surface. Besides this the face was mottled with a dirty yellow pigmentation, and she looked in wretched health. The two red superficial erosions in the right cheek pouch and the one in the left were persistent, and at times they became very red and angry looking.

Two months before consulting me she had had a severe carbuncle on the right temple, showing she was subject to streptococcic invasion. Furthermore, shortly before, a baby had scratched her under the right eye, making a wound which was a number of months in healing. There was a history of much tuberculosis in the family, although her immediate relatives, such as her father, mother and sister, were not affected with this disease.

Her tongue had a thick, grayish-yellow coating, and there was some indican in the urine. She slept wretchedly and she suffered from cold hands and feet. For months before the eruption appeared and during pregnancy, she used to take milk excessively: two quarts at night, and large quantities during the day, to the exclusion of almost all other food.

Case 2.—A religieuse, aged 26, consulted me, May 8, 1912, on account of a most extensive and severe lupus erythematosus of the sides of the nose and of the cheeks. The scarring was typical. She said that three and one-half years previously

---

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

two scaly spots had appeared, one on each side of the cutaneous surface of the upper lip. After this an eruption broke out on the inside of the upper lip, forming a running sore. The lip was then so out of shape that she could not speak, and the gums had a white coating.

When she came in, the inside of the upper lip was red and inflamed, the gums were retracted in some situations, redundant in others, and gingivitis was present. The lower lip was prominent, bright red, injected, and frequently had the appearance described by William Dubreuilh[1] of being coated with collodion. During the exacerbations of the lupus erythematosus, of which she had many, the lips, especially the lower one, burned and became intensely inflamed. The exacerbations were intimately associated with disturbances in the general health. At such times the mucous glands emptying on the inner surface of the lower lip swelled and became prominent as rounded elevations. At times a herpetic eruption resembling "cold sores" appeared in this situation, and the gums would redden and feel "feverish." Occasionally raised red blotches appeared on the mucous membranes of the lips. When the blotches were examined with a lens they showed a beautifully characteristic structure. They were about 0.5 cm. in diameter and slightly raised in a pincushion form. There was a central erosion, and the rounded border was convergingly striped with bright red capillaries. The epithelium covering this border was faintly opalescent. At one time, Feb. 19, 1914, there were three such lesions, each about 0.5 cm. in diameter, on the red of the upper lip, and one on the lower.

This patient was an irregular, rapid eater. She took much sweet food, potato and cheese. She had a heavily coated tongue and suffered from marked gastro-intestinal symptoms, such as flatulence and distention after eating, sour stomach and constipation. At times she had a ravenous appetite. She also had occasional right-sided headache. The conjunctivae were frequently yellow. As is common in gastro-intestinal intoxication, the whole cutaneous surface was congested with blood. Whenever the general health deteriorated the lesions became much worse. For instance, when she tried to keep Lent, it reacted very badly on her general health and on the lupus erythematosus. The edges of the eyelids were red and sore, resembling blepharitis marginalis.

April 14, 1914, on being examined the mouth revealed three lesions in the right cheek pouch, and one in the left. These did not cause discomfort. In each of them there was a bright red central line, surrounded by an opalescent area, which in turn was situated in a bright red field. All these lesions were above the interdental lines and were not near any roughened harsh surface, as roughened or sharp-edged teeth, such as might have caused an erosion.

The patient told me that at one time it was thought she had tuberculosis. I never found evidence to that effect while she was under my observation.

Case 3.—An unmarried nurse, aged 42, consulted me, Jan. 29, 1914, for an eruption which had appeared one year before, following sunburn at the seashore at Santa Cruz. There was an irregular light red telangiectatic patch on the left cheek; an irregularly contoured, light red desquamative patch that included the chin and lips and that contained many milia-like bodies; some irregularly contoured, light red, desquamative patches on the right cheek near the eye, and two patches near the right angle of the jaw that were doughy, telangiectatic and simulated an eczema.

There was a red patch with a central erosion, and a surrounding opalescent color in the left cheek pouch. This patch was not circular, but stretched forward along the interdental line. Below this there was an opalescent patch without erosion.

A diagnosis of syphilis had been made on the evidence of the lesions themselves, without any other evidence whatever, and the patient had received two intravenous injections of salvarsan in the previous May and June, followed by hypodermics of sublimate and inunctions of unguentum hydrargyri, with, of course, no result.

She suffered from quite marked gastro-intestinal disturbances, had flatulent dyspepsia, and there was dilatation of the stomach and clapotage. She also suffered from constipation, and much gas in the bowels, and the physical examination of the abdomen showed the intestines markedly dilated with gas.

Case 4.—June 4, 1908, a girl, aged 17, consulted me on account of a "bat wing" lupus erythematosus of the face and reddened bald patches in the scalp. She said the first appearance of the disease was on the left index finger the previous December. The eruption was preceded by a few months of irregular menstruation.

She had erythematous blotches on the roof of the mouth, and there was roughening of the upper gums far back on their inner sides, that is, the sides facing the mouth cavity.

It cannot be asserted unequivocally that the lesions in the mouth in this case were those of lupus erythematosus. It can only be said that they occurred in a patient having this disease, and that they were not herpetic or luetic, or the lesions of lichen planus or of erythema multiforme.

Her general condition was not good. She was markedly anemic, and the skin around the mouth was a dirty yellow. When she first came in her hemoglobin was 49 on the Dare instrument. She had a coated tongue, a heavy breath, and frequently a feeling as of a lump in the stomach. She was constipated.

Case 5.—A married woman, aged 26, consulted me, April 17, 1909, on account of a raised, light red, desquamating, well-circumscribed lesion that formed a segment of a ring, and was situated on the upper portion of the bridge of the nose and extended to the right. This eruption had begun two years before, when she was suffering from pains and gas in the stomach and abdomen, and when her baby was 6 months old.

On her second visit, May 1, 1909, I became aware of a right-sided rhinitis, best marked on the right side of the septum nasi. The reddened surface was sharply bounded at its lower edge, and below this sharp boundary the epithelial surface was thickened and sodden looking. There was a marked tendency for this surface to crust.

The skin over the elbows was rough, she had seborrhea sicca of the scalp, her nails were slightly brittle, and she had some acne of the chin. The patient was in fairly good health, but she suffered from flatulent dyspepsia, constipation and mucous discharges from the bowels. Her conjunctivae were tinged slightly yellow as with bile. She suffered from muscular pains in the shoulders and arms, and occasionally had temporofrontal headaches. She was anemic.

During the succeeding winter there was an exacerbation of the lupus erythematosus lesions. About some of them there appeared a bright red margin. At the same time there occurred a scattered papular eruption of the left ear shell, and some pernio-like lesions of the fingers; one of them on the back of the first knuckle of the left index finger was disk shaped. Toward spring all these manifestations either quieted down or entirely disappeared.

Case 6.—A single woman, aged 30, consulted me, Feb. 25, 1913, on account of lupus erythematosus of the left cheek and of the bridge of the nose. The patch on the left cheek had a bright red border about 2 mm. in width. Within this border the center was scaly and lighter red. The patch had been present for some months, but within the last two or three weeks a red crusted lesion had appeared on the bridge of the nose.

During the preceding summer, and previous to the appearance of the eruption on the face, she had remarked a redness of the lower lids. There was redness and thickening and some crusting of the middle two thirds of the free edge of each lower lid. This was pronounced enough to give her a peculiar expression.

Both lips were dry and scaly; and the lower lip was irritated along the mucocutaneous border. The gums were a little redundant, but otherwise in very good condition.

1. Dubreuilh, William: Ann. de dermat. et de syph., 1901, ii, 231.

The symmetrically patchy circumscribed character of the lesions on the lids, together with their permanency, would be enough to permit them to be classed as lupus erythematosus patches. The condition of the lower lip was not characteristic enough to allow making such a strong inferential diagnosis.

The patient did not complain of any trouble in the stomach at all. Her tongue was coated, and she had been constipated, but at the time of her visit the bowels were regular. There was, however, splashing in the stomach and very extensive hypertympany over the bowels. She slept well, but she had spent three weeks of the previous month in a hospital on account of nervousness.

CASE 7.—A man, aged 40, consulted me, Dec. 29, 1913, for lupus erythematosus lesions of the left side of the upper lip, left cheek, left wing of the nose extending into the nostril, left parotid region and of the inner surface of the right ear shell. The mucous membrane in both cheek pouches far back, opposite the last molars, was affected.

The affection had begun three years previously on the outer surface of the upper lip as a papule, and had gradually spread out over the left cheek and up on the left wing of the nose and into the left nostril. The advancing border of this lesion was so prominent, indurated and of such a deep red as to cause it to be mistaken for many other diseases, especially syphilis. That part of the border which ran along the mucous surface of the left side of the upper lip was quite characteristic. It was a narrow line covered with white, tightly adherent, hyperkeratotic epithelium. The area on the lip and cheek, enclosed by the border, was thickened, rough and scarred, and the upper portion was a dirty buff color. The scarring appeared to be partly due to the disease and partly due to wounds made in extirpating pieces of skin for microscopic examination. The lesion over the left cheek was a large dusky red raised papule with a depressed center. The lesion in the hollow of the left ear shell was covered by a hard, horny, yellowish plate of thickened epithelium, with a pitted surface. All the skin lesions were very tender.

The lesion in the right cheek pouch opposite the last lower molar consisted of a number of soft, smooth, rounded elevations which were not indurated. This field was sharply bounded above by a white line where it came against the healthy mucous membrane. The patch in the left cheek pouch was slightly reddened with no definite border, and there was frequently in this situation, where the mucous membrane was reflected on the gums, a leukoplasia-like whitening of the surface and occasional cracking.

At one time during my observation of this patient he got a red erosion of the mucous membrane of the gums below the lower right bicuspids. This lasted only a couple of weeks, but may have been a lupus erythematosus lesion.

The patient suffered from retracted, easily bleeding gums, a heavily coated tongue, a splashing, dilated stomach and an overloaded lower bowel with very offensively smelling evacuations. The colon in the left inguinal region felt like a thick caoutchouc bar.

The whole integument was passively congested, and the patient's hands were markedly tremulous.

CASE 8.—A woman consulted me, March 14, 1908, on account of a red scaly lesion occupying a large part of the left cheek, and other lesions in the left ear shell, on the tip of the nose, on the right cheek, on the right ear, on the forehead and one below the internal canthus of the right eye that involved the mucous membrane of the lower lid. There was also a split-pea-sized lesion on the vermilion of the upper lip. Although none of these lesions were of a classic type, they were characteristic enough both in their appearance and in their course to permit of a diagnosis being made.

The patient's general nutrition was anything but satisfactory. She was large and fat, and the fat was soft and pulpy. She had a bad breath, heavily coated tongue, and suffered from severe headaches attributable to the condition of the stomach. She had had the fallopian tubes removed, April 14, 1906, and up to one year before she had some undetermined trouble in the lungs. Her father, her eldest brother and her cousin had died of pulmonary tuberculosis. Her temperature was generally slightly subnormal, and tuberculin, which was given to her as a treatment, caused no febrile reactions.

The patient's face had always flushed easily from early girlhood, and her present malady had appeared first one year before, as a red lesion on the left cheek. She exhibited still other symptoms of a too mobile vascular system, as whiteness and coldness of the fingers, and coldness of the feet. The eruption improved gradually under a treatment directed to clearing up the gastro-intestinal symptoms. Many of the patches, however, left scars, as is characteristic of lupus erythematosus. New patches of small size and of little induration still appear.

In the spring of 1909 a patch occurred, invading the mucous membrane. This was treated with solid carbon dioxid and disappeared, leaving a slight scar.

CASE 9.—A girl, aged 16, applied for treatment, May 6, 1913. A small red spot had broken out on the external surface of the left lower eyelid one year before, and it began to spread decidedly in October, 1912. When she applied for treatment in May it had invaded the mucous surface of the lid. She also had a patch on the edge of the shell of the left ear. The patches spread as a ring, clearing in the center.

She had a coated tongue with a bright red tip. She had suffered recently from frequent dizzy spells and headache, and occasionally she had wind on the stomach. The stomach was dilated and she had marked splashing. She was constipated. Her feet were always cold.

In the fall of 1913 she had an acute exacerbation in which the eyes were almost closed.

CASE 10.—A woman, aged 30, consulted me, Sept. 13, 1913, for lupus erythematosus which had begun three years previously on the skin at the outer angle of the right eye. The eruption remained confined to this locality for more than one year. Nearly two years after this, a lesion appeared on the right cheek, and a few months afterward another one on the left cheek.

The patient's history previous to the appearance of the eruption was interesting. Just one week before the first occurrence of the lupus erythematosus, she had been operated on for tubal pregnancy. Previous to that she had had an operation for appendicitis; just previous to that for floating kidney, and previous to that she had a curettement. She was subject to migraine that centered particularly in a nerve at the inner canthus of the right eye.

She had a poor appetite. Her tongue was coated, she had a burning pain and much wind in the stomach. She suffered from dizziness and muscae volitantes, and she had a tendency to be constipated. She was a poor sleeper.

When she first consulted me, the lesions were light red, markedly keratotic and circinate, and occupied both cheeks and the right upper eyelid, the edge of this constituting in this case the involvement of the mucous membrane. The mucous membrane of the lower lip was very red and frequently cracked, but the condition was not characteristic enough to say that it was part of the lupus erythematosus process.

The patient's general health was wretched, and she frequently had angioneurotic symptoms of the extremities. One morning during the cool weather in March she came to the office with dead fingers, local syncope. A few minutes later some of the fingers, especially the left annularis, assumed the beautiful transparent pale blue color seen in Raynaud's disease. The hands and forearms were violet blue. On this occasion the lupus erythematosus lesions were light red and desquamating, and one of them, situated outward from the left eye, had an active red border.

CASE 11.—A man, aged 67, and of a particularly robust appearance, called on me on account of lesions in the cheek pouches.

The affection began two and a half years previously as a lesion on the left side of the dorsum of the tongue, where there was still a delicate opalescent shade of color. In the

right cheek pouch there was localized superficial desquamative inflammation with white patches of sodden epithelium scattered over the reddened surface. There was a similar, but much less marked, lesion in the left cheek pouch. The lesions were permanent, but subject to acute exacerbations, during which they became extremely annoying from their painful rawness. During an acute attack there was drooling of a brown fluid.

Besides the foregoing, the patient had vitiligo of the back of the hands, prurigenous eczema of the anus and acne of the buttocks. He also suffered from sharp attacks of pain in the cardiac region, which had been diagnosed as angina pectoris, but which were probably due to an immensely distended colon.

There was no history of syphilis; none of the lesions present resembled syphilis, and the blood gave a negative Wassermann reaction.

Under general treatment and diet directed to correcting the bacterial fermentative processes in the alimentary canal, the lesions in the cheek pouches, the drooling and the eczema ani were reduced to insignificant manifestations. The lesion in the right cheek pouch resulted in a superficial but distinct scarring, and the delicate opalescence on the dorsum of the tongue was also probably due to a fine scarring of the papillary layer. This scarring was of great importance from a diagnostic standpoint.

Syphilis, lichen planus, herpes simplex and lupus erythematosus had to be considered in the diagnosis. Syphilis was excluded because of the appearance of the lesions themselves, the absence of any syphilitic history and the negative Wassermann. Lichen planus of the cheek pouches shows a characteristic fine white lacework and white-topped papules that were never present in this case. Besides the characteristic local appearance of lichen planus, there is usually a lichen planus eruption of the skin. None of these appearances were present in this case. Herpes simplex rarely forms a continuous eruption. It usually appears in outbursts more or less widely separated in time. The individual lesions are usually small and cup shaped with a yellow floor, and if they occur in groups, each group will have a microcyclic polycyclic edge.

The persistency of the lesions, the absence of symptoms pertaining to affections for which they might be mistaken, and the production of superficial scarring lead to the belief that this was a case of lupus erythematosus of the mucous membranes alone.

The eleven cases herein reported show lupus erythematosus in nineteen locations on the mucous membranes. The locations were as follows: cheek pouches, five; gums, three; roof of mouth, one; lips, four; nose, two, and edges of eyelids, four.

Nine of these eleven patients were females, a ratio of more than four to one male. They ranged in age from 16 to 67, two being under 20 and two over 40 years of age, leaving seven, a large majority, between the age limits of 20 and 40. These eleven cases were among thirty-eight instances of the disease seen in private practice since April, 1906. All but one of the eleven had typical lesions on the external surface, while in the one exception, Case 11, the mucous membrane alone was affected, the lesions being in the cheek pouches and on the left side of the dorsum of the tongue. The diagnosis in Case 11 may be questioned, though I believe it to be lupus erythematosus for reasons given in the differential diagnosis in the case report.

Excluding Case 11 for the purpose of determining in how large a percentage of typical cases there was mucous membrane involvement, I found over 27 per cent. It is interesting here to note that Thomas Smith[2] observed sixteen cases with mucous membrane involvement among fifty-six consecutive cases, more than 28 per cent. All were females. This indicates a distinct tendency for the disease to affect the mucous membranes, and this fact may be of the greatest importance from the standpoint of etiology.

One of the characteristics of lupus erythematosus of the mucous membranes is its persistency. As stated before, the hidden lesions, those of the moist surfaces, are usually erosions which, when not acutely inflamed, are covered with sodden epithelium and bordered by an irregular edge that is but slightly raised and without much character. The patch may have a yellow coating or may be leukoplasic. When leukoplasic it has less character than the leukoplasia of lichen planus, syphilis or that resulting from irritants, such as tobacco smoke. It is definitely patchy without papules, and is unlike lichen planus of the mucous membranes, which is papular, the papules being white topped and grouped if multiple, giving a characteristic fine, white, lace-work appearance. Though of long standing, it is less thickened than leukoplasic areas of syphilis or those resulting from irritants, and it has not the corrugated surface often seen in such white areas. The lupus erythematosus erosion is not all leukoplasic nor always leukoplasic in part. It may be opalescent and not eroded, or may have the appearance of a recent erosion produced by cauterization or other traumatism, except that the edge is more distinct in the acute erosion. It may have a most innocent appearance and not cause any disturbance aside from its constant presence.

Mucous patches of syphilis have bases which are covered with more sodden epithelium and have a dirtier appearance. Other signs may or may not be present. As with any of the persistent mucosa lesions, one has to resort to every means to reach a positive conclusion. Some of the late opalescent specific lesions of the tongue may be closely simulated by lupus lesions. The specific lesions here are usually more thickened and are often fissured. They, too, are persistent, remaining for years without treatment, and even in spite of the old methods of medication, though they will yield delightfully to salvarsan. If there is sufficient doubt in favor of a syphilitic nature, even though laboratory findings may be negative, salvarsan should be administered. Mouth lesions may be especially puzzling when the external lesions closely simulate squamous syphilids, as did those in Cases 3 and 7.

While stubbornly resisting treatment, the condition often shows acute exacerbations. These exacerbations are so definitely associated with disturbances in the general health, particularly derangements of the gastro-intestinal system, that one must carefully consider the importance of this in the etiology of the disease. A small area of affected mucous membrane may persist for months without treatment, and even with treatment, both local and internal, may be as unyielding as are some of the external manifestations of the disease. Often when the lesion is nearly healed and all is progressing favorably, some constitutional disturbance will supervene with a coincident sudden reversion. In this respect, these exacerbations bear a close resemblance to herpes simplex with this notable difference, that the individual lesions in herpes quickly and completely disappear, even in those cases in which the attacks are subintrant and therefore continuous.

2. Smith, Thomas: Mucous Membrane Lesions in Lupus Erythematosus, Brit. Jour. Dermat., February, 1906, p. 59.

whereas those of lupus erythematosus improve more slowly, and tend not to disappear, or do so with the utmost deliberation. It is not uncommon to observe the occurrence of herpes simplex affecting the mucous membranes of patients under treatment for lupus erythematosus of the skin or of both the skin and mucous membranes. The lesions of herpes are usually easily distinguishable from the older disease, as the edges show a more acute inflammation, the borders being congested and reddened; and though in acute exacerbations of lupus erythematosus the lesions may have as deeply reddened and prominent borders, there will not be the cup shape, nor will groups have the microcyclic polycyclic edges such as are seen in herpes. In healing, herpes lesions do not leave scars, whereas one of the characteristics of the other disease on the mucous membranes as well as on the skin is its scarring.

When on the vermilion of the lips the lesions are painful, especially during an acute exacerbation. W. K. Sibley[3] mentions this in reporting a case with an active lesion present on the vermilion of the upper lip, which was very painful, whereas the condition inside the mouth had not caused much discomfort. In the four instances mentioned in the case reports of this paper in which the vermilion of the lip was affected, there was an appearance of being coated with collodion, as mentioned in Case 2. This was the best example of this phenomenon in this group of cases, and was accompanied by the greatest discomfort.

Since having attention drawn to the gums of patients with lupus erythematosus, I have observed that only exceptionally are the gums in good condition. A history of easily bleeding gums is common. Gingivitis is almost constantly found. Redundancy or retraction is often marked, and the teeth are usually bad. The conditions are so constant as to point definitely to long-continued antecedent gastro-intestinal derangements which have reacted on the gums and teeth. This would seem to be a point of some importance, which, associated with the not infrequent presence of more characteristic affections of the mucous membranes, should direct the attention of the observer to digestive and assimilative faults of long standing as most probable causative factors. The fact that acute exacerbations frequently occur associated with acute or subacute digestive disturbances would also point to an intimate dependence of the disease on toxemias of gastro-intestinal origin.

One of the most interesting conclusions reached by a careful observation of all the phases of lupus erythematosus of the mucous membranes is that the lesions are the result of a general disease. The manifestations on the mucous membranes and on the skin as well are only symptoms of a deeper pathologic condition. The foundational disturbances undoubtedly vary in different individuals, but, with the cases considered in this article, the evidence pointing to digestive and assimilative faults is weightiest of all. These faults are such long-standing ones, having become so thoroughly habitual, that their eradication is accomplished only after long and persistent efforts. The difficulties encountered in correcting the faulty conditions would partly explain the stubbornness which is characteristic of the disease in yielding to treatment. Not only the resistance to local treatment, but also the recurrences and the appearance of new lesions for a long time while treatment is in progress, can be more easily understood with this point in view. Furthermore, as important as any conclusion is the one that internal treatment and a proper regimen are as necessary as is local treatment for the cure of the patient.

323 Geary Street.

3. Sibley, W. Knowsley: Brit. Jour. Dermat., March, 1914, p. 101. In connection with this case report a complete bibliography is given.

ABSTRACT OF DISCUSSION

DR. JOSEPH ZEISLER, Chicago: For many years I have been not only embarrassed but severely mortified by the rebelliousness of cases of lupus erythematosus against all of our therapeutic efforts. I say "all" because if we are enthusiastic about one or the other of modern treatments, sooner or later we will find it will fail. We must still admire the wisdom of Kaposi, who said that cases of lupus erythematosus will get well in spite of the worst treatment, and again they will resist our best treatment. Freezing, which we thought for a time was not only the newest but the best method, will sometimes fail us. The beneficial effect is sometimes temporary.

Radium, in favor of which much is said, may cause violent reactions. It is in this sense that I look on Dr. Culver's treatment as an important contribution, in bringing out the internal aspects and treatment of these cases. I believe we must make as careful a study of each case as we can from a symptomatic point of view, and try to find a course of treatment congenial to that. It will not, therefore, always be the same treatment which we should use.

I believe we shall have to include lupus erythematosus with those diseases which perhaps are produced by a disturbance of the internal secretions. That does not militate against the view just expressed by Dr. Culver, as we know there are some secretions eliminated from the intestinal wall which have a bearing. I will try in future to treat my cases on the idea that there is some disturbance of the internal secretions which we must try to overcome by employing various organotherapeutic methods.

DR. EVERETT S. LAIN, Oklahoma City: My experience in roentgenology has been a valuable aid in the diagnosis of many skin eruptions. My curiosity or interest was excited in this subject, first, by empirically treating urticaria with the vaccine of the *Bacillus coli communis* and noting the prompt response, sometimes in one or two hours, in cases which had been resisting all treatment for a week or several days previously. Next, when I heard a most interesting discussion by Dr. Rosenow last May in Chicago, I came home and began treating by Roentgen ray the teeth in cases of erythema multiforme and other diseases which have been classified as having an idiopathic etiology. I have now, to my mind, some very interesting observations, which, if borne out in a sufficient number of cases, I believe will throw further light on this subject. I believe when we begin to study more closely the focal or internal infections, the same as is being done by the internists with rheumatism, we, too, shall be wiser. The dentists are curing many things by treating the teeth. They are really curing some cases of so-called rheumatism.

DR. J. B. KESSLER, Iowa City, Iowa: Some of the cases of mucous membrane eruptions are difficult to diagnose. A recent case was that of a woman, probably 21 or 22 years of age, who had a pustule on the under lip, extending over on to the vermilion border of the mucous membrane. I examined my patient and did not find any enlarged glands, although this was important. A histologic biopsy was made, and our microscopist thought it was more like tuberculosis. The first Wassermann test was one plus, and the second was two plus. That did not help me. I could not make up my mind that it was syphilitic. In the past we worked without Wassermann examinations to help us out, and so we treated our patients on the line of the textbook teaching of the past, namely, to give a trial of mercury when you do not know what else to do. We started first with hypodermic injections of mercuric chlorid. Giving her a rest

from those injections, I employed increasing doses of mercury protiodid. I thought I would return then to the other and the local applications of mercury ointment. To my surprise, before I could get back to the hypodermic injections my patient's lip had improved, and in a couple of weeks it had recovered. I am still at a loss to know whether I had a syphilitic case or not. This was a married woman, with no history of syphilis on either side, but she had worked in a button factory, and there many of the people had sores on their mouths and on their fingers. Now, the point is, could there be syphilitic eruptions without enlarged glands?

Dr. W. A. Pusey, Chicago: If I followed Dr. Culver correctly, he said only one of his cases was practically confined to the mucous membrane of the mouth and lips, and in that case he modestly left the diagnosis open. I have seen several cases of erythematous lupus in which I had no doubt of the diagnosis and which did not spread outwardly to any considerable degree beyond the vermilion surface of the lips. I believe Dr. Culver has done well to call attention to the occurrence of these cases of erythematous lupus on mucous surfaces, and to the possibility of the disease being confined entirely to the buccal mucous membrane. I value highly his comments on the internal factors on the causation of erythematous lupus. To my mind erythematous lupus belongs in the group of toxic dermatoses—in the erythema multiforme group. I have seen erythematous lupus lesions on the face in association with erythema multiforme on other parts of the body, particularly on the hands and forearms. I recall one case of a tuberculous woman with typical erythematous lupus on the face who had lesions on the hands strikingly suggestive of Raynaud's disease. To my mind erythematous lupus is not the expression of a specific intoxication, but runs the whole gamut of intoxications from chronic infections like tuberculosis to such intoxications as come from intestinal absorption. And in searching for the cause of the cases we have to take into consideration all the possibilities of internal intoxication. I would like to emphasize what Dr. Zeisler said about the futility of any single local application in erythematous lupus. We can get benefit from many of them, but we cannot be sure in a given case of benefit from any of them. I do not use radium in erythematous lupus, and very rarely now do I use the Roentgen ray. I have been disappointed, like Dr. Culver, in carbon dioxid snow in erythematous lupus, and I have in a few cases seen it much abused by overfreezing with it. At the present moment I am inclined to believe that vigorous treatment with ultraviolet light is giving me better results in erythematous lupus than anything else I have used. It is a method causing some temporary discomfort, but free from danger.

Dr. Douglass W. Montgomery, San Francisco: It is of course admitted that the etiology of these cases is obscure; although we think we have a right to assume that the disease is due to a toxin located in the gastro-intestinal canal, we know neither the toxin nor the exact place of its origin. The improvement in almost any case is slow. There are two situations in the alimentary canal particularly liable to infection: one the stomach, which is a sac; and the other the second stomach, the cecum, which is also a sac. When the eruption slows down to the very chronic state, then we do get good results from the use of carbon dioxid snow. It acts as a strong revulsive, and gives the eruption the last kick to kick it out. We have, however, given up the use of the carbon dioxid snow during the acute stage.

Dr. A. Ravogli, Cincinnati: I have spoken already in other meetings on the etiology of lupus erythematosus. For me, from the clinical observation and the reaction to the tuberculin, there is no doubt whatever of its tubercular origin. I have seen lupus erythematosus limited to the mucous membranes, and I have seen lupus erythematosus of the mucous membrane associated with lupus erythematosus of the skin, and some of the cases ended with general tuberculosis. I am now using as treatment—and with very satisfactory results—the cataphoresis method. Take the negative pole of a galvanic current and attach it to a little tampon saturated in 10 per cent. solution of zinc chlorid and apply this on the patch of lupus erythematosus, placing the other pole in the hand of the patient, for ten or fifteen minutes of current. The zinc chlorid, together with the action of the cataphoresis of the electrical current, produces an induration of the patch which lasts for something like twenty-four hours, and then gradually disappears. From that method I have seen very beautiful results. Together with this application, sometimes, when the little nodules begin to break down, I touch them with compound solution of cresol; and in four or five weeks I have seen satisfactory results. A case of lupus erythematosus of the tongue in the form of rings, without a manifestation of the lupus erythematosus of the skin, associated with hypertrophy of the submaxillary glands, healed up by touching it twice a week with compound solution of cresol. This application produces some temporary pain, but this is relieved immediately by touching with alcohol; touch it with compound solution of cresol, keeping it there as long as the patient can stand it, and then wash it with alcohol.

Dr. A. J. Markley, Denver: I have had the opportunity of observing a large number of patients in the sanatoriums about Denver and Colorado Springs during the past six years and I can say that in these institutions lupus erythematosus is a rare disease. These cases represent all types of tuberculosis in not only the incipient but the most advanced stages, yet lupus erythematosus occurs most infrequently in Colorado and such an experience, if it means anything, points against any direct connection between the two diseases. I have, however, seen one brilliant result from tuberculin in a case of rapidly developing lupus erythematosus in a woman with no physical manifestations of tuberculosis; the condition cleared up rapidly under injections of tuberculin.

Dr. H. H. Hazen, Washington, D. C.: I think we must be careful in our cases, for with a very large percentage of all adults we find there a strong positive reaction to the tuberculin. I think the Austrian army people found that 60 or 70 per cent. of all the men who came up for examination gave a positive reaction. A number of years ago at the Phipps Clinic at Johns Hopkins we found that all the adults connected gave a very strong positive von Pirquet reaction. I do not think we can say that the cutaneous test means anything in adults. Even von Pirquet himself admits that it is too delicate.

Dr. Ernest Dwight Chipman, San Francisco: The point emphasized in the discussion, that in lupus erythematosus the infection is not necessarily constant and specific, appeals to me strongly. It seems probable that we shall trace the origin of obscure dermatoses more and more to various infections. I recall a case of lupus vulgaris in which I was persuaded to inject a substance of rather uncertain composition, now called a phylacogen. Within forty-eight hours there appeared a typical zoster reaction along the course of the neighboring nerve. Some time ago, in dealing with an herpes progenitalis, I sought in vain a focal infection along the urethra. Later the same individual was found to be suffering with chronic appendicitis, a source which I had neglected to explore. This man has had no recurrence of his herpes since the removal of the appendix.

The Child and the Community.—It is the duty of the community to protect its children from prolonged labor in mill or factory. That the growing child should be subjected to the strain of long hours of the grinding monotony of factory work is a short-sighted policy for the community, as well from an economic point of view as from a humanitarian one. The child of today makes the community of tomorrow, and whatever the physical, mental and moral education of the child is now will be reflected in the character and standards of his day when he transmutes his present training into action. —E. O. Otis, M.D., paper read at Seattle meeting of the National Association for the Study and Prevention of Tuberculosis.

PLASMA AND BLOOD VOLUME IN PREGNANCY*

J. R. MILLER, M.D.
N. M. KEITH, M.D.
AND
L. G. ROWNTREE, M.D.
BALTIMORE

From the beginning to the middle of the nineteenth century, it was believed that the total volume of circulating blood underwent an increase in pregnancy, with a relative increase in the fixed elements. This condition was called "plethora of pregnancy" and all untoward symptoms were treated by bleeding and cupping.

It was later shown by Andral and Gavarret, Becquerel and Rodier, and Reignauld[1] that in the last months of pregnancy the red cells and albuminous content decreased, whereas the white cells and water content of the blood increased. The theory of chlorosis or chloro-anemia of pregnancy was thereupon developed by Reignauld, Cazeaux, Kiwisch and Scanzoni,[1] and an increase of diet replaced bleeding as a therapeutic measure.

French obstetricians, and particularly Kiwisch, later modified this view and postulated an increase in the total blood volume with a relative increase in the water content, and termed this condition "serous plethora." This conception has been more or less universally accepted and it probably represents the true condition.

Welcker[2] was the first to report experiments on blood volume in pregnant animals, though his results were more or less conflicting. He reported finding 7.6 gm. of blood per hundred gm. of body weight in a pregnant mouse as contrasted with a normal of 8 gm. He also concluded that the blood volume was greater in males. In amphibia the relative blood volume of the pregnant female, reckoned free from her eggs, was rarely as great as that of the male. In a suckling cat the value was less than in the male.

Heidenhain[3] found that a pregnant rabbit contained 1/14.9 of its body weight in blood, while the normal figure was 1/18. In 1872 Spiegelberg and Gscheidlen[4] made a study of this problem on pregnant dogs. Their paper is very convincing and is therefore abstracted somewhat in detail. They used a modification of the Welcker method.

In six nonpregnant dogs they found 7.12 to 8.92 per cent. of blood, an average of 7.87 per cent., whereas in ten pregnant dogs they found 7.29 to 12.41 per cent., an average of 9 per cent. Attention was called to the values in relation to the duration of pregnancy, showing that in five early cases, in which the uterine contents averaged 657 gm., the blood volume was normal, or 7.8 per cent., while in five late cases, in which the uterine contents averaged 1,193 gm., the average blood volume was 10.5 per cent.

In these dogs it was found that a very slight increase of hemoglobin took place, and the water content of the blood increased about 8 parts per 1,000. Spiegelberg and Gscheidlen concluded that a slight increase in the hemoglobin and water fractions would not explain their results and therefore it must be assumed that a real increase in the blood volume, both relative and absolute, occurs in pregnancy.

Baudelocque was the first to call attention to a low specific gravity in pregnancy. Andral and Gavarret[5] found an increase in the water content of from 7 to 10 parts per 1,000. Nasse[6] gave figures for the specific gravity of plasma and blood in pregnancy; the former he found to be 1.0255, the latter 1.045, as contrasted to normals, 1.0265 and 1.050 respectively. He quotes Andral and Gavarret and Becquerel and Rodier, who found respectively 127 and 125 gm. of red blood corpuscles per liter. His own figures varied from 95 to 125 gm. per liter.

Zangemeister[7] found in pregnancy a lowering of the specific gravity and of the molecular concentration of the plasma, freezing point, $\Delta = 0.52$. The chlorids were, however, increased above values found in normal controls. He reported that the normal figures were usually obtained on the ninth to twelfth day after labor.

In 1911 Zuntz[8] made use of the carbon monoxid method of Haldane and Smith as modified by Zuntz and Plesch, to study the blood volume in pregnant women. Haldane and Smith, and Plesch gave as normal blood values 4.69 to 6.05 per cent. of the body weight. In five cases before labor, Zuntz found large blood volumes of 4,077 to 6,756 c.c., representing 6.03 to 11.26 per cent., averaging 8.39 per cent. of the body weight. Three out of the four cases showed a decrease in both absolute and relative blood volume following labor. One case did not present these findings, though Zuntz thought this to be due to an experimental error. Even after labor the three cases showed values slightly above normal. Zuntz admitted that some carbon monoxid was undoubtedly lost through the placenta, but considered his conclusions justified since he made no allowance for the uterine contents in calculating the percentages. He stated that the chief drawback of this method, aside from its complexity, is that in the calculations small errors in the experimental work are magnified greatly in the final results.

About the same time, 1911, H. Fries[9] published a few results obtained by means of the von Behring tetanus antitoxin method on pregnant and puerperal women. He recognized the great drawback of this method, for though it gives fairly consistent results, its nature does not permit of repetition on the same patient. He also reported a personal communication with von Behring to the effect that the latter found by the use of his method a relatively and absolutely small blood volume in pregnant animals. Fries tried the method on women with the following results:

1. Ten nonpregnant women, averaging 63.5 kg. in weight, had a blood volume of 7.9 per cent. of the body weight, or 1/12.6.

2. Six invalid patients in the gynecologic wards, averaging 54.2 kg. in weight, had the same average value.

---

* From the Obstetrical, James Buchanan Brady Urological, and Medical Clinics of the Johns Hopkins Hospital.

1. Cited by Spiegelberg and Gscheidlen, Footnote 4.
2. Welcker: Prag. Vierteljahrschr. f. prakt. Heilk., 1854, iv, 11; Ztschr. f. rat. Med., 1858, iv, 145.
3. Heidenhain, R.: Arch. f. physiol. Heilk., 1857, i, 507.
4. Spiegelberg and Gscheidlen: Untersuchungen über die Blutmenge trächtiger Hunde, Arch. f. Gynäk., 1872, iv, 112.
5. Andral and Gavarret: Cited in Winckel's Handbuch der Geburtshülfe, 1903, i, Part 1, p. 332.
6. Nasse: Das Blut der Schwangeren, Arch. f. Gynäk., 1876, Part 2, p. 315.
7. Zangemeister: Die Beschaffenheit des Blutes in der Schwangerschaft und der Geburt, Ztschr. f. Geburtsh. u. Gynäk., 1903, xlix, 92.
8. Zuntz: Gesammtblutmenge in der Gravidität, Zentralbl. f. Gynäk., 1911, p. 1365.
9. Fries, H.: Ueber Veränderungen der Blutmenge in der Schwangerschaft, Ztschr. f. Geburtsh. u. Gynäk., 1911, lxix, 340.

3. Ten pregnant women in the eighth to the tenth month, averaging 62 kg. in weight, had 7.4 per cent., or 1/13.5.

4. Four women during labor showed 8.7 per cent., or 1/11.5.

5. Nine puerperal women showed 8.7 per cent., or 1/11.5.

It was found by testing the blood from the umbilical vessels that no antitoxin passed to the child. Römer had shown that this occurs some time after the injection, probably several weeks.

On the basis of these observations Fries concluded (1) that his results on normals compared well with the accepted figures in the literature; (2) that a decrease in volume rather than an increase occurs in pregnancy, and (3) that during labor and during the puerperium there is a gradual rise to normal.

We would call attention to a mistake which he made in calculating the percentage of body weight in the first four cases given in the accompanying table. It is also seen that four out of the ten cases in his Table 3 have relatively high blood volumes, and it is only by including such values as were noted in his 81 kg. patient, that the average percentage of body weight is made to fall below the normal of 7.9 per cent.[10] Three of the four cases in labor showed a very high blood volume. His figures for puerperal cases varied from 6.4 to 13.8 per cent. and can by no means serve as the basis for any sound theorizing. Six of these nine cases had low values, and three had very high values totally out of keeping with the others.

Whether or not the von Behring method will give accurate results in pregnant women we are not prepared to say, but it seems very unlikely that valuable data can be obtained by means of any method which does not allow repeated observations on the same patient. This is particularly true in relation to obstetric patients in whom many variable factors have to be taken into account, such as the weight of the child, loss of blood at labor, edema, obesity, nutritional conditions and variations in the blood volume itself. Furthermore, it would seem impossible to get reliable results by using the von Behring method on a patient who had previously received antitoxin of any kind. This new method permits repetition of the test at will.

The present paper is a preliminary communication based on results obtained in a small series of pregnant women, by means of a new method for the determination of total plasma and blood volume devised by Rowntree, Keith and Geraghty.[11] This method consists in the introduction directly into the circulation of a nontoxic, slowly absorbable dye, vital red, which remains in the plasma long enough for thorough mixing, and the colorimetric determination of its concentration in the plasma by comparison with a suitable standard mixture of dye and plasma. It gives the total plasma volume, and by the use of the hematocrit, the total blood volume can be obtained. The reader is referred to the paper of these authors[10] for fuller details of the method, and for results obtained in other conditions. It is to be regretted that, owing to the war, a supply of the dye sufficient to enable us to study a large number of patients was not available.

10. Haldane and Smith (The Mass and Oxygen Capacity of the Blood in Man, Jour. Physiol., 1900, xxv, 331), and Keith, Rowntree and Geraghty (Arch. Int. Med., to be published), showed that obese patients had a relatively small blood volume.

11. Rowntree, Keith and Geraghty: Tr. Assn. Am. Phys., 1915.

TECHNIC

A 1.5 per cent. solution of the dye in freshly distilled water is sterilized by boiling for from five to ten minutes, and aseptically stoppered in a sterile Erlenmayer flask. This solution is made up as required.

The patient is weighed stripped, and the dose is determined on the basis of 3 mg. of the dye per kilogram of body weight. The skin over the anterior surface of both elbows is prepared in the usual manner for venipuncture. Under aseptic technic a small (20 gage) platinum-iridium needle, to which is attached a piece of rubber tubing 2 or 3 cm. long, is inserted into the vein. Ten c.c. of blood are withdrawn into a pipet and emptied into a 50 c.c. centrifuge tube containing just sufficient powdered sodium oxalate to prevent coagulation. The plasma so obtained is used in the preparation of the standard which is described below.[12] The rubber tubing is removed from the needle, the latter being left in the vein and a 20 c.c. record syringe containing the exact dose[13] of the dye is attached and its contents injected, after which the needle is withdrawn. Three minutes later, a needle is inserted into a vein of the opposite arm. Without impeding the venous return, 10 c.c. of blood are withdrawn immediately by means of a pipet; two or three minutes later another 10 c.c. are withdrawn. The first is placed in a 50 c.c. centrifuge tube and the second in a 15 c.c. graduated centrifuge tube. To each, sufficient dry sodium oxalate is added to prevent clotting, and the tubes are capped with rubber to prevent evaporation during centrifugalization. The three tubes are placed in a high power centrifuge and subjected to 3,000 revolutions per minute for twenty minutes.[14] After removal from the centrifuge, the relative proportion of erythrocytes and plasma in the graduated tube is noted. Without disturbing the red cells, the plasma is carefully pipetted off from each tube and placed in a clean test tube. We now have three test tubes, (1) containing plasma without dye, and (2 and 3) containing plasma and dye in an unknown concentration. A suitable dye standard mixture of known dye content is made, and with it 2 and 3 are compared.

This standard solution,[15] which has been found to be well adapted to colorimetric determinations and applicable in all cases, is made as follows: 0.5 c.c. (7.5 mg. of dye) of the dye solution used for the injection is diluted accurately to 100 c.c. with 0.8 per cent. sodium chlorid solution. A convenient amount of this is mixed with an equal volume of the patient's plasma, and twice that amount of saline, yielding a dilution of 1/4. The prism of Rowntree and Geraghty's modification of the Authenrieth-Königsberger apparatus is filled with this solution.

12. This procedure of taking plasma for making the standard in each case was found necessary on account of the great variation of the color of the plasma in different individuals.

13. The amount injected is 3 mg. per kilogram. The weight in pounds divided by 11 gives the number of c.c. of a 1.5 per cent. solution to be injected.

14. To prevent hemolysis all pipets and centrifuge tubes must be thoroughly washed with normal saline and dried before use. It is obvious that the slightest hemolysis will alter the color of the plasma and make accurate colorimeter readings impossible.

15. The standard selected has been prepared on the following basis: The amount of dye injected into the patient is diluted in the number of cubic centimeters of salt solution equal to 4 per cent. of the body weight expressed in grams, for example, a man weighing 70 kg. would be given 210 mg. of vital red (14 c.c. of a 1.5 per cent. solution). Four per cent. of 70 kg. equals 2,800 gm. or 2,800 c.c. without making any correction for the differing specific gravities of plasma and water. Accordingly, if 210 mg. be dissolved in 2,800 c.c. of salt solution, 7.5 mg. of the dye dissolved in 100 c.c. would give a standard solution of the desired concentration.

Then Specimens 2 and 3 of the patient's plasma are diluted with three parts of saline, placed in the cup of the colorimeter and read against the above standard.

CALCULATION OF RESULTS

In determining the plasma volume, the weight of the patient is designated as W, the colorimetric reading of the standard solution equals 100, while the reading of the patient's plasma against this standard is designated as R. The standard is prepared so that the amount of dye injected is diluted to 40 c.c. for every kilogram of body weight. Accordingly the number of cubic centimeters of plasma in the patient's body is represented by the equation $\frac{100}{R} \times 40\ W$ or $\frac{4{,}000\ W}{R}$

The total blood volume is calculated from the plasma volume on the basis of the hematocrit reading.

1. Whereas the normal amount of plasma is 50 c.c. per kilogram of body weight,[10] an average of 58.4 c.c. per kilogram was found in twelve women before labor, and of 49.3 c.c. per kilogram in ten women after labor. It therefore seems justifiable to conclude that there is an absolute as well as a relative increase in the plasma volume late in pregnancy, with a decrease in the puerperium.

2. The hematocrit readings vary considerably in different cases. All but one were below the normal of 43 per cent.,[10] the average being 35.8 per cent. in twelve cases before labor. There appears to be a general tendency to return to normal after labor. It may be more than a coincidence that in Case 6, in which the patient lost considerable blood, the hematocrit red blood cell value fell. These findings are in harmony with the idea of "serous plethora."

RESULTS OF OBSERVATIONS ON THE BLOOD IN THIRTEEN CASES OF PREGNANCY

No.	Age	Para	Time Relation to Labor in Days		Blood Lost, c.c.	Weight of Child, gm.	Body Weight, kg.	Plasma Volume, c.c.	Plasma, c.c. per kg.	Blood Volume, c.c.	Per Cent. of Body Weight	Per Cent. of Body Weight*	Estimated Decrease in Blood Vol., c.c.	Hematocrit per cent. of R. B. C.
			Before	After										
1	21	0	2	..	210	4,165	55.5	3,213	57.9	5,637	10.66	11.6	.....	43
7133	..	..	..	5	...	.....	48.2	2,487	51.6	4,363	9.5	....	1,274	43
2	30	1	19	..	100	4,150	61	3,343	54.8	5,306	9.13	10	.....	37
7151	..	..	..	4	...	.....	52.7	3,057	58	4,700	9.36	....	506	35
				11	...	.....	53.9	2,641	49	4,192	8.1	....	1,286	37
3	16	0	13	..	150	3,315	51.8	2,621	50.6	3,971	8.05	8.5	.....	34
6903	..	..	..	4	...	.....	45.4	2,243	49.4	3,299	7.61	....	672	32
4	20	0	9	..	325	3,100	57	3,329	58.4	5,044	9.03	9.6	.....	34
7103	..	..	..	1½	...	.....	50	3,030	60.6	4,734	9.94	....	310	36
				9	...	.....	50.5	2,525	50	3,945	8.2	....	1,099	36
5	23	3	6	..	250	3,970	65.6	3,870	59	5,691	9.11	9.7	.....	32
7090	..	..	..	4	...	.....	55	2,695	49	4,022	7.68	....	1,569	33
6	25	2	4	..	800	3,085	63.9	3,623	56.7	6,039	9.92	9.5	.....	40
7112	..	..	..	3	...	.....	57.3	2,974	51.9	4,724	8.65	....	1,318	37
7	22	1	39	..	200	4,075	64.5	4,689	72.7	7,105	11.55	12.5	.....	34?
6954	..	..	..	9	...	.....	60	3,078	51.3	4,809	8.41	....	2,296	36
8	22	2	4	..	100	3,640	61.4	3,899	63.5	5,262	8.98	10.2	.....	28
7048	..	..	..	7	...	.....	59.3	2,894	48.8	4,904	8.68	....	358	41
9	18	0	11	..	225	3,420	61.7	2,974	48.2	4,647	7.89	9.4	.....	36
7092	..	..	..	5	...	.....	50.1	2,216	37.5	3,821	6.79	....	826	42
10	20	0	1	..	675	3,420	63	3,717	59	6,300	10.5	11.4	.....	41
7096	..	..	..	8	...	.....	57	2,519	44.2	3,760	6.9	....	2,640	43
11	16	0	6	..	200	1,040	47	1,795	38.1	3,042	6.78	....	.....	41
7094	..	..	..	10	...	.....	43.6	1,548	35.5	2,669	6.43	....	373	42
12	17	0	61	..	...	.....	54.5	3,461	63.5	5,408	10.42	....	.....	36
7008														
13	19	0	14?	..	...	.....	57.3	3,266	57	5,184	9.51	....	.....	37
7105														

* Estimated free from uterine contents.

For these readings the volume of red blood corpuscles is designated as P and the plasma volume as 100 — P. The total blood volume is estimated from the following equations:

$$\frac{\text{Total plasma volume} \times 100}{100 - P}$$

In estimating the percentage of body weight, it has been assumed that the specific gravity of blood is 1.050.

RESULTS

The determinations of plasma and blood volumes were made before or after labor, or both, in a series of thirteen women. The values obtained as well as other data bearing on the results appear in the accompanying table.

Too few patients have been studied to permit of far-reaching conclusions, but a few interesting features are worthy of comment.

3. The normal blood volume has been found to be 8.8 per cent. of the body weight,[10] but our twelve cases showed an average of 9.56 per cent. before labor, and ten of them showed an average of 9.05 per cent. after labor. The normal percentage of body weight was based on figures obtained from males averaging about 140 pounds. In the twelve cases here included the patients averaged 133.5 pounds before labor and the ten cases after labor averaged 121 pounds. With the exception of No. 11, all the patients showed large total blood volumes of 4, 5, and even 6 liters, though no patient weighed over 143 pounds. In Case 7 the hematocrit value was not taken before labor, but if a hematocrit finding of red cells 2 per cent. lower than that obtained after labor is used, a blood volume of over 7 liters is obtained. Such findings easily explain the clinical observation that a considerable loss of blood is less dangerous to a woman in labor

than at any other time. Indeed, Gjestland[16] reported two cases in which the patient survived the loss of 3,000 and 3,400 c.c. of blood respectively. The latter patient, he stated, had practically a normal blood picture twenty-seven days after labor. Among 20,628 cases he found eighty-one patients who survived a loss of over 2,000 c.c. He concluded that in pregnancy the blood volume must be at least 1/13 of the body weight.

4. In Cases 2, 3, 4 and 8 there was relatively little decrease or even a relative increase in blood volume after labor. Inasmuch as these cases were all studied within the first four days we were led to repeat the determinations in Cases 2 and 4 with the results noted in the table. Such findings make it highly probable that, when there is no excessive hemorrhage, the physiologic return of the blood volume to normal occurs slowly during the puerperium.

5. In using the Welcker method, Spiegelberg and Gscheidlen were careful to use the "Reingewicht" for calculations, that is, the body weight of the animal minus intestinal and uterine contents. This is obviously impossible in human beings, but approximate values may be obtained by allowing for a little more than the weight of the child. It was found that the figures for total blood volume were very little if at all changed by this calculation, for if the body weight is reduced the amount of dye injected would be correspondingly smaller. The relative blood volume, however, is perceptibly increased as follows:

	Per Cent.
Average of 10 cases before labor	9.48
Calculated average of same cases, "Reingewicht"	10.24

This would tend to show that the increase in the maternal circulation is even greater than that shown by this method.

6. Inasmuch as the dye used is practically nondialyzable, it is not to be expected that it passes rapidly through the placenta and so disappears from the maternal circulation. In Case 10 the opportunity was taken to examine the fetal blood and urine from the child born five hours after the test was made. The dye could not be detected in either, nor could it be found in the placenta on microscopic examination, though its presence in dilute form in the syncytium is not to be excluded by such means. It is very unlikely, however, that the syncytium takes up any appreciable amount of the dye, for the samples of blood taken three and six minutes after injection showed no marked variation in dye content. Constant results were also obtained in one case in which the samples were taken at intervals of three, ten and eleven minutes. Furthermore, the fact that a decrease in blood mass is not found immediately after labor (Cases 2 and 4) renders such an occurrence very improbable.

7. The only patient not showing an increased blood volume was the one in Case 11, who had a premature labor at seven and a half months which was complicated by syphilis and nephritis. This case has not been included in calculating the average figures for normal pregnancy.

CONCLUSIONS

These studies indicate that there is an increase in the absolute and relative volumes of both plasma and blood late in pregnancy with a slow return to normal during the puerperium.

These findings confirm the work of Zuntz on humans, and of Heidenhain and Spiegelberg and Gscheidlen on animals.

16. Gjestland: Starke Blutung bei der Geburt. Einen wie starken Blutverlust verträgt der Mensch? Cited in Zentralbl. f. Gynäk., 1914, i, 616.

TUBERCULIN TESTS IN CHILDREN OF COLORADO *

GEORGE H. CATTERMOLE, M.D.
BOULDER, COLO.

It is customary for us to quote statistics relative to the prevalence of tuberculous infection among children, but we seldom question the source of this information. Until quite recently the chief statistics were those of von Pirquet and Hamburger of Vienna, Calmette of Lille, and others who have obtained their data from a class of patients and under conditions very different from our own. It seems to be taken for granted that tuberculous infection is common among children under all social conditions.

I attempted to get information from my colleagues as to the results of their tuberculin tests, but found that no systematic records were being kept in Colorado, except possibly by a very few men. Even at the university clinic, in Denver, no records of such tests have been kept.

There seems to be very scant information in this country regarding the prevalence of tuberculous infection among children. Such studies as have been published are largely from charity hospitals and dispensary patients. Such reports indicate about the same percentage of "reactors" among children in this country as is found under similar conditions in Europe.

We must assume that practically all children have been exposed to infection by tubercle bacilli before they reach the age of 14 years. Those living in the tenement districts of large cities are exposed to the most intense infection, under such conditions as bad air, lack of sunshine and poor food, which would render them most susceptible.

Under similar conditions in Colorado the percentage of "reactors" might be the same as is found in New York, but this is not likely, and it is evident that in the small cities and country districts of the Rocky Mountain region where there is no overcrowding, plenty of food and sunshine, the percentage of reactors is less than in the eastern cities. There seems to be little doubt that this also applies to other parts of the country.

Dr. J. B. Manning of Seattle wrote as follows:

> I made a careful clinical study of 228 children coming to the Children's Clinic of the Tuberculosis Division of the Seattle Health Department, in relation to tuberculous surroundings, controlled by von Pirquet tests. Of 166 children with definitely known exposure to tuberculosis, 50.60 per cent. reacted positively to the von Pirquet test, 49.3 per cent. reacted negatively to the same test. Of the 62 children examined with a history of no known exposure, 14 reacted positively, 22.8 per cent., and 48, or 77.4 per cent., reacted negatively. Between 10 and 15 years there were the largest number of reactors, 58.1 per cent. This is far below Hamburger's or von Pirquet's figures for the frequency of tuberculosis among children of this age. These differences, I believe, are readily explained on the basis of different community, characteristics of climate, housing and sanitation.

* Read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Manning's results are very different from those of Fishberg, who found that among 692 children living with tuberculous parents, in the tenements of New York, 67.25 per cent. reacted, while among 588 children of the same social class, but not living with tuberculous parents, 52.72 per cent. reacted. The reason for this large percentage of reactors seems to be the general and widespread presence of the infection. City children show from 50 to 100 per cent. of reactors, while tests made in the country districts of the same region show only 25 per cent.

The tuberculin reaction is evidence of hypersensitiveness brought about by the presence of tubercle bacilli in the body tissues. The phenomenon resembles anaphylaxis. The secretions of the tubercle bacillus sensitizes the animal to subsequent inoculation of its own proteins. This reaction does not indicate clinical tuberculosis, but it does indicate the presence in the body, at some time, of living active tubercle bacilli.

In using old tuberculin for the cutaneous tests we are employing a crude material, composed of fats and proteins. Old tuberculin may also lack substances contained in the living bacillus, but which are destroyed in its preparation.

TABLE 1.—RESULTS OF CUTANEOUS TUBERCULIN TESTS BY AGES

Age, yrs.	Positive	Negative	Total
1	2	3	5
2	1	2	3
3	0	2	2
4	1	4	5
5	2	3	5
6	2	8	10
7	2	4	6
8	2	2	4
9	1	6	7
10	3	1	4
11	2	4	6
12	2	2	4
13	3	0	3
14	2	0	2
	25	41	66

I realize that my series of cases is small, but they were private patients and from families known to me personally. The tests were made because the children were showing symptoms which might be due to tuberculosis. These cutaneous tests have diagnostic value in both a positive and negative way.

TABLE 2.—COMPARISON OF REACTIONS IN CHILDREN FROM TUBERCULOUS AND NONTUBERCULOUS PARENTS

Age of child, years	Tuberculous children	Non-tuberculous children	Tuberculous parents	Non-tuberculous parents
1	2	3	5	0
2	1	2	2	1
3	0	2	0	2
4	1	4	2	3
5	2	3	3	2
6	2	8	5	4*
7	2	4	3	3
8	2	2	1	2*
9	1	6	3	4
10	3	1	3	1
11	2	4	2	4
12	2	2	1	3
13	3	0	2	*
14	2	0	2	0
	25	41	34	29

* Uncertain.

From Table 2 it will be seen that 25 (38 per cent.) of the children in my series gave a positive reaction; 41 (62 per cent.) were negative; 34 of these children had tuberculous parents, while 29 had parents free from tuberculosis. In spite of the fact that 50 per cent. of these children had parents who had suffered from active tuberculosis, only 38 per cent. of the children showed a positive reaction at the time of examination. Probably half of the families living in Colorado contains one or more adult consumptives. This indicates the opportunity for infecting the children.

In 22 instances tuberculous children had tuberculous parents. In 27 instances, nontuberculous children had nontuberculous parents. In 12 instances nontuberculous children had tuberculous parents. In 1 instance a tuberculous child had nontuberculous parents.

Of the 12 children who did not react, but who had tuberculous parents, three were less than 2 years old; one 2 years old; one 4; one 5; three 6; one 7 and two 9. This is interesting as showing how children may associate with infected persons without themselves becoming infected. It is also remarkable how seldom children reacted in instances in which their parents were free from tuberculosis and how frequently they did react when the parents had tuberculosis. In some families all the children reacted. This occurred usually when a parent had active tuberculosis and lived in the house with young children. In other families all the children gave negative reactions. This usually occurred when the consumptive parent was isolated from the children or great care was taken with the sputum. Probably it will be the rule that when there is massive infection all the children will show reaction.

My series include 132 tests made on 110 persons. Of these individuals, 69 were under 14 years of age; 18 were between the ages of 14 and 25 years, and 23 were over 25. In 20 instances when I have made more than one test on the same person, the two or three tests have given the same results except in two instances.

In sixteen instances the von Pirquet and Moro tests were used and were both negative or both positive except in two instances. In one of these the Moro was used in a girl of 11 years while she had pneumonia, and was negative. Two weeks later she showed a delayed reaction to the von Pirquet. In the other the Moro was negative and the von Pirquet slightly positive after forty-eight hours. The von Pirquet and intracutaneous tests were both negative in a man dying of tuberculosis. These results are not different from those reported in great numbers and detail in the literature on this subject.

Many times parents will consent to the use of an ointment when they will not allow us to make an abrasion of the skin. For this reason we must know the relative value of the Moro test.

The consensus of opinion, based on many thousands of tests, is that first, the intracutaneous, and second, the subcutaneous-local tests are the most delicate, and when used indicate practically the absolute number of persons infected with the tubercle bacillus; third, in order of relative sensitiveness comes the cutaneous, of which the von Pirquet is the type; fourth, the subcutaneous; fifth, the percutaneous, of which the Moro is the type, and sixth, the conjunctival. The intracutaneous test may later become the most valuable one we have, as by using doses of increasing quantity we are able to determine the minimum amount which will cause a reaction.

The cutaneous test undoubtedly has value in indicating the character of the infection. Dr. F. M. Pottenger writes me:

> I believe that the cutaneous tuberculin test is of great value. A marked reaction, reaching its maximum within the first twenty-four or thirty-six hours, means that the patient is fighting an active infection. Of course this presupposes a patient with good reactive powers and that means a patient in fairly good condition.

Suppose we say that a prompt and intense reaction indicates a fresh invasion and a mild or late reaction a latent and old process. In young children the reaction indicates a comparatively recent infection, which is still active or only partially healed. The earlier the child becomes infected with tuberculosis the greater the danger of the infection causing clinical tuberculosis and death. In infancy tuberculous infection means tuberculous disease. But in later childhood the intensity of the reaction may not indicate the degree of infection, but rather the hypersensitiveness of the child.

We do not know how many tubercle bacilli it takes to infect a child. Webb of Colorado Springs says:

> We have ascertained that from virulent cultures inoculated subcutaneously twenty-five bacilli of the human type infected a guinea-pig, seventy-five of bovine type infected a rabbit, and 1,000 infected a calf. We have not yet determined the exact number of human tubercle bacilli that will infect a Rhesus monkey, yet the work we have done would indicate that a few hundred would suffice, and we may presume that children become infected by a similar number.[1]

Webb experimented on animals by injecting first one living tubercle bacillus and gradually increasing the number each week until 150,000 were inoculated into one guinea-pig. This animal was killed and found free from tuberculosis. The inoculations were continued on rabbits and monkeys, and when the results showed the method to be safe, seven children were treated in the same manner. These children were negative to the von Pirquet test both before and after the treatment. This would indicate true immunization.

The point which I wish to make from this is, many children in Colorado, and others living under favorable conditions, may be infected so slowly and gradually with the tubercle bacillus that they acquire immunity. In support of this view I wish to show that when massive infection occurs a condition of hypersensitiveness follows, and this favors the reaction.

Römer has systematically tested guinea-pigs infected with varying amounts of tubercle bacilli of different virulence by performing weekly intracutaneous tests. The test consists in injecting into the skin 0.1 c.c. of tuberculin dilutions representing 0.02, 0.002, 0.0002, 0.00002, 0.000002 c.c. tuberculin. The area of induration is measured after twenty-four hours with a caliper and compared with the thickness of the skin in an uninjured area. An animal reacting to 0.02 and not to 0.002 c.c. of tuberculin is said to have I grade of sensitiveness; one reacting to 0.002 and not to 0.0002, II grade of sensitiveness, etc. By varying the amount of virulence of the cultures injected he has been able to study the variation in tuberculin sensitiveness during all grades of infection from rapidly fatal to mild ones ending in spontaneous recovery. Stated briefly, his results show that the more severe the infection the higher the grade of sensitiveness developed and the more quickly is this high point reached. Instances in which the disease remains localized show a strikingly low grade of sensitiveness.[2]

Römer used massive infection as compared with Webb's doses. These larger numbers of tubercle bacilli stimulate an overproduction of immune bodies with the result that the animals are hypersensitive to tuberculin. When only a few tubercle bacilli are inoculated, as by Webb's method, only sufficient antibodies are developed to neutralize the infection and there is no hypersensitiveness and no reaction.

1. Webb: Studies in Tuberculosis, Bull. Johns Hopkins Hosp., August, 1912, No. 258.
2. Hamman and Worman: Tuberculin in Diagnosis and Treatment, New York, D. Appleton & Co., p. 179.

SUMMARY

Children who are infected with large numbers of tubercle bacilli, as those living in the tenements of the cities or with active pulmonary cases anywhere, develop hypersensitiveness as shown by the tuberculin reaction.

When children have never been infected or in cases in which the number of bacilli received is very small and the child's resistance good, as in Colorado, they do not react and are either not infected or are immune.

In my cases, in which there seems such abundant opportunity for infection, I believe that many of the children have been immunized, but proof of this will require further study.

Possibly all tuberculosis is contracted in childhood, and from three-sevenths to six-sevenths of the population acquire immunity at this time, while the others succumb to the more acute conditions of childhood or later show the chronic pulmonary type of adults, which is believed never to occur except in those who have been infected and rendered partially immune in childhood.

In the prevention of tuberculosis we should aim to protect infants from all exposure and older children from massive infection. Moderate and gradual infection in older children probably insures immunity.

ABSTRACT OF DISCUSSION

DR. C. G. GRULEE, Chicago: One point is important and that is that the large proportion of infections in tuberculous individuals are present as the result of infection from individual to individual. We have hitherto underestimated the number of infections from individual to individual, and there can be no question that these very far exceed infections from milk.

DR. LANGLEY PORTER, San Francisco: This is the one point that is most important in the whole discussion, that infection from individual to individual is the most common means of transmitting tuberculosis. In 100 cases of tuberculous meningitis in children, in every instance the disease was traced definitely to human infection. We have found that the majority of infections in children in the poor sections of San Francisco may be traced to grandparents. The old people said to have chronic asthma and winter cough, so-called, have in reality tuberculosis and infect their grandchildren and others living with them.

DR. H. D. CHAPIN, New York: A most important point with reference to bovine and human tuberculosis infection is that if we attribute the infection largely to the bovine bacillus, many people are scared out of using milk, and if we are going to rule out milk we rule out the most valuable food that we have for the tuberculous patient.

DR. E. LACKNER, Chicago: In all the children entering our hospital we make the tuberculin test and we expected to find a much larger percentage of tuberculous children than we did find. The reports coming from the European clinics have been showing high percentages, even up to 80 per cent. of the children giving positive reactions to the tuberculin test. The children that we examined were from the "Ghetto" where we expect to find a great deal of tuberculosis, but we were agreeably disappointed to find so few suffering from tuberculosis. All of the children were carefully tested by the von Pirquet test. We tested about 4,000 children and not more than 20 per cent. were found to be tuberculous. These tests were all carefully made and were watched carefully.

DR. J. I. DURAND, Seattle: With reference to Dr. Manning's statistics showing such a low percentage of children reacting positively to tuberculosis tests when the parents

were tuberculous, I think that one explanation of this may be that in Seattle they have been carrying on a very vigorous campaign against tuberculosis and the people are very much alive to the question. In the clinics they examine every child for signs of tuberculosis and if any such signs are found the children are subjected to the von Pirquet test immediately. In the first place only about 50 per cent. responded to the test. In many cases the test was made only after finding tuberculosis in the parent or parents. In many instances in which tuberculosis was found to be present in a child, the parents were subjected to examination and in this way many cases of early tuberculosis were brought to light. I believe these statistics of Dr. Manning's are very much under what they will be found to be a year later.

DR. J. P. SEDGWICK, Minneapolis: With reference to making examinations of children when the parents are found to be tuberculous, this is a matter of equal interest to the internist. It will work to advantage the other way around. When a child is found to be tuberculous the parents should be examined, and in this way the frequency with which the disease is discovered in the parents is astonishing.

DR. R. B. SWEET, Fresno, Calif.: The question comes up whether we will find cases that react positively to the bovine test when they are negative to the human test. In spite of what has been said, wherever we detect slight signs of tuberculosis and there is a negative reaction to the human type of infection, I believe there might possibly be a positive reaction to the bovine type, and still the children may have a tuberculosis of the human type.

DR. T. C. MCCLEAVE, Berkeley, Calif.: With reference to bovine and human tuberculosis, it is conceded that tuberculosis of the human type is very much in the preponderance, and bovine type bacilli are rarely found in pulmonary tuberculosis, but certain forms of surgical tuberculosis in young children are quite commonly caused by bovine type infection. Men who have emphasized the importance of the human type have been wont to deplore any mention of bovine tuberculosis, for the reason, as they say, that it tends to divert the mind from the more important question of human infection, and some of them object to having it said that there is any bovine tuberculosis at all; but I think this attitude is fast disappearing, as in most recent papers on the etiology of tuberculosis the bovine type infection is generally recognized. I read a paper on this subject at the last meeting of this section, in which I showed that a certain proportion of tuberculosis came from milk, as tuberculosis of the glands, osseous structures and abdominal viscera, but no one claims that pulmonary tuberculosis comes from milk. The last speaker emphasized the fact that human infection is the great source of infection in children, and this is true; but it has been shown that from 12 to 25 per cent. of all tuberculosis in children is of the bovine type as found in the surgical conditions that I have mentioned. There is no reason for feeling that calling attention to one type of tuberculosis will divert our minds from the other type of the disease. Each type should be given the attention it deserves, and there should be no idea of conflict between the two.

DR. JOHN RITTER, Chicago: I am vitally interested when I hear statements of the value of the von Pirquet test as a diagnostic measure. One must not be led to believe when he gets a reaction which is positive that he is necessarily dealing with a case of tuberculosis or that a negative result absolutely interdicts the possibility of tuberculous disease, if such an opinion was based on a single test. In the Rush Medical College ambulatorium of the Tuberculosis Sanatorium we frequently find that a few of the children reacting negatively to the von Pirquet test reacted positively to a second or intracutaneous test, and I am quite sure that 80 per cent. of those reacting negatively to the von Pirquet test would react positively to a second test. As to the supposed prevalence of bovine pulmonary tuberculosis, the English commission appointed to investigate this subject found that it was very difficult to differentiate the pathology of human and bovine tuberculosis, but they expressed the opinion that tuberculosis of the human type, and especially pulmonary tuberculosis, predominated over tuberculosis of the bovine type, and they found that only 0.6 of 1 per cent of all cases of pulmonary tuberculosis are caused by the bovine germ. The human bacillus is usually responsible for tuberculosis of the pleura, larynx, and lungs, while the bovine bacillus causes tuberculosis of the peritoneum, glands, bones, skin, etc. Infection from individual to individual is the largest factor in the transmission of tuberculosis, usually from the old to the young, and when we accept this we will come closer to the solution of the problems involved. It has been my rule for years to say that an old person said to have asthma or chronic bronchitis has tuberculosis, and I have found that such persons have frequently infected all their grandchildren. This fact should be more emphasized and all children in such families carefully examined. As to the reaction following the application of tuberculin, in some cases it may appear in a few hours, in others at the end of twenty-four hours, and again in others at forty-eight and in some even as late as seventy-two hours. In cases in which the reaction comes up quickly it often indicates an active focus, but if the reaction is slow in appearing it may indicate a latent process. In some instances in which we do not get a reaction at the first, a second or intracutaneous application of a milligram of tuberculin is often followed by a distinctly positive generalized and local reaction.

DR. J. A. COLLIVER, Los Angeles: I have just returned from Prof. von Pirquet's kinderklinik where they are working on these tests. Prof. von Pirquet asked me to try his tuberculin skin reaction on different parts of the body. The hand, shoulder, back (cervical and lumbar region), knee, foot and the regular routine place on the forearm were used, and about 100 children were tested, making over 700 skin tests in all. I found that the reaction in the different parts of the body differed only slightly from that of the forearm—not enough to make it worth while changing the routine location. All children entering the hospital receive the von Pirquet test. When it is negative or doubtful, a Mantoux is made. This is more delicate and when positive brings out the other von Pirquet test. A watch screw driver is good or better than the von Pirquet drill. Each child receives a Pirquet test before each tuberculin injection. Accurate measurements and observations of these tests are made every two hours for the first fourteen hours, then every four to six hours thereafter. There is often a traumatic reaction occurring in a few hours, but usually disappearing before the true reaction begins. Greatest intensity of reaction may be delayed forty-eight to sixty hours and be accompanied by lymphatic lines, enlarged glands and necrosis. The tuberculin skin test when positive in diabetic children is severe, characteristic, and often necrotic.

DR. G. H. CATTERMOLE, Boulder, Colo.: Something has been said with reference to Ghon's work. It should be remembered that in Germany practically all the milk is boiled and that may account, in a large measure, for the absence of bovine tuberculosis among the children in Germany. My object in presenting this subject was to stimulate interest in it, and urge you to make use of the tuberculin skin tests. We have been very much at sea as to the real value of the skin test. Tuberculin is also being used in this way in the treatment of tuberculosis, and I believed that a discussion of the subject would be interesting and instructive. I find that I react positively to the test, while my son who is 15 years old, born and raised in Colorado, reacts negatively. I have made the test on my forearm, as you can see, and also controls. In making these tests I used simply the linear incision with a drop of old tuberculin. These reactions illustrate very well the difference between the positive and the negative reactions.

Water Purification.—

"Come, sir, despatch; if thou couldst, doctor, cast
The water of our land; find its disease,
And purge it to a sound and pristine health,
I would applaud thee to the very echo
That should applaud again."—(From Macbeth.)

PNEUMONIA IN INFANTS

A CLINICAL STUDY OF HOSPITAL CASES *

HENRY DWIGHT CHAPIN, M.D.
NEW YORK

Most physicians who have had a large experience in treating the pneumonia of infants and little children in hospitals must be disappointed in the results when we consider that the nursing and appliances are usually most favorable for handling the disease. It may be of interest to glance at the reasons for this comparative lack of success and consider if anything can be done to improve results in institutional treatment.

For many years I have attended all varieties of pneumonia in the babies' wards of the New York Postgraduate Hospital, which is situated adjacent to a large and populous section of the city — said to be the most densely populated portion of the globe. Poverty and neglect are here common experiences in the life of many families. It is evident that very promising material for the treatment of such a depressing disease as pneumonia can hardly be expected from such a source of supply. So far as I can learn, my results are about the same as those of other hospitals dealing with a similar line of cases. Indeed, there seems to be a considerable similarity in the statistics of pneumonia in all ages and classes when studied in relation to the same type or class in a similar environment.

The cases on which this study is based were taken during October, November and December, 1914, and part of April, 1915, and may be considered as typical of the usual run of cases in the fall, winter and spring months. The high mortality in these and similar cases is due to three causes: (1) the poor general vitality of the class of children treated; (2) the fact that many bad cases that are not doing well at home are finally sent to the hospital in a late and dangerous stage of the disease; (3) a large proportion of the cases represent secondary or terminal conditions that are very apt to occur after any severe illness in the poorly nourished infant.

It is believed the cases here reported are fairly typical of the usual manifestations of pneumonia as seen in the average hospital for infants. The study includes 50 cases, 23 of lobar pneumonia and 27 of bronchopneumonia. In this series, 5 patients with lobar pneumonia died, giving a mortality of 21 per cent., and 13 with bronchopneumonia died, showing a mortality of 48 per cent. While the mortality in the lobar pneumonia is higher than usual in this class of hospital cases, the deaths from bronchopneumonia were rather lower. In a recent series of cases reported by the Babies' Hospital[1] (N. Y.), among 51 patients with lobar pneumonia 5 died, giving a mortality of about 10 per cent., and of 116 patients with bronchopneumonia, 62 died, with a mortality of 53 per cent. In a record of 1,000 cases, running through six years, Pisek reports a mortality of 34.3 per cent. in the babies' wards, including both varieties of pneumonia, and Holt has reported a mortality of 33.1 per cent. among 410 cases at the Babies' Hospital. These figures, I believe, represent a fair average in the results obtained in the types of pneumonia usually seen in hospitals that draw largely from a poor and neglected class in densely populated communities. When influenza is prevalent, the type of pneumonia is sometimes markedly affected, and I believe this was the cause of the rather high mortality in the lobar pneumonia cases.

It is not always easy clinically to differentiate lobar from bronchopneumonia in the early years of life, particularly in the hospital, as the patients have usually been ill for some days, and often much longer, before admission. In the lobar form, the diagnosis was made on the history of an acute onset, the rapid and fairly extensive development of an area of dulness, and the high, fairly continuous fever which suddenly declined. When the history recorded a slow inception, with a remittent fever, not constantly so high, with disseminated patches especially noted over the posterior areas of both lobes, it was considered to be bronchopneumonia. Even when a large portion of a lobe gave the physical signs of consolidation, daily examinations usually showed that this was due to a gradual confluence of a number of smaller areas, which aided in deciding on the diagnosis. It must be confessed, however, that occasionally it is impossible to make a clear differentiation between these two types of pneumonia in children during life. We have had necropsies in which both kinds were present in the same patient. It is probable that some of the cases here classed as lobar pneumonia were really of this mixed form.

There is another type of pneumonia almost universally seen in hospital infants who have suffered from prolonged or exhausting diseases, namely, hypostatic pneumonia. This form, which is practically a terminal condition, involves the posterior parts of both lungs and is not usually recognized during life. It is especially constant in atrophic babies kept too long in institutions, but a necropsy will show this condition in almost every infant who has long been sick.

Without attempting a summary of all the clinical features of the cases reported, some of the salient points will now be noted. In the 23 cases of lobar pneumonia, the ages of the patients were the following: 4 months; 8 months; 10 months; 13 months, two cases; 14 months, two cases; 18 months; 20 months; 22 months, two cases; 24 months; 25 months; 28 months; 30 months, three cases; 3 years, three cases; 5 years, three cases. The ages of those who died were: 10 months, 13 months, 14 months, 22 months, 24 months.

A noticeable feature was the high temperature shown in many of the cases — in three the temperature was 104 F.; in one, 104.2; in one, 104.4; in one, 104.8; in two, 105; in one, 105.2; in one, 105.6; in two, 106, and in one, 106.4. Four of those who died had temperatures ranging from 105 to 106, but in one fatal case no temperature higher than 102.8 was noted. Recovery can ensue after a very high temperature in this disease, as it took place once with 105, again with 105.2, again with 105.6, and finally with 106.4. Most of the cases, as is usual in lobar pneumonia with children, bore the high temperature well up to 105, but beyond this point the symptoms were much aggravated, especially the rapidity of the respiration. In some of the cases there was marked fluctuation in the daily temperature before the final fall.

The blood findings in seventeen cases are given in Table 1.

These showed a more or less marked leukocytosis in all but one case in a poorly nourished baby of 22 months who died at the end of eight days with every

* Read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Twenty-Sixth Ann. Rep., Babies' Hospital, New York, Sept. 30, 1914.

evidence of poor resistance. There was also a polynuclear increase, as is usual with coccic infections. When we consider that the polynuclears in early infancy may run as low as 18 per cent. and at from 1 to 5 years average from 35 to 52 per cent. it is seen that the relative increase has a greater significance than if it occurred at a later age.

The duration of the disease was very variable; the shortest attack was 7 days and the longest 25 days. The physical signs of consolidation nearly always lasted several days after the drop in temperature that denoted the crisis. In some of the longer cases, there would be a drop of temperature and in a few days another rise, due to extension to an adjacent lobe. This is a not infrequent characteristic of this disease as it is seen in the hospital.

TABLE 1.—BLOOD FINDINGS IN SEVENTEEN CASES

Age	Leukocytes	Polynuclears	Lymphocytes
8 mos.	28,700	70	30
13 mos.	22,800	70	30
13 mos.	30,000	65	35
14 mos.	34,800	78	22
14 mos.	27,500	82	18
20 mos.	17,500	71	29
22 mos.	6,800	63	37
22 mos.	25,400	74	26
24 mos.	23,100	76	24
25 mos.	18,000	52	48
28 mos.	20,800	58	42
30 mos.	34,300	75	25
3 years	28,600	83	17
3 years	34,600	74	24
5 years	32,700	76	24
5 years	19,100	79	21
5 years	14,100	73	27

The twenty-seven cases of bronchopneumonia occurred at the following ages: 1 month, two cases; 6 weeks; 4 months, two cases; 7 months, two cases; 8 months, two cases; 9 months; 10 months, four cases; 11 months; 13 months; 15 months, two cases; 16 months, three cases; 18 months; 3 years; 4 years, three cases; 5 years. The ages of those patients who died were: 1 month, two cases; 6 weeks, 4 months, 7 months, 9 months, 10 months, 15 months, 16 months, two cases; 18 months, 3 years, 4 years. As would be expected, the heavy mortality was in the younger patients, ten of the deaths occurring in children under 2 years. Over half the cases were accompanied by high temperatures, and there were wide fluctuations in many of them. The temperature in seven cases rose to between 104 and 105, seven between 105 and 106 and two rose above 106. The highest was 106.8 in a baby of 16 months who died. In eight of the fatal cases the temperature was very high, but this was also true in seven that survived, in four rising above 105 and in one reaching 106, in a baby of 10 months. These high temperatures were accompanied by other evidences of a severe grade of infection, and very wide fluctuations were also a bad omen.

In nine of the cases, the blood was examined with the results recorded in Table 2.

In these few cases, there was not so large a proportion showing high leukocyte count as in the lobar pneumonia cases, but the polynuclears averaged as high.

Most of these patients had a persistent, hacking cough that was very troublesome at night. Unless relieved by occasional sedatives, the vitality and resistance of the child suffers much from this symptom. As in lobar pneumonia, the physical signs frequently persisted after the temperature had dropped to normal. In most of the cases with recovery the disease lasted from two to four weeks.

The treatment of these cases was based on the character of the disease and condition of the patient. The management was naturally stimulating and supporting. The drugs principally employed were strychnin, caffein, aromatic spirits of ammonia and occasionally digitalis and nitroglycerin. For quick hypodermic effect, camphor in oil and the benzoate of soda and caffein were depended on. When a constant, hacking cough prevented rest and sleep, small doses of codein sulphate were given as indicated. In all cases, these or other drugs were given singly, according to special indication, and never combined in mixtures.

One of the greatest difficulties in handling these infants, especially those on the bottle, was in properly nourishing them. In most cases they were suffering from digestive disturbances due to careless or improper feeding before admission. This is very apt to occur in this class of babies and has much to do with the high mortality. Again, as they are evidently weak, the mother or nurse mistakenly gives too strong feeding mixtures for their digestive capacity. The result is apt to be diarrhea or distention of the bowel by gas. The latter is a very serious complication in pneumonia of infancy as the action of the lung is thereby much embarrassed. The bowel was usually cleared with a dose of castor oil, followed, at first, by rather weak feeding mixtures to test the digestive capacity of the stomach and bowels. In some cases it was necessary to stop all milk for a short time, using gruels, meat broth or egg water, and then tentatively starting with a high dilution of the milk. Sometimes small amounts frequently given were found best, and in others more prolonged rest of the digestive tract worked better. The cases in which diarrhea and distention persisted, in spite of careful dieting, were nearly always fatal. The proper feeding of babies with pneumonia, especially when they start with digestive troubles, tests all the skill of the physician.

The special handling required by these cases is shown in their reaction to the cold-air treatment now so popular with some. That vigorous infants with lobar pneumonia respond well to the cold-air treatment is frequently true. Howland and Hoobler[2] have shown that cold fresh air in patients with active pneumonia always produced a rise in blood pressure. Whether increased blood pressure is always desirable, and under what conditions it is to be sought, seems to be uncertain. In my experience the cold-air treatment is not applicable to the bronchopneumonia of infants. Plenty of fresh air must always be employed, but cold surroundings are apt to depress too much. Two years ago I gave this question a fair trial by treating my pneumonia cases in one ward in which all the large windows were kept wide open, day

TABLE 2.—BLOOD FINDINGS IN NINE CASES

Age	Leukocytes	Polynuclears	Lymphocytes
10 mos.	18,400	80	19
11 mos.	15,100	64	36
13 mos.	19,200	60	40
15 mos.	23,900	78	32
16 mos.	14,600	67	33
18 mos.	9,000	55	42
4 years	11,900	68	32
4 years	10,600	68	32
5 years	25,500	87	13

2. Howland, John, and Hoobler, B. Raymond: The Effect of Cold Fresh Air on Blood Pressures of Children and Young Adults, Am. Jour. Dis. Child., November, 1912, p. 307.

and night, in winter weather. Most of the cases of bronchopneumonia and many of the lobar forms in feeble infants did not do well under this management, which was discontinued after several months' trial. The aim is now to have a steady supply of fresh, outside air delivered into a ward that has been moderately warmed, which has proved more satisfactory.

If better results are to be obtained in the hospital treatment of pneumonia in infants, efforts must be made in two directions: 1. We must try to have them admitted earlier. 2. Patients must be promptly discharged as soon as resolution has taken place. If home treatment is impossible, the baby should be sent to the hospital when the disease is first recognized, before bad feeding, poor air and faulty hygiene have lessened the chances of recovery. Dispensary doctors, social workers or visiting nurses can do effective work in this direction. If the baby is moribund, with few hours to live, it had better be kept at home rather than have the last moments made uncomfortable by transit. Some of my patients were in this condition when admitted. A very wide experience has taught me that sick infants, especially those having pneumonia, should not be retained in hospitals any longer than is necessary to get over the acute symptoms. If kept too long, there is constant danger of relapses and reinfection. While this can be guarded against by careful nursing in small, well-ventilated wards, as a rule the babies recover much quicker outside of an institution. It is most difficult to avoid various secondary and cross infections in weak infants who are collected together in one place. My plan is to remove these infants from the hospital as soon as the acute symptoms have subsided and board them out in private homes in the country under the constant supervision of a doctor and nurse who are paid for this work. Only in this way have I been able to prevent many relapses, and make permanent the work of cure in babies who have been sent to the hospital from homes of ignorance and poverty.

51 West Fifty-First Street.

ABSTRACT OF DISCUSSION

Dr. F. C. Neff, Kansas City: In the paper Dr. Chapin spoke of the importance of the feeding in these infants with pneumonia. During the past two years I have had occasion to employ wet nurses in the feeding of certain infants suffering from pneumonia, babies that had previously done perfectly well on the bottle. Because of the seriousness of pneumonia in infancy, I believe that breast milk increases the chances of a favorable outcome.

Egyptian Medicine.—The Egyptians were probably the most healthy people of history. Herodotus spoke of them as the healthiest nation, and Diodorus said that from the king to his humblest subject the mode of life in Egypt seemed as if ordered by the physician rather than the lawyer. The Egyptians stayed off disease by a reverent attention to the vitality of the body. They were the first people to master the question of antisepsis. By cassia, frankincense, and myrrh they preserved the body from microbes of dissolution. But whether it was that their vitality shielded them during life from notable microbic attack or some other reason prevailed, they confined their use of antiseptics to the preservation of the dead from dissolution and not the living from disease.—G. T. Wrench: Lord Lister, His Life and Work.

THE ETIOLOGY AND TREATMENT OF OZENA

A PRELIMINARY REPORT *

HENRY HORN, M.D.
SAN FRANCISCO

Just before the outbreak of the European war in July, 1914, Guggenheim of St. Louis, Murray of Minneapolis, Glogau of New York, and I embraced the opportunity to study, in the private laboratory of Hofer of Vienna, his work on the etiology of ozena.

His positive statements that the *Coccobacillus foetidus ozaenae* of Perez was the true and only etiologic factor in this disease, and his enthusiasm over the results of treatments by vaccines under Kofler in Chiari's clinic led us all to the determination to investigate this matter on our return to America.

As is well known, the superficial observation which is afforded the onlooker in a large clinic, where a series of cases — perfectly familiar to the experimenters, but new to the observer — is shown, is extremely unsatisfactory, and any personal conclusions are therefore unfair to the series under observation. The brilliant cases are shown, the poor cases usually slighted. Even daily observations of crust formations and degree of fetor vary greatly with different observers, and the detailed report of cases made by Hofer does not convey the same impressions as a similar but smaller series would to the personal observer.

To read the articles which Hofer has published, one would conclude that all the work has been a steady progression toward the desired end. Such is not the case, because in conversation with him, and with others in Vienna, who are familiar with his work, many difficult obstacles have had to be surmounted.

It is not fair, therefore, to the general medical public and to the specialists of America, to give the impression that the millenium in the treatment of ozena has arrived, that the isolation of the etiologic organism is easy and that the preparation of the vaccines is a matter of routine. Such is far from being a true statement of the case, and any one who empirically treats all cases of ozena with vaccines made from subcultures of strains furnished by Hofer is doomed to bitter disappointment.

It is the object of this paper to sound a note of warning and to make some suggestions, which are the result of constant experimentation along these lines during the last twelve months.

If we can presently put into the hands of the medical public a specific for this dreadful disease, it will almost rank in value with the discovery of the antitoxin of diphtheria.

True, it is not a matter of saving life; but those of us who have treated the victims of this most disgusting of all diseases which afflicts otherwise normal individuals know that the gratitude of these patients for a restoration from their former social ostracism is as great as the gratitude of the mother whose child is restored to health.

In debating this subject let us ask ourselves the following questions:

1. Is the Perez bacillus the true and only cause of ozena?

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

2. Has not the undoubted cure of certain cases with vaccines made from the Perez organism and the undoubted failure to cure in other cases, clinically similar, weakened our concept of the clinical entity of clinical ozena?

3. Is it not possible that cases of ozena clinically identical may be cured by several different vaccines?

4. Shall we not have to revise somewhat our clinical classification of ozena?

5. Is the information already at hand sufficient to enable us to produce a successful vaccine?

A close analysis of the literature, already put out by Hofer, would seem to indicate that the questions just enumerated have all been answered. Such is not the case. During our laboratory work with Hofer he constantly reminded us that the isolation of the organism was an exceedingly difficult task; that it had taken him several years to gain his present results, and that many of his vaccine experiments for one reason or another had been failures.

It is also possible that in the short time which we spent in his laboratory many essential details were overlooked.

First, then, it seemed logical to repeat some of his principal experiments on rabbits with the cultures furnished by him, and I present for consideration a series of rabbits' heads prepared in Kaiserling solution and mounted in glycerin.

The necropsies were made as soon after death as possible, usually within two or three hours. Animals which had to be killed were struck across the base of the skull in order to obviate any congestion of the nose due to the administration of chloroform or ether. The heads were first skinned and the skull sawed through exactly in the median line, so that the saw split apart the two upper incisor teeth. The lower jaw was not saved. The skull was opened like a book and usually one nostril was found completely closed by the septum while the other side was free. The closed side was opened with a sterile knife, and any bacteriologic examination could then be made without fear of contamination.

The method of dosage was as follows: An ordinary agar slant was freely inoculated with a platinum loop of pure culture of the growth to be experimented on. This was incubated for twenty-four hours, and then 10 c.c. of sterile physiologic salt solution added and the growth brought into a suspension. The dosage was taken from this suspension and injected into a vein of the ear.

EXPERIMENTS WITH RABBITS

RABBIT 1.—Hofer's original cultures, Strain M. Oct. 17, 1914, Injection 1, 0.5 c.c. of live culture. October 23, Injection 2, 1.5 c.c. of live culture. October 30, rabbit killed.

Necropsy.—General necropsy negative. The anterior turbinate on each side distinctly but slightly congested as compared with the posterior turbinates.

RABBIT 3.—Hofer's original cultures, Strain M. In this experiment the pure cultures were transferred directly to the given amount of water and injected as follows: Oct. 23, 1914, Injection 1. One loop of pure culture added to 5 c.c. of water, and 1 c.c. of this suspension injected. October 27, Injection 2. Two loops of pure cultures added to 5 c.c. of water, and 1 c.c. injected. November 4, Injection 3. Three loops of pure cultures added to 5 c.c. of water, and 2 c.c. injected.

Necropsy.—Nov. 23, 1914, general necropsy negative. Anterior turbinate congested with small strings of whitish pus throughout. In left anterior turbinate, collection of whitish pus pockets. No marked atrophy. From this pus a polymorphous gram-negative organism was obtained which answered all the microscopic characteristics of the Perez bacillus but gave no distinct odor. Agar slants inoculated with heart blood of this animal remained sterile after twenty-four hours' incubation.

RABBIT 5.—Weight, 3,195 gm. Hofer's original cultures, Strain M. Nov. 20, 1914, Injection 1. Six loops from original pure cultures in 1 c.c. of water, and injected. November 25, weight 2,860 gm. Loss, 335 gm. in five days, marked loss of appetite. Rabbit has marked snuffles; does not move about. Apparently quite ill. Injection 2: Agar slant inoculated freely from original cultures and grown for twenty-four hours. One c.c. added and emulsion made. This entire emulsion used as injection. November 27, weight, 2,620 gm. December 17, rabbit has regained some appetite and runs about cage. Still very thin. December 23, 5 c.c. of water added to subculture grown on agar through four generations. Injection 3: 2 c.c. of the foregoing injected. Feb. 23, 1915, rabbit died. Very thin, large ulcerations on hind legs and around rectum.

Necropsy.—General necropsy negative. Marked atrophy of posterior turbinate with deposits of pus. Anterior turbinate congested, somewhat atrophic.

RABBIT 9.—Hofer's original cultures, Strain G. Five c.c. of salt solution added to twenty-four-hour growth on infusion agar. Dec. 16, 1914, Injection 1: 2 c.c. of the foregoing. December 30, rabbit died.

Necropsy.—Rabbit very thin. Entrance to nose blocked with pus. Necrotic areas in lobes of ears. General necropsy negative. Intense congestion in anterior turbinates. Very little free pus. Posterior turbinates dark brown.

RABBIT 10.—Cultures isolated by Dr. Klenk, Minneapolis. Five c.c. added to twenty-four-hour growth on plain agar. Dec. 15, 1914, Injection 1: 2 c.c. of the foregoing injected. December 15, rabbit died twelve hours after injection.

Necropsy.—General necropsy negative. Anterior turbinate intensely red and congested, with dark red patches in middle turbinate. Posterior turbinate red and angry looking, with small area of intense congestion. Blood taken from heart and grown in Rosenau's glucose and agar tubes shows many small colonies of gram-negative, small fairly constant cocci.

RABBIT 7.—This rabbit was injected with killed organisms of the original Hofer strain for the purpose of producing an agglutinating serum. Five c.c. of salt solution was added to twenty-four-hour growth on agar and killed by heating in water bath to 68 C. for one hour. Dec. 7, 1914, Injection 1: 2 c.c. of the foregoing. December 17, Injection 2: 3 c.c. December 23, Injection 3: 4 c.c. Jan. 2, 1915, rabbit died.

Necropsy.—General necropsy negative. Both anterior turbinates at anterior and posterior pole intensely congested. Middle portion pink. Posterior turbinates somewhat atrophic. Some free pus in nose.

RABBIT 6.—Experiment exactly the same as in Rabbit 7. Nov. 27, 1914, Injection 1: 1.5 c.c. of the foregoing killed organisms. Immediately after injection, the rabbit showed evidences of lung embolism or infarct and seemed about to die, lay on side, was unable to stand. Partial recovery after several days. December 7, rabbit killed. Very thin, congestion of the left lung. Eyes almost closed with pus. Some secretion in nose. Nose, right side: Anterior turbinate pinkish, very dry, no secretion. Posterior turbinate dark brown, no secretion. Left side: Posterior turbinate intensely congested and filled with fresh blood clot. Posterior end of the anterior turbinate intensely congested and filled with blood clot.

COMMENT

Other series of rabbits were inoculated with killed cultures exactly after the method employed by Hofer, but up to the present time, I have been unable to obtain an agglutinating serum.

The rabbits did not lose weight during these experiments, and the appetite remained good. Various changes were made in the dosage, length of time between injections, etc., but the serum obtained would agglutinate neither with Hofer's original cultures nor

with the cultures made from undoubted clinical types of ozena.

We can only conclude then, that the intravenous injection of live cultures in very large doses will kill rabbits in from twelve to twenty-four hours, the only necropsy finding of any consequence being the selective action of the organism on the mucous membranes of the turbinate bones of the nose.

In smaller doses, intense congestion, first of the anterior turbinate and later of the posterior turbinate, can be brought about. If this process is allowed to continue, pus forms in and about the turbinated bodies, finally entirely blocking up the nares.

In some of the rabbits which withstood the large doses for a comparatively long time, marked atrophy of the turbinates was noted. The amount of congestion seems to vary with the size of the dose and the virulence of the strain. Thus, in Rabbit 10, prepared from a strain isolated in America and from which comparatively few subcultures had been made, the greatest effect was seen.

Naturally, this series is far too small on which to base other than confirmatory evidence. Many side lines of experimental study presented themselves, and these are now being carried on.

DETAILS OF THE WORK

With the exception of a short article by Guggenheim, nothing has appeared to my knowledge in English concerning these investigations, so that it might be well briefly to review the details of Hofer's work before we pass to the therapeutic use of the vaccines.

The subject of the etiology of ozena has been worked on for years by different observers in various parts of the world. As is well known, the disease is far more common in Europe than it is in America. The international investigation which was started two years ago by Mayer fell flat in the United States, probably because the men saw so few cases that they had very little interest in the subject.

Every specialist, however, has one or more such cases a year, and as a usual thing, a general lack of knowledge on the subject, combined with the general pessimistic view of the results of treatment, causes him to slight or probably not treat the case at all. Such an attitude is now no longer defensible. In properly prepared vaccines we have a potent factor in our hands for vast improvement. We can promise not only that the odor will disappear but also that the formation of crusts will be reduced to a minimum.

In this paper all other forms of atrophic rhinitis, syphilis, tuberculosis, etc., will not be mentioned. We are dealing only with the typical clinical picture of ozena, which is familiar to all rhinologists.

Stripped of all unnecessary details, the method of isolation is as follows:

A crust is taken from the nose, preferably at the anterior end of the middle turbinate. This is dropped in a bouillon tube and incubated for exactly twelve hours. This period of incubation is a very important point, for it has been found that a lesser period does not give the organisms time to grow, and an incubation of more than twelve hours causes such an overgrowth of the accompanying organisms that isolation of the Perez bacillus is impossible.

At the end of twelve hours, one drop from this bouillon tube is spread over from three to five agar Petri dishes. These are incubated for twenty-four hours, and then the separate colonies are fished and transferred to agar slants.

In fishing for the colonies a great deal of experience and judgment is necessary, those conforming to the characteristics of the staphylococcus, *Micrococcus catarrhalis*, streptococcus, *Bacillus proteus* and other well-known forms are not transferred. There is nothing characteristic about the colonies. They are usually small, moist and transparent.

After twenty-four hours on agar slants, a characteristic odor is usually developed by which the organism can be fairly well identified. There is also nothing characteristic of the slant growth, the pure culture looking much like ordinary staphylococci. The presence of a marked odor is very variable. It is not the marked sickening odor of ozena in the patient, but a milder, though still characteristic odor.

The final test of agglutination, which Hofer says is simple, has not proved so, either in my hands, or in the hands of several trained bacteriologists.

I have followed out exactly the technic of Hofer, as well as several other details suggested by bacteriologists who have been interested in my work, but so far I have been unable to secure any satisfactory agglutinating serum even in very small dilutions.

The cause of this failure I am unable to explain. It is possible that the subcultures which were made from the original Vienna strains were so attenuated that they had no effect on the rabbit. Agglutinating serums prepared from our own cases are now being experimented with, but so far no definite conclusions can be drawn.

The injections of these organisms into the rabbit and their subsequent recovery from the nose I have been repeatedly able to carry out, and these experiments seem free from criticism.

TREATMENT

This, then, brings us to the most important part of the subject, namely, the treatment. One fact stands out without question, and has been proved so often that it needs no support. Cases which clinically would be classed as true ozena have been vastly improved temporarily and possibly permanently by the administration of several of the stock vaccines on the market, which usually contain the Friedländer bacillus, *Micrococcus catarrhalis,* pneumococcus and streptococcus.

This may raise two points: 1. Is ozena possibly a mixed infection? 2. Are there certain types which cannot be clinically differentiated and of which the Perez bacillus is not the etiologic factor? It would also seem possible that some of our many failures are due to the fact that the growth of the various extraneous organisms in the nose are for the moment more important than the Perez bacillus and that perhaps our results would be better if we preceded the treatment by the use of a stock mixed vaccine, to be followed in turn by a vaccine made from the Perez organism or possibly, as we are now considering, a combination of the Friedländer bacillus, *Micrococcus catarrhalis,* pneumococcus and streptococcus, with a vaccine made from the mixed strains of the Perez bacillus.

In this paper I am not going to quote histories of cases treated with the stock mixed vaccines. I am, however, going to report a few cases in which the Perez vaccines were used which tend to show, although they do not prove, the great value of this remedy in the treatment of ozena. What I do particularly want to show are the sources of error which may creep in and which are to be avoided.

The detailed report of Hofer's cases would lead one to suppose that there is nothing more to be desired.

My experience in America and the experience of two or three others leads us to suspect that either we are not in possession of full details or that our technic has not been developed to the highest possible point.

It should also be remembered that in the series of unbroken successes which Hofer reports, nothing is said of the possibility of recurrence after the treatment has been stopped. Judged by our small experience, this is something which must be very carefully considered but which does not in any way mitigate against the value of the treatment. In other words, my position is this, that although I admit the fact that the investigations of Hofer are practically free from criticism, I am not at all certain that cures from the vaccines as used by him will prove to be absolute and permanent.

In spite of the fact that the preparation of autogenous vaccines in these cases is a very difficult thing, it will probably prove that this is the only method by which we can be certain of a good result. Hofer himself mentions this fact in his last article, but very truly adds that in clinical practice this is an impossibility. He also makes the point, which we have also proved to our satisfaction, that in cases which clinically are undoubtedly ozena, we are unable to isolate the Perez bacillus, but an administration of the stock Perez vaccine will either cure or greatly improve the case. This simply proves that there are certain bacteriologic conditions over which we at present have no control.

The method of administration of the vaccines as worked out by him in his last article is of great importance and covers the ground so completely that I have nothing of value to add.

Most of the vaccines used by him in his clinical work are made from seven or eight different strains, to which has been added one strain of the Perez bacillus which occurs normally on the mucous membrane of the nose of dogs.

The various strains vary extraordinarily and are difficult to preserve. They must be carefully protected from heat and light. For the best results, careful watch must be made for the constitutional symptoms, which are less marked with old vaccines than with those freshly prepared.

The clinical manifestations are the best guide to dosage, and a period of at least one week should intervene between injections. The dose varies with every vaccine and every patient. An initial dose of 50 million, doubling until the proper constitutional symptoms develop, is about correct.

The general reactions are rise of temperature, loss of weight, malaise and vomiting. The local reactions are redness and swelling around the injection and swelling of adjacent glands. Symptoms referable to the nose are coryza, free discharge from the nose, sensations of heat and fulness over the bridge from the mucous membrane.

These local reactions in the nose are what we should endeavor to produce if the full effect of the vaccine is desired. As a usual thing, the patient is instructed not to douche the nose until it becomes absolutely necessary; in this way, a good idea of the amount of improvement can be gained.

Notes should be kept on: (1) the intensity of the odor; (2) condition of the accessory sinuses; (3) condition of the crusting, and (4) the improvement in subjective symptoms.

The improvement is usually noted by the patient after the first dose. The parents notice the improvement in the degree of odor. The crusts blow out more readily, and the feeling of tightness across the forehead is improved. From five to fifteen injections are considered necessary for a complete cure, and the patient must be carefully watched for a relapse, when the treatment should again be instituted.

I give below a few typical case histories which show the undoubted beneficial effects of the vaccines. None of these patients do I consider cured, but the marked improvement warrants one in continuing treatment.

CASE HISTORIES

CASE 1.—M. G., woman, aged 19, family history negative, had odor and discharge from nose for thirteen years. Both nasal spaces very large with great atrophy. Large greenish foul-smelling crusts over entire nose, especially at anterior end of middle turbinate. Ethmoids opened. Six months' treatment with ordinary autogenous vaccines without improvement. Dionin treatment of no avail. A proprietary mixed nasal stock vaccine used three months without any improvement. Starting April 1, 1915, Perez vaccine of mixed strains used for twelve injections with vast improvement. Some slight crusting and slight odor still perceptible. Subjective improvement well marked. Patient well satisfied. Cultures from nose demonstrated Perez bacillus in typical form.

CASE 2.—M. Z., woman, aged 32, Hungarian. Typical ozena since childhood. Treated for years in European clinics without improvement. Typical ozena, fully developed atrophy, horrible stench. Perez bacillus demonstrated. Two injections of 100 million caused odor to almost entirely disappear. Patient lost from sight.

CASE 3.—S. P., woman, aged 27, German, first seen in 1912, family history negative. Typical ozena with pansinusitis. Treatment for three years by surgical means. All sinuses opened, including right Killian with great improvement. Odor and crusts would not improve. Pus condition 50 per cent. better. Stock mixed vaccines used over period of months as well as autogenous vaccines with slight success. Principal complaint, blinding headaches and odor. Treatment with autogenous vaccine of Perez bacillus showed immediate and profound improvement. No odor at any time, no crusts, headaches entirely gone. Patient washes nose once a week, formerly twice a day. Case considered cured.

CASE 4.—J. M., boy, aged 9 years, Spanish, complained of frontal headaches and odor and crust blocking from right side. Examination of mother shows typical ozena, brother two years younger also typical ozena. Has always played with dogs. Examination of right side reveals profound atrophy, greenish crusts on middle turbinate, odor foul. Left side free. Perez bacillus isolated in pure culture. Treatment over three months with a proprietary mixed nasal vaccine shows some improvement but odor always the same. Perez vaccine, mixed strains begun April 10 and continued to present time. Some improvement in odor, great improvements in crust formation. Headaches gone. Still under treatment. The improvement with the Perez vaccine greater than with any previous form of treatment.

CASE 5.—H. M., boy, aged 8 years, brother of J. M. History exactly the same. Nasal condition clinically identical except the left nostril is involved. Could not isolate the Perez organism. Even very small doses produce violent headaches, high temperature, vomiting and malaise for several days. Improvement slight, if any. Probably Perez bacillus not the only organism involved. Still under observation.

CASE 6.—M. deV., girl, aged 16 years, of Italian parentage, had negative family history. Odor very disagreeable to family. Headaches especially in frontal region. Right side large greenish foul-smelling crust blocking entire nostril. Perez organism not yet isolated. Marked improvement after second injection. Treatment for three months. Improvement very marked. Crust almost gone. Odor disappeared. Just returned after two weeks' absence with marked odor. Patient still under treatment.

CONCLUSIONS

I think we are in a position to admit the following facts:

1. The *Coccobacillus foetidus ozaenae* Perez, as isolated by Hofer, has answered all the bacteriologic requirements necessary to establish its identity as the etiologic factor in ozena.
2. The isolation of this organism is attended with considerable difficulty.
3. The production of agglutinating serum in rabbits is an exceedingly difficult task.
4. The preparation of autogenous vaccines in every case is very difficult, if not impossible.
5. At present mixed vaccines made from various strains of Perez bacillus is the most practical method of treatment which is now available.
6. It may be necessary to precede or combine with the treatment the vaccines made from the organisms which are usually present in combination with the Perez bacillus.
7. It may be possible that there may be two or more types of ozena bacteriologically different but clinically identical.

209 Post Street.

ABSTRACT OF DISCUSSION

Dr. W. T. Cummins, San Francisco: I can discuss Dr. Horn's paper only bacteriologically. I had the opportunity a year ago of hearing a paper on ozena in Vienna, and I made several interrogations relative to the bacteriologic side of it. I must confess that a certain amount of skepticism was engendered at that time, but at least a part of it has disappeared since knowing of Dr. Horn's work and hearing his paper. There is one rather inharmonious point, I might say, in the lack of agglutination in Dr. Horn's work compared with that of Dr. Hofer. It is rather remarkable if they have the same organism. We know that some organisms are not capable of producing agglutinins in the animals injected. The rabbits injected by Dr. Hofer showed agglutination, and if Dr. Horn had used a larger number of animals it is possible that some agglutination might have been demonstrated.

There is one point that engendered a certain amount of skepticism in my mind, although it may not be important, and that is the subject of pleomorphism. There are certain organisms that are pleomorphic, and it is said that this organism may be rod-shaped or coccoid. This condition is noted with a few intestinal bacteria. It seems that this organism of ozena belongs to the Friedländer group, to which the bacillus of rhinoscleroma is presumed to belong. There is one very strong point indicating the specificity of this organism, and that is the localized reaction in the nose after intravenous injection in rabbits. Dr. Horn's specimens certainly show well-marked nasal lesions indicating selective bacterial activity. I must say that the technic is quite laborious, and I agree with Dr. Horn and the other gentlemen who have worked it out that the ability to detect the odor, and the tedious fishing of colonies from the original plates require an unquestionably long time. I am glad to state that my original skepticism has been somewhat modified, but I still possess a certain degree of it relative to the etiologic position of this organism in ozena.

Dr. George H. Willcutt, San Francisco: I had the opportunity in Vienna of seeing some of the work done along this line by Dr. Kopfler in the Chiari Clinic. I can agree with Dr. Horn that many cases were not benefited; in fact, only about 50 per cent. showed any improvement, and in that 50 per cent. there were many relapses. The bacteriologic examinations made by Dr. Hofer showed the *Bacillus mucosus,* sarcinae, and the *Coccobacillus foetidus ozaenae,* and at that time he was not sure that the condition was due to the coccobacillus alone. He made a suspension, as Dr. Horn has very well explained, and began his injections with about sixty millions, increasing the amount weekly until he reached about six hundred millions. Following the injections he would at times find local reactions and also a general reaction occasionally. One of the local signs Dr. Horn failed to mention was the increase of the odor in a number of cases. The odor was markedly increased in some cases after the first injection. The pharyngitis which is usually present in these cases showed improvement before the nasal condition, and after one or two injections disappeared in most of the cases. Kopfler injected some patients fifteen or twenty times, while others showed some improvement after a few injections, and control examinations made two or three months later showed improvement in the local condition, the crusts having disappeared; there was more discharge from the nose and the mucous membrane was more normal. However, 50 per cent. of the patients treated did not show a cure.

Dr. William R. Murray, Minneapolis: The etiology of ozena is a subject that has been of great interest to the medical profession for many years. Lowenberg, Fraenkel, Paulson, Hajek, Abel, Perez, and others have described micro-organisms which they have considered the cause of ozena. The importance of this subject was emphasized in 1911 when an international collective investigation of ozena was begun under the direction of Prof. Alexander of Berlin. This committee is engaged in studying the researches of Perez, who in 1899 described an organism which he believed to be the cause of ozena. Perez's findings have recently been confirmed by Hofer of Vienna.

A year ago I obtained a culture of the Perez bacillus from Dr. Hofer and what work I have done, in association with Dr. Larson, university bacteriologist, has been in connection with the use of a Perez vaccine and an effort to confirm the laboratory findings of Hofer. We have examined, bacteriologically, thirty-eight cases of atrophic rhinitis. Crusts were planted in broth and on agar plates. In no instance was the bacillus of Perez isolated. Agglutination tests were made in thirty-four cases. The serum was tested out in dilutions of 1:100. There was not one frank positive agglutination reaction obtained. Twenty-four rabbits were injected intravenously with cultures from the crusts of patients. Fifteen of these rabbits died. At necropsy a streptococcus, staphylococcus, bacillus of Lowenberg, proteus, pyocyaneus and coli bacillus were isolated. The Perez bacillus was not obtained either from the heart's blood or the nasal mucosa. The bacillus of Perez, obtained from Hofer, was injected intravenously into a number of rabbits. It was found to be nonpathogenic for adult rabbits. The bacillus was not found in the nasal passages. Seven suckling rabbits were injected with the same organism and the Perez bacillus was isolated from the heart's blood and nasal mucosa. The organism, which had thus passed through a young rabbit, was found to be pathogenic for adult rabbits. At necropsy it was found that the nasal mucosa was highly injected. It was ascertained, however, that the nasal cultures were positive only in those cases in which the heart's blood was positive.

Our bacteriologic evidence against the Perez bacillus being the cause of ozena is: (1) in thirty-eight cases examined, we were not able to isolate the Perez bacillus; (2) in thirty-four cases, we were not able to obtain an agglutination reaction (3) of twenty-four rabbits injected with mixed cultures from crusts, none showed the Perez bacillus.

Clinically about twenty cases of atrophic rhinitis were treated with vaccines (Perez). Of these cases, twelve (true ozena cases characterized by advanced bilateral atrophy, large greenish crusts and a fetid odor) were observed for a period of from three to eight months. Vaccines, obtained from two strains of the Perez bacillus, were administered at intervals of seven days in doses from 50,000,000 to 500,000,000. In a few of the cases there was clinical improvement, the odor disappearing, the crusts becoming smaller and more easily expelled and atrophic pharyngitis showing improvement. Other cases did not show any objective or subjective evidence of improvement, and in no case could it

be considered that a cure was effected or that there was a permanent disappearance of crust formation.

DR. HENRY LEWIS WAGNER, San Francisco: I would like to ask whether the infarcts had been found in other parts of the body, and where, if other animals had been utilized outside of rabbits? The first man who made a bacteriologic examination of ozena, did so in a laboratory under my supervision in the University of Witzbach, and he then discovered the polymorphous condition of the germ; but in those days —it is now practically twenty-seven years ago—the condition now recognized was not understood, and I am very much interested and have followed it, although I personally have remained rather skeptical. There were a woman and two children, boys I think, in our clinic, but I recall that one boy only showed the characteristic sign of malodor; the mother as well as the other boy showed no sign whatever of the so-called ozena odor, and I think certainly there is no question that the mother as well as one boy should not be included. I have seen these children, and certainly there is no question that all three of them have been benefited.

DR. H. W. LOEB, St. Louis: It seems to me that while work is being done at present, we are still up against the same proposition, whether or not the organism discovered is saprophytic or pathogenic. I should like to ask Dr. Horn if he discovered crusts in the rabbit's nose, and also if he has been able to isolate the Perez bacillus from the nasal discharge. Looking over the various developments in the treatment of ozena in the past twenty years, it seems to me that after all we have achieved more by relieving the nose of the discharge and of the consequent saprophytic changes than by any other plan of treatment. I feel, however, that while we must remain somewhat skeptical, we should be thankful that Dr. Horn was able to make a positive reaction in the mucous membrane of the rabbits.

DR. HENRY HORN, San Francisco: I think that the discussion has brought out the point which I made, that the value of the treatment will be determined by our personal experience. Any one who has read the last article of Hofer in the *Archives of Laryngology* would say that it was exceedingly optimistic. This is the general impression concerning his work, and his enthusiasm during our stay in his laboratory was pronounced. Dr. Willcutt was in Vienna during preliminary stages of this work and he knows that Hofer had just as many obstacles to overcome as we have. In reply to Dr. Loeb's question, I can say that in all the rabbits injected with the original Hofer cultures we recovered the Perez bacillus in the nose. We also recovered it in the heart's blood by the Rosenau method. Regarding the pus in the nose, I have seen a large collection of pus pockets, but no crusts have been seen. I have never noticed odor in the nose of a rabbit, and I do not think that Hofer claims this; but he does claim crusting and atrophy. The point that Dr. Loeb made, that the removal of the saprophytes is a long step toward a cure, is undoubtedly true, and is exactly the point I made. As far as I can see, in the twelve cases I have handled, I have seen as good results with stock nasal vaccine as from the Perez vaccine. As regards the infarcts, I have seen none. Hofer claims there are no changes at necropsy other than the local change in the nose.

Leaders in Rural Sanitation.—It is conceded that among rural people leadership is notably lacking; there is no organization which can be relied on and no idea of social responsibility. Who then can lead in a movement for betterment? The county health officer and the doctor. It is within the authority of the health official to demand certain requirements in the interest of public health and for the protection of the individual. Health work touches intimately the family life in every phase; and it is so personal in many aspects that one with authority like the health officer, or with influence such as the physician has, can teach acceptably and by practical application just what the farmer, his wife and children need to know.—Oscar Dowling, *The American Journal of Public Health*, May, 1915.

A NEW METHOD FOR THE PROPHYLACTIC APPLICATION OF TETANUS ANTITOXIN*

H. E. ROBERTSON, M.D.
Professor of Pathology, University of Minnesota Medical School
MINNEAPOLIS

It has become a fact well established by both clinical and experimental observations that, in the large majority of cases, administration of tetanus antitoxin at the time of, or shortly after, infection by tetanus spores will prevent the development of tetanus. The almost uniformly successful results obtained for a number of years in cases of Fourth of July injuries in the United States have proved conclusively the value of the prophylactic use of tetanus antitoxin.

The present European war has, however, emphasized another phase of the tetanus problem which demands consideration. The routine administration of antitetanic serum to all wounded soldiers is now a fairly general practice both in Germany and in France. In spite of this, owing to the conditions governing the care of the wounded in war, cases of tetanus continue to occur (1) in those soldiers in whom the prophylactic injection has been accidentally omitted, and (2) in those in whom the injection of antitoxin has been delayed until one, two or even more days have elapsed after injury. The occurrence of isolated cases of tetanus in these two groups has tended, in the minds of many European physicians, to cause doubt as to the efficacy of prophylaxis against this disease.

To overcome the delay in administration, it was evident early that some more simple method of application of antitoxin was desirable. The subcutaneous injection of liquid antitoxin, immediately following an injury, manifestly is not a procedure that can always be carried out.

Methods previously proposed to meet this objection, the powdered antitoxin of Calmette, the local applications of liquid antitoxin advocated by Suter, and the rubbing into the wound of antitoxin salve as recommended by Bockenheimer, for reasons which will be discussed in a later article, did not appear to be satisfactory.

Accordingly, after experiments with various methods of local application, the following was found to fulfil best the requirements: Liquid antitoxin was poured on pads of sterile absorbent cotton in such amounts as to render the cotton uniformly moist but not wet enough to drip. These pads were then dried for twenty-four hours in a moderate heat (from 40 to 45 C., 104 to 113 F.). A previously sterilized evaporating dish or earthenware mortar, covered with a double layer of filter paper, was found satisfactory for this purpose. Drying in vacuum did not appear to give any advantage. The dried antitoxin cotton became a stiffened mass, resembling dried paper pulp. This was weighed and then divided into pieces which by weight would represent definite quantities of antitoxin; for example, if the entire mass contained twenty units of dried antitoxin, one twentieth by weight would represent about one unit.

The experimental proof of the efficacy of this method will be described more in detail in a later communication. It is sufficient here to note that when the prepared cotton was bound on freshly made

* From the pathologic-anatomic institute, University of Freiburg in Breisgau (director, Prof. Dr. L. Aschoff).

wounds of mice, rats or guinea-pigs, protection was given against the later injection of many times the minimum fatal dose of tetanus toxin or against the simultaneous inoculation of a garden earth, which had been proved by numerous tests to produce tetanus in 100 per cent. of cases for unprotected mice, rats or guinea-pigs.

If the dry antitoxin pad was bound on a wound in which no fresh blood or serum was present, the absorption of antitoxin was greatly reduced and the protection therefore incomplete. If immediately previous to the application of the pad, it was moistened in sterile saline, distilled water, sterile bouillon or any clean fluid, absorption was rapid and protection entirely adequate.

Pieces of this dried antitoxin cotton were used which were over six weeks old and were found to be perfectly efficient in the usual dosage. Amounts representing the dried product of from one to two and a half units (German standard) were employed, and rats weighing up to 200 grams were given full protection.

In a conference over this method, Hoechst Farbwerke stated that their antitoxin (which was kindly supplied by them for the purposes of these experiments) was combined with a certain percentage of glycerin, which might interfere with both its drying and preservation. They indicated further that a special preparation could be made to meet a demand for such a product.

In conclusion, it must be understood that this method is not offered as a substitute for the subcutaneous injection of fluid antitoxin, which, when it can be properly and early enough administered, is at the present time the best and surest means of producing temporary protection against tetanus. There are occasions, however, especially in times of war, but also in times of peace, such as absence of the proper antitoxin supply, or syringes, too great distance from the doctor, etc., when it would be an advantage to have dry tetanus antitoxin dressings which might be carried in the first-aid dressing kit, which could be applied by a layman as easily as by a physician, and which, in the presence of a dirt-infected wound, only need to be moistened and bound on with the first dressing. In this manner, what might prove to be a dangerous loss of time in obtaining serum could be avoided and the absorption of tetanus antitoxin secured before the elaboration and absorption of tetanus toxin.

A further point in favor of the method is the ease of preservation. As yet no tests have been made with the prepared cotton which has been kept longer than six weeks, but there is no reason to believe that the dried product will not retain its efficacy for much longer periods of time. The difficulties confronting the practicing physician or even druggists in keeping on hand fresh supplies of various antitoxic serums are well known.

Simplicity of preparation and preservation, ease of application, and adaptability to the sudden demands which surround the most complicated injuries when immediate application of serum is indicated, are points which render this method worthy of a thorough trial.

Early Diagnosis.—In the entire realm of preventive medicine, there is no factor more potent than early diagnosis, first, because disease is far more amenable to treatment in the early stages, and second, because early diagnosis affords greater advantages in preventing the spread of infection to others.—*Illinois State Board of Health.*

REPORT OF A CASE OF CESAREAN SECTION AFTER DEATH OF THE MOTHER

Alonzo E. Mack, M.D., Omaha

Mrs. D., aged 36, quadripara, with negative family and personal history, had always been in the best of health. Three children, aged 10, 7, and 3, had had normal deliveries, and the patient made an uneventful recovery in each confinement. During the third pregnancy the patient developed varicose veins, especially in the lower left extremity, which caused her so much pain that it was necessary for her to wear an elastic stocking or bandage extending from the foot to the thigh. During her fourth pregnancy her condition was normal, and she had no trouble of any character with the exception of the varicosis, and again it was necessary for her to wear the elastic stocking or rubber bandage.

I saw the patient from time to time and examined the urine several times with a negative result. The expected time of confinement was Oct. 11, 1914. About 7 o'clock on the morning of October 4, the patient's husband telephoned me that his wife had fainted and to call immediately. About fifteen minutes later when I arrived at the house I found that the patient had died. Believing that not more than three to five minutes had passed since she died, I advised the immediate opening of the abdomen and uterus and the removing of the child. Her husband quickly consented, and without wasting any time trying to find the fetal heart beat or other signs of fetal life, and knowing positively that the patient was dead and without wasting any time with antiseptic preparations or for control of hemorrhage, with a small lance I opened the abdomen and uterus, and quickly removing the child, clamped the cord and divided it. Much to my dismay the child showed no sign of life, and had passed through the livid stage and was very pallid. With my stethoscope I listened for heart sounds and found none. To all appearances the child was dead.

In hopes that there might be some life in spite of the fact of apparent hopelessness, I began artificial respiration, at the same time dipping the child in a pan of hot water and then cold water and also using the B. S. Schultze method for reviving asphyxiated babes. I continued the artificial respiration and the dipping in the hot and cold baths for forty minutes, and at no time during the forty minutes was there the slightest indication of life, not a single gasp, and the several examinations for heart sounds failed to reveal the least trace of a heart beat. Then it occurred to me to inject hypodermically epinephrin solution, 1:1,000. After I had filled my hypodermic I was puzzled as to where to inject it to do any good. Before this I had tied the cord, leaving a stump of about three-fourths inch. I injected the epinephrin into the cord, carrying the point of the needle well through the abdominal wall. In about two minutes I noticed the cord begin to pulsate. I also noticed a pulsation of the heart through the chest wall. I could palpate the heart beat. With my stethoscope I could hear it very plainly. I continued the artificial respiration, and hot and cold applications, and at the end of fifty minutes from the time the child was delivered it was breathing well and crying lustily.

The babe has not had a sick day, and is a robust healthy child in every respect. May 4, when it was 7 months old, it weighed 19 pounds.

The cause of the patient's death was pulmonary embolism. The offending body was undoubtedly detached, and its starting point was the thrombus from the femoral, the uterine or the ovarian veins. One of the chief trunks of the pulmonary artery was suddenly obstructed, causing violent dyspnea, cyanosis and almost immediate death. In the more fortunate cases of pulmonary embolism, only a small branch is obstructed, when dyspnea and cyanosis are more moderate, and recovery is possible.

My object in presenting this paper is to urge all physicians to do their whole duty if such an opportunity presents.

Special Article

THIRTEENTH ANNUAL SUMMARY OF FOURTH OF JULY INJURIES

This week for the thirteenth consecutive year, THE JOURNAL presents statistics of deaths and injuries resulting from the celebration of the Fourth of July, with special reference to tetanus, or lockjaw, resulting from these injuries. With the rapid decline in the number of casualities in the last few years, instead of relaxing its vigilance, THE JOURNAL has made extra effort to secure complete and accurate data. Whereas, in former years, long lists of casualties were received from the various hospitals, during the last few years, and this year particularly, the blanks were returned with very short lists or with the statement that no cases whatever were treated. Health officers, also, who formerly sent in long lists of killed and injured, likewise had no names to report. On many of the blanks was written the significant statement: "We had a safe and sane Fourth." The data are presented in the same manner as heretofore, and in every table the comparison shows the remarkable decrease during the last few years in the number of deaths and injuries from the use of fireworks.

TABLE 1.—TETANUS CASES BY STATES
Comparison with Previous Years

	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
Alabama	..	..	1	..	..	..	..	..	..	..	..	..	..
Arizona	..	..	..	..	1	..	..	..	..	..	..	..	..
California	2	4	4	3	1	..	2	1	2	1	..	..	..
Colorado	4	..	1	..	..	..	..	..	..	..	..	..	..
Connecticut	3	..	3	..	4	1	..	..	..	..	..	..	..
Delaware	..	..	1	1	1	..	2	..	..	..	..	..	..
Dist. of Columbia	1	..	..	..	..	..	..	..	..	..	..	..	..
Florida	..	..	..	..	..	..	1	..	..	..	..	..	..
Georgia	..	..	..	..	1	..	..	..	..	..	..	..	..
Idaho	1	..	..	..	..	..	1	..	..	..	..	..	..
Illinois	49	15	20	16	12	12	20	10	3	..	..	..	..
Indiana	11	6	3	8	2	..	9	6	..	1	1	..	..
Iowa	14	2	3	4	4	1	1	1	1	..	..	..	..
Kansas	11	1	..	..	2	1	6	..	..	..	1	..	..
Kentucky	4	2	..	1	..	1	1	..	..	..	..	1	..
Louisiana	..	..	..	..	..	..	..	..	..	..	..	..	..
Maine	2	4	1	1	..	1	1	1	..	..	..	..	1
Maryland	1	..	1	1	..	..	2	1	..	..	..	..	..
Massachusetts	16	5	7	3	2	5	8	..	1	1	..	..	..
Michigan	29	7	9	4	4	2	11	11	2	1	..	..	..
Minnesota	15	2	2	2	2	..	..	..	..	..	..	1	..
Missouri	29	1	3	3	1	5	8	2	..	..	..	..	..
Montana	2	1	1	..	1	..	3	2	..	..	..	..	..
Nebraska	4	3	3	1	..	1	3	1	..	..	..	..	..
New Hampshire	2	..	..	1	..	..	1	..	..	..	..	..	..
New Jersey	8	9	3	10	8	10	19	9	2	..	..	1	..
New York	36	9	6	8	4	9	11	7	1	..	2	..	..
North Dakota	..	..	..	..	..	..	..	..	..	..	..	..	..
Ohio	67	9	5	7	6	7	12	3	3	..	..	..	..
Oklahoma	1	..	1	1	..	1	..	1	..	1	..	..	..
Oregon	2	..	..	1	1	1	..	..	..	..	..	..	..
Pennsylvania	82	17	12	5	7	7	10	11	1	..	..	..	..
Rhode Island	3	..	..	1	..	..	..	..	..	..	..	..	..
South Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..
South Dakota	..	..	..	..	..	1	1	..	..	..	..	..	..
Tennessee	..	..	..	..	..	..	..	..	..	..	..	..	..
Texas	..	..	..	..	2	..	..	..	..	..	..	..	..
Utah	..	1	1	..	..	..	..	1	..	..	..	..	..
Vermont	3	2	..	2	2	..	..	..	..	..	..	..	..
Washington	2	1	..	..	2	4	4	1	..	..	..	..	..
West Virginia	3	..	..	2	..	1	4	..	..	2	..	..	..
Wisconsin	10	4	13	2	3	5	9	3	2	..	..	..	..
Wyoming	..	..	..	1	..	..	..	..	..	..	..	..	..
Total	417	105	104	89	73	76	150	72	18	7	4	3	1
States having cases	30	21	23	25	23	20	25	18	10	6	3	3	1

ONLY ONE LOCKJAW VICTIM THIS YEAR

There was only one fatality from lockjaw reported this year, a 12-year-old boy named Coro who lived at Waterville, Maine, and who, while celebrating, shot himself — site of wound not given — with a blank cartridge pistol. Tetanus developed and he died nine days later. Apparently antitoxin was not used.

The distribution by states of lockjaw cases resulting from Fourth of July injuries for each of the last thirteen years is given in Table 1. The rapidly decreasing totals for some of the states is strikingly shown, particularly for Illinois, Massachusetts, Michigan, Missouri, New York, Ohio and Pennsylvania. Let us hope that the one case reported this year will be the end of tetanus deaths from this needless cause.

TABLE 2.—RATIO OF TETANUS CASES TO BLANK CARTRIDGE INJURIES

Year	Tetanus Cases	Blank Cartridge Injuries	Ratio
1903	417	1,672	1: 4.01
1904	105	905	1: 8.62
1905	104	809	1: 7.78
1906	89	979	1:11.00
1907	73	606	1: 8.16
1908	76	942	1:12.39
1909	150	1,225	1: 8.17
1910	72	450	1: 6.25
1911	18	185	1:10.28
1912	7	75	1:10.71
1913	4	97	1:24.25
1914	3	122	1:40.67
1915	1	294	1:29.40
Totals	1,119	8,361	1: 7.47

BLANK CARTRIDGE WOUNDS AND TETANUS

The proportion of blank cartridge injuries to the cases of lockjaw reported in Fourth of July injuries during the thirteen years is given in Table 2. The two years in which the largest numbers of lockjaw cases were reported were 1903 and 1909, when also the two largest numbers of blank cartridge wounds were reported. The one case this year was due to this cause, although there were 294 blank cartridge wounds. The decreasing proportions of tetanus cases to such injuries in the last three or four years was doubtless due to the more general and prompt use of antitoxin in such injuries. The proportion for all the thirteen years was one lockjaw case to every 7.47 blank cartridge injuries.

TABLE 3.—CAUSES OF TETANUS CASES

Year	Blank Cartridge	Giant Cracker	Cannon	Fire-arms	Powder, etc.	Total
1903	363	17	5	3	29	417
1904	74	18	5	1	7	105
1905	65	17	4	5	13	104
1906	54	17	1	7	10	89
1907	52	8	6	4	3	73
1908	58	5	4	3	6	76
1909	130	9	1	4	6	150
1910	64	2	..	5	1	72
1911	15	1	1	..	1	18
1912	7	..	..	..	..	7
1913	4	..	..	..	..	4
1914	2	..	..	1	..	3
1915	1	..	..	..	..	1
Totals	889	94	27	33	76	1,119

CAUSES OF LOCKJAW CASES

Altogether 1,119 cases of lockjaw from Fourth of July injuries were reported for the thirteen years. Of these, 889 (79.4 per cent.), were caused by wounds from blank cartridges; 94 (8.4 per cent.) from giant crackers; 76 (6.9 per cent.) from powder and explosives; 33 (2.9 per cent.) from firearms, and 27 (2.4 per cent.) from toy cannons. In other words,

over three times as many lockjaw cases were due to blank cartridge injuries as to all other injuries put together.

TETANUS CASES NOT DUE TO FIREWORKS

Tetanus cases reported during the Fourth of July season but which were due to other causes, such as crushing injuries or penetrating wounds from splinters, nails, etc., are shown in Table 4. These are given to show the general prevalence of tetanus germs during the season. The number of such cases is likewise decreasing each year, probably due to more care being taken in the treatment of penetrating wounds as well as to the prophylactic use of antitoxin.

TABLE 4.—CASES OF TETANUS FROM OTHER CAUSES

	1908	1909	1910	1911	1912	1913	1914	1915
Alabama	..	..	1	1	..	..	..	..
Arizona	..	..	..	..	..	1	..	..
Arkansas	2	..	..	..	..	..	..	..
California	4	4	1	2	7	10	..	1
Colorado	3	..	..	1	..	..	..	..
Connecticut	2	2	..	..	..	..	..	..
Delaware	2	1	..	..	..	..	..	..
District of Columbia	..	..	..	..	..	..	..	..
Florida	2	..	..	..	..	..	..	..
Georgia	..	1	..	..	..	..	..	1
Idaho	..	..	..	..	..	..	..	..
Illinois	17	18	7	6	10	7	..	..
Indiana	6	4	1	2	1	3	1	1
Iowa	2	7	3	1	..	2	1	..
Kansas	4	..	1	..	..	..	..	..
Kentucky	5	5	..	1	2	..	3	1
Louisiana	1	..	..	1	3	3	..	..
Maine	..	..	..	..	..	..	..	..
Maryland	3	..	2	1	1	..	..	..
Massachusetts	3	5	..	..	..	..	..	..
Michigan	4	5	1	..	..	..	1	..
Minnesota	4	2	..	..	..	..	..	..
Mississippi	..	..	..	..	..	..	..	..
Missouri	12	5	1	2	3	..	..	3
Montana	..	..	..	..	..	..	..	..
Nebraska	..	3	1	1	1	..	..	..
Nevada	..	..	..	..	..	..	..	..
New Hampshire	..	..	..	..	..	..	..	..
New Jersey	7	8	8	1	..	..	3	..
New Mexico	..	1	..	..	..	..	..	..
New York	17	12	4	2	4	..	2	..
North Carolina	1	..	..	..	..	1	..	..
North Dakota	1	..	..	..	..	..	..	..
Ohio	23	13	2	..	2	1	3	..
Oklahoma	..	..	..	..	..	..	..	..
Oregon	..	1	3	..	2	..	..	..
Pennsylvania	21	21	8	6	4	1	2	2
Rhode Island	..	1	..	..	..	..	..	..
South Carolina	..	..	..	..	..	..	..	..
South Dakota	2	2	..	..	..	..	..	..
Tennessee	3	..	..	..	1	1	..	..
Texas	4	1	1	..	..	..	..	..
Utah	..	..	..	..	..	..	..	..
Vermont	..	..	1	..	..	..	..	..
Virginia	4	1	..	1	2	1	..	..
Washington	2	..	..	..	1	..	..	..
West Virginia	..	1	..	..	..	..	..	..
Wisconsin	5	4	1	..	..	1	..	1
Wyoming	..	..	..	..	..	..	..	..
Totals	166	128	47	29	44	32	16	10
States reporting cases	29	25	18	15	15	12	8	7

OTHER DEATHS AND INJURIES FROM FIREWORKS

Besides the one death due to tetanus, twenty-nine persons were killed by various forms of fireworks, making a total of thirty deaths, or ten less than last year, two less than in 1913, eleven less than in 1912, twenty-seven less than in 1911 and 101 less than in 1910. The number this year is the smallest since the collection of these statistics was begun. The causes of deaths, other than from tetanus, are shown in Table 5, in comparison with the numbers due to similar causes in previous years. This year five persons were killed outright by firearms, five by explosions of powder, bombs or torpedoes, six by cannon, and two by other forms of fireworks. The most serious fact presented this year is that eleven persons, mostly little girls or small children, were burned to death by fire from fireworks, most cases being caused by the supposedly "harmless" varieties.

As heretofore, all accidents not due directly to the discharge or handling of fireworks, or other means of noise production and display, on or about the Fourth of July, have been omitted. Of the 719 deaths from Fourth of July injuries, other than from tetanus, in the thirteen years, 217, the largest number, were burned to death; 199, the next largest number, were killed by firearms; 116 by explosives; 58 and 48, respectively, by giant crackers and toy cannons, and 81 persons by various forms of fireworks.

DISTRIBUTION OF INJURIES

In Table 6 a summary of all injuries, including tetanus, and of all causes, is given arranged by states. Beneath the totals at the bottom are given, for comparison, the totals for the twelve previous years and the grand totals for the thirteen years. Table 7 permits the comparison by states of the totals of deaths and injuries for twelve years. The number of casualties this year was 1,165, a decrease of 341 below last year, but an increase of two over 1913 and an increase of 177 over 1912. New York had 332, the largest number, this year — in fact, that state shows an annual

TABLE 5.—CAUSES OF DEATHS NOT DUE TO TETANUS

Year	Gunshot	Fire from Fireworks	Powder, Torpedoes, etc.	Giant Crackers	Cannon	Other Causes	Total
1905	37	23	6	5	7	17	95
1906	38	18	18	3	3	3	83
1907	20	31	13	13	3	22	102
1908	30	22	19	23	7	7	108
1909	17	37	16	7	7	6	90
1910	19	26	11	2	3	3	64
1911	11	12	9	2	5	8	47
1912	9	8	7	2	2	7	35
1913	8	13	6	..	1	1	29
1914	5	16	6	1	4	5	37
1915	5	11	5	..	6	2	29
Totals	199	217	116	58	48	81	719

increase in the number of casualties since 1912. Pennsylvania, heretofore always holding the darkest record, falls to second place this year with 299 injuries, or 188 cases less than in 1914. Marked increases over last year are reported for California, Massachusetts, Minnesota, New York and West Virginia. All other states reported decreases, or only slight increases.

NATURE OF NONFATAL INJURIES

There were 1,135 nonfatal injuries this year, or 331 less than last year, four more than in 1913 and 188 more than in 1912. One person was totally blinded this year, eleven lost one eye each, five lost legs, arms or hands, and thirty-eight lost one or more fingers. In spite of the continued increase in the total number of nonfatal injuries since 1912, the totals of these more severe injuries have markedly decreased, the totals this year being the smallest reported during the thirteen years. This year 227 injuries were due to the giant firecracker, which drops to the second place in causing nonfatal injuries, but continues to hold the first place as a cause of lacerated wounds. It was responsible for most of the losses of eyes, hands and fingers, but this year caused no deaths. Firearms caused 100 injuries, including five deaths. As usual, many of these injuries were due to stray bullets from

the reckless use of firearms by other persons. The use of cannons, including many of the improvised variety, resulted in ninety-three injuries this year, including six killed. In the thirteen years, a total of 43,951 persons were killed or injured in the celebration of the Fourth of July.

TOTALS IN CHIEF CITIES

Table 8 shows the number reported killed and injured in the eighty-four largest cities each year, and the totals for the past nine years. The cities are arranged according to their population as given by the United States census in 1910. This table is of particular interest, since the results are shown in cities of nearly equal size. Philadelphia, which has been constantly in the lead since 1909, still holds the darkest record with one killed and 280 injured. New York nearly equals that record with 272 injured. St. Louis holds third place with forty-seven, and Boston and Hartford (Conn.) are tied for fourth place with twenty-seven each. In spite of Chicago's unusually clean record, five of the eight casualties were fatal. Of the 299 accidents reported for Pennsylvania, all but eighteen were in Philadelphia. Likewise, of the 332 casualties reported for New York State, all but sixty occurred in New York City. It is, therefore, up to these cities to remove the blots from the records of those states.

TABLE 6.—SUMMARY BY STATES OF FOURTH OF JULY CASUALTIES

Marginal Number	States	Deaths			Injuries						Total Persons Dead or Injured	Causes of Tetanus Cases		Causes of all Cases Aside from Tetanus Cases					Marginal Number
		From Tetanus	From Other Causes	Total	Loss of Sight	Loss of One Eye	Loss of Legs, Arms or Hands	Loss of Fingers, One or More	Other Injuries	Total Non-Fatal Injuries		Blank Cartridge	All Other Causes	Blank Cartridge	Firecracker	Cannon	Firearms	Powder and Fireworks	
1	Alabama								1	1	1				1				1
2	Arizona								2	2	2			1				1	2
3	Arkansas																		3
4	California							3	37	40	40			1	9	4	1	25	4
5	Colorado								3	3	3							3	5
6	Connecticut					2			47	49	49			22	4	6	9	8	6
7	Delaware								1	1	1				1				7
8	District of Columbia								1	1	1			1					8
9	Florida																		9
10	Georgia																		10
11	Idaho								2	2	2							2	11
12	Illinois		7	7		1		8	38	47	54				15	8	5	26	12
13	Indiana				1	2		4	22	29	29			1	13	6	3	6	13
14	Iowa		1	1		1	1		18	20	21				3	4	2	12	14
15	Kansas								2	2	2				1			1	15
16	Kentucky								5	5	5				3		2		16
17	Louisiana		1	1							1							1	17
18	Maine	1		1		1			7	8	9	1			2			6	18
19	Maryland							2	21	23	23			2	4	2	3	12	19
20	Massachusetts		4	4					69	69	73			1	19	7	1	45	20
21	Michigan		1	1		1			29	30	31			2	13	3	3	10	21
22	Minnesota		1	1			1	3	13	17	18				6	3		9	22
23	Mississippi																		23
24	Missouri		1	1				1	46	47	48			19	7	3	3	16	24
25	Montana								2	2	2				1			1	25
26	Nebraska								3	3	3				1		1		26
27	Nevada								2	2	2							2	27
28	New Hampshire								4	4	4				4				28
29	New Jersey		1	1				1	34	35	36			11	5	3	3	14	29
30	New Mexico		1	1		1			1	2	3			1	1			1	30
31	New York						1	5	326	332	332			205	17	10	38	62	31
32	North Carolina																		32
33	North Dakota																		33
34	Ohio		3	3				1	9	10	13				3	1	4	5	34
35	Oklahoma		1	1							1							1	35
36	Oregon						1		4	5	5				2			3	36
37	Pennsylvania		6	6		1	1	8	283	293	299			25	73	29	17	155	37
38	Rhode Island								5	5	5			1	2			2	38
39	South Carolina																		39
40	South Dakota								4	4	4							4	40
41	Tennessee																		41
42	Texas																		42
43	Utah		1	1					1	1	2						1	1	43
44	Vermont																		44
45	Virginia																		45
46	Washington								6	6	6				1		1	4	46
47	West Virginia								13	13	13			1	5	3	1	3	47
48	Wisconsin					1		2	19	22	22				11	1	2	8	48
49	Wyoming																		49
50	1915 totals	1	29	30	1	11	5	38	1,080	1,135	1,165	1	0	294	227	93	100	450	50
51	1914 totals	3	37	40	3	13	16	67	1,367	1,466	1,506	2	1	122	402	143	231	605	51
52	1913 totals	3	29	32	2	22	10	46	1,051	1,131	1,163	4	0	97	312	62	169	519	52
53	1912 totals	6	35	41	8	21	13	43	862	947	988	7	0	70	362	75	157	317	53
54	1911 totals	10	47	57	8	26	30	83	1,399	1,546	1,603	15	3	170	484	114	184	633	54
55	1910 totals	67	64	131	7	33	26	114	2,612	2,792	2,923	64	8	386	1,050	212	229	974	55
56	1909 totals	125	90	215	16	36	41	176	4,823	5,092	5,307	130	20	1,095	1,614	427	341	1,680	56
57	1908 totals	55	108	163	11	93	57	184	5,115	5,460	5,623	58	18	816	1,793	399	481	2,058	57
58	1907 totals	62	102	164	12	75	57	237	3,868	4,249	4,413	52	21	554	1,489	267	502	1,528	58
59	1906 totals	75	83	158	22	72	56	227	4,931	5,308	5,466	54	35	925	1,690	408	532	1,822	59
60	1905 totals	87	95	182	25	106	80	221	4,562	4,994	5,176	65	39	744	1,775	474	404	1,675	60
61	1904 totals	91	92	183	19	61	61	208	3,637	3,986	4,169	74	25*	831	1,268	508	406	1,057	61
62	1903 totals	406	60	466	10	75	54	174	3,670	3,983	4,449	363	29†	1,309	1,152	397	236	363	62
	Totals for thirteen years	991	871	1,862	144	644	506	1,818	38,977	42,089	43,951	889	199	7,413	13,618	3,579	3,972	14,281	

* Kind of fireworks causing six tetanus cases unknown.

† Kind of fireworks causing twenty-four cases of tetanus unknown.

Of these eighty-four cities, forty-one had clear records this year as compared with twenty-two last year, thirty-one in 1913 and twenty-eight in 1912, when the lowest total of casualties was reported. The cities showing the most marked reductions in the total numbers of injuries are Chicago, Cleveland, Buffalo, Newark, Minneapolis, Jersey City and Kansas City. On the other hand, New York, Boston, Baltimore, Indianapolis, Worcester, Hartford and Wilkes-Barre seem to be losing their control of the situation in the last three or four years, and the numbers of casualties are increasing.

WHERE THE RESPONSIBILITY RESTS

As has been repeatedly stated in these annual reports, for the greater majority of Fourth of July injuries, *the responsibility clearly rests with city governments,* since the employment of death-dealing methods of celebration is subject to their regulation. The city authorities, therefore, who fail to do their duty must be held personally responsible for the maiming of hundreds, the shooting of others and the burning to death of little children by fire from fireworks. Rigidly enforced prohibitive ordinances in forty-three of our largest cities would practically remove this national disgrace. Restrictive ordinances are usually looked on as half way measures, and are not expected to be strictly enforced; therefore, prohibition measures are essential.

TABLE 7.—TOTAL DEATHS AND ACCIDENTS BY STATES DURING TWELVE YEARS

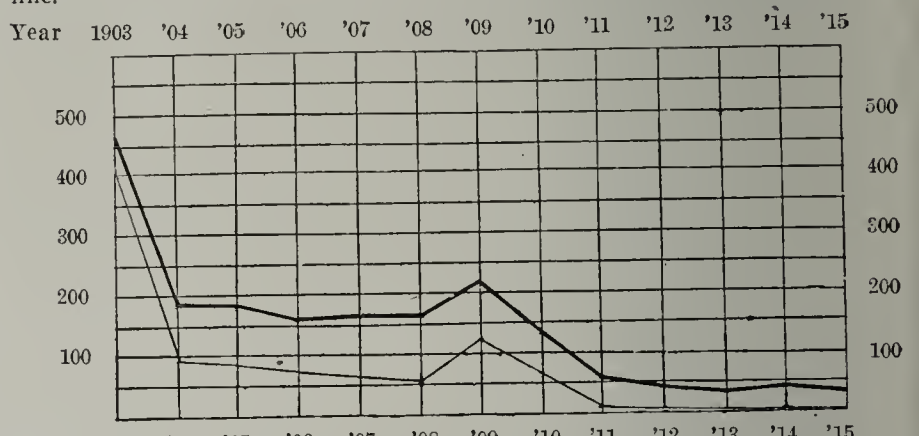
	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
Alabama	7	1	2	1	1	1	3	3	....	1	....	1
Arizona	....	4	5	2	5	3	....	2	2	....	2	2
Arkansas	....	3	4	....	5	1	4	1	1	....	....	....
California	138	142	96	121	136	89	63	43	31	23	24	40
Colorado	44	26	23	25	13	18	19	6	21	1	3	3
Connecticut	133	132	169	63	105	86	78	15	30	50	77	49
Delaware	5	14	8	16	12	13	8	3	6	6	8	1
District of Columbia	10	24	5	12	21	....	....	....	2	1	1	1
Florida	2	2	....	....	....	1	4	....	....	....	....	....
Georgia	....	....	4	2	4	....	5	10	28	4	....	....
Idaho	4	3	3	4	4	2	3	1	2	....	1	2
Illinois	423	542	598	468	558	546	285	218	39	47	95	54
Indiana	211	217	250	....	255	164	167	53	43	12	62	29
Iowa	137	328	255	231	174	91	141	54	24	22	27	21
Kansas	88	56	61	64	72	86	50	25	8	5	7	2
Kentucky	72	17	21	18	33	17	26	6	5	2	11	5
Louisiana	2	3	7	8	4	....	4	2	2	4	4	1
Maine	32	29	15	11	16	22	7	4	....	6	6	9
Maryland	22	13	10	23	21	10	8	13	11	15	10	23
Massachusetts	193	467	329	168	430	430	63	27	45	43	87	73
Michigan	157	288	193	163	203	177	143	69	50	21	72	31
Minnesota	102	174	95	95	65	69	64	17	17	6	12	18
Mississippi	....	....	2	2	1	....	....	1	1	....	....	....
Missouri	84	218	325	299	375	352	112	60	57	83	53	48
Montana	17	40	3	6	11	9	10	....	6	....	1	2
Nebraska	63	43	47	58	46	42	36	17	12	17	10	3
Nevada	1	2	....	1	4	....	1	....	....	....	....	2
New Hampshire	23	9	29	13	13	23	10	2	3	3	15	4
New Jersey	204	350	398	402	472	488	167	43	16	21	55	36
New Mexico	4	5	1	6	....	1	3	....	....	3	....	3
New York	549	566	681	752	647	897	327	237	115	144	250	332
North Carolina	....	1	1	....	....	....	1	5	....	....	....	....
North Dakota	8	29	11	8	13	4	13	1	2	....	....	....
Ohio	327	329	490	375	543	323	166	105	55	70	45	13
Oklahoma	3	7	14	194	9	12	11	9	11	1	4	1
Oregon	13	9	11	5	9	21	19	3	5	4	5	5
Pennsylvania	744	721	969	491	987	986	623	442	265	491	487	299
Rhode Island	30	11	21	39	39	42	19	11	2	21	25	5
South Carolina	....	....	1	....	....	4	....	1	....	....	....	....
South Dakota	10	15	5	8	10	9	4	2	....	....	1	4
Tennessee	1	5	6	4	5	4	10	3	12	3	1	....
Texas	2	4	11	7	11	4	2	....	3	2	....	....
Utah	22	25	18	30	12	18	8	2	1	1	1	2
Vermont	14	10	14	18	19	12	4	4	1	....	3	....
Virginia	11	5	8	....	5	....	....	3	1	....	5	....
Washington	25	15	25	23	38	32	37	22	12	13	5	6
West Virginia	16	34	64	27	29	35	20	2	2	3	8	13
Wisconsin	215	230	155	150	187	157	171	52	38	16	23	22
Wyoming	2	8	3	....	1	1	4	4	1	....	....	....
Totals	4169	5176	5466	4413	5623	5307	2923	1603	988	1163	1506	1165

PROGRESS IN THIRTEEN YEARS

The results of publishing these statistics for thirteen years are graphically shown in the two accompanying charts. Chart 1 shows the reductions in the numbers killed. The heavy line indicates the numbers killed each year from all causes; the light line shows the numbers of deaths each year from lockjaw.

CHART 1.—TOTAL DEATHS FROM FIREWORKS

The heavy line shows the annual fluctuation in the total number of deaths since 1903. The deaths from lockjaw are indicated by the light line.



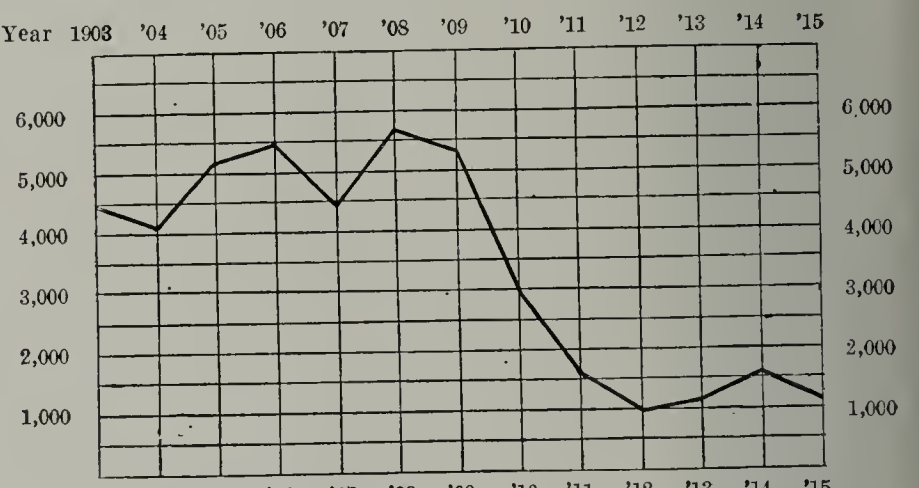
Year	1903	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15
Total Deaths	466	183	182	158	164	163	215	131	57	41	32	40	30
Lockjaw Deaths	406	91	87	75	62	55	125	67	10	6	3	3	1

Chart 2 shows the totals of those killed and injured for the thirteen years. Note that in spite of the publication annually of the awful results of the celebration, the totals continued gradually to increase until 1908, and that the remarkable decrease began in 1909.

In 1908 another table (Table 8) was added to THE JOURNAL'S statistics, in which the numbers killed and injured in each of the eighty-four largest cities were shown. It was also pointed out that the responsibility for these casualties clearly rested with city governments. When the 1908 report was published, reprints were circulated far and wide among newspapers and other publications. The result was most remarkable. Since that time not only did the press of the country generally take up the cause, but also local, state and national organizations and societies became interested. They not only argued against the use of fireworks, but, more important, also provided more rational and patriotic means of celebration. Vigorous action was taken by city councils, and each year the ordinances are growing more prohibitive. All these forces have made most liberal use

CHART 2.—TOTAL CASUALTIES FROM FIREWORKS

The dark line shows the annual fluctuation in the total number of Fourth of July injuries since 1903.



Year	1903	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15
Totals	4,449	4,169	5,176	5,466	4,413	5,623	5,307	2,923	1,603	988	1,163	1,506	1,165

of THE JOURNAL'S statistics, even though the source has not always been mentioned. The number of deaths has been reduced from 215 to thirty; the deaths from lockjaw from 125 to one, and the totals of deaths and injuries from 5,460 to 1,135. While these decreases are gratifying, the fact that so many casualties are still reported indicates the need for a continuance of the effort for improvement.

TABLE 8.—NUMBER REPORTED KILLED AND INJURED IN THE LARGER CITIES DURING NINE YEARS

Marginal No.	City	1907		1908		1909		1910		1911		1912		1913		1914		1915		Totals		Marginal No.
		Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	
1	New York City	22	422	11	316	7	559	6	179	3	91	1	58	..	65	1	94	..	272	51	2,056	1
2	Chicago	16	151	12	202	..	118	4	62	2	53	2	12	1	12	3	18	5	3	45	631	2
3	Philadelphia	7	248	6	426	9	508	4	405	..	294	2	127	3	340	4	237	1	280	36	2,865	3
4	St. Louis	3	189	4	229	4	163	..	44	..	38	..	48	...	72	1	43	..	47	12	873	4
5	Boston	3	59	6	190	5	167	..	35	..	3	..	16	1	15	..	13	..	27	15	525	5
6	Cleveland	3	63	12	93	..	4	..	1	..	5	..	1	..	4	..	1	..	...	15	172	6
7	Baltimore	..	5	1	10	..	5	..	6	..	10	..	10	1	12	..	6	..	19	2	83	7
8	Pittsburgh	10	88	..	30	5	48	6	26	1	25	1	14	1	46	1	11	..	8	25	296	8
9	Detroit	2	46	..	10	2	46	1	17	..	18	2	20	1	3	..	43	..	6	8	209	9
10	Buffalo	..	18	3	11	..	33	1	13	..	16	..	6	..	16	2	9	..	1	6	123	10
11	San Francisco	..	...	..	11	..	12	..	9	1	8	..	7	..	9	..	4	..	5	1	65	11
12	Milwaukee	2	93	..	70	..	78	3	112	1	19	..	24	..	10	..	8	..	9	6	423	12
13	Cincinnati	2	89	1	112	3	86	3	49	1	4	..	21	..	26	1	4	2	1	13	392	13
14	Newark, N. J.	1	129	2	81	1	150	1	15	..	...	..	...	..	...	..	2	1	1	6	378	14
15	New Orleans	..	8	..	4	..	...	..	3	..	2	..	2	..	3	..	4	..	...	...	26	15
16	Washington, D. C.	..	12	..	21	..	...	..	...	..	...	..	2	..	1	..	1	..	1	...	38	16
17	Los Angeles, Cal.	..	35	..	40	..	26	..	...	..	4	..	5	..	6	..	1	..	7	...	124	17
18	Minneapolis, Minn	..	13	..	10	1	24	..	20	..	...	..	...	..	2	..	1	..	1	1	71	18
19	Jersey City, N. J.	..	31	5	34	1	14	1	44	..	14	..	3	..	...	..	2	..	3	7	145	19
20	Kansas City, Mo.	1	46	..	55	4	67	1	25	..	4	..	1	..	...	..	...	1	...	7	198	20
21	Seattle, Wash.	1	3	..	1	3	10	..	7	..	...	..	2	..	2	..	1	..	...	4	26	21
22	Indianapolis, Ind.	1	31	1	14	1	35	..	24	..	5	..	6	..	1	..	11	..	10	3	137	22
23	Providence, R. I.	..	20	1	21	..	13	..	10	1	9	..	...	2	17	..	7	..	1	4	98	23
24	Louisville, Ky.	..	13	..	10	1	10	1	13	..	3	..	2	..	2	..	8	..	3	2	64	24
25	Rochester, N. Y.	..	12	..	10	..	5	..	10	..	4	..	2	..	4	..	8	..	...	...	55	25
26	St. Paul, Minn.	..	20	..	13	..	18	..	12	..	10	..	7	..	2	..	4	..	4	...	90	26
27	Denver, Colo.	..	8	..	13	..	12	1	6	..	2	..	7	..	1	..	1	..	...	1	50	27
28	Portland, Ore.	..	2	..	3	..	16	..	13	..	1	..	2	..	...	..	...	..	...	...	37	28
29	Columbus, Ohio	5	36	..	5	1	19	..	...	..	1	..	1	..	2	..	...	..	1	6	65	29
30	Toledo, Ohio	1	5	..	8	2	3	1	2	..	2	1	1	..	7	..	...	..	...	5	28	30
31	Atlanta, Ga.	1	4	..	3	..	...	..	5	..	10	..	28	..	4	..	...	..	...	1	54	31
32	Oakland, Cal.	..	9	..	...	..	8	..	9	..	1	..	2	..	...	..	...	..	2	...	31	32
33	Worcester, Mass.	1	6	2	20	1	42	..	6	..	1	..	10	..	14	..	3	..	13	4	115	33
34	Syracuse, N. Y.	..	20	..	14	..	13	..	6	..	1	..	4	..	15	..	6	..	...	...	79	34
35	New Haven, Conn.	..	2	..	...	..	15	..	...	..	1	..	6	..	10	..	11	..	...	...	45	35
36	Birmingham, Ala.	..	...	..	...	..	...	..	...	..	3	..	...	..	...	..	...	..	...	...	3	36
37	Memphis, Tenn.	..	1	..	3	..	4	..	2	..	...	..	2	..	1	..	...	..	...	...	13	37
38	Scranton, Pa.	..	5	1	17	1	29	..	6	..	10	..	...	..	9	1	15	..	4	3	95	38
39	Richmond, Va.	..	...	..	...	1	1	..	...	..	...	..	...	..	...	..	4	..	...	1	5	39
40	Paterson, N. J.	1	29	2	31	1	45	1	14	..	5	..	2	..	4	..	...	..	...	5	130	40
41	Omaha, Neb.	..	25	..	10	1	17	..	17	..	7	1	2	..	16	..	6	..	1	2	101	41
42	Fall River, Mass.	..	...	..	12	..	19	..	1	..	...	..	1	..	...	..	2	..	...	...	35	42
43	Dayton, Ohio	..	11	..	14	..	4	..	2	..	4	..	1	..	...	..	1	..	...	...	37	43
44	Grand Rapids, Mich.	..	20	1	30	..	3	..	17	1	6	..	9	..	13	..	2	..	8	2	108	44
45	Nashville, Tenn.	..	2	..	...	..	...	..	8	..	2	..	10	..	2	..	...	..	...	...	24	45
46	Lowell, Mass.	..	23	..	...	..	18	..	...	1	3	1	...	..	...	..	...	..	...	2	44	46
47	Cambridge, Mass.	..	...	..	17	..	...	..	...	..	4	..	...	..	...	..	4	..	2	...	27	47
48	Spokane, Wash.	..	...	..	...	..	...	..	...	..	7	..	4	..	8	..	2	..	4	...	25	48
49	Bridgeport, Conn.	..	1	..	27	..	21	..	4	..	4	..	1	..	3	..	23	..	2	...	86	49
50	Albany, N. Y.	1	24	..	37	..	31	..	11	1	5	..	...	..	4	..	1	..	3	2	116	50
51	Hartford, Conn.	..	18	..	18	..	11	..	14	..	1	..	9	..	27	..	3	..	27	...	128	51
52	Trenton, N. J.	..	38	1	17	1	58	..	...	..	1	..	...	..	1	..	1	..	...	2	116	52
53	New Bedford, Mass.	..	...	..	3	..	...	..	...	..	...	..	...	..	...	..	1	..	...	...	4	53
54	Reading, Pa.	..	17	..	13	..	17	1	3	..	4	..	3	..	21	..	5	..	...	1	83	54
55	San Antonio, Tex.	..	...	..	1	..	...	..	...	..	...	..	...	..	...	..	...	..	...	...	1	55
56	Camden, N. J.	..	16	..	29	4	14	..	6	..	...	1	...	..	...	..	1	..	2	5	68	56
57	Salt Lake City	..	15	..	6	2	14	1	4	..	...	..	1	..	1	..	...	..	...	3	41	57
58	Lynn, Mass.	..	3	..	11	3	16	..	4	..	...	..	2	..	...	..	...	..	...	3	36	58
59	Springfield, Mass.	..	21	1	36	1	9	1	2	..	4	..	...	..	1	1	...	..	1	4	74	59
60	Wilmington, Del.	1	14	..	13	3	9	..	6	..	3	..	5	..	6	..	6	..	1	4	63	60
61	Des Moines, Iowa	1	31	..	41	..	13	..	23	..	12	..	...	..	6	..	6	..	4	1	136	61
62	Lawrence, Mass.	..	11	1	...	5	22	..	...	..	...	..	...	..	...	..	...	..	...	6	33	62
63	Tacoma, Wash.	2	4	1	3	..	3	..	2	..	...	..	1	..	...	1	...	..	...	4	13	63
64	Kansas City, Kan.	1	10	..	17	..	33	..	14	1	5	..	...	..	...	..	...	..	...	2	79	64
65	Yonkers, N. Y.	..	32	..	5	..	8	..	...	...	4	..	...	..	...	..	...	..	...	...	49	65
66	Houston, Texas	..	...	..	1	..	1	..	...	..	...	..	...	..	...	..	...	..	...	...	2	66
67	Duluth, Minn.	..	13	..	9	2	10	..	3	..	1	..	...	..	...	1	1	..	...	3	37	67
68	St. Joseph, Mo.	1	23	1	41	1	24	..	11	..	1	..	...	..	...	..	3	..	...	3	103	68
69	Somerville, Mass.	..	...	..	...	..	1	..	2	..	...	..	1	..	...	..	1	..	...	...	5	69
70	Troy, N. Y.	..	...	2	18	..	16	1	8	..	2	..	1	..	1	..	6	..	...	3	52	70
71	Utica, N. Y.	..	18	..	10	..	5	..	1	..	...	..	...	..	2	..	2	..	...	...	38	71
72	Waterbury, Conn.	2	8	..	14	..	5	..	15	1	...	..	...	..	1	..	...	..	...	3	43	72
73	Schenectady, N. Y.	..	4	..	20	..	8	1	13	..	7	..	...	..	1	..	2	..	...	1	55	73
74	Hoboken, N. J.	..	1	1	24	..	7	..	4	..	...	..	1	..	...	..	...	..	1	1	38	74
75	Elizabeth, N. J.	..	43	..	72	..	37	..	15	..	1	..	...	..	...	..	...	..	...	...	168	75
76	Manchester, N. H.	..	3	..	1	1	5	..	...	..	...	..	1	..	1	..	2	..	...	1	13	76
77	Evansville, Ind.	..	5	..	12	..	6	..	7	..	1	..	...	..	...	..	9	..	2	...	42	77
78	Norfolk, Va.	..	...	..	...	..	...	..	...	..	...	..	...	..	...	..	1	..	...	...	1	78
79	Wilkes-Barre, Pa.	1	...	3	38	1	15	2	8	..	2	..	5	..	...	..	1	..	11	7	80	79
80	Peoria, Ill.	..	8	..	27	1	22	1	17	..	...	..	2	..	...	1	3	..	...	3	79	80
81	Erie, Pa.	..	...	..	1	..	4	..	2	..	3	..	1	..	1	..	3	..	1	...	16	81
82	Savannah, Ga.	..	...	..	...	..	...	..	...	..	...	..	...	..	...	..	...	..	...	...	.....	82
83	Harrisburg, Pa.	..	23	1	71	..	22	..	3	..	1	..	...	..	...	..	1	..	7	1	128	83
84	Portland, Me.	1	2	..	...	..	2	..	...	1	2	..	...	..	1	..	1	..	1	2	9	84
	Totals	94	2,458	83	2,860	80	2,936	43	1,457	16	774	12	522	10	854	18	681	10	806	366	13,348	
	Totals elsewhere	70	1,791	80	2,600	135	2,155	88	1,335	41	772	29	423	22	309	22	825	20	359	507	10,569	
	Grand totals	164	4,249	163	5,460	215	5,091	131	2,792	57	1,546	41	945	32	1,163	40	1,506	30	1,165	873	23,917	

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, AUGUST 28, 1915

MASTICATION AND FOOD UTILIZATION

Again and again in everyday life we find that some dictum which either commends itself to common sense or lends itself freely to argumentative proof is being made the basis of a widespread propaganda. What was more reasonable than to assume that water ingested with meals would dilute the gastric juice and thus diminish its proteolytic efficiency? And what was more logical than to urge the abolition of such an assumedly harmful custom of water drinking? Yet investigation has showed that some of the postulates in this contention are wrong, and that unsuspected factors further vitiate the conclusions.[1] Indeed, under certain conditions water may even promote the gastric secretion, and thus upset these revered traditions.

The proper mastication of food has certain obvious justifications. It promotes a more extensive insalivation, which is not without advantage to certain types of foodstuffs, and it permits a speedier admixture of the alimentary digestive secretions with the individual comminuted food particles. Enthusiasts have not been content with the insistence on these indisputable advantages, but have attempted to infuse far-reaching effects into the habit of very complete mastication. We may be ready to admit that insufficient mastication is the cause of direct or indirect evils which may be greatly exaggerated in certain pathologic conditions. When, however, we are urged to chew our food with unremitting vigor because it "secures proper insalivation of food, increases the quantity of alkaline saliva passing into the stomach, stimulates the heart and circulation, influences the nutrition of the jaws and their appendages by stimulating blood and lymph circulation, and, finally, tends to diminish the amount of food consumed because it is more economically disposed of in the system," one may well pause to make a few related inquiries. Where is the borderline between "truth and poetry" in these matters?

The two extremes of practice are doubtless represented by undermastication, as involved in the hasty bolting of food, and overmastication, to which the epithet "fletcherizing" is sometimes applied. Foster and Hawk[2] have completed studies of the utilization of typical protein as influenced by different degrees of mastication. The principal protein constituent of the diet was cooked beef in the form of 15-millimeter cubes. It happened that protein utilization was most complete as the result of good mastication, and least complete when bolting was practiced. The output of fecal nitrogen was highest during the food bolting, and macroscopic meat residues appeared in every stool under such conditions. Yet the discrepancies in the protein utilization during these extremes of mastication averaged only 1.6 per cent.

Such insignificant differences surely cannot be used in support of any enthusiastic claims for the alleged marvelous efficiency of the excessive mastication of food, even when judged by the other extreme of food bolting. In another recently published series of experiments on man in which vegetable products, notably potatoes and cereal breads, formed the prominent articles of diet, utilization was apparently improved by good mastication.[3] Neither these nor the earlier quoted results are to be taken as an appeal for complete indifference in the matter of eating, but rather as an indication of the rationality of that happy medium of performance in mastication which is usually a sign of physiologic wisdom in other functions.

1. The Physiologic Effects of Copious Water Drinking with Meals, editorial, The Journal A. M. A., Nov. 30, 1912, p. 1975; Water as a Gastric Stimulant, Jan. 2, 1915, p. 59.

SPOILED CORN MEAL

A normal crop of maize is estimated by the Department of Agriculture at 3,000,000,000 bushels, and valued at something over $1,500,000,000. Only a small proportion of this total crop comes to market, the larger part by far being fed on farms. Census returns place the value of the corn flour and corn meal at about $66,000,000. From this it will be seen that there is in the corn crop an enormous reserve supply of material suitable for human food, if the demand should direct its use for this purpose rather than for conversion into edible flesh, as now occurs with that portion of the corn fed to farm animals.

There are regions of the United States in which corn is not only the principal cereal product, but also the most important of all articles of diet. This statement applies, for instance, to parts of the South and, in particular, to its rural districts, where wheat flour is of secondary importance and in some cases even a rarity. In many Southern families, even in the cities, corn meal in some form or other is eaten three times a day, and in most families at least once a day. These dietary features have been given a particular signifi-

2. Foster, L. F., and Hawk, P. B.: Gastro-Intestinal Studies, VII, The Utilization of Ingested Protein as Influenced by Undermastication (Bolting) and Overmastication (Fletcherizing), Jour. Am. Chem. Soc., 1915, xxxvii, 1347.

3. Abderhalden, E.; Ewald, G.; Fodor, A., and Röse, C.: Versuche über den Bedarf an Eiweiss unter verschiedenen Bedingungen, Arch. f. d. ges. Physiol., 1915, clx, 511.

cance in recent years by those who have regarded corn as an etiologic factor in the production of pellagra. Although it is widely admitted at present that the reference of the essential cause of this disease to the ingestion of either good or spoiled maize is not supported by the scientific studies which have been made,[1] yet the zeist theory of pellagra has not been entirely abandoned.

In any event, however, the spoiling of corn is something real and significant for the food industries and the health of our people. Moisture is perhaps the most important of the controllable factors causing deterioration. During the spoiling, acidity develops quite rapidly, being facilitated in good part possibly by the agency of molds and bacteria, though some of the changes in this direction may be the expression of reactions natural to parts of the grain whenever conditions of heat and moisture are conducive to them. Acidity is one of the indexes of the soundness of corn and its fitness for human consumption.

The spoiling of corn products seems to be most common at the season when the whole kernel is ready to germinate and the germ tissue shows a tendency to activity. Under ordinary circumstances, this arises in the spring during the "germinating season." This process is doubtless merely a result of suitable moisture and temperature, so that a control of these factors offers the hope of checking the changes facilitated by them. Meal should keep through the germinating season, if held in cold storage; and it ought to be liable to spoil even in the winter months if it contains an excess of moisture and is kept in warm storage. There is one feature in the manufacture of corn meal which tends to increase the possibility of spoiling.[2] The places of production and consumption do not coincide geographically. Although the consumption of meal is greatest in the South, the production of corn is greatest in the states of the Middle West forming the "corn belt." In the South, the acreage is given up largely to the production of cotton, and the corn crop is not sufficient to supply the local demand. While the Southern corn is used as far as it goes, and is usually preferred, the larger part of the meal is either ground by Southern mills from Western corn or is milled in the North, usually in or near the region where the corn is grown.

It has long been known that the presence of the germ in the meal increased the tendency to spoil. Grits accordingly keep better than meal from whole corn. Examinations recently made by the Bureau of Chemistry of the U. S. Department of Agriculture[2] show clearly that, in comparison with whole-kernel meal prepared from corn, degerminated, bolted meal both dried and undried shows superior keeping qualities. Even when thoroughly dried, the whole-kernel meal is liable to develop acidity in so short a time as to demand immediate consumption. If meal of this type is preferred because of its greater nutritive value or more oily flavor, it should be milled locally in small quantities and consumed within a short period. To quote the government authorities, in regard to keeping qualities whole-kernel meal may be compared to cream in that it must be delivered and consumed without delay, while degerminated meal may be compared to butter, which, within reasonable limits, keeps until used. A recognition of these facts determined by careful investigation may tend to diminish the danger represented by the use of spoiled corn for table meal.

1. Siler, F. J.; Garrison, P. E., and MacNeal, W. J.: Pellagra, THE JOURNAL A. M. A., Jan. 3, 1914, p. 8.

2. Information in respect to this problem will be found in the paper by Winton, A. L.; Burnet, W. C., and Bornmann, J. H.: Composition of Corn (Maize) Meal Manufactured by Different Processes and the Influence of Composition on the Keeping Qualities, Bull. 215, U. S. Dept. Agric., May 21, 1915.

FEWER BUT BETTER-TRAINED PHYSICIANS

Fifteen years ago a noted educator,[1] who was thoroughly familiar with the conditions underlying medical education, tersely remarked, "We do not need more doctors, we need more doctor." The statistics published last week show that this need is being attained. Fifteen years ago this country had 162 medical colleges, which was over half of the world's supply. Although some were well equipped and well conducted, a large proportion were owned by individuals or by joint stock corporations, and were conducted for profit. In some instances, a professorship could be secured by any physician who bought a certain amount of stock; for a smaller amount he would secure a lectureship. Since these institutions were organized for profit, it was important to secure large classes so the income from fees would be correspondingly increased. Glowing advertisements, follow-up letters and paid solicitors were freely used; thus enrolments were swelled to mammoth proportions. No wonder that the actual number of students fifteen years ago reached the amazing total of 28,142, and that there were 5,747 graduates!

In the fifteen years there has, indeed, been a marked reduction; there are nearly 50 per cent. fewer medical colleges; there are nearly 40 per cent. fewer medical students and medical graduates. Medical colleges sans teachers, sans laboratories and sans ideals have given way to well-equipped medical colleges having fair entrance standards, skilled teachers, modern laboratories and an abundance of clinical material. The sum total of colleges is decreased; the number of better ones has been greatly increased.

Instead of a great army of students, many having not even a grammar school education, and enticed from more fitting occupations by glowing advertisements and "easy" requirements, we now have about half the number; but practically all have had a preliminary

1. "The Contribution of Our Higher Schools to the Life of the Nation," President William H. P. Faunce of Brown University, at the Thirty-Ninth University Convention of the State of New York, July 1-3, 1901, Regents' Bulletin, September, 1901, p. 404.

training which enables them better to understand the more complex problems of modern medicine. As to the opportunities for properly equipped medical students, these have not been diminished, but have been decidedly improved. The tables published last week show that there could be a further reduction in the number of colleges and still allow of a greatly increased student enrolment. And the students would be further benefited by the change, since a greater proportion would be in the better-equipped colleges.

As to the reduction in the number of graduates, surely this country needed "fewer doctors, but more doctor!" For the public welfare it is certainly better to have a hundred well-trained graduates from modern high-grade medical schools than a thousand from the old-time variety of run-for-profit institutions. There is no danger that there will be a dearth of physicians. The annual number of graduates is still nearly double the loss of physicians by death; and even if it were less than the annual loss, it would be many years before a dearth would result because of the seriously overcrowded condition of the profession. There is now one physician to from 600 to 650 people, as compared with one to from 1,500 to 2,500 in the leading nations in Europe. Even with this amazing contrast, we have not included in the figures for this country the hordes of so-called "drugless practitioners," Christian Scientists, osteopaths, chiropractors, naprapaths, etc., who are scarcely found in other countries.

THE HOUSE: ITS UNIQUE PROBLEMS IN HYGIENE

A house erected in accord with modern science and the builder's art must satisfy a few apparently simple needs. These have been cleverly summarized in the following words:[1] protection from the elements, from cold and heat, from rain and snow and damp, from intruders who might interfere with the family safety or possessions; water at hand; some way of getting rid of waste; space for the family, for all their occupations and belongings; room for a guest: these were sought by even the cave dwellers. And we have not passed beyond these simple needs. Our enemies are of a different kind, but the daily paper shows that we must pay for safety locks; and while wild animals no longer prowl about, we find it almost impossible to keep out rats and mice and harmful insects. The "house" fly is now called a "typhoid" fly, and not permitted even as a casual visitor. To all these needs we have added what the cave man did not seek for, since his life was largely out of doors. We must have air and sun within doors. Doctors are now talking about house diseases. Tuberculosis is one of these, and the fight against it must be made, in part, just here. It is for sun and air that we have to pay large rents in town; and it is partly to secure these in our large dwellings that tenement-house commissions exist, to protect those who cannot protect themselves. Then, too, there must be protection against fire, not only by the fire department but also in the house itself. Modern nerves, moreover, demand quiet. We may want our own phonograph, but we do not care to hear our neighbor's, and walls and floors must be built to keep out sounds. We call these simple needs. They would seem to be human rights; but even now, in this twentieth century, how many houses rank 100 per cent. in all these: in warmth and coolness at proper seasons; perfect dryness, ventilation and lighting; safety from fire and intruders; and room for each member of the family to be by himself, and to keep an open door to guests? Yet, we cannot be as well or as happy or as useful as we should, until these are achieved.

Only a few years ago, such subjects were regarded by some as beneath the dignity of scientific investigation. Miss Helen W. Atwater,[2] of the Office of Experiment Stations, remarks that the way in which our homes are run, or, in more technical terms, the science of home economics, is now in much the position that scientific agriculture was in twenty or thirty years ago. The leaders had shown that science can improve crops, and some of the more progressive farmers were giving the new ideas a practical test; but many of the rank and file were still doubtful whether such study was worth while. Few farmers of today, however, would care to go back to the days before experiment stations, fertilizer control and other modern improvements. The creation of a home, to be as efficient as possible, includes many different kinds of questions. It makes necessary much study along many lines, just as agriculture has included problems as different as those of insect pests and cheese making. In solving agricultural problems, every intelligent farmer has done his part as well as the special investigators in the laboratories. In the same way, every intelligent housekeeper who studies the household problems of cooking, cleaning and furnishing, and tries to solve them with the help of both practical experience and scientific information, hastens the day when household management can be as accurately planned as that of the factory and the farm.

There are many features of the situation which appeal to the physician. He is concerned with all the modern questions of industrial hygiene, the dangers of occupations, and the harm which may come to mankind as a direct result of environment and mode of work. In a sense, the house must be considered as a workshop. It is "sometimes a bakery, sometimes a clothing factory, sometimes a cleaning establishment." The house, therefore, should be equipped for effi-

1. Kinne, Helen, and Cooley, Anna M.: Shelter and Clothing, New York, 1914, p. 15.

2. Year Book of the U. S. Dept. Agriculture, Washington, 1914, p. 339.

ciency in carrying on housework just as carefully as a modern shoe factory is equipped for making shoes. In such a factory, lighting, heating, ventilation and sanitation are as carefully considered as the machinery. These matters of hygiene are even more important in the home, which is not merely a workshop, but also a place in which to rest and recuperate.

Ridicule or accusations of extreme faddism no longer greet those who advocate a rational dietary. There is a growing tendency to study the intelligent expenditure of scanty portions of small incomes, so that the purchase of potatoes instead of pickles, and of wholesome food calories instead of advertised dainties and delicacies, is becoming less unusual. It will not be long before a frank discussion of the economy of other features of the home will be more freely tolerated. The rational use of labor-saving devices not only may bring comfort but also may avert difficulties that bring patients to the physician. As Miss Atwater remarks, a machine for washing clothes saves more bodily energy than a patent roasting pan, and a meat chopper is used more often than a device for stoning cherries. There are plenty of problems bordering on the domain of industrial hygiene in relation to household equipment and management.

CELEBRATION OF THE FOURTH OF JULY: A SUCCESSFUL CAMPAIGN FOR IMPROVEMENT

In 1903 THE JOURNAL began the collection of statistics regarding deaths and injuries resulting from the use of fireworks in the celebration of the Fourth of July. In addition to securing data through news-clipping bureaus, blanks were sent to physicians, health officers and hospitals, requesting lists of casualties. From the beginning, special efforts were made to obtain information as to cases of tetanus resulting from these injuries. The tabulated figures of injuries and the enormous proportion of deaths from lockjaw were a revelation. In the report published in THE JOURNAL in 1903 it was shown that in the celebration that year, 4,449 people had been injured, and that 466 had died. Of those injured, many had lost their sight, had legs, arms or hands blown off, or were otherwise maimed for life. Of those fatally injured, 406, mostly children, died a slow, agonizing death from lockjaw. In the report, particular attention was called to the fact that the great majority of lockjaw cases had resulted from blank cartridge injuries, and special directions were given regarding the care of such wounds. Reprints of the report were circulated, but not to so great an extent as was done a few years later.

In the following year, a gratifying improvement was noted in the reduction of deaths from tetanus—ninety-one instead of 406. This reduction was due largely to the wider knowledge and more general use of improved methods in the treatment of such injuries. Aside from the reduction in the number of tetanus cases, however, little or no attention seems to have been paid to the statistics. In spite of the annual publication of the awful results, the number of casualties continued to increase, until in 1909 there were 5,623 accidents, including 215 deaths, 125 of which were from lockjaw!

In 1908, however, in addition to the statistics previously presented, a table was prepared, giving the casualties in eighty-four of the largest cities. This showed that the majority of deaths and injuries were clearly due to the lawlessness and disorder permitted in these cities. The corollary was also clear, that the city governments were responsible. The pamphlet containing a reprint of the report of 1908 was sent to newspapers throughout the country. The response was remarkable. The press generally quoted THE JOURNAL'S statistics, naturally emphasizing the local figures. The facts had touched local pride. Civic and other organizations started campaigns for the suppression of fireworks and the encouragement of a more enlightened celebration. City officials were stimulated to action, and in a single year a remarkable diminution of injuries resulted, as shown by the figures. That progress, with slight fluctuations, has continued, and this year less than one fourth as many injuries are reported including thirty deaths, only one of which was from lockjaw.

It was a foregone conclusion that, once the public was acquainted with the awful facts, a change would be demanded. This has been the case, as the improved conditions bear witness. It is to be hoped that "a safe and sane" celebration of our independence will soon become so universal that there will be neither injuries nor deaths from so needless a cause.

PAUL EHRLICH

Paul Ehrlich was a genius of the first order.[1]

While he was still a student of medicine, the problems presented by the affinity of lead for certain tissues attracted his attention. From speculating on the nature of this affinity, his interest grew to include protoplasmic affinities in general, and thus was determined the direction his genius should take.

Some of the notable results of his early investigations are discoveries in bacterial staining methods, which proved of great value to Koch and which, ever since, have been in daily use everywhere; the microchemical differentiation of leukocytes, on which rests the study of the blood for clinical purposes; the development of the methylene blue reaction of living tissues,

1. See obituary, p. 814. An authoritative summary of the scientific work of Ehrlich is given in Paul Ehrlich, Eine Darstellung seines Wissenschaftlichen Wirkens, Festschrift zum 60. Geburtstage des Forschers (14 März, 1914), Jena, Gustav Fischer, 1914.

and the formulation of that unique conception of protoplasmic structure and function on which he based the great side-chain theory which he advanced to explain the reactions in immunity and other phenomena.

What might be termed the second phase of Ehrlich's work concerned investigations in immunity under the guidance of the side-chain conception. No better illustration of the practical usefulness of the imagination in creating a successful working hypothesis can be given than the results achieved by Ehrlich in the field of immunity. Perhaps the usefulness is seen most clearly in the standardization of diphtheria antitoxin, which was a direct outcome of experiments devised according to the side-chain idea. Ehrlich's method, to the exclusion of others, is used all over the world; but the influence of the work carried out to test the side-chain theory by Ehrlich and his pupils still dominates investigation in all branches of immunity and the practical use of the knowledge obtained therefrom.

The side-chain theory is so well known that it is not necessary to restate it except in the most succinct form. A toxin or other antigen is without action on the animal body unless bound by molecular chains in the cells—receptors. But when so bound, the antigen causes injury to the cell, and subsequent repair, in the course of which there is an overproduction of receptors, which, passing into the blood and lymph, constitute the antibody for the antigen in question, because the antigen is now bound and neutralized or destroyed before it can reach the cell. As expressed by Behring, antibodies are free cell receptors, and the elements which, when situated in the cells, are essential for the action of toxins, for instance, are also the means of healing when free in the blood. In accord with the principles of this theory, Ehrlich's vivid mind coined numerous new words, which proved helpful in the discussion of new facts and ideas, and which soon passed into current international usage.

Ehrlich's last work was the development of the experimental chemotherapy of syphilis and certain other spirochetal infections. To discuss this wonderful work fully in all its ramifications is not possible at this time. The scientific world has accepted "the development through a lengthy series of systematic biochemical experiments, based on original conceptions of the affinities of cellular constituents, of a successful chemotherapy of important human infections, by direct attack on the parasites by substances specially built up for that purpose and introduced from without," as the fitting culmination of the tireless activities of an altogether unique investigative spirit. As pointed out elsewhere, Ehrlich's results in experimental chemotherapy fully justify Huxley's prediction in 1881 that through discoveries in therapeutics it would become possible "to introduce into the economy a molecular mechanism which, like a cunningly contrived torpedo, shall find its way to some particular group of living elements and cause an explosion among them, leaving the rest untouched."

Paul Ehrlich will live in the history of civilization as one of the great investigators, genial, creative, fertile, excelling in "that boldness of the scientific use of the imagination which alone can extend beyond the obvious fact and reveal the unknown," one of the great benefactors of mankind.

IMMUNITY OF LIVING ALIMENTARY MUCOSA AGAINST DIGESTION

An entirely satisfactory explanation of the immunity which the mucosa of the alimentary tract appears to possess against digestion by the enzymes which find their way into the interior of the digestive tube has never been forthcoming. The protective function of the mucus secreted on the inner surface of the gastrointestinal canal, and the occurrence of antienzymes in the lining membranes have been discussed prominently in this connection. The question has more than merely theoretical or academic interest because of the part which it may play in relation to the genesis or healing of ulcers along the alimentary tract.

Certain facts ascertained by Burge[1] at the University of Illinois have been related to this problem of a protective mechanism. In comparing the rate of destruction of various enzymes by the passage of a direct electric current through them, it was found that both pepsin and trypsin are destroyed more easily than are their precursors, pepsinogen and trypsinogen, respectively. Inasmuch as the effect of the current is believed to be due to oxidation, Burge concludes that the enzymes are oxidized more easily than are their proenzymes. This makes it seem possible, from a hypothetic standpoint at least, for the mucosa of the stomach and intestine to protect itself from digestion by means of the oxidative processes which it doubtless can exert. The integrity of the membrane would thus be maintained by rendering inactive the layer of enzyme solution immediately in contact with it. According to Burge, this assumes that there are two opposing activities at work, namely, the active enzyme within the lumen of the digestive tract attempting as it were to digest the cells of the mucosa, while oxidative processes of these cells are rendering the enzyme inactive and hence protecting the mucosa from digestion.

There are familiar facts which lend themselves to interpretation from this point of view. The observation has frequently been made that if the blood supply be cut off from a circumscribed area of the stomach wall, the proteolytic gastric juice begins to digest the tissue. The origin of an ulcer might here be attributed to the freedom of the pepsin to act when the area is left unprotected by the deprivation of oxygen through

1. Burge, W. E., and E. L.: The Rate of Oxidation of Enzymes and Their Corresponding Proenzymes, Am. Jour. Physiol., 1915, xxxvii, 462.

exclusion of the circulation. Burge goes so far as to suggest, in addition, that the increased tendency of tissues to undergo autodigestion in certain diseased states may be associated with a diminution in the oxidative processes known to occur in some of these cases.

Any hypothesis like the foregoing must account for the security of the enzyme precursors in the gland cells themselves, since the latter must contain oxidative properties. For this emergency the fact, cited by Burge, that trypsinogen and pepsinogen are relatively difficult to oxidize has been quoted to prevent these substances from being oxidized in the cells of the pancreas and of the gastric mucosa during the process of secretion. There is surely a preponderance of the unknown and undetermined in the foregoing postulates; but the fairest way to condemn them is not with new hypotheses but with facts, when they are forthcoming.

Current Comment

ACCURACY IN THE DIAGNOSIS OF URINARY CALCULI

Now that accurate methods of diagnosis and clinical analysis are becoming not only familiar but also available to the majority of practitioners and to every physician connected with a clinical institution, the importance of employing modern opportunities deserves renewed emphasis. The statistics gathered in the biochemical laboratory of the Western Pennsylvania Hospital at Pittsburgh by Dr. Rosenbloom[1] in regard to the composition of urinary calculi illustrate this statement. We venture to remark that the majority of physicians who deal with stones in the bladder and other types of renal calculi almost instinctively think of them as composed of uric acid and insoluble urates. Obviously the treatment of this "diathesis" will be based on the hypothesis as to the nature of the deposits in the urinary tract. Rosenbloom has shown that, in the cases which have come under his observation, the large majority of the renal stones are composed of calcium oxalate and not of uric acid or urates. On the basis of a "snap" diagnosis without chemical examination of the calculi, the usual alkaline therapy would probably be instituted in the majority of these cases as a matter of routine. It happens, however, as Rosenbloom points out, that the usual antacid treatment is just the opposite of what is indicated. Although uric acid and its salts are soluble in alkaline mediums, and tend to become insoluble as the acidity increases, the opposite is true for calcium oxalate and calcium phosphate, which are deposited in alkaline mediums and dissolved by acids. These are facts—those stubborn things which insist on being respected. Facts deserve to be seen, for mental nearsight may have direful consequences, especially in medical matters.

1. Rosenbloom, Jacob: A Further Study of the Chemical Composition of Urinary Calculi, THE JOURNAL A. M. A., July 10, 1915, p. 161.

THE SYNTHESIS OF HIPPURIC ACID

The protracted discussion known as the benzoate of soda controversy has served to direct attention to the synthesis of hippuric acid in the body. This compound, as is well known, represents the product in the form of which benzoic acid and its salts are eliminated from the organism after being united with the amino-acid glycocoll. To classic experiments carried out by Bunge and Schmiedeberg nearly forty years ago is due the commonly quoted statement that the kidneys are preeminently the organs in which the synthesis of hippuric acid from benzoic acid and glycocoll is accomplished. In the original experiments on this subject, no hippuric acid could be detected after benzoate administration, if the kidneys of the animals examined — dogs in these cases — were excluded from participation in the bodily functions. Of late, the methods of detecting and estimating hippuric acid have been greatly improved, so as to make possible the determination of comparatively small quantities. Making use of these newer, more delicate procedures, Kingsbury and Bell[1] at the University of Minnesota have reinvestigated the problem of the place of hippuric acid synthesis in the species in which the earlier investigators had made their widely quoted observations. They have found that considerable amounts of hippuric acid may be synthesized even in nephrectomized dogs. It therefore follows that the kidney is not the only organ which may effect this synthesis.

ADVERTISING METHODS IN PUBLIC HEALTH WORK

The modern public health movement has been a development of the present generation, almost of the last decade. Two distinct methods, based on equally distinct lines of reasoning, appear to have been adopted. One view assumes that public health must be secured and maintained by means of a great organization, a state health police force, which will prevent the violation of the laws of health in the same way that the regular police force prevents crime. The other view aims rather at the education of the people, so that the laws of health will become common property and the power for their enforcement will lie in public opinion. The advocates of the first theory devote themselves to securing larger appropriations, so that more inspectors can be employed. The advocates of what may be called the educational method endeavor rather to spend such funds as are available in presenting basic facts to the people in a strikingly impressive and convincing way. In this educational work, the State Health Department of Virginia has been especially prominent. Few, if any, states with as limited funds have been able to produce so many new and excellent educational devices. The *Health Almanac,* now used by six or seven states, was first issued from Virginia. The State Department of Health saw no reason why the household almanac should be monopo-

1. Kingsbury, F. B., and Bell, E. T.: The Synthesis of Hippuric Acid in Nephrectomized Dogs, Jour. Biol. Chem., 1915, xxi, 297.

lized by nostrum venders. The latest innovation from Virginia is another device, captured from the "patent medicine" advertising agent. Any one who has driven in country roads and lanes is familiar with the omnipresent tin sign, tacked on fences, gate posts, telephone and trolley poles, and even on trees and the sides of barns, urging the public to try "Dr. Killem's Sure Cure for Bright's Disease" or "Ketcham's Old Reliable Cure for Consumption." Obviously, such advertisements caught the public eye and held attention, or "patent medicine" firms would not continue to employ them. Why not use the public highways to advertise health as well as quackery? No sooner said than done. A series of six placards, printed in black on yellow tin sheets, 10 by 14, are being tacked up all over the Old Dominion. The farmer, the automobilist, the country swain riding with his sweetheart, even the humble foot traveler trudging along the dusty road, will now see from fence posts, walls and telegraph poles such messages as these:

THE BEST FARM IN THIS COUNTY
is the one on which the health of the family is best protected.

BEWARE MOSQUITOES.
They breed in stagnant or slowly running water.

TYPHOID FEVER
CAN BE PREVENTED.

The education of the people in regard to health is advancing when the trees and posts by the wayside are converted into heralds of good health and disease prevention.

THE RELATION OF MUSCLE WORK TO MUSCLE FATS

The determination of the source of the energy which is transformed when a muscle works is one of the fundamental problems of physiology. Precisely what materials are used up in the contractile processes seems to depend somewhat on the nature of the material available at any time. There is an abundance of evidence that the organism does not destroy nitrogenous components by preference when it is called on for increased muscular exertion. The output of nitrogenous waste products excreted by the kidneys is not notably augmented when the work factor in the daily routine is increased while the diet remains unchanged. In fact, it has been found that muscular work does not alter the respiratory quotient — that ratio of the carbon dioxid produced to the oxygen consumed which gives an indication of the kind of nutrient undergoing metabolism. In other words, during work the qualitative metabolism of the whole body is the same as during rest. In the absence of food, as for example in an excised muscle, work is performed at the expense of the stored-up nutrients. There is an insignificant change in the nitrogenous components observed under such conditions. The carbohydrate of the muscle, on the other hand, is invariably drawn on during such survival life; this method of study has frequently been used in the hope of throwing light on the metabolism of the intact living muscle in work. The glycogen decreases. In the presence of a sufficient supply of oxygen, oxidations take place with the evolution of carbon dioxid, and the oxidations increase whenever the muscle contracts. It is also certain that when the oxygen supply is deficient, lactic acid accumulates in the muscles, and, on the other hand, that it disappears again when the oxygen supply is restored and the muscle recovers from fatigue. Chemically it is conceivable that this production of lactic acid may be associated in some way with a metabolism of fats in muscle quite as well as with the carbohydrates. Heretofore little has been known as to the fate of muscle fat in the course of the contractile changes, and whether or not it shares in the extensive chemical changes known to take place in excised muscle. At the University of Cambridge, Winfield[1] has studied what part, if any, is played by fats in the chemical events associated with muscle during its survival life. Despite the induction of work to the point of fatigue and exhaustion, he obtained no evidence that there is any change in the fat content of amphibian muscle, during the metabolic changes occurring in the survival period, which would be sufficient in amount to account for the development of the lactic acid which is known to be produced. To sum up, as a whole the results seem to indicate that fats differ from the carbohydrates in availability for the direct supply of muscular energy.

BLOOD ALKALINITY DURING DIGESTION

The "alkaline tide" in the urinary secretion is an expression which was widely current not many years ago, and was intended to indicate the tendency of the urine to show a reaction alkaline to litmus during the period of gastric digestion. It was usually explained on the assumption that the withdrawal of acid into the interior of the stomach to furnish the gastric secretion left a preponderance of bases in the blood. The kidneys thereupon exercised their characteristic regulatory response by eliminating some of the excess of bases in the urine. It has also been noticed that the alveolar tension of carbon dioxid in the lungs usually rises after meals. This phenomenon is capable of several interpretations, which Van Slyke, Cullen and Stillman[2] of the Hospital of the Rockefeller Institute have expressed as follows: It is possible that acid digestion products displace carbon dioxid from the blood, and, during this displacement, the rate at which carbon dioxid passes from blood to lungs is increased. Or, the blood may become more alkaline, as the result of the secretion of gastric hydrochloric acid, or absorption of alkaline digestion products. Consequently, the carbon dioxid capacity of the blood is increased, and, in equilibrium with it, the carbon dioxid tension of the alveolar air of the lungs rises. The hypotheses here presented are, it will be noted, based on diametrically opposed explanations. A well-known publicist remarked a few days ago that facts

1. Winfield, G.: The Fate of Fatty Acids in the Survival Processes of Muscle, Jour. Physiol., 1915, xlix, 171.

2. Van Slyke, D. D.; Cullen, G. E., and Stillman, E.: Changes in Blood Alkalinity During Digestion, Proc. Soc. Exper. Med. and Biol., 1915, xii, 184.

have a cruel way of substituting themselves for fancies. There is nothing more remorseless, just as there is nothing more helpful than truth. It is well, therefore, to be on the right side of facts. The New York investigators[2] have accordingly determined, on each of a number of subjects in conditions of approximate digestive rest and of digestive activity, the following data: alveolar carbon dioxid tension; alkaline reserve of the blood plasma as indicated by its ability to maintain its alkalinity after addition of acid and alkaline reserve of the plasma as indicated by the amount of carbon dioxid with which it can combine. The results show that the reserve alkalinity of the plasma increases during digestion, the alveolar carbon dioxid decreasing simultaneously. This excludes the possibility of the absorption of acid products of digestion as an explanation of the phenomena in question.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Diphtheria Cottage.—The board of supervisors of San Francisco County has voted $7,000 for the construction of a diphtheria cottage at the county isolation hospital.

Alumni Election.—At the annual meeting of the Alumni Association of the College of Physicians and Surgeons of San Francisco, the following officers were elected: president, Dr. Frederick C. Keck; vice-presidents, Drs. Stefan Wassilko and Richard H. Dunn; secretary, Dr. Charles M. Toppman (reelected), and treasurer, Dr. Philip S. Haley (reelected).

New Health Association Officers.—At the annual meeting of the Health Officers Association of Los Angeles County, at Long Beach, July 27, the following officers were elected: Dr. Ralph L. Taylor, Long Beach, president; Drs. Stanley T. Black, Pasadena, William A. Weldon, San Pedro, Luther M. Powers, Los Angeles, Francis E. Corey, Alhambra, and W. C. Mabrey, Long Beach, vice-presidents, and J. L. Conroy, Monrovia, secretary-treasurer.

Personal.—Dr. William P. Lucas has been appointed chairman of the committee on open air schools of the San Francisco Association for the Study and Prevention of Tuberculosis; Dr. William R. P. Clark, chairman of the committee on cooperation and Dr. George R. Hubbell, chairman of the committee on investigation.——Dr. James J. Hogan, San Francisco, sailed for Europe from New York, on the *Bergensfjord* July 24, for Bergen, Norway, to test in the war zone the intravenous use of colloidal (gelatin) solutions in shock.

Pediatric Society Organized.—At a meeting held July 23 at the Barlow Medical Library, Los Angeles, the Pediatric Society of Southern California was organized. Dr. W. A. Edwards was elected president and Dr. Victor Stork secretary and treasurer. The society has for its object the advancement of the study of infancy and childhood, and to this end will include as associate members those interested in the various phases of child study. An effort is being made to show the government child welfare exhibit in Los Angeles under the auspices of the society.

ILLINOIS

Personal.—Dr. Oliver J. Roskoten, Peoria, fractured his right arm while cranking his automobile, August 3.——The condition of Dr. Frank C. Winters, Monmouth, is so much improved that he is expected to be able to return home in a few days.

Outbreak of Foot and Mouth Disease.—Another herd of cattle infected with foot and mouth disease was discovered in Cook County, August 13. The affected cattle were on land adjoining that where the disease was found recently in Wheeling township.——The Department of Agriculture announces that the situation in Bureau, Ford, Lawrence and McDonough counties remains unchanged.

Chicago

Corwin Made Publicity Director.—Dr. Arthur M. Corwin has been appointed director of publicity and education of the department of health.

Personal.—Drs. John Dill Robertson, Commissioner of health, and William K. Murray, head of the hospital bureau of the department, are making a tour of Eastern cities to study garbage disposal methods, housing conditions and isolation hospitals.

To Examine Veteran Policemen.—Drs. Clarence W. Leigh, Charles J. Whalen, William L. Noble, Nathaniel A. Graves and Michael J. Purcell have been appointed a board to reexamine veteran policemen who had been announced unfit for service by the Chief Ambulance Surgeon and who contested this decision.

Chicago's Health Department.—The Chicago Civil Service Commission recently commenced the study of the city's health department, and called to its aid a representative of the Public Health Service. J. C. Perry was assigned to the work, and in *Public Health Reports,* August 20, makes an extended report of his four months' study in connection with the representatives of the Civil Service Commission. Every department and feature of health administration in Chicago is given a critical study, and the findings, which are too voluminous to abstract here, are interesting. Incidentally the lack of sufficient appropriations for carrying on effective work, particularly in the infant welfare department, is emphasized.

Typhoid Fever.—The *Bulletin of the Chicago School of Sanitary Instruction* gives a compilation of typhoid cases for the first six months of 1915, which shows that there were 347 cases with definite dates of onset. By months they were as follows: January, 79; February, 48; March, 91; April, 54; May, 37, and June, 38 cases. Investigation of the source of infection shows that 18 cases may be charged to contacts, 5 to carriers, 36 to unpasteurized milk and 48 to out-of-town sources. Of these cases, 181 patients were treated in hospitals, of whom 28 died, or 15.47 per cent. Of 161 patients treated at home there were 20 deaths, or 12.05 per cent. The higher percentage of deaths in hospitals is accounted for by the delay in entering the hospital, the greater severity of the cases, and by the character of the patients, many of whom were homeless persons and in poor physical condition to start with.

MASSACHUSETTS

Hospitals May Lose By Mexican Troubles.—The continued disturbances in Mexico have so depreciated the estate of Dr. F. S. Pearson that it is doubtful whether his desire to aid several New England institutions can be carried out. Tufts College, Boston, which was to receive $500,000 will be the heaviest loser. The Pittsfield House of Mercy and the Lawrence General Hospital will also suffer to the extent of $50,000 each.

Personal.—Fire in the Columbus Building, Westfield, June 24, seriously damaged the offices of Drs. Archibald J. Douglas, James B. Atwater and Julius M. Dutton.——Dr. William J. Gallivan, health commissioner of Boston, resigned July 30.——The Civil Service Commission of Boston has confirmed the appointment of Dr. Francis X. Mahoney as municipal commissioner of health.——Dr. Chas. W. Milliken, Barnstable, has been named by the governor as medical examiner.

MICHIGAN

State Society Meeting.—The semi-centennial meeting of the Michigan State Medical Society will be held in Grand Rapids, August 31, and September 1 and 2, under the presidency of Dr. Reuben Peterson, Ann Arbor. Unusual preparations have been made by the committee of arrangements for the entertainment of members and delegates.

Personal.—Dr. A. S. Spoore, according to reports, has been appointed state bacteriologist in charge of the labora-

tory at Lansing, succeeding Dr. Marinus L. Holm, transferred to the branch laboratory to be established at Houghton.——Dr. William DeKleine, Grand Haven, well known as a good-roads advocate, has been elected director of the campaign against tuberculosis, for which $100,000 was voted by the State Legislature at its last session.

Sanatorium Notes.—The contract for an addition to the wing of the Saginaw Detention Hospital for Tuberculosis was awarded August 3.——A tuberculosis hospital is being made ready for the tuberculosis patients of Cadillac and Wexford County.——An addition to the Ingham Sanatorium, to be known as the Dakin Memorial Hospital, is being constructed at a cost of $2,000.——The board of trustees of the State Sanatorium, Howell, is planning to provide at that institution, a building for girls, one for boys and a third as an administration building for the children's group, containing the necessary offices, a dining room and a school. The $12,000 appropriated by the last legislature will be sufficient to erect the first unit of this group.

MINNESOTA

Public Health of Minnesota.—At the annual meeting of the Minnesota Public Health Association held at Minneapolis, August 12, Dr. Henry Wireman Cook was elected president. In his address Dr. Cook stated that there were 11,000 preventable deaths annually in Minnesota, and that many thousands more are made invalids or cripples by preventable diseases and preventable accidents. Through the efforts of various welfare societies in the direction of public education, it is beginning to be realized by business houses that good health among their employees is a vital factor in efficiency.

Sanatorium Notes.—Plans have been prepared for a sanatorium to be built at Worthington on Lake Okabena by the Southwestern Minnesota Tuberculosis Association. The institution is to be two stories and basement in height, and is to consist of a main or administration building with a building on either side connected with the main building by corridors.——Contracts have been awarded for the erection of a tuberculosis sanatorium on the shores of Lake Julia, near Puposky. This sanatorium is being erected jointly by the counties of Beltrami, Koochiching and Hubbard, at a cost of $40,500.——Up to the present time, thirty-one Minnesota counties have taken advantage of the county tuberculosis sanatorium law. In fourteen other counties, hospitals are either ready to open or are under construction. ——At present four sanatoriums are in actual operation; the state sanatorium in Cass County with accommodation for 200 patients; the Nopeming, in St. Louis County, with accommodation for 120 adults and twenty children; the Battle Lake, Ottertail County, with accommodation for twenty-four patients and the Ramsey County, St. Paul, which cares for 110 patients. ——The Hennepin Sanatorium, near Hopkins, with sixty beds and the Goodhue Sanatorium at Cannon Falls, with thirty beds, will be ready for use by fall.——In March of next year the sanatorium for Clay and Becker counties, at Lake Park, with thirty beds; for Polk and Norman counties at Crookston, with forty-five beds; for Beltrami, Hubbard and Koochiching counties at Puposky, with thirty beds; for Lac Qui Parle, Chippewa, Yellow Medicine and Renville counties at Granite Falls, with forty-five beds, will be ready. ——In April the sanatoriums for Lincoln, Pipestone, Rock, Lyon, Murray, Nobles, Cottonwood and Jackson counties, at Worthington, with forty beds; and that for Wabasha County at Wabasha City, with twenty beds, will be ready. The fall of 1916 will see completed the sanatoriums for Marshall and Roseau; Todd and Wadena; and Crow and Aitkin counties.

MISSISSIPPI

Eradicating Anthrax.—At Jackson early in August the discovery of anthrax among cattle in a private pasture in the city led to prompt measures to eradicate the dangerous infection. As a first step all the buzzards in the neighborhood were killed, taken to the garbage crematories and burned. The cattle in the infected pasture were put in quarantine for two weeks and the grass in the pasture will be burned over. Virus was sent for and all the exposed cattle were inoculated. It is believed that the infection was carried to Jackson by buzzards from Natchez where anthrax existed among cattle.

MISSOURI

State Sanitarians to Meet.—The second annual meeting of the Missouri Valley Public Health Association will be held at the Coates House, Kansas City, September 28 and 29, under the presidency of Dr. Paul Paquin, health officer of Kansas City.

Pellagra Commission Created.—A board of health consisting of the commissioner of health and sanitation, the mayor and the city physician has been created by the city commission of Joplin to enforce health regulations with regard to communicable diseases, with especial reference to pellagra.

Used Dead Doctor's Name.—The health department of Kansas City has arrested Lee Toy, a Chinaman operating under the name of Dr. Roe Chung, on the charge of practicing medicine without a license. Dr. Chung, who held a certificate from the state board of health, died a year and a half ago.

Alumni Reunion.—The Alumni Association of the Washington University Medical School, St. Louis, will hold a reunion October 4 to 8. Clinics and lectures will be given at the various hospitals by graduates and by the teaching staff of the medical schools. The same dates will include Veiled Profit Week and the visiting members will be provided with tickets to the ball of this organization.

NEW JERSEY

Donation Day at the Seashore Home.—August 11 was donation day at the Seashore Home for Invalid Children. During each summer the home maintains 500 mothers and children at a cost of $2,500 a week.

NEW YORK

Physician Leaves Large Estate.—An appraisal of the estate of Dr. Philip M. Wood, who died in Jamaica, May 14, gives its value as nearly $500,000, the greater part of which is in real estate mortgages.

Enforcement of Vital Statistics Law.—The State Department of Health has again called the attention of the physicians of the state to the fact that violations of the Vital Statistics Law, requiring the report of births within five days of their occurrence, will be prosecuted by local district attorneys. The enforcement of this law is not only a matter of great value to the state, but is also of national importance. The administration of the law is being watched with great interest throughout the country, as indicated by telegrams received by the Department from the Federal Children's Bureau and the U. S. Public Health Service. The law provides a penalty of from five to fifty dollars fine for the first offense in the case of a physician or midwife who fails or neglects to file a birth certificate within five days, and from ten to one hundred dollars fine in the case of a second offense.

New York City

Personal.—Dr. Cecile L. Greil sailed on the *Stamphalia* for Naples, August 21.

Cooperation with Health Department.—On August 5 the directors of the Retail Drygoods Association voted unanimously to establish a committee on health and sanitation, cooperating with the health department in maintaining sanitary conditions in the great department stores among the 50,000 members of the association.

Typhoid on Hart's Island.—There has been an outbreak of typhoid fever among the prisoners in the workhouse on Hart's Island during the past month. There have been sixty cases of a very mild type with one death. Thus far the source of the epidemic has not been discovered, but it is suspected that it has been due to a carrier. Of the 700 inmates of the institution all have undergone antityphoid inoculation and it is believed that the epidemic is now under control.

On Watch for Cholera.—Dr. Joseph O'Connell, Health Officer of the Port of New York, has issued an order requiring special examination of all persons on board vessels from Venice, Leghorn and north and east of Rimini, localities where cholera has appeared. The manifests of all vessels will be examined to determine the original point of departure of all steerage passengers on board and any found to

have been within the infected area will be reported to the health officer for bacteriologic examination.

Industrial Hygiene Clinic.—The new division of industrial hygiene has established a clinic at 49 Lafayette Street, Manhattan, with general and laboratory equipment suitable for the work. More than eight thousand bakers, peddlers and soda fountain clerks have been examined and certified as to freedom from contagious diseases. More than nine hundred employees of the fur industry and those of a number of rag clipping shops have also been examined in the clinic, and factory surveys of 113 shops in the fur and allied industries have been completed, and studies of paint, chemical and color factories have been made. On complaints of citizens, examinations have been made and among other things nine cases of tuberculosis, three of syphilis, etc., have been found in restaurants and other places. Occupational mortality statistics are being prepared to show the influences of occupation on the death rate in the community.

Plan to Unify and Improve Supervision of Tuberculosis.—Two new procedures have recently been put into effect at the Tuberculosis Hospital Admission Bureau and in the various tuberculosis institutions which will go far to secure the unified control of the tuberculosis hospitals maintained by the Department of Health, the Department of Charities and by Bellevue and the Allied Hospitals and the tuberculosis sanatoriums maintained by the Department of Health and the State of New York. These procedures are the appointment of a special committee, consisting of Mr. A. W. Wilson and Dr. John S. Billings, to supervise and control all matters relating to the admission and discharge of consumptives to tuberculosis institutions. The tuberculosis institutions maintained or subsidized by the city have been classified primarily as to the social status of the patients received and secondarily as to the patient's physical condition. This classification consists of institutions for patients only temporarily dependent through illness, and those for patients in a chronic dependent plight. If necessary patients may be admitted to an institution receiving a lower class of patients but not to one admitting a higher class. With the exception of incipient and early favorable cases, the presence of tubercle bacilli in the sputum is a prerequisite for admission to a tuberculosis institution. A more detailed investigation of the home environment and financial status of patients will be made and a representative of the Hospital Admission Bureau will visit all tuberculosis institutions at regular intervals, the larger ones daily and the smaller less often.

Myopia in School Children.—A committee, consisting of Rev. James F. Smith, Dr. William F. Snow, Dr. Thomas A. Storey, Dr. C. Ward G. Crampton, Dr. Ward A. Holden, Mr. E. F. Brown, and Dr. Ira S. Wile, which was appointed March 20 for the purpose of considering a communication from the Public Health Committee of the Academy of Medicine relating to the question of myopia in schoolchildren, has submitted its report. This report considers the questions of lighting, writing, blackboard work and the standards for books. Among the recommendations made are the following: That, as rapidly as possible, old nonadjustable school furniture should be replaced by the more modern and more adjustable furniture; that at the beginning of each school year a circular be sent to all principals of schools calling their attention to the importance of adjusting school furniture to the needs of the individual; that movable furniture be provided for the first few grades especially, with the approval of the fire department; that the Department of Education should make an investigation and study of the slope of desks to determine some feasible plan of providing a desk-top capable of prompt adjustment to the proper angle for writing purposes; that special attention be paid to the importance of bringing books up toward the eye of the child, instead of permitting the child to bring the eyes closer to the book; and that the Department of Health emphasize the importance of the relation existing between correct posture during writing and spinal curvature and visual defects. A number of suggestions were made with reference to proper lighting and the opinion was expressed that the use of colored crayons should be interdicted except for unusual work. The tentative standard for approving textbooks for pupil's use as adopted by the Board of Superintendents was thought to cover the details desirable in textbooks and was tentatively approved.

NORTH CAROLINA

Birth Registration Neglected.—The North Carolina State Board of Health announces that there are 72,000 infants in North Carolina without names registered under the vital statistics law.

Antityphoid Campaign Comes to a Close.—The antityphoid campaign in Durham County after five weeks of activity came to a temporary close August 2. During this time about 8,000 individuals received the antityphoid inoculation.

Sanatorium Merger.—The Charlotte Sanatorium Company has rented and will operate the Charlotte Sanatorium. Dr. Edward C. Register is president of the company and general manager of the institution, which is well equipped and has an efficient staff in its various departments.

Personal.—Dr. Oliver G. Falls, Kings Mountain, was elected president of the North Carolina State Organization of County Commissioners at the annual session in Morehead City, August 10 and 11.——Dr. John C. Wessell, Wilmington, has been appointed local surgeon of the Seaboard Air Line Railway, vice Dr. Morris M. Caldwell, accidentally drowned early in August while visiting an interned German ship in the harbor.——Dr. Isaac A. Harris, Alexander, the oldest living practitioner of medicine in Buncombe County entertained the members of the Buncombe County Medical Society at his country home with a lawn fête August 14. A large delegation of Asheville physicians motored down. ——Dr. John W. MacConnel, Davidson, is spending his summer vacation in postgraduate work in New York City. While active in the organization work of the Red Cross, the rumor that he would go to Europe to engage in the field work of the organization is incorrect. He expects to resume his duties as college physician and instructor at Davidson College with the opening of the autumn session.——Dr. James C. Braswell, Jr., Whitakers, has been elected full-time health officer of Nash County, succeeding Dr. A. H. Kibler, resigned, to take service with the United States Health Commission in Dutch Guiana, South America.

NORTH DAKOTA

Reciprocity Extended.—Indiana has been added to the list of states with which North Dakota has reciprocity in the licensing of physicians. Such relations have been established by the North Dakota State Board of Medical Examiners with Arkansas, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, South Dakota, Texas, Vermont, West Virginia and Wisconsin.

PENNSYLVANIA

Personal.—Dr. George W. McNeil has been appointed postmaster of Pittsburgh.——Dr. Joseph R. Cox, Newcastle, is reported to be seriously ill at his home with septicemia.

Smallpox Near Norristown.—A case of smallpox was discovered at Skippack, eight miles from Norristown. The victim was a farmer, who had been ill one week but had been able to serve milk to summer boarders staying at boarding houses near the farm.

Leper Fenced About.—In order to keep the curious from coming in contact with Joseph Norman, Wilkes-Barre, declared a leper several months ago and since that time under quarantine, the city commission has directed that a board fence 8 feet in height be erected around his house.

Tuberculosis Most Fatal.—Tuberculosis still stands in the foremost rank of disease that levy heavy death tolls in Pennsylvania. Nearly 1,000 persons died in May, according to the monthly report of the Bureau of Vital Statistics. Of this number 857 died of tuberculosis of the lungs and 130 of tuberculosis of other organs.

Occupational Eye Diseases.—Surgeon J. W. Schereschewsky, U. S. Public Health Service, is conducting extensive laboratory work at the new federal laboratory in the U. S. Marine Hospital, Pittsburgh, regarding the effect of heat and light on mill workers to determine the action of infra-radiation to which has been attributed glass-workers cataract and other occupational diseases.

Drug Users to Be Registered.—All known users of a narcotic drug must be registered at once. This step is taken as an indication that the United States government is determined to eliminate the use of harmful drugs. Since the Harrison act went into effect, the consumption of narcotics has decreased greatly, but the act has not controlled the drug habit.

Food Law Violators Arrested.—Fifty-six defendants, the largest number arrested by the pure food agents in months, had hearings before Magistrate Harris on August 13. The majority of arrests were for selling soda water artificially colored or sweetened with saccharin, and followed a raid made on the storekeepers in the congested districts where the children can buy soda water for a penny the glass. Nearly all were either fined or held for court.

Philadelphia

Charter for Hospital Granted.—A charter for the Misericordia Hospital, the institution to be erected at Fifty-Fourth and Cedar Avenue for the Sisters of Mercy was recently granted by the Court of Common Pleas. For the purpose of building this institution, a fund of $200,000 was raised in a campaign.

New Health Rules to Be Taught in Schools.—Instead of physiology being taught in schools, a simplified course outlining the rules of health will take its place. The critical test at the end of the term will be to determine not how much the children know, but how their knowledge in building up health bodies for themselves has been applied. The school boards want the boy and girl to know not only that fresh air and sunshine are good for them, but to prove it for themselves in daily life. The new course is elemental in its simplicity. Nothing will be taught that cannot instantly be applied.

Civil Service Examinations.—The civil service commission of the city of Philadelphia has scheduled examinations for the following positions September 16: chief of the division of housing and sanitation of the bureau of health, with a salary of $3,100; September 17, medical inspector (women), division of child hygiene, with a salary of $1,000; September 23, assistant chief medical inspector with a salary of $2,400, and September 24, chief of the division of child hygiene, with a salary of $3,000. Applications for any of these positions should be made in person at Room 875, City Hall, Philadelphia.

Campaign Against Mosquitoes.—Since the recent rains the mosquito brigade of Chief Connell of the highway bureau has treated more than 353,000 square feet of standing water with oil, filled approximately 300 pools and made 50 miles of ditches to drain marshes where the pests breed. The men have been instructed to cut down the weeds on vacant lots. On August 20, fifty employees of the Bureau of Highways went to work to clear the mosquitoes of the swamps near League Island. The marshland is owned by the city and the work of clearing was begun after an investigation by a body of residents of West Philadelphia. The work is being carried on along the Government Avenue east of Broad Street and at the Curtin Street canal. Only $3,500 was appropriated this year and those who have investigated the matter declare that $50,000 is needed to wage a warfare which should be begun in January when the marsh lands are frozen and can be cleared and trenched with little difficulty.

SOUTH CAROLINA

Bequest to Infirmary.—By the will of the late Rosa Thompson of Charleston a bequest has been made to the Riverside Infirmary for the erection of an annex or the enlargement and remodeling of the present building.

Applying the Diet Treatment of Pellagra.—An arrangement has been entered into between the United States Public Health Service and the Epworth Orphanage at Columbia for the application of the diet treatment of pellagra among the children in the orphanage afflicted with this disease. The control of the diet arrangements of the orphanage have been placed in control of the Public Health Service, and the service will prescribe the diet and furnish the protein portions thereof. All facilities and privileges are to be allowed the government authorities for carrying on the diet treatment, the arrangement to continue two years unless terminated by either party unless it is found unsatisfactory or impracticable to continue it.

TEXAS

Personal.—Dr. Willard S. Hastings, superintendent of the Salome Hospital and also of the hospital of the San Antonio and Aransas Pass Railway at Cuero, has resigned to accept a position in a hospital in Chicago.

Blind Asylum Sites.—Tentative offers of sites for the new blind institution for the establishment of which the last legislature made an appropriation of $325,000 have been made by Austin, Lampasas, Brownwood, Wichita Falls, Sweetwater, Valley View, Waco, Temple and Dallas.

Health Week in El Paso.—Health week will be celebrated in El Paso from September 27 to October 3 inclusive. The program includes a baby show for the first three days; the Southwestern Health Conference for the next three days, and also a report on the El Paso health survey; a conference of public health officials; a tuberculosis conference and the reading of papers on the care of the sick, housing conditions, sex hygiene and control of contagious diseases.

WISCONSIN

School Health Station Established.—The first diagnostic health station to be established in the public schools by the Milwaukee health department has been opened in the Cass Street school.

Health Service in Wisconsin.—The Wisconsin Association of Graduate Nurses has decided to start a campaign for the establishment in the state of a generalized nursing service, each unit of which is to cover a fixed district.

Personal.—Dr. Leslie H. Redelings, Marinette, has received a fellowship in the Mayo Clinic, Rochester, and will remain there for three years.——Dr. Orville Mackellar, Delavan, is under treatment at Chicago for a compound fracture of the hip.

Free Medical Dispensaries in Milwaukee.—Steps toward establishing free medical dispensaries in Milwaukee, under the Mathew Keenan endowment fund of about $300,000.00 will be taken after the estate of the testator's widow has been settled in the county court.

Eugenic Law Disobeyed.—For the first eighteen months in which the eugenic law was in effect 231 Milwaukee couples have been married in Waukegan, Ill. Of these only 12 have filed the medical certificate which it is provided shall be filed within ten days by citizens of Wisconsin marrying outside of the state.

State Board's Duties Lessened.—The State Board of Health has recently made the discovery that one of its subsidiary functions, that of the examining and licensing of graduate nurses, has been taken from it and given to the state board of medical examiners under the enactment revising the general medical laws of the State.

Change in Eugenic Certificate.—The old certificate required since January, 1914, when the eugenic marrying law came into force, has been changed and the fee reduced from $3.00 to $2.00. The new certificate states that, the physician "has made a thorough examination of ....., and believes him to be free from all venereal diseases." The former certificate stated that, the physician "having applied the recognized clinical and laboratory tests," etc.

CANADA

Salvarsan Substitute.—Under the patronage of the University of Toronto, "diarsenal" is now being manufactured in Toronto, as a substitute for salvarsan.

Medical Men Attend Training Camp.—Eighteen Toronto physicians have applied to attend training school for medical officers at the military camp at Niagara-on-the-Lake, Ontario. The camp now totals 9,342 men, and the hospital report shows 107 men sick.

Special Tuberculosis Investigation.—Dr. Walter Bingham Kendall, superintendent of the Sanatorium for Tuberculosis at Sanitarium, Ontario, will shortly report on special investigations in connection with disease of the lungs which he has been conducting for some time.

Queen's Hospital Unit.—Word has been received in Kingston, Ont., that Queen's stationary hospital which left Eng-

land on August 1, reached Alexandria, Egypt, August 12. There are about 200 in the hospital unit under the command of Lieut.-Col. Frederick Etherington.

Pension Board.—A medical board in connection with pensions for soldiers has been established at Niagara Camp, Niagara-on-the-Lake, Ontario. Each pensioner will be examined annually to ascertain whether his physical condition warrants his name remaining on the pension list for another year.

Reciprocity.—Under a statute relating to the faculty of medicine, the Province of Ontario is declared, by order-in-council, to be a separate British possession, to which the second part of the Medical Act of Great Britain of 1886 shall be applicable. This is the final authority for medical reciprocity between Ontario and Great Britain.

Inspection of Resorts.—Dr. Adam H. Wright. Toronto, chairman of the Ontario Board of Health, and Dr. George Clinton, Belleville, Ont., district medical officer of health for that section of Ontario, recently made an official inspection of the summer resorts in eastern Ontario. They report the hotels and lake resorts in a very satisfactory sanitary condition.

Personal.—Dr. John R. Whitham, Brantford, Ont., has left for Montreal, having secured a commission in the third McGill University overseas company.——Drs. James A. and Lorne F. Robertson, Stratford, Ont., have each contributed $1,000 toward machine guns for Perth County soldiers.——Dr. James L. Wilson, Toronto, who enlisted with the Imperial Army Medical Corps, arrived in England August 3.——Dr. Dana A. Volume, Erskine, Alta., who has been visiting his home in Kingston, Ont., has received an appointment with the Royal Army Medical Corps.——Dr. George B. Ryan, Paris, France, is visiting his old home in Dorchester, N. B. He will return to Paris in the autumn.——Dr. J. M. Lacey, Winnipeg, has been appointed assistant chief medical officer for the National Transcontinental Railway.——Dr. John Franklin Duncan, London, Ontario, has been appointed assistant surgeon to the mounted police at Regina, Sask.——Dr. L. T. Davis, Vancouver, has been appointed ship's doctor on the Blue Funnel Line Steamship, *Talthybius*.——Dr. Clarke, Calgary, with a party of forty of the Army Medical Corps, has gone to the front.——Dr. Ella C. Scarlett Synge, Vancouver, has left for Serbia in command of the Woman's Volunteer Reserve of Vancouver.——Drs. Frank S. Keele and Herbert A. Gordon, Portage La Prairie, Man., have left for France to join No. 3 Stationery Hospital.——Dr. James H. Hamilton, Revelstoke, B. C., has been gazetted medical officer to the fifty-fourth battalion in camp at Vernon, B. C.——Dr. Lloyd Warner, house surgeon, Winnipeg General Hospital, has departed for overseas service.——Dr. J. F. Hummell, Stratford, Ont., who was wounded on May 14, has been recommended for the Victoria Cross. He is now with a Canadian field ambulance.——Dr. Gordon D. Atkinson, Derby Junction, N. B., has left for Serbia.——Hon. Dr. Beland, M. P., who has been a prisoner in Germany, writes a letter to Canadian friends that he is getting to be an old man, but soon expects to be released.——Dr. Alf. Haywood, assistant superintendent Toronto General Hospital, and who has been doing excellent work with the first Canadian overseas force, has been granted six weeks' leave of absence.——Lieut.-Col. Herbert A. Bruce, M.D., Toronto, who went to England a short time ago, has been appointed surgeon on the staff of the Duchess of Connaught Hospital, but will likely be sent to one of the British hospitals in France in the near future.——Dr. George D. Porter, Toronto, general secretary of the Canadian Association for the Prevention of Tuberculosis, Dr. Jabez H. Elliott, secretary of the Academy of Medicine, Toronto, Dr. William B. Thistle, Toronto, Dr. Edmund E. King, Toronto, Dr. William Oldright, Toronto, and Dr. Charles J. O'Reilly, Toronto, are absent on their summer vacation.

Hospital News.—Much uneasiness in Toronto over Canadian medical men who might possibly have been on the ill-fated *Royal Edward* when torpedoed in the Ægean Sea has been allayed by a cable from Surgeon-General Carleton Jones from England in which he states that there were no Canadians on board. The three hospital units despatched for the Dardanelles have all arrived in safety. The three units referred to are No. 1 Stationary Hospital in charge of Colonel Sanford McKee, Montreal; No. 3 Stationary Hospital, Colonel Casgrain, Windsor, Ont.; and No. 5 Stationary Hospital, Colonel Etherington, Kingston.——Hon. Dr. Pyne, Toronto, cables from England that after looking over several sites for the Ontario Government Hospital, he has chosen a site at Orpington, Kent, 15 miles from London. The hospital will contain 1,040 beds. Half may be used for convalescent patients and those suffering from shock, and half for acute cases. The hospital is under way and will be completed without delay.——Laval University, Montreal, has again offered a stationary hospital for overseas service and the offer has been accepted by the Canadian Government. The establishment calls for twelve officers, twenty-six nurses, 108 privates and fourteen other ranks. It will have half the accommodation of a general hospital, namely, 520 beds in all. Although the casualties in the Canadian Army Medical service have not been heavy, officials say there must be a continual stream of reinforcements in this branch of the service, as more men are continually being required for the new hospitals being organized in France.——The Independent Order of Odd Fellows, Ontario, has given $1,000 towards the maintenance of the Ontario Hospital in England.——Amherst, N. S., has made arrangements with the Imperial authorities for German prisoners from the internment camp there to be put to work building their new hospital. The plans adopted by the council of Amherst were prepared by one of the German prisoners who in the fatherland had charge of a large German estate. He was returning to Germany when interned in Amherst.——To commemorate the first building of the Hotel Dieu Hospital, Montreal, which originally stood on the corner of St. Paul and St. Sulpice streets, a handsome bronze tablet has been placed upon the large commercial building now occupying the spot. Upon the top of the tablet there is a bust of Jeanne Mance in bas relief form perpetuating the memory of the founder of the institution. The hospital was erected in 1644.——The Hon. W. J. Hanna, acting premier of Ontario, and administrator of the public institutions of Ontario, has fallen in with the suggestion that the Ontario Government temporarily use the new buildings of the Hospital for the Insane at Whitby, Ont., as a convalescent home for invalided soldiers. The matter was brought to the attention of the Government by the Toronto and York County Patriotic Association for whom Dr. Harry B. Anderson, Toronto, is honorary advisory physician. It is likely that a preliminary clearing hospital will be established in Toronto where cases may be examined and diagnosed.

GENERAL

Sanitary Survey.—Dr. Howard Franklin Smith, and Sanitary Engineer J. A. Craven, U. S. P. H. S., have begun a survey of the great Miami River and its tributary streams, with headquarters at Dayton.

Electro-Therapeutists Meet.—The twenty-fifth annual meeting of the American Electro-Therapeutic Association will be held in Atlantic City, N. J., September 14 to 16, under the presidency of Dr. John W. Torbett, Marlin, Texas. The headquarters of the association will be at the Hotel Chalfonte.

Escaped Leper.—The authorities at Washington, D. C., have notified the health and other authorities throughout the country of the escape from the reservation at Washington of Emil Grabell, alias C. K. Randall, a leper. He is described as being 6 feet tall and weighs 200 pounds. He is said originally to have come from St. Louis.

Public Health Officers to Meet.—The forty-third annual meeting of the American Public Health Association will be held in Rochester, N. Y., September 6 to 10, under the presidency of Dr. William P. Sedgwick, Boston. The work of the Association is divided into six sections, namely, health officers, laboratory workers, vital statisticians, sanitary engineers, those interested in industrial hygiene and social workers.

Prevention of Infant Mortality.—The American Association for the Study and Prevention of Infant Mortality will hold its sixth annual meeting in Philadelphia, November 10 to 12, with headquarters at the Hotel Bellevue-Stratford. The preliminary program shows the following subjects: Eugenics; effect of the economic standing of the family on infant mortality; infant welfare nursing in small cities, towns and rural districts; institutional mortality; midwifery conditions; and treatment and prevention of respiratory diseases.

Physician Probably Lost on Arabic.—Among those reported lost on the *Arabic* is Dr. Edmund F. Woods of Janesville, Wis. Dr. Woods was born in England, and when 6 years

of age came with his family to the United States. He took his medical course in the Indiana Medical College, Indianapolis, from which he was graduated in 1882; he also received a diploma from the Atlanta (Ga.) Medical College in 1890. Dr. Woods was a Fellow of the American Medical Association and was a surgeon of prominence of Wisconsin. He sailed for Europe on June 26, last, going directly to northern France, where he expected to do hospital work. He has practiced in Janesville about twenty-five years.

Successful Candidates for Navy Medical Reserve Corps.—At the preliminary examination July 6, 1915, in various cities of the United States, of candidates for appointment as assistant surgeons in the Medical Reserve Corps and eligible to subsequent examination and appointment in the Medical Corps of the navy after a course at the Naval Medical School, the following candidates were found physically and professionally qualified:

1. Virgil Hope Carson, M.D. (Medical College of Virginia); Intern, New York City Hospital.
2. Elphege Alfred Gendreau, M.D. (Georgetown University Medical School); Intern, Providence Hospital, Washington, D. C.
3. Francis DeArmond Gibbs, M.D. (Georgetown University Medical School); Intern, Georgetown University Hospital and Children's Hospital, Washington, D. C.
4. John Harper, M.D. (Medico-Chirurgical College of Philadelphia); Intern, Medico-Chirurgical College of Philadelphia.
5. Forrest Martin Harrison, M.D. (George Washington University); Intern, Government Hospital for the Insane, Washington, D. C.
6. Richard Hagan Miller, M.D. (Jefferson Medical College); Ph.B., 1907 (Brown University), A.M., 1909 (Brown University); Intern, Rhode Island Hospital, Providence, R. I.
7. John Paul Owen, M.D. (St. Louis University); Intern, Hospital and Health Board of Kansas City, Mo.
8. John Floyd Pruett, M.D. (Leland-Stanford University); A.B., 1909 (Leland-Stanford University); Intern, Lane Hospital, San Francisco.
9. William Jehiel Rogers, M.D. (Western Reserve University); A.B., 1911 (Adelbert College, Western Reserve University); Intern, St. Vincent's Charity Hospital.
10. George Patrick Shields, M.D. (University of Pennsylvania); Intern, Methodist Episcopal Hospital and St. Agnes Hospital, Philadelphia, Pa.
11. George Washington Taylor, M.D. (Tulane University); B.S., 1909, M. S., 1910 (Alabama Polytechnic Institute); Intern, Illinois Central R. R. Co. Hospital, New Orleans.
12. Russell John Trout, M.D. (New York University and Bellevue Hospital Medical School); Intern, Bellevue Hospital.
13. George Boyd Tyler, M.D. (Medical College of Virginia); Intern, Marine Hospital, Chicago.
14. Walter Alfred Vogelsang, M.D. (University of Tennessee); Intern, Contagious Disease Hospital, N. Y., Ernest Werde Hospital, Buffalo, N. Y., and Tuberculosis Preventorium for Children, Farmingdale, N. J.
15. Grover Cleveland Wilson, M.D. (University of Virginia).
16. Charles Henry Weber, M.D. (Marquette University); B.S. (Marquette University); Intern, National Military Home, Ind.

FOREIGN

Plague in Havana.—On August 16, a case of bubonic plague was reported at Havana, the first one to be observed since early last winter.

Cholera in Galicia.—A dispatch from Zurich of August 18 states that 670 new cases of cholera have been officially reported, the majority of which are in Galicia, and that the disease is rapidly spreading.

Swiss Guard Against Cholera.—A dispatch from Vevey says that the Canton of Neuchatel has taken measures to establish isolation hospitals and to provide special medical service against the incursion of cholera from Austria.

Alcohol in Austria.—Under a decree of June 30 Austria has prohibited the establishment and operation of new non-agricultural distilleries of alcohol which are subject to consumption tax under the laws of 1888 and 1889. The construction and operation of new alcohol refineries is also prohibited, and no enlargements may be made which would result in increased production.

Awarding of Prizes by the French Academy of Sciences.—Of the twenty prizes awarded at the recent annual meeting of the Académie des Sciences at Paris, five of the winners had fallen on the field of battle since the prize committee had agreed on the recipients. The two medical prizes went to Hallé and Gougerot for their work on chronic tuberculosis of the kidney and treatment of syphilis in private practice. One prize of $760 was given to Professor Cesaro of the University of Liége for his research on crystallography.

The "Pará-Medico."—The *Pará-Medico* is the newly founded official organ of the organized physicians of the northernmost state in Brazil, Pará, the main seat of the rubber trade. The accent in "Pará" should be on the second syllable, as in "hurrah." In Brazil the city of Pará is known generally as Belem. The first issue contains eight original articles on leprosy, chronic nephritis, malaria, etc., besides discussions on the public health in the equatorial state. A. Franca calls attention to painful hypersensibility localized in the epigastrium as a valuable diagnostic sign in acute malaria.

Drugs and Chemicals in Russia.—According to Commerce Reports Russia at the beginning of the war was in better shape with reference to drugs and chemicals than in some other respects; only those requiring technically more complicated processes could not be made in Russia. Ten chemical factories were in existence at the beginning of the war, and since then other facilities have been provided, and the stoppage of imports has developed the production of phenol, chloroform, lanolin, mercury and its salts, acetanilid, and a start has been made in the production of alkaloids. Many chemicals with trademarked names manufactured in other countries are now on sale under their chemical names.

Restrictions on Patent Medicines in Cuba and Guatemala.—The provisions of the Cuba patent medicine regulations of 1913, relating to the disclosure of patent medicine formulas, has been suspended until Sept. 10, 1917. In Guatemala the provisions of the decree of 1902 concerning the sale of patent medicines will be strictly enforced after Sept. 25, 1915. This decree provides that no pharmaceutic preparation of unknown composition shall be sold until after it has been examined and approved by the Managing Board of the Faculty of Medicine and Pharmacy. Lists will be kept at all custom houses of remedies of secret composition, the importation of which is authorized. All others will be excluded. Products and medicines imported by others than those conducting legally recognized pharmacies or similar establishments will be confiscated.

WAR NOTES

Supplies to Small French Hospitals.—A total of 255 cases of surgical dressings and other hospital supplies for small institutions in Normandy and Brittany have been shipped thus far by the New England branch of the French Wounded Emergency Fund.

Typhus in Serbia.—Dr. Samuel H. Hodge, Knoxville, Tenn., who went to Serbia in charge of a Red Cross unit last November, returned August 13. In February, Dr. Hodge contracted typhus fever and was ill for twenty-six days. In March there were 46,000 cases of the disease, but before he left Serbia the epidemic was well under control.

Tribute to Physicians in War.—Mr. Charles J. P. Lucas, Cleveland, who has recently arrived from France, pays a glowing tribute to the heroism of American physicians serving in war hospitals and in the field. There are now, he says, twenty-two American surgeons and sixty orderlies in France, stationed at Neuilly near Paris, Pagny-sur-Meuse and St. Maurice. At Pagny the physicians were under fire for a period of four months.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending August 21, 1915, lists the following contributions:

Dr. George N. Kreider, Springfield, Ill.		$ 5.00
Dr. Hugh A. Cuthbertson, Chicago		10.00
Receipts for the week ending August 21		$ 15.00
Previously reported receipts	$7,814.84	
Less error*	25.00	
		7,789.84
Total receipts		$7,804.84
Previously reported disbursements:		
1,625 standard boxes of food at $2.20	$3,575.00	
1,274 standard boxes of food at 2.30	2,930.20	
353 standard boxes of food at 2.28	804.84	
Total disbursements		7,310.04
Balance		$ 494.80

* By oversight, Dr. Charles N. Dowd, whose check was received July 16, was credited with contribution of $25 for week of July 17 and of July 24.

F. F. Simpson, M.D. Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

PARIS LETTER

PARIS, Aug. 5, 1915.

The War

DRESSING OF WOUNDS OF WAR WITH SALINE SOLUTION

Several surgeons have reported excellent results from the treatment of wounds of war with sea water or 0.7 per cent. saline solution. Dr. E. Gley, professor at the Collège de France, has drawn the attention of the Académie de médecine to the fact that the proportion of sodium chlorid in an isotonic solution must be 0.9 per cent. Physiologists, moreover, have forsaken the wrongly named "physiologic solution" for the solution of Ringer-Locke, which includes not only sodium chlorid but also calcium chlorid, potassium chlorid and sodium bicarbonate. In surgery also it would be well to use by preference the latter solution, which is preferable to saline solution and still more to simple sterilized water. This last, on account of its harmful osmotic activity, ought to be banished from operating rooms and dressings. For nine months Dr. Gley has used Ringer-Locke solution, either plain or as a vehicle for antiseptic substances, in operations, dressings and hypodermic or intravenous injections. The results observed have included a diminution of pain, a more rapid disappearance of suppuration, and more rapid cicatrization of the wounds.

With regard to sea water, the Prince of Monaco has observed that, no matter how far from the coast or at what depth, the sea water is drawn, it is never possible to be sure that it is free from germs. Of two samples taken side by side, one will furnish cultures of microbes and the other will be found sterile. Sea water, therefore, should be sterilized before being used. Heat seems to deprive it of none of its valuable properties.

Dr. V. Wallich has read a paper before the Académie des Sciences on the elimination of suppuration in wounds of war. He has succeeded in eliminating the most serious suppurations, such as those in fractures with wounds, phlegmons of various regions and ununited stumps. In three or four days the secretions of the wound disappear and the wound itself takes on a "ham-like" appearance surrounded by a large cicatricial border. The general condition of the patient improves, although in some cases a high temperature persists, while the pulse constantly becomes less accelerated. The examination of the exudate shows an increasing vitality of the leukocytes and a diminution of germs. At last the germs disappear; there remain only healthy leukocytes and proliferating corpuscles. These results are obtained by doing away with drains as soon as possible; the wound is bathed at the outset with a saline solution which has been boiled for a quarter of an hour and which contains a soupspoonful of sodium chlorid per liter. The surface of the wound is covered with little gauze compresses boiled in the same solution. The asepsis should be complete; the operation of dressing, like a bacteriologic manipulation, should be performed with sterilized instruments, the dressing materials being untouched by the hands, which are difficult to keep aseptic during the course of a series of dressings.

LESIONS OF THE MEDIAN NERVE OF THE FOREARM IN LIGHT WOUNDS BY PROJECTILES

At a recent session of the Société de chirurgie de Paris, Dr. Hardouin of Nantes called attention to the great frequency of lesions of the median nerve in the forearm in light wounds by projectiles. These lesions seldom become manifest until after the cicatrization of the wound. The patient complains that movements of the hand and wrist, whether spontaneous or passive, continue to be painful even though there is no articular stiffness present. A characteristic sign is that pain, provoked by exaggerated movements, is present near the anterior cicatrix of the forearm and a little below it, but not in the articulations of the fingers and the hand, as in cases of arthritis and synovitis. When the lesion of the median nerve has not been recognized these cases drag on indefinitely, no result being obtained from any mechanotherapeutic or electrotherapeutic measures. The patients make very good recoveries, on the contrary, when they receive the exclusively surgical treatment adapted to their condition. The median nerve must be liberated from the intimate adhesions which bind it to the neighboring muscles and tendons. The operation is simple, but it is necessary to try to avoid formation of new adhesions. To prevent this, Hardouin has for six months employed a very simple procedure which has given full satisfaction. The nerve, once dissected free, is completely and carefully wrapped (but not so tightly as to cause compression), with a strand of catgut carefully applied along the entire affected zone. The catgut, during the time it is being absorbed, protects the nerve and permits the neighboring tissues to become cicatrized without forming new adhesions. After this procedure, pains disappear rapidly and the function of the hand is notably improved in most cases.

TREATMENT OF SYPHILITIC COMPLICATIONS IN SOLDIERS BY SHORT INTENSIVE COURSES OF ARSENIC AND MERCURY

At present there is an object in treating syphilitic soldiers energetically and rapidly in order to return them to the army as soon as possible. For this purpose Drs. Dalimier and Debat have adopted a method which they have just reported to the Académie de médecine and which consists in a combination of injections of salvarsan with Jacquet's "plurimercurial" treatment: three or four moderate arsenical injections given six days apart with daily absorption of 0.1 gm. of mercurous iodid in the form of pills, 0.01 gm. of mercuric iodid in intramuscular injection and inunction of 2 gm. of Neapolitan ointment [about the same as our mercurial ointment U. S. P.—ED.].

By this method about 80 per cent. of the patients may be returned to the ranks in three weeks. Used with care on subjects thoroughly examined beforehand, it is not dangerous and is tolerated perfectly.

THE SANITATION OF BATTLEFIELDS

In the present war, in which the battle fronts extend in France and Belgium alone over more than 600 kilometers (about 375 miles), the question of the sanitation of battlefields has a special importance. It was recently discussed by the Conseil supérieur d'hygiène publique de France (THE JOURNAL, May 22, 1915, p. 1777). In general, the use of chemical agents and spray applications (coal tar, phenol, ferrous sulphate, zinc sulphate, chlorinated lime, etc.), is recommended. These chemical agents, however, are rather expensive and it is not always possible to obtain them. It is therefore of interest to recall that in 1871 the Conseil d'hygiène publique recommended and applied with success an altogether different method, based on the power possessed by vegetable growths of absorbing and transforming decaying animal substances. By this method bodies are left where they fall, but covered with a layer of earth no thicker than 40 or 50 cm. (about 15 or 20 inches). It is necessary, however, to take care to bring the earth for the mound from a distance of 1 or 2 meters (about 1 or 2 yards), in order not to disturb the soil impregnated with liquids of decomposition and to avoid forming trenches at the side which would dry the mound too rapidly. The mound is then planted with grains and plants which grow rapidly and which are especially avid of nitrogen or the products of decomposition. Among the best for this use are the *Helianthus annuus* or common sunflower and the *Balsamita suaveolens*, otherwise known as the *Chrysanthemum balsamita* or balsam herb, whose assimilative powers are remarkable. Other plants which are very greedy for nitrogen may be employed, such as the *Galega officinalis* or goat's rue, the *Helianthus tuberosus* or Jerusalem artichoke, the *Sinapis arvensis* or wild mustard, and some forage plants.

THE AMERICAN RELIEF

The general committee of the American Relief Clearing House has met at the seat of the organization, rue François-I-er, 1, under the chairmanship of Mr. H. Herman Harjes. The financial report shows that up to the present it has received 199,711 francs (about $39,942), while the various organizations of which it is the center have received 1,009,565 francs (about $201,913). The chairman mentioned that donations, whether in shape of money or of supplies, are addressed directly to the invaded provinces through the Belgian relief commission (Hoover Commission) and that the Rockefeller foundation and the American Red Cross are supporting an important sanitary mission in Serbia. Mr. Harjes expressed the gratitude of the committee toward the French government and its officials, who have given every facility for the transportation of donations from America. These have amounted already to 7,000 cases, 2,786 of which have been received in June alone.

THE ACADEMY OF MEDICINE AND THE WAR

Ordinarily the Académie de médecine holds no sessions from the end of July to the beginning of October. Because of the present condition of affairs it has decided to continue holding public sessions during August and September.

Marriages

Van Arsdle Blakslee, M.D., Midland, Ont., to Miss Margaret Newbold of Manhasset, L. I., N. Y., August 10.

Charles E. Porter, M.D., Menlo, Iowa, to Miss Minnie Leone Wilson, of Pomona, Cal., August 4.

Louis Birsner, M.D., Belleville, Ill., to Miss Gertrude Hinch of Ste. Genevieve, Mo., August 15.

Willard Woodard Dicker, M.D., to Miss Mary C. Wright, both of Oak Park, Ill., August 14.

Lawrence Contessa, M.D., to Miss Angelina Ruffolo, both of New York City, August 18.

James Craig Neel, M.D., to Miss Nellie Clarke Glascock, both of Baltimore, August 17.

Henry Wolffe Bowers, M.D., to Miss Grace Borgen, both of Nevada, Iowa, August 15.

James J. Walsh, M.D., to Miss Julia Hulet Freed, both of New York City, August 14.

Charles P. Kennedy, M.D., to Miss Nora Bess Ely, both of Cincinnati, August 14.

Charles T. Foo, M.D., St. Johns, Mich., to Miss Rose Woo of Detroit, recently.

Elton A. Chloupek, M.D., to Miss Emma Shaw, both of Chicago, recently.

Deaths

Paul Ehrlich. Prof. Paul Ehrlich, one of the most celebrated scientists of modern years, died in Berlin, August 20, of heart disease. Dr. Ehrlich was born in Strehlen in the Province of Silesia, March 14, 1854. His early education was received in Breslau, and later he studied medicine at Breslau, Strassburg, Freiburg and Leipzig. He received his degree in medicine in 1878. From 1878 to 1885 he was assistant in the clinic of v. Frerichs at Strassburg; from 1885 to 1889 assistant in the medical clinic of Gerhardt; and in 1889 he became privatdozent in the medical faculty of Berlin. He became assistant in the Institute for Infectious Diseases under Koch in 1890, and was made professor in 1891. In 1896 he became director of the Institute for Serum Study in Steglitz near Berlin. He was made director of the Royal Institute for Experimental Therapy, a German government institute at Frankfort, in 1899. In 1906 Mrs. Georg Speyer endowed an institute for the study of chemical therapeutics for Dr. Ehrlich. The Georg Speyer-Haus was built next to the Royal Institute for Experimental Therapy. At that time also Dr. Ehrlich received a grant of $10,000 from the Rockefeller Institute. In 1904 Dr. Ehrlich visited the United States and lectured in various cities, receiving the degree of LL.D. from the University of Chicago; in 1907 he delivered the Harben lectures in London, receiving the degree of Doctor of Science from the University of Oxford; in 1908 he received one half of the Nobel Prize for Research in Immunity, the prize being equally divided between Drs. Ehrlich and Metchnikoff, and in 1914 he was decorated with the Insignia of the Red Eagle by Emperor William XII. He was also the recipient of the grand cross of the Orden Civil de Alfonso conferred by the king of Spain.

Ehrlich's early publications were on the study of the blood cells and its constituents. He also did fundamental work in the standardization of diphtheria antitoxin, working with von Behring. A number of experiments with synthetic products resulted in the production of atoxyl; in 1910 salvarsan, and later neosalvarsan. Simultaneous with these studies he developed the side-chain theory. More recently Professor Ehrlich had been concerned with remedies for cancer.

Last year the sixtieth birthday of Professor Ehrlich was celebrated in Berlin. At that time our foreign correspondent stated that although it was customary to celebrate the seventieth birthday as the occasion of public honor, the occurrence of the sixtieth birthdays of two great scientists, Drs. Ehrlich and Behring, one on the 14th, the other on the 15th of March, made an early celebration seem particularly appropriate. Great honor was done to these two discoverers at that time.

Carlos John Finlay who first suggested the theory of the propagation of yellow fever by means of the mosquito, died at his home in Havana, Cuba, August 20, aged 81.

He was born in Puerto Principe, Cuba, Dec. 3, 1833, the son of Dr. Edward and Isabel de Barrès Finlay. He received his preliminary education in Rouen, France, and then entered Jefferson Medical College, Philadelphia, from which he was graduated in 1865. Dr. Finlay began practice in Havana. He was the delegate from Cuba to the International Sanitary Conference in Washington in 1881, and in that year, on August 14 before the Royal Academy of Medicine, Havana, promulgated his theory that an insect, the mosquito, was the means whereby yellow fever was conveyed from person to person. His articles in support of this theory appeared in the *American Journal of the Medical Sciences* for October, 1886; he reported that he had "obtained a well-marked attack of yellow fever following a bite by a contaminated mosquito." He published another article on the subject of mosquito transmission of yellow fever, in 1894, in the *Edinburgh Medical Journal* and five years later a third article in the *Medical Record,* in which he outlined in detail how yellow fever cases should be handled and screened, proposed the destruction of mosquito larvæ and discussed prophylaxis treatment and general sanitary control.

Dr. Finlay's theory was not regarded seriously, but he persisted.

After the withdrawal of the United States troops from Cuba, in 1902, Dr. Finlay succeeded Dr. Gorgas as chief health officer of Cuba and later was retired on a pension by the Cuban government. Since January, 1909, he had been the honorary president of the Junta Nacional de Sanidad y Beneficencia and editor of its official organ. He was also a member of many learned societies. Dr. Finlay was an enthusiast, thoughtful and kindly. He lacked the genius for self-exploitation and having established his doctrine, modestly lived on with no thought of further recognition.

Dr. Edmund Blackett Owen, M.B., F.R.C.S., 1872; surgeon-in-chief of the St. John Ambulance Brigade, died in London, July 23, from cerebral hemorrhage, aged 68. The death of Dr. Owen was probably hastened by his devotion to the wounded. When the Epsom Hospital for the Wounded first opened, Dr. Owen operated the first night from eleven o'clock until four in the morning, beginning again immediately after breakfast and for some time thereafter he had been working very strenuously in connection with the Red Cross. Dr. Owen had been senior vice-president of the Royal College of Surgeons and chairman of the council of the British Medical Association. He had received honorary degrees from the universities of Aberdeen and Sheffield; was a Chevalier of the Legion of Honor of France, and had written several medical treatises, notably the article on surgery in the Encyclopedia Britannica.

Horatio Nelson Spencer, M.D. College of Physicians and Surgeons in the city of New York, 1869; a member of the Missouri State Medical Association; aged 73; founder of the *American Journal of Otology* and editor of the journal for four years; a member of the American Otological Society; a Confederate veteran; professor of diseases of the ear in the medical department of Washington University, St. Louis, and consulting aural surgeon to the Martha Parsons Free Hospital for Children, St. Louis; died at Galen Hall, Atlantic City, N. J., August 7, from typhoid fever.

Florence Huson, M.D. University of Michigan, Ann Arbor, 1885; a Fellow of the American Medical Association; attending obstetrician and chief of staff of the Detroit Women's Hospital and Infants' Home; founder of the Free Dispensary for Women and Children, Detroit; founder, and for several years president of the Blackwell Medical Society and once vice-president of the Michigan State Medical Society; died at her home in Detroit, August 13, from cerebral hemorrhage.

John O'Malley, M.D. Jefferson Medical College, 1884; a member of the Medical Society of the State of Pennsylvania; aged 59; physician to the St. Joseph's Home and Maternity Hospital, Scranton, Pa.; for many years health officer of Scranton and for three terms a member of the local school board; died at his home in Scranton, August 6, from cholera morbus.

Arthur Alston Morrison, M.D. Medical College of the State of South Carolina, Charleston, 1894; aged 44; formerly a Fellow of the American Medical Association; a member of the Medical Association of Georgia; assistant surgeon of the First Infantry, Georgia National Guard;

attending physician to the Hoover Home and Bethesda Orphan's Home, Savannah, Ga., died at his home in Savannah, August 6.

Edelbert U. Eaton, M.D. University of Buffalo, 1884; aged 70; a member of the Medical Society of the State of Pennsylvania; first president of the Potter County Medical Society, formerly a member of the Pennsylvania legislature and for seventeen years postmaster of Ulysses, Pa., died at his home at that place May 25, from cerebral hemorrhage.

John Jacob Bissett, M.D. College of Physicians and Surgeons in the city of New York, 1880; aged 79; a member of the Medical Society of the state of Pennsylvania and Medical Society of New Jersey; an officer of the United States Navy retired as lieutenant commander; of Coraopolis, Pa., died in Bridgeport, Conn., July 20, from cerebral hemorrhage.

John Kendrick Gilmore, M.D. Detroit College of Medicine, 1892; a member of the Medical Society of the State of Pennsylvania, and formerly president of the Clinton County Medical Society; borough physician and formerly president of the Renovo, Pa., board of health, died at his home in Renovo, about August 5, aged 56.

Ammi Ward Follett, M.D. Dartmouth Medical School, Hanover, N. H., 1882; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; a practitioner of Somerville, Mass., since 1888; died at his home in that place, August 16, aged 57.

Neal Walter Culbertson, M.D. Rush Medical College, 1896; aged 44; a Fellow of the American Medical Association; local surgeon to the Pennsylvania, Baltimore and Ohio, and Wabash systems at Massillon, Ohio, died at his home in Massillon, August 7, from endocarditis.

William Emil Klokke, M.D. College of Physicians and Surgeons, Chicago, 1899; a member of the Missouri State Medical Association; of St. Louis; a specialist on diseases of the eye, ear, nose and throat; died in Tampa, Fla., August 8, from meningitis, aged 39.

George Kerr, M.D. University of Pennsylvania, Philadelphia, 1864; aged 74; of Pierson, Fla.; a Fellow of the American Medical Association; surgeon of volunteers during the Civil War, died at his summer home in Lavalette, N. J., August 12.

Arthur Thomas Hills, M.D. New York Homeopathic Medical College, New York City, 1875; aged 65; of New York City and Nyack, N. Y.; a Fellow of the American Medical Association; died in a hospital in Nashua, N. H., August 7, from nephritis.

Jeanne de la Montaigne Lozier, M.D. New York Medical Hospital College for Women, New York City, 1878; aged 74; at one time a member of the faculty of her alma mater; died at her home in New Brighton, Staten Island, August 6, from heart disease.

George William Hackett, M.D. University of Buffalo, 1895; of Ceres, N. Y.; a Fellow of the American Medical Association; was caught beneath his overturned automobile and instantly killed near Shingle House, N. Y., August 11.

John Ambrose Kenney, M.D. University of Pennsylvania, Philadelphia, 1909; a Fellow of the American Medical Association; aged 40; a specialist on diseases of the eye, ear, nose and throat, died at his home in Wilkes-Barre, Pa., August 9.

Wilbur James Boyden, M.D. Long Island College Hospital, Brooklyn, 1872; aged 64; for many years a practitioner of Muncie, Ind., and later a patient in the East Haven State Hospital; died at his home in Wayne County, Ind., about August 3.

Garland E. Huddle, M.D. Baltimore University, 1892; aged 44; a member of the Kentucky State Medical Association; for several years health officer of Bowling Green, Ky.; died at his home in Bowling Green, Ky., August 3, from nephritis.

Samuel Thomas Roman, M.D. University of Pennsylvania, Philadelphia, 1865; aged 75; a Fellow of the American Medical Association; assistant surgeon of volunteers during the Civil War; died at his home near Conowingo, Md., August 4.

William Jamison McClement Cunningham, M.D. Rush Medical College, 1904; of Chicago; a member of the Illinois State Medical Society and Chicago Dermatological Society; died in the Presbyterian Hospital, Chicago, August 13.

Robert V. Mobley, M.D. University of Alabama, Mobile, 1889; aged 49; of Birmingham, Ala.; a member of the Medical Association of the State of Alabama; died in an infirmary in Birmingham, August 4, from tumor of the brain.

Elmer L. Styles, M.D. Homeopathic Hospital College, Cleveland, 1881; aged 68; a veteran of the Civil War; of New Britain, Conn.; while driving his automobile in Newington, Conn., August 3, died suddenly from heart disease.

George W. Arbuckle, M.D. Hahnemann Medical College, Chicago, 1881; aged 69; formerly coroner of Cuyahoga County, Ohio, and for many years a resident of Cleveland; died at his home in Novelty, Ohio, July 29.

Adelbert De Loss Lowell, M.D. Rush Medical College, 1889; a Fellow of the American Medical Association; aged 52; for twenty-nine years a practitioner of Rogers Park, Chicago, died August 14, from appendicitis.

David LeRoy Merriman, M.D. Hahnemann Medical College, Philadelphia, 1894; aged 50; a member of the Medical Society of the State of Pennsylvania; died at his home in Arendtsville, Pa., August 15, from uremia.

Marvin B. Grace, M.D. Texas Medical College, Galveston, 1891; aged 47; a Fellow of the American Medical Association and a well-known practitioner of Seguin, Tex.; died at a hospital in Houston, Tex., July 27.

John Charles Maloney, M.D. Yale University, New Haven, Conn., 1910; aged 29; a member of the Medical Society of the State of New York; died at his home in Dundee, N. Y., August 1, from valvular heart disease.

Paul Emile Arthur Du Milieu, M.D. Faculty of Medicine of Bordeaux, France, 1878; Cooper Medical College, San Francisco, 1886; aged 63; was found dead in his home in Nevada City, Calif., August 7.

Lauchie Q. Thornberry, M.D. University of Louisville, Ky., 1907; aged 38; of Mouthcard, Ky.; who was shot and seriously wounded, July 21, in a quarrel, died in a hospital in Huntington, W. Va., July 31.

John Gilmer Minor, M.D. Jefferson Medical College, 1854; aged 84; for more than half a century a practitioner of Rockingham County, Va.; died at his home in Bridgewater, Va., about August 3.

Lester H. Painter, M.D. College of Medicine and Surgery, Physio-Medical, Chicago, 1898; aged 44; of Dallas, Tex.; died at the home of his sister in Muncie, Ind., August 1, from heart disease.

John R. Vandenberg, M.D. Grand Rapids (Mich.) Medical College, 1902; aged 36; of Grand Rapids, Mich.; was killed, August 2, in a collision between automobiles on the Robinson road.

Michael J. S. Cook, M.D. Detroit Homeopathic College, 1872; aged 79; for nearly thirty-five years a practitioner of Harbor Springs, Mich.; died at his home in that place, July 25.

Richard H. Hightower, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1890; aged 55; died at his home in Stockbridge, Ga., July 22, from cerebral hemorrhage.

George H. Riley, M.D. Rush Medical College, 1875; aged 59; of Toledo, Ohio; died at the home of his sister in Chicago, August 3, from carcinoma of the stomach.

John Wilbur MacCammon, M.D. Medical College of Indiana, Indianapolis, 1902; aged 38; died at his home in Indianapolis, August 7, from tuberculosis.

Mary Louise Ambrook, M.D. University of Michigan, Ann Arbor, 1891; aged 65; died at her home in Boulder, Colo., August 4, from heart disease.

Benjamin J. Smith, M.D. Bellevue Hospital Medical College, 1873; aged 69; died at his home in Vanceboro, N. C., May 29, from acute colitis.

James Malcolm Thompson, M.D. Chicago College of Medicine and Surgery, 1910; aged 35; died at his home in San Francisco, August 5.

Clara Emma Watson, M.D. Eclectic Medical College of the City of New York, 1895; aged 54; died at her home in Brooklyn, July 31.

Reuben F. Berry, M.D. Beaumont Hospital Medical College, St. Louis, 1888; aged 69; died at his home in Lancaster, Ohio, July 31.

Osmer Irvin Reasoner, M.D. Kentucky School of Medicine, Louisville, 1876; aged 62; died at his home in Muncie, Ind., August 9.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

FORMAMINT

Report of the Council on Pharmacy and Chemistry

The following report has been authorized for publication.

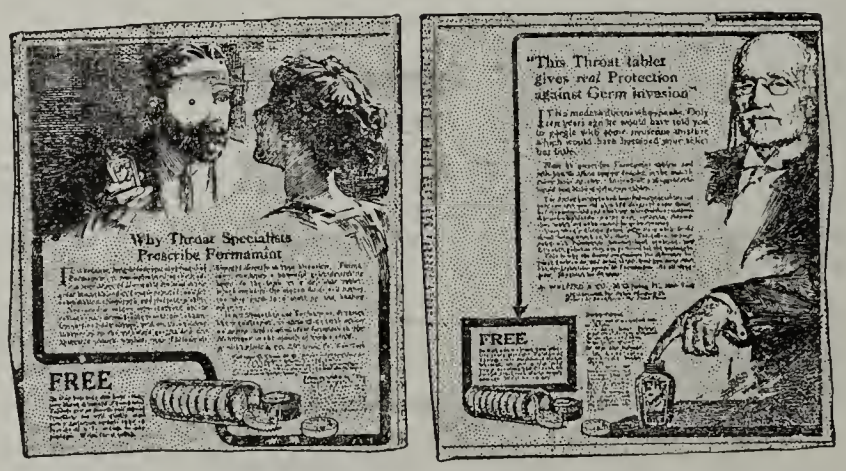
W. A. Puckner, Secretary.

Formamint is a proprietary medicine manufactured by the A. Wulfing Company (New York, London and Berlin), which is affiliated with the Bauer Chemical Company.

It has been widely advertised in Europe for several years, and is now on the American market;[1] it is advertised in this country both in newspapers and medical journals.

Following is a brief review of the more important alleged investigations that have been reported from time to time in various European journals.

In "The Therapeutical Value of Formamint in Septic Affections of the Oro-Pharynx," De Santi[2] quotes Rosenberg,[3] who reports the successful use of Formamint in cases of streptococcus infections, tonsillitis and acute symptoms of chronic sore throat. According to Seifert[4] Formamint is a chemical combination of formaldehyd and milk sugar. When the tablets are dissolved in the saliva, 0.01 per cent. of formaldehyd in its "status nascendi" is liberated and exercises a strong disinfectant action. Seifert states that the preparation is markedly palatable, since it contains a little citric acid to render the taste cool and refreshing. In some experiments with streptococci, pneumococci, typhoid and diphtheria bacilli, Seifert found that a solution of one tablet in 10 c.c. of water destroyed these germs in from five to ten minutes. A solution of the same strength was also added to culture tubes of broth, agar, and gelatin, with the result that no growth occurred in them, while distinct and characteristic development of the bacteria took place in control tubes. He does not state, however, how much Formamint solution was added to the mediums.



How the exploiters of Formamint capitalize the medical profession. Miniature reproductions of typical Formamint advertisements appearing in the newspapers.

Daus[5] reports successful treatment of tonsillitis, mumps and middle ear diseases. In these cases no other gargles or mouth washes were used. He states that no indication of irritant or other injurious action made its appearance even after large doses. In the same article F. Levy reports experiments as follows: Agar plates were prepared with a culture of streptococcus from a severe case of quinsy. One half of the plate was rubbed with saliva containing Formamint in solution. (The strength of the solution used is not given.) In twenty-four hours streaks of growth had appeared on one portion of the plates while the part on which the Formamint saliva had been rubbed remained sterile. Daus also found that agar and broth cultures of streptococcus shaken with Formamint saliva remained sterile.

Rheinboldt,[6] investigating the effects of Formamint and of ordinary formaldehyd on animals, concludes that formaldehyd is toxic in action while Formamint is not.

Rosenberg[7] corroborates this statement. He also found that agar plates of *Bacillus prodigiosus* were killed by Formamint solutions in about four hours. He fails, however, to give the strength of his Formamint solutions.

Wingrave[8] suggests the use of Formamint for infants! He recommends that a tablet be crushed and wrapped in "butter cloth." The ends of the cloth are to be tied with thread, the Formamint is to be moistened, and the packet is to be held in the mouth of the baby several times each day.

Young[9] published the results of some experiments by himself and Delépine on the human throat. They dissolved a tablet in the mouth and made swab cultures with the following results:

Immediately after taking the tablet....	0 colonies
10 minutes after taking the tablet....	35 colonies
30 minutes after taking the tablet....	150 colonies

They found no staphylococci at any time. Other results of swabbing various parts of the throat before and after the use of Formamint, reported by these investigators, show enormous reductions in the count, claimed to be due to the action of Formamint. The count was made on agar at 37 C., but they fail to state the time elapsing between taking the Formamint and making the swab. Young also reports favorable clinical results in cases of scarlet fever, diphtheria, sore throat, and the like. It must be noted, however, that they state that the mouth and fauces must first be thoroughly cleansed by swabbing and douching before Formamint is used.

THE "CHEMICAL COMPOUND" CLAIM

The claims made in the advertising literature of Formamint are very extravagant. Many are highly improbable. These statements will be discussed later.

The statement is made that Formamint is a new chemical compound:

> "Formamint is Pentamethanallactose, 5 CHOH+C_{12} H_{22} O_{11}. It is an original combination of Formaldehyde with Lactose, a definite chemical compound. The Formaldehyde molecule is locked up in it until solution in the saliva takes place, when the Formaldehyde is liberated in its *nascent* state and is therefore active without being irritant."

Furthermore the makers contend that this new chemical compound is entirely harmless. For example Daus,[5] in an article on "The Disinfectant Action of Formic Aldehyde on Mucous Membranes," declares:

> "No indication of irritant or other injurious action made its appearance even after large doses. The urine remained free from albumin and sugar."

Such statements as these are found in the advertising literature:

> "Formamint tablets are absolutely harmless and innocuous, even to little children."
>
> "When dissolved in the saliva, Formamint Tablets liberate slowly Nascent Formaldehyde in a most active yet non-irritant form."

They maintain that Formamint is not only absolutely harmless, but actually beneficial to the tissues. It may be used "to tone up and strengthen the tissues, prevent hoarseness, and allay irritation in singers, public speakers," etc.

The claims urged as to its germicidal power are indeed glittering. This "new chemical compound" is claimed to liberate formaldehyd in some new and peculiar condition which, while it has a soothing and tonic effect on the cells of the human tissues, can at the same time quickly kill any form of bacterial life.

1. The Journal A. M. A., Feb. 24, 1912, p. 572.
2. De Santi: Medical Magazine, 1907, xvi, 141.
3. Rosenberg: Lancet, London, 1905, ii, 1871.
4. Seifert: Pharmakol. u. therap. Rundschau, 1904, No. 14; quoted by De Santi (Note 2).
5. Daus: Med. Klin., 1906, ii, 410.
6. Rheinboldt: Deutsch. med. Wchnschr., 1906, xxxii, 587.
7. Rosenberg: Therap. d. Gegen., 1905, vii, 55.
8. Wingrave: Lancet, London, 1906, ii, 1067.
9. Young: Lancet, London, 1908, i, 975.

"Dissolving readily it releases its germicidal, antiseptic qualities, which impregnate the saliva and are carried naturally and easily around the mouth and in the deepest crevices of the throat — destroying the germs where they are causing the mischief. Formamint prevents and destroys infectious germ life in a soothing grateful way."

"In the saliva it frees a germicide, fatal to germs but harmless to the most delicate membranes. And flowing into every tiny corner of the gums, tonsils and throat, into places where no gargle ever reaches, it most effectively *disinfects* the throat."

The claims as to the preventive and curative effects of the preparation cover a large portion of the category of human ailments and distresses. The following quotations indicate some of its supposed properties:

". . . it is therefore self-evident that Formamint should be looked upon as a necessary part of the treatment of all forms of tonsillitis."

"The value of Formamint is equally great in diphtheric tonsillitis, or as a prophylactic . . ."

"The extraordinary success which I had with Formamint in a school epidemic of scarlet fever during May and June, 1907, was the determining factor which induced me to abandon the use of inhalations, gargles, local applications in the treatment of diseases of the throat, and to use Formamint exclusively for the future."

"There are naturally many similar conditions in which Formamint may be used as a prophylactic, notably scarlet fever, mumps, streptococcal and staphylococcal sore throats, 'milk outbreaks' of sore throat, drain throats, hospital throats, and the like."

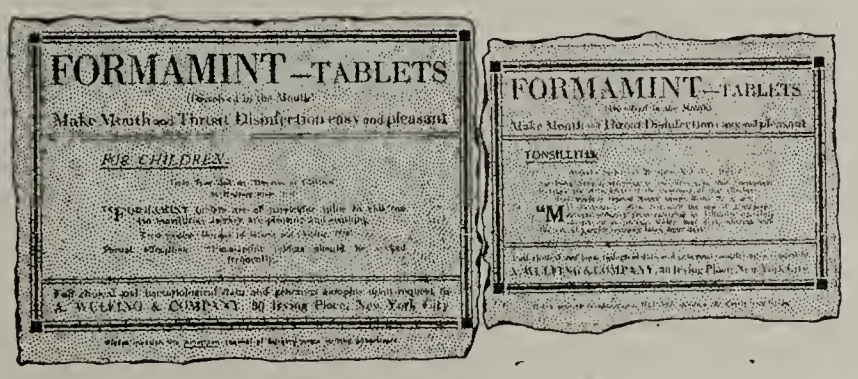
"Formamint Tablets are indicated in Angina, Tonsillitis, Pharyngitis, Stomatitis, Gingivitis, Glossitis, ulceration, spongy or bleeding gums, Pyorrhoea Alveolaris, 'Smoker's Sore Throat,' Abscess or Boils, etc."

"As a *Prophylactic* against Diphtheria, Scarlet Fever, Influenza, Measles, Epidemic Poliomyelitis, and other pathogenic micro-organisms. To neutralize putrefaction products in and about the teeth, correct fermentative processes, deodorize and purify the breath, etc."

"To *tone up,* and *strengthen* the tissues, prevent *hoarseness,* and *allay irritation* in singers, public speakers, neutralize the effects of dust-infection or *disinfect the saliva or sputum* in Influenza, Tuberculosis, etc."

One man declares that along with specific constitutional treatment he "had the best results from the use of Formamint tablets" in a case of syphilitic ulceration of the tongue.

In short, Formamint is recommended for the treatment or prevention of almost everything from a bad breath, to such grave conditions as scarlet fever, diphtheria and tuberculosis, conditions in which a delay in proper treatment—for instance, a failure to administer in diphtheria, antitoxin, may result in the death of the patient.



Two Formamint advertisements reproduced in miniature typical of those appearing in a certain type of medical journals.

A series of investigations was therefore undertaken in order to discover whether the extravagant claims regarding the germicidal power of Formamint could be verified.

Experimental Data

Two fifty-cent bottles of Wulfing's Formamint were purchased in the open market and were kept well stoppered to prevent deterioration.

Qualitative tests showed the presence of formaldehyd and the amount was determined quantitatively by the hydrogen peroxid method as given by Sutton.[10] The results were respectively, 1.99 per cent. and 2.03 per cent. of formaldehyd.

Some determinations were made of the germicidal power of Formamint in vitro, that is, under controlled laboratory conditions. A twenty-four-hour plain agar culture of *Staphylococcus aureus* was washed off in 10 c.c. of sterile 0.85 per cent. sodium chlorid solution. A 1:100,000 dilution of this was made in each of three flasks containing 100 c.c. of sterile saliva. Flask 1 contained 1 per cent. of Formamint, Flask 2, 5 per cent.; Flask 3, containing no Formamint, was kept as a control. At intervals samples were removed and dilutions made and plated in duplicate on standard agar. The plates were incubated twenty-four hours at 37 C., and plates containing less than 200 colonies were counted. The results are given in Table 1. After seven days there was no appreciable difference in the plates.

10. Sutton: Volumetric Analysis, Edition 10, p. 390.

Another test was made by adding a 1 per cent. Formamint solution to plain agar plates inoculated with *B. coli*. A twenty-four-hour plain agar culture of *B. coli* was washed off in 10 c.c. of sterile 0.85 per cent. sodium chlorid solution. A 1:1,000,000 dilution was made of this and 1 c.c. added to each plate. Varying amounts of the 1 per cent. solution of Formamint were added to each plate. They were incubated seventy-two hours at 37 C. After seven days' incubation the count was the same. The results are given in Table 2.

TABLE 1.—SHOWING TIME IN WHICH CULTURES OF STAPHYLOCOCCUS AUREUS WERE KILLED BY DIFFERENT AMOUNTS OF FORMAMINT

Amount of Formamint in Saliva (Per cent.)	Period of Standing at 37 C. (Hours)	Average Count When Plated	Count on Flask of Saliva without Formamint
1	3	32	3200
1	6	0	7000
5	1	Few	5000
5	2	0	4100
5	3	0	3200*
5	6	0	7000*

* The last two observations were made at the same time as on the 1 per cent. solutions.

Another experiment was made thus: One loopful of a twenty-four-hour plain agar culture of *Streptococcus lacticus* was mixed with a tube of North medium. One loopful from the inoculated tube was mixed with a second tube of North medium. Both tubes were poured into Petri dishes and allowed to cool. One half of each plate was well smeared with a 10 per cent. solution of Formamint in saliva. After twenty-four hours' incubation at 37 C., only a few colonies appeared on the side to which the Formamint had been applied, while the other half was thickly covered with colonies.

This work so far corroborates that reported in the literature quoted by the manufacturers. But the fact that a compound is a germicide when brought into intimate contact with bacteria in a solution or medium in a test tube or flask does not prove that it will be effective when used in the human throat.

THE ALLEGED GERMICIDAL ACTION

An attempt was made to discover whether or not the claims advanced by the manufacturers as to the perfect germicidal action of Formamint in all the nooks and crannies of the mouth and throat could be confirmed.

TABLE 2.—COUNT OF B. COLI CULTURES WITH DIFFERENT AMOUNTS OF FORMAMINT

No. c.c. of 1 per cent. Formamint	0	0.1	0.3	0.5	0.7	1.0	1.5	2.0	3.0
Count	160	33	39	26	15	12	2	0	0

The first step in attacking this problem was to make comparative counts of the number of bacteria in the throat before and after the use of Formamint. The methods employed were as follows: The throat was gargled with 50 c.c. of sterile 0.85 per cent. sodium chlorid solution. In each case the same length of time, as far as possible, was used in the process. The liquid was collected in a sterile flask. The gargling in a series of experiments was begun not less than two hours after a meal. After some preliminary work the following dilutions of the 50 c.c. of salt solution were found sufficient: 1:1,000, 1:10,000 and 1:100,000. Plates were made in duplicate from each dilution and incubated seventy-two hours at 37 C. The counts were made on plates containing less than 200 colonies. Except where

otherwise noted standard agar was used. The mediums were always prepared in the same way.

All the work was carried out under conditions as nearly natural as possible. The Formamint was taken according to the directions accompanying the trade package. Every opportunity was given the Formamint to penetrate all the crypts and recesses about the mouth and throat. The tablet was allowed to dissolve as slowly as possible, the time usually being five to six minutes, and saliva was thoroughly forced around the mouth before being swallowed. Plating was always done immediately after gargling so that no growth could occur in the salt solution. The results are given in Table 3. The numbers are average counts from several plates and calculated to show the number of bacteria washed out by the 50 c.c. of salt solution.

Finally a determination was made of the number of streptococci in the throat before and after the use of Formamint. The throat was gargled in the manner previously described. The streptococcus count was made by the dilution method as given by Heinemann.[11] Culture tubes were used instead of fermentation tubes. One per cent. dextrose broth was the medium employed. One cubic centimeter was added to each of a series of ten tubes for each dilution and the following dilutions were used: 1:10,000, 1:100,000 and 1:1,000,000.

The results given in Table 4 are the average count from a number of dilutions and are reported as the total number washed out by the 50 c.c. of salt solution.

TABLE 3.—SHOWING THAT FORMAMINT DOES NOT GREATLY DECREASE THE NUMBER OF BACTERIA IN THE THROAT

Conditions of Test	Time Since Preceding Test	Amount of Formamint Used	No. Found in Throat Before Use of Formamint	No. Found in Throat After Use of Formamint
Normal	.....	0	15,600,000	.....
Normal	1 hour	0	38,500,000	.....
Normal	1 hour	0	30,500,000	.....
Normal	.....	0	12,500,000	.....
Normal	1 hour	0	14,500,000	.....
	1 hour	0	23,500,000	.....
Tablet dissolved in mouth and throat gargled one hour later	6 days	1 tablet	.....	15,000,000
Throat again gargled two hours after Formamint was used	1 hour	0	.....	10,050,000
Normal	7 days	0	62,000,000	.....
Normal	1 hour	0	72,500,000	.....
Normal	.....	.....	61,000,000	.....
Tablets were taken, one per hour, and throat gargled one hour after last tablet was taken.	2 days	12	.....	39,100,000
Throat was again gargled two hours after taking last tablet	1 hour	0	.....	59,000,000
Normal	5 days	0	35,000,000	.....
Normal	1 hour	0	62,000,000	.....
Normal	1 hour	0	72,000,000	.....
One tablet was taken each half hour for twelve hours consecutively. Throat was gargled one hour after last tablet was taken.	4 days	24 tablets	.....	175,000,000
Throat was again gargled two hours after last tablet was taken	1 hour	0	.....	168,750,000
Normal	3 days	0	129,600,000	.....
Normal	1 hour	0	177,000,000	.....
Normal	1 hour	0	147,000,000	.....
Normal	3 days	0	79,000,000	.....
One tablet was taken immediately after preceding gargle. Throat was again gargled at end of one hour.	1 hour	1	.....	83,200,000
Throat was again gargled two hours after tablet was taken	1 hour	0	.....	134,750,000
Normal conditions except that mouth and teeth were thoroughly washed with soap just before gargling.	19 days	0	32,600,000	.....
Same as above	1 hour	0	33,125,000	.....
Same as above	1 hour	0	40,375,000	.....
Teeth were not washed. Otherwise normal conditions	2 days	0	33,500,000	.....
Same as above	1 hour	0	43,330,000	.....
Same as above	1 hour	0	54,000,000	.....
Same as above	1 hour	0	50,000,000	.....
Same as above	1 hour	0	67,000,000	.....
Mouth and teeth thoroughly washed with soap just before throat was gargled.	2 days	0	5,270,000	.....
Same as above	1 hour	0	10,916,000	.....
Same as above	1 hour	0	8,275,000	.....
Normal conditions, but 1 c.c. of sterile rabbit's blood was added to each plate.	3 days	0	228,750,000	.....
Count from the same gargle as above. No blood used in the plates	0	0	60,625,000	.....
Normal conditions, but count was made on blood agar	1 hour	0	431,250,000	.....
Count from the same gargle as above. No blood used in the plates	0	0	59,625,000	.....
Normal conditions, count was made on blood agar	2 days	0	683,300,000	.....
Same gargle as above, but count was made on plain agar	0	0	58,500,000	.....
One tablet was taken just after preceding gargle. After one hour throat was again gargled. Count on blood agar.	1 hour	1 tablet	.....	558,300,000
Same gargle as above, but count was made on plain agar	0	1 tablet	.....	55,875,000
Normal conditions	2 days	0	79,125,000	.....
One tablet was taken just ten minutes before gargle was made	1 hr. & 16 min.	1 tablet	.....	56,250,000
Normal conditions	2 days	0	46,750,000	.....
One tablet was taken just ten minutes before throat was gargled	1 hour	1 tablet	.....	38,500,000
Teeth and mouth were thoroughly washed with soap just before gargle was made.	5 days	0	47,370,000	.....
Teeth washed as above and one tablet taken ten minutes before gargle was made.	1 hour	1 tablet	.....	21,225,000

TABLE 4.—SHOWING THAT FORMAMINT FAILS TO REDUCE THE NUMBER OF STREPTOCOCCI IN THE THROAT

Conditions of the Test	Time Since the Preceding Test	Amount of Formamint Used	No. Found in Throat Before Use of Formamint	No. Found in Throat After Use of Formamint
Normal	.....	0	1,200,000	.....
One tablet was taken and throat gargled one hour later	4 days	1 tablet	.....	14,750,000
Normal	3 days	0	9,950,000	.....
One tablet was taken and throat gargled ten minutes later	1 hour	1 tablet	.....	8,000,000

11. Heinemann: Laboratory Guide in Bacteriology, p. 86.

Discussion

The contention that Formamint contains formaldehyd was confirmed by analysis.

The manufacturers also maintain that Formamint is a new, definite chemical compound, consisting of five molecules of formaldehyd and one molecule of lactose, and that when dissolved in the saliva the formaldehyd is liberated in some new and peculiar form, which they call nascent formaldehyd. This new kind of formaldehyd is, according to the advertising literature, especially powerful in its germicidal properties and at the same time has absolutely no irritating or harmful effects.

NOT A CHEMICAL COMPOUND

Thoms,[12] retained as an expert by the German government, decided, after a series of chemical investigations, that Formamint was not a definite chemical compound, but that it was probably a solid solution of formaldehyd in lactose. He proved that when the process of manufacture was carried out in exactly the way called for by the Formamint patents, compounds containing a greater or less per cent. of formaldehyd could be made while the other properties remained similar to those of Formamint. The composition of the final product depended on the proportion of the components used in the process. Therefore Formamint did not form a safe means of uniform dosage.

As a result of Thoms' work the German courts held that Formamint was not a new chemical compound. Consequently the Formamint patent (Number 189036) was annulled in Berlin, Nov. 29, 1913.

Again the contention that formaldehyd in the nascent or active condition is less poisonous and irritating than in its ordinary form is contrary to what would be expected from the behavior of such compounds. If it were liberated, as claimed, in the "nascent" condition, it would be, for that very reason, not only more active but also more harmful.

As a matter of fact, Formamint did have an irritant effect on the worker who carried out these investigations. When one tablet was taken each hour for twelve consecutive hours, marked irritation of the intestinal tract resulted. There was almost sufficient nausea to cause vomiting and uneasiness in the alimentary canal following the experiment. When the twenty-four tablets were taken the results were similar but more pronounced. This is decidedly in contradiction to the assertions of the manufacturers.

Otto Seifert,[13] moreover, cites the following:

"By Effects: Only a few patients complain of an unpleasant sharp taste, burning of the tongue (Seifert, Sklarek). Among the general symptoms observed are urticaria-like exanthems (Glaser, Roters), which are accompanied by nausea, vomiting, headache, insomnia and vertigo, burning and irritability especially in the larynx (Meissner); phenomena of poisoning (Geissler); gastric disturbances (Engelmann); renal irritation (Steinhard); unsuited for diabetics (Voit)."

The contention that Formamint, when mixed directly with mediums and left in contact with bacteria, will kill the organisms was corroborated. Thus the statements and pictures in the booklet, "The Gospel of Prevention," which is enclosed with each bottle of Formamint, showing the inhibition of growth of air bacteria on plates containing Formamint are no doubt true and authentic.

Finally, the claim that Formamint is an almost perfect throat disinfectant was by no means confirmed, as a glance at the tables will show. One hour after it is taken, even when a tablet was used each half hour for twelve hours, the number of bacteria in the throat was practically the same as when Formamint was not used. Even ten minutes after taking a tablet the number of bacteria in the throat was never greatly reduced as is maintained by the manufacturers.

HAS NO SELECTIVE ACTION

Formamint exerts no selective action in killing off the very delicate organisms which are more apt to be pathogenic. When the comparative counts were made on blood agar which would favor the growth of the delicate parasitic organisms, no reduction whatever was shown by the use of Formamint.

The number of streptococci was found to be the same, within limits of experimental error, ten minutes after taking a tablet as it was before the tablet was taken.

Therefore it seems that Formamint fails, as any such germicide would be expected to fail, to kill bacteria in the crypts and recesses of the throat, for when dissolved in the mouth it cannot reach and remain in contact with the organisms long enough to kill them before it is swallowed.

SUMMARY

Summed up the investigation shows:

1. That the claims made for Formamint are extravagant and misleading.
2. That the recommendations for the use of these tablets may be, in some cases, fraught with danger and are a menace, not only to the health of the individual, but also to the safety of the community.
3. That the claim that Formamint is a definite chemical compound is false.
4. That the use of Formamint may produce marked irritation of the intestinal tract, and finally,
5. That Formamint is not a throat disinfectant as the manufacturers maintain, but its action on the bacteria of the throat is an almost negligible one and dependence on Formamint for the prevention of infection and for curing disease is not only unwise but dangerous.
6. That Formamint conflicts with the rules of the Council. False statements are made with regard to its composition (Rule 1); grossly unwarranted claims are made for its therapeutic properties (Rule 6), and therefore its exploitation to the public (Rules 3 and 4) is a public danger.

It is recommended that this report be published, to call attention not only to the falsity of the claims made for, and the danger in the use of, Formamint, but also to emphasize the utter inefficiency of all such methods of "disinfecting" the throat.

12. Thoms: Arb. a. d. Pharm. Inst. d. Universität, Berlin, 1914, xi, 210.
13. Seifert, Otto: Die Nebenwirkungen der modernen Arzneimittel, 1915.

Correspondence

The Official Responsibility of the State in the Tuberculosis Problem

To the Editor:—In THE JOURNAL (Aug. 7, 1915, p. 512) appears a most interesting paper by Dr. William Charles White of Pittsburgh, which was read at the recent meeting of the National Association for the Study and Prevention of Tuberculosis, at Seattle. All those who are vitally interested in the tuberculosis problem are of the opinion that only by united and concerted action between city, county and state authorities with the federal government can mitigation and control of tuberculosis be accomplished. Dr. White, in the beginning of his paper, refers to the unsatisfactory demonstrations made for the control of the disease, and expresses the opinion that if a unit in a community ever so small could demonstrate a feasible plan for the control of the disease, such a plan could be adapted by any community, as a whole, as a practical working plan. In 1911 Dr. Petruschky of Danzig attempted to put into execution just such a plan, and in his report four years after summarizes the most gratifying results. In the small village of Hela, situated on the peninsula of that name, a community consisting of fishermen and their families, in all about 500 souls, he undertook to examine by various methods every man, woman and child, and from the inception of that plan to the present time they have always been under observation. Whereas in the seven years previous to this vigilant inspection, nine cases of death from tuberculosis were reported, there has not been a single fatal case in the past four years. Fifty schoolchildren were all tested with tuberculin, and twenty-five reacting positively were at once given dietetic, hygienic and tuberculin treatment. The

remaining twenty-five, and all new children entering the school, were given a test once in six months, and kept under constant observation. All families, with the assistance of social workers, nurses and the moral support of the parish priest, were placed under the most hygienic housing conditions, and under this careful and strict management not a single new case of pulmonary tuberculosis has been observed during the past four years.

In 1913, Dr. Dietz of Darmstadt, mainly through the efforts of the insurance associations, attempted the control of tuberculosis in a small village in which it was very prevalent, and Dr. Kutchera in the Swiss Alps, since 1913, has been attempting to demonstrate on a large scale the control and arrest of pulmonary tuberculosis. In a large convent of about 500 sisters, in which pulmonary tuberculosis was very prevalent, he reports that by individual care, observation, examination and treatment in nine months, a perceptible improvement in the general condition was noticeable in 85 per cent. This all goes to show that community attempts on small units are making for the control of tuberculosis; but time alone can tell or demonstrate if permanently good results will follow. I do not believe that in any large community, where the views on this most important problem are so divergent, much good will come from any plan which we may devise, unless we first educate the community to a better understanding of this vexed problem and its great importance for the present and coming generations.

John Ritter, M.D., Chicago.

The Losses of Weight in the Newly Born

To the Editor:—Your editorials are always instructive, and form part of my weekly reading. This is why I have noticed "The Losses of Weight in the Newly Born" (The Journal, Aug. 7, 1915, p. 531). This loss begins under ordinary circumstances on the first day, not, as your editorial says, on the third or fourth, and is observed in all individuals without exception unless these individual babies be not starved. Before birth the baby was constantly supplied with food, and immediately afterward it is expected to do without any, or too little. If this little consists of improper substances, so much the worse for the baby. The "effort to force nutrients on an unprepared organism has no advantage." You also say children fed abundantly with artificial mixtures "sometimes experience the severest losses of weight." We practitioners are well aware of that. Without any modern education we know that both our new-born and advanced babies are made sick (who is not?) on indigestible food, and may lose weight, health and life. We never waited for your "more recent investigations," or the "more refined chemical technic of today," or "the demonstration of diverse enzymes" to appreciate the facts of emaciation, illness and loss of weight in the newcomer.

Maybe I never understood fully the secret of successful teaching which, according to Osler, consists in "reiteration, reiteration and reiteration," and therefore deserve a good deal of the oblivion, oblivion and oblivion I enjoy at the hands of my friends and pupils of 1860 and ever since. Unless you object, I propose, in connection with the rights of my old friends, the newly born, to copy from my presidential address of 1912 the following lines which you published in your issue of June 8, of that ancient year:

> The tissues of the newly born contain more water than those of the adult; the difference amounts to 10 per cent. *Loss of water* is badly tolerated, while large quantities are eliminated at once through the lungs, kidneys and skin, and some through the intestines. Without a proper supply, the tissues deteriorate, and the physiologic equilibrium is lost. That was always so — the newly born is conservative — and was considered normal. The baby had to be satisfied with reading in every text-book — even in the old ones from which some new ones are compiled — that he has to please the attending oracles by giving up 10 or 20 per cent. of his weight within a week or two. However, as the mother has but little milk during the first days, the least the baby should have a right to expect is water — at least teleology ordains it so — the more so as the first mammary secretion means colostrum, which contains three or four times as much protein as the milk of later weeks — that means 3 or 4 per cent. That is mainly so — even still more so — when the baby is premature and endowed with less vitality than when born at full term.

What I want to urge on those who have read your editorial is the lesson I repeated annually since I began public teaching in 1860. Give the new-born water to replace what he is losing. If that is not "scientific," it is intelligible without "giving the parents a written dietary." The parents do the same things for their own persons, namely, when they have lost water they drink. If they treat their new-born on that line, that baby will not lose weight to the extent your editorial takes for granted. In a large obstetric practice which extended over twenty years and did not terminate until about forty years ago, I have demonstrated that to my full satisfaction, and to that of many pupils and friends these two generations. My plea after all is *water*. It may be properly mixed when the maternal supply takes long to be amply supplied. The addition is barley water and after a few days boiled (or pasteurized) cow's milk. How much? Ten per cent. in the thin barley water, sweetened with cane sugar or not. No crime is committed by making it 9 or 11. I know babies; they do not care for mathematics, and thrive without formulas.

Your issue of August 14 tempts me to add a few words concerning "barley water" which met a few encouraging words from Dr. H. D. Chapin (The Journal, Aug. 14, 1915, p. 571). I have followed the advice given by him in these words: "We should study this subject from the practical standpoint and find out what agrees with the baby and then find the scientific reason for its use." In a practice of more than sixty and in my teaching of more than fifty years, indeed, I never diluted milk with water, but always with barley (occasionally oatmeal) water. In my first magazine writings, in my "Infant Diet" of nearly fifty years ago, in the great "Hand Book" of Gerhardt, in Buck's "Hygiene," in my "Intestinal Disorders," in my "Therapeutics of Infancy and Childhood"—all out of print, I am now sorry to say—and in endless discussions and papers, I have preached the gospel of barley water. Dr. Chapin credits me with having done so "some years ago." I have not invented barley nor discovered it—it has been eulogized by Homer for its being "the marrow of man." That was "some years" before my time, even before von Swieten, from whom I learned it. But I utilized barley water nearly twenty years before Zweifel, Schiffer and Korowin found the experimental proofs of the availability of amylaceous foods. That was nearly forty-five years ago.

Now Mr. Editor, I promised myself and you to be very brief. I do not believe that the constant repetition of often proved or self-evident facts is among your obligations to the American Medical Association and your other subscribers, or that it is your duty to please the discoverers of things that have been discovered and published one or more times. In the minds of the "pediatrician" of today, in the minds of any doctor who respects the history of his science and art sufficiently to know it, "the old woman of a generation ago" is a misnomer. Pediatrics is not of yesterday. Please read Garrison's history of medicine. If you do not care to study Soranus or even Rosen von Rosenheim, recall Charles West, Rillich and Barthez, Gerhardt, or your own J. Lewis Smith, and the doings of the New York Medical College, the Bellevue Medical College and the University Medical College, whose activities date back more than "a generation ago" and "the old woman."

A. Jacobi, M.D., New York.

Cataractous Families

To the Editor:—Recently I removed a mature cataract from the right eye of Mrs. H. W., aged 51. The one in the left eye is now mature.

Shortly afterward I removed a ripe cataract from the left eye of Mrs. W.'s brother, aged 45. Five years previously the right eye had been operated on for cataract, but the operation had been followed by iritis, panophthalmitis and enucleation.

Not long afterward I removed a mature cataract from the right eye of a sister of the two patients mentioned above, aged 48.

John L. Dickey, M.D., Wheeling, W. Va.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

JINTAN — A CHINESE NOSTRUM

To the Editor:—Enclosed I am sending you a couple of packages of Jintan. This stuff is sold far and wide over China. I have never yet seen any article so widely advertised as this is in China. The whole country is literally covered with its ads. Needless to say, the most extravagant claims are made for it. It has a large sale.

I should like very much to know something about what it contains and about how much would be the cost of the ingredients to make pellets that I enclose. With this information I can get in some effective blows in exposing the cheat.

A. C. SELMON, S. D. A. China Missions Training School, Shanghai, China.

ANSWER.—The specimen of Jintan (small, reddish-brown pills said to be made by H. Morishita) referred to by our correspondent was analyzed by the Chemical Laboratory of the American Medical Association. It reports:

Qualitative tests indicated the absence of potent alkaloids, iron and other heavy metals, saline laxative salts and emodin-bearing cathartics such as rhubarb, aloes or cascara in therapeutically effective amounts. Sugars were present in considerable quantities and the pills were highly aromatized, suggesting "breath perfumes" like "sen sen." A vegetable drug was present but was not identified. Physiologic experiments indicated that the pills possessed no material potency.

As the unidentified drug is likely to be of Japanese or Asiatic origin, and as the pills appeared to be devoid of therapeutically active drugs, no great amount of time was spent in an attempt to recognize this drug.

While the reported examination is not exhaustive, it seems to demonstrate sufficiently the general worthlessness of the nostrum. We cannot estimate the cost of the ingredients, but we venture a conjecture that the principal expense in the business is the advertising.

ARTICLES ON PAINFUL FEET

To the Editor:—Please give a list of references to articles on painful feet (excluding fallen arches).

H. C. STEIN, M.D., New York.

ANSWER.—

Porter, J. L.: Painful Affections of Feet, *Surg., Gynec. and Obst.*, January, 1911; abstr., THE JOURNAL, Feb. 4, 1911, p. 379.

Watkins, G. T.: Unusual Manifestations of Defective Feet, *California State Jour. Med.*, February, 1911; abst., THE JOURNAL, March 4, 1911, p. 698.

Strunsky, M.: Avoidance of Mistakes in Diagnosis of Foot Troubles, *New York Med. Jour.*, Feb. 4, 1911; The New Heel, THE JOURNAL, April 12, 1913, p. 1152.

Osgood, R. B.: Pathologic and Symptomatic Weight-Bearing. Consideration of Prevention and Cure of Foot-Strain, *Am. Jour. Orthop. Surg.*, February, 1912.

Tubby, A. H.: Some Obscure Affections of Foot, *Clin. Jour.*, London, April 23, 1913.

Dunlop, G.: Foot-Strain: Anatomic Explanation with Suggestions for Treatment, *Washington Med. Ann.*, July, 1914.

Hibbs, R. A.: Muscle Bound Feet, *New York Med. Jour.*, Oct. 24, 1914; abstr., THE JOURNAL, Nov. 7, 1914, p. 1698.

Tyrrell, J. B.: Foot Troubles as Factor Affecting Human Efficiency, *Med. Rec.*, New York, Nov. 7, 1914.

Millikin, M.: Foot as Affected by Modern Shoe, *Ohio State Med. Jour.*, November, 1914.

Billington, R. W.: Static Foot Disorders, *Tennessee State Med. Assn. Jour.*, February, 1915.

Lower, F. S.: Foot Ailments, *Illinois Med. Jour.*, March, 1915.

MANUFACTURE OF SALVARSAN

To the Editor:—Is salvarsan or neosalvarsan made in the United States? If so, by whom?

A. S. GOCKLEY, M.D., Carroll, Iowa.

ANSWER.—So far as we know, neither salvarsan nor neosalvarsan is manufactured in the United States. Under United States patents granted to the Farbwerke vorm. Meister, Lucius and Bruening, Hoechst a. M., Germany, this concern controls the sale of the products in this country. So far the products sold here have been those manufactured by the Farbwerke in its German factory, and we are not aware that the owners of the patents have taken any steps toward the production of salvarsan or neosalvarsan in the United States.

As the United States (differing in this from other countries) grants patents on the process, as well as on the product, the manufacture of salvarsan in the United States by others than the holders of the patent would be contrary to the law, even if a totally different process of manufacture were used from that covered by the patent.

We understand that in England the patent has been suspended, and that it is being manufactured there, and that under another name it is being made in Canada.

NEXT DOSE IN TUBERCULIN THERAPY

To the Editor:—Please tell me where I can find an article by Dr. Myer Solis-Cohen on "The Determination of the Next Dose in Tuberculin Therapy."

EDWARD SPEIDEL, M.D., Louisville, Ky.

ANSWER.—THE JOURNAL, Oct. 17, 1914, p. 1386.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, October 5-6. Sec., Dr. John Wix Thomas, 200 National Bank of Arizona Bldg., Phoenix.

COLORADO: Denver, October 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

IDAHO: Wallace, October 5. Sec., Dr. C. A. Dettmen, Burke.

MINNESOTA: Minneapolis, October 5-8. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MONTANA: Helena, October 5. Sec., Dr. William C. Riddell, Helena.

NEW HAMPSHIRE: Concord, September 15-16. Sec., Dr. Walter T. Crosby, Pembroke Bldg., Manchester.

NEW YORK: Albany, Buffalo, New York, Syracuse, October 5-8. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

PORTO RICO: San Juan, October 4. Sec., Dr. Quevedo Baez, Allen St., San Juan.

RHODE ISLAND: Providence, October 7-8. Sec., Dr. Gardner T. Swarts, State House, Providence.

UTAH: Salt Lake City, October 4-5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

California April Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at San Francisco, April 13-16, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 32, of whom 22 passed, including 1 drugless practitioner, and 10 failed, including 5 drugless practitioners. One applicant was licensed under the Army and Navy clause. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
College of Physicians and Surgeons, San Francisco	(1914)	77.4, 79.1
Cooper Medical College	(1903) 81.9; (1912)	75.7
Hahnemann Medical College of the Pacific	(1913) 83.4; (1914)	79.7
University of California	(1914)	85
University of Illinois	(1914)	81.9
Tulane University of Louisiana	(1914)	75
Johns Hopkins University	(1913)	88.4
New York Homeo. Med. Coll and Flower Hosp.	(1913)	82
Jefferson Medical College	(1905) 82.2; (1914) 79.1, 79.5, 81.4,	82.8, 90.9
Trinity Medical College	(1890)	
McGill University	(1911)	83.5
University of Bonn, Germany	(1914)	79.8
University of Geneva	(1913)	87.2
FAILED		
California Eclectic Medical College	(1913)	72.1
College of Physicians and Surgeons, Los Angeles	(1914)	72
Oakland College of Medicine and Surgery	(1914)	67.4
Jenner Medical College	(1901)	74.7
Harvard University	(1913)	71.8
LICENSED UNDER THE ARMY AND NAVY CLAUSE		
College of Phys. and Surgs. in the City of N. Y.	(1887)	1

Book Notices

Case Histories in Obstetrics. Groups of Cases Illustrating the Fundamental Problems Which Arise in Obstetrics. By Robert L. DeNormandie, A.B., M.D., Assistant in Obstetrics, Harvard Medical School. Cloth, Price, $4. Pp. 516. Boston: W. M. Leonard, 1914.

This book is a successful attempt to supplement the rather general instruction, given in the textbooks, in the management of the different problems of obstetrics by detailed rules of procedure elucidated by suitable examples. The author gives the histories of seventy-six actual cases illustrating twenty-eight obstetric problems, such as diagnosis of pregnancy, forceps, breech delivery, contracted pelvis, sepsis, mastitis, etc. The unnecessary details of every entry in each case are not given, but an attempt is made to bring out every important point in at least one case of the group. Following the reports of the cases of a group a summary is given of all of the points pertaining to the management. This plan is executed so well that hardly any question concerning the management of any obstetric problem can be raised that has not been clearly discussed and answered.

Of course the plan is not new: it was adopted by Smellie and all the earlier English and French writers. The school textbook and lectures of fifty or sixty years ago were illustrated by many reports of cases. As the theory of obstetrics has developed in recent years, more space has been required in the textbooks to present the science in a systematic form, and the case histories have been gradually crowded out. In this country, especially, didactic teaching in obstetrics has largely usurped the place of clinical teaching. The lack of clinical material, or rather the indolent failure to make use of the clinical material at hand, is responsible for the fact that many students have been graduated without even having personally supervised a confinement. Textbook recitations, lectures and quizzes were sufficient to qualify a student for the written state board examinations, and the teaching was largely adapted to this end. Dr. DeNormandie's book would have been a very valuable supplement to the old didactic teaching. It is no less valuable as a model for the new method of clinical instruction. More and more the tendency is to divide the obstetric teaching into a year's work in theory and a year's work in training in the obstetric art. For the latter course this book could be used with great profit.

In the large number of practical problems discussed, it is unavoidable that the views of the reviewer must sometimes differ with those of the author. The Prochownik diet is indicated in a variety of conditions, but as a routine in all cases in the last two months of pregnancy in order to obtain a smaller baby it is hardly advisable. The cases of nausea and vomiting of pregnancy are not well selected to show severe vomiting of the first trimester, nor do they demonstrate the value of rectal injections of dextrose solutions. One is somewhat surprised at the nonchalance with which the report is made of the detection of ether in the baby's breath in a case of partial asphyxia of the baby after a forceps operation made under ether narcosis. Manual dilatation and extraction in placenta praevia is generally held to be dangerous and responsible for many of the bad results in this serious complication. Holding the uterus during the third stage of labor to prevent hemorrhage is of doubtful value, and frequently leads to harmful massage that interferes with the normal mechanism in the expulsion of the placenta. Why use an intra-uterine mercuric chlorid douche for postpartum hemorrhage when sterile water is just as efficient and carries no danger of poisoning? The temperature of the douche recommended, 110 F., is much too low. It is not clear why a patient should remain absolutely flat on her back for six hours after labor, or why she should remain in bed from eighteen to twenty-one days. A temperature in the puerperium of 102, ascribed to excitement due to visitors, probably could be better explained by the fact that the abnormal temperature followed a manual dilatation of the cervix and a forceps delivery. Likewise a high temperature on the fourth day of the puerperium, ascribed to the appearance of milk, followed a bag and manual dilatation and forceps delivery with deep tears in the vagina and cervix.

More serious criticism could be made of the practice of the author in applying high forceps in occiput posterior positions. In Case 19 this resulted in laceration of the perineum and relaxation of the sphincter ani, and in Case 21 in shock, and laceration of the cervix and perineum. A study of the histories does not convince one that forceps were indicated, but rather leaves the impression that with sufficient and careful analgesia, the patient could have been satisfactorily managed either till labor was ended spontaneously or until dilation was completed and the head descended, thus avoiding the difficulties and dangers of high forceps.

Notwithstanding these exceptions to a very few details, we find that most of the rules show wisdom, common sense and ripe, well-used experience. It deserves to be and promises to become one of the most popular books on obstetrics that has appeared for some time.

Miscellany

Errors in Bacteriologic Milk Analyses

Great differences in the results of the bacteriologic analysis of identical samples of milk have in some places led to a discrediting of such analyses. The methods ordinarily used have been those formulated by the American Public Health Association, and have been regarded as standard.

In October, 1914, the public health laboratory of the city of New York, under the supervision of W. H. Park, the Lederle laboratory, directed by H. D. Pease in the bacteriologic department, the sanitary laboratory of C. E. North, and the bacteriologic laboratory of the Borden Condensed Milk Co., under the direction of Dr. F. X. Govers and Mr. W. D. Strack, conducted a series of tests for the purpose of determining the causes of the great variation in tests of milk samples by different bacteriologists. H. W. Conn of Wesleyan University was made referee, and in *Public Health Reports*, Aug. 13, 1915, describes these tests, giving the tabulated results. In a general summary of the work, among other things, he says: The standard methods of milk analysis of the American Public Health Association are in need of revision. They lay great emphasis on some of the least important points and neglect to lay emphasis on some of the most important ones. A revision of these methods is now in the hands of committees appointed by the American Public Health Association, by the Society of American Bacteriologists, and by the Association of Dairy Instructors.

No single count can be relied on. An average of two or more plates should be required in determining the bacterial content of any sample of milk. Wide variations in the composition of the culture mediums do not make any noticeable difference in the bacterial count. In these tests it was found that variations in analyses were due largely to differences in technic. Among the reasons for differences were: laboratory errors, irregularities in methods of laboratory technic, such as shaking of the samples, amount of dilution, methods of counting by a counting lens, or without the use of one, etc. For instance, the extent of shaking makes a difference in the result. Counts from highly seeded plates are uniformly lower than the counts from low seeded plates. Best results are obtained when the plates contain somewhere between forty and 200 colonies. Another factor modifying the counting is the practice followed by laboratories of estimating number rather than actual counting.

It was found that there are irregularities in samples of milk from the same bottle, explained as due to the clumping of bacteria, and that the bacteria being solid objects cannot be expected to be distributed uniformly through the liquid. One sample may contain one fourth as many bacteria as another from the same bottle. After determination of these causes for variations in the count and the adoption

of methods to bring about uniformity in technic, the variations were greatly reduced.

In regard to the technic, it is stated that there is no essential difference in the results whether the milk diluted is directly inoculated into the Petri dish and the agar poured on it, or whether the diluted milk is inoculated into a melted tube of agar and subsequently poured into a dish.

Five-day incubation gives a very slightly greater count than a two-day incubation. This was not considered of sufficient importance to change from the two-day count. A twenty-four-hour count gives on an average about one-half as high numbers as a forty-eight-hour count.

With the adoption of uniform technic in the four laboratories, the counts were fairly close together, and were considered accurate enough to warrant the three grades of milk that have been adopted by the commission on milk standards, in which Grade A includes milk having counts below 200,000, Grade B from 200,000 to 1,000,000, and Grade C all above 1,000,000. For this broad grading, it is stated that it is necessary to have an average of at least four or five analyses in order to rely on the results.

Methods of Destroying Lice

J. P. Kinloch of the University of Aberdeen made an investigation with reference to the control of vermin among troops liable to be infected with typhus. Among his conclusions, as given in *Public Health Reports*, are the following:

Dry heat is more effective than moist in destroying lice and their eggs. The paraffin bodies are actively insecticidal, and of these gasoline is the most effective, in which they are destroyed after immersion for one minute. The vapor kills them in half an hour. Powerful fatty solvents other than paraffin are actively insecticidal. Benzin, toluene and acetone are as effective as gasoline. Certain chlorin derivatives of methane, ethane and ethylene are often more effective, and are noninflammable. Exposure to the vapor of these substances is fatal in five minutes. Soap solutions containing 2 per cent. of trichlorethylene or 10 per cent. tetrachlorethane are capable of killing in half an hour at ordinary temperatures all lice and nits.

Practically the destruction of lice and nits is best done by immersion of the garments and bedclothes in gasoline or benzin. If clothing will not be injured by immersion in water, steeping for half an hour at 12 C. (53.6 F.) in soap solution containing 2 per cent. of trichlorethylene or 10 per cent. of tetrachlorethane destroys lice and nits. Derivatives of chlorin and ethane in the form of gas cannot be used, but their soap preparations are of value. For cleansing the body, soap solutions containing 2 per cent. of trichlorethylene or 10 per cent. tetrachlorethane are best. It is believed that lice will not live on the body if it is anointed daily with 25 per cent. solution of trichlorethylene in petrolatum or twice daily with a mixture of gasoline in petrolatum of the same strength.

Owner's Liability for Injury Resulting from Use of Automobile

Probably few prospective purchasers of automobiles for general family use, observes Joseph T. Winslow in the August *Case and Comment*, reflect upon the legal liability which may attach to them by reason of damage or injuries resulting from the use of the machine by members of their family. In view of the present state of the law and its apparent trend, however, it would appear a wise course, from a financial standpoint, for purchasers and owners of cars intended for such use to give attention to this question, and to see to it that when they are being used on the public highway they are at least in charge of persons competent to operate and manage them.

There are two theories on which it has been sought to hold owners responsible for injuries resulting while their cars are being operated or used by members of their families; first, on the theory of respondeat superior, and, second, on the doctrine of dangerous agency or instrumentality.

Medicolegal

Privileged Character of Information Gained by Inspection of Patient

(*Yazoo & M. V. R. Co. vs. Messina* (*Miss.*), *67 So. R. 963*)

The Supreme Court of Mississippi, in affirming a judgment in favor of the plaintiff Messina for personal injuries, says that after the wreck the defendant company sent its own surgeons to take charge of the injured, and to carry them to a hospital. There was some evidence tending to show that the plaintiff was not given that care and consideration which he was entitled to receive while he was at the scene of the wreck. To rebut this evidence the defendant offered to prove by its surgeons that they examined the plaintiff at that time, and that the wounds had been dressed and properly treated, and that that was all which could have been done under the circumstances. At the instance of the plaintiff the trial court excluded this evidence from the jury. Section 3695 of the Code of 1906 provides: "All communications made to a physician or surgeon by a patient under his charge . . . are hereby declared privileged." It will be noted that the plaintiff was a patient under the charge of the surgeons selected by the defendant. By the statute "all communications" made to a physician by his patient are privileged. It was argued by the defendant that the evidence offered did not consist of "communications" by the patient to the physician; that the physician's information was gained by an inspection of the patient, and that the statute did not cover this character of evidence. Taken literally, this view of the statute may be sound; but, when it considers the manifest policy of this sort of legislation, the court believes that what the defendant sought to prove was communicated to the witness by the patient. Except as a physician, he was not qualified to testify. His knowledge of the matter inquired about came to him from his examination of his patient. It is not necessary that the communication should be made by words in order to make it privileged. There is no more sacred relation of confidence than the relationship of physician and patient, and it was, in the court's opinion, the intention of the legislature to close the lips of the physician concerning any and every thing he knows about the patient by oral communication or from a physical examination of his patient. This statute protecting the patient makes privileged "all communications," and it would be absurd, the court thinks, to say that what the patient says to the physician is privileged, but what is communicated to the physician by his expert examination and exploration of his patient's body is not privileged. The oral communications are usually of little importance, but the physical examination is always of prime importance. The fact that the physicians in the present case were not called by the plaintiff, but were sent by the defendant to examine or treat the plaintiff, did not change the legal aspect of the case. The physicians were acting in their professional capacity, and the plaintiff was their patient, and all communications to their professional senses are privileged, and the physician, however willing he may be to violate the confidence of his patient, will not be permitted to do so by the wise provisions of the statute. In the light of such authorities as this court has been able to find, the overwhelming weight are in accord with this view of the law.

Unavailable Defenses for Unlawfully Prescribing Morphin

(*Hyde vs. State* (*Tenn.*), *174 S. W. R. 1127*)

The Supreme Court of Tennessee affirms a conviction of the appellant Hyde, a practicing physician, of unlawfully prescribing morphin, in violation of the act of 1913. The court says that this is modeled after, and closely conforms to, the act of Congress later passed and approved Dec. 17, 1914, effective on and after March 1, 1915, so far as the provisions of the congressional enactment could be made applicable to and regulate intrastate sales of the drugs affected, there being left a not inconsiderable field for the operation of the local act, which is the initial step in Tennessee in the

regulation of the sale of habit-forming drugs. The court does not agree with the contention that the state statute, so far as the appellant was concerned, was a regulation of the practice of medicine, and not a regulation of sale or sales. The practice of medicine is not undertaken by it to be regulated; it is affected at but a single and minor point, by way of incident to the distribution of the particular drugs a physician may find it necessary in his practice to prescribe. Nor does the provision that a physician can prescribe the indicated drugs only when he is in personal attendance on the patient arbitrarily curtail his right to practice by prescribing according to methods formerly obtaining. It does not violate either the fourteenth amendment of the federal constitution, or the provision of the state constitution that no man shall be deprived of his liberty or property but by the law of the land. It is not unreasonable or arbitrary to hedge about the issuance of such prescriptions by making it a condition that the physician "shall personally attend the patient"; since only by personal observation and diagnosis can the physician be sure that the drug is needed—that he himself is not being imposed on in an effort through him to defeat the very purpose the statute has in view. In this case a detective, under employment by the pure food and drug department of the state, went to the office of the appellant and requested a prescription for morphin for an alleged friend of his, Louise Walker, who he said lived on a certain street. No such woman existed, and there was no such street address as that given. Having obtained the prescription and paid for it, the detective took it to a pharmacy, where it was filled, the detective paying for it. The court holds that, on sound principle and true policy, the physician must be held to answer as a principal in the offense committed in the illegal sale. The court fails to see how the appellant could avail himself of the fact that the person prescribed for was nonexistent. Rather would it seem that this fact showed at once the recklessness of the accused and a substantial reason for the provision in the statute that the giving of a prescription for the drug should be only to a patient actually attended. The appellant's attempted defense came to this: There can be no guilt if there be no real and indicated patient to receive the product of the prescription; therefore, in order to a defeat of the statute with impunity, it is only necessary to put out prescriptions for fictitious persons. If the prescriptions or the drugs derived through them come into the hands of habitual users or whomsoever, what does it concern the physician? The lawmakers certainly did not intend to pass a statute thus inane. The beneficient end they had in view should not be thwarted by any refinement of reasoning; certainly not by reasoning that leads to a conclusion so unsatisfactory, not to say unsound. Nor may the physician successfully defend by proving that the prescription was caused to be issued and the sale to be made by means of the solicitation of an agent of a department of the state government, for the purposes of a criminal prosecution. Whatever may have been the trend of the earlier authorities, it is now a well-established rule that such acts of a government agent do not absolve the defendant's act of criminality.

Employment of Physician by Secretary Managing Affairs of Corporation

(Greensfelder vs. Witte Hardware Co. (Mo.), 175 S. W. R. 275)

The St. Louis Court of Appeals affirms a judgment in favor of the plaintiff for medical and surgical treatment rendered to a man who was severely injured while in the defendant's employ. The court says that it is true that one does not ordinarily make oneself liable to a physician by calling the latter to attend a third person who has been injured, or is otherwise in urgent need of such attention. That is to say, from a mere request alone to perform such services, in the absence of a legal duty to provide the same, the law does not, as in the ordinary case in which services are requested, imply a promise on the part of the party making the request to pay the reasonable value of the services when rendered. The reason for this is obvious. The law recognizes that in the everyday affairs of life a physician is frequently summoned to attend a sufferer, who is perhaps unable to thus act for himself, by one who is impelled so to do by the precepts of humanity alone. But here the question was as to the power of the secretary of the defendant corporation, who was in complete charge of its business at the time, to bind it to pay the plaintiff for what became over eight months' treatment of the man at a hospital. The plaintiff was called by telephone to the defendant's place of business shortly after the man was injured. When he saw how seriously the man was injured, he telephoned for another physician. After examining the patient and consulting with the plaintiff, the second physician, at the plaintiff's request, made inquiry as to who was to pay for the treatment, and asked that a "member of the firm" be summoned. The secretary then came, and, on being told that it would be necessary to take the injured employee to a hospital for treatment, said, as the second physician testified: "Go ahead; do the best you can with him; if you have to take him to a hospital, go ahead; do the best you can." The court has no doubt that from this the jury could lawfully find the existence of an actual contract binding the corporation to pay for the hospital treatment rendered in reliance on the conversation thus had. It is sufficient if the facts and circumstances appearing are such that the existence of an actual contract may be lawfully inferred therefrom by the jury sitting in judgment on the facts in controversy; that is to say, if the jury found that the plaintiff rendered the services, in reliance on the conversation in question, intending to charge the defendant therefore, and that the defendant's authorized representative intended at the time to bind the defendant to compensate the plaintiff for such services, all of the elements of an actual contract were established, and it mattered not that the parties failed to formulate expressly the agreement by the use of appropriate words to that end. The secretary being in charge of the company's business at the time, and performing the duties ordinarily devolving on the president or other chief officer of a corporation, it cannot be doubted that this was sufficient to warrant a finding that he was vested with ample authority to bind the corporation in this instance. The point was made that the conversation mentioned above could in any event bind the defendant only to pay the reasonable value of the first or emergency treatment, and that, since the plaintiff did not thereafter confer with the defendant during the course of treatment at the hospital, he could at most recover only for such services as were reasonably necessary in the immediate emergency. But, however this might be under other circumstances, the court thinks that the contention could not be here upheld, as when the conversation was had the physicians had done all that they could for the injured man without removing him to a hospital for treatment, and it was with reference to this particular matter that the secretary was summoned, to ascertain who would be responsible for the expense to be thereby incurred.

Practice of Medicine with Herbs or "Domestic Family Remedies"

(State vs. Yee Foo Lun (Utah), 147 Pac. R. 488)

The Supreme Court of Utah affirms a conviction of the defendant of practicing medicine without a license. The court says that the information probably would have been better had it charged that the defendant diagnosed or treated an ailment instead of Smith, but no point was made on the information, and that is passed. The defendant claimed to be protected by the provision of the statute that nothing therein shall be construed to prohibit the sale or administration of domestic family remedies. But a concoction or compound of ginseng, cinnamon, licorice, sarsaparilla, etc., can neither in law nor in fact be regarded a domestic family remedy. That it is free from alcohol, chloroform, narcotic or alkaloidal drugs, and probably harmless, is not the controlling factor. Such a compound or concoction is not something commonly kept by nonprofessional persons in their homes, or of which they have general knowledge. Instead of calling it a domestic family remedy, it is better to call it

by its right name—a subterfuge to deceive the credulous and the afflicted. When the question is looked at from the defendant's evidence, the matter is still worse. A mixture of fourteen different herbs, equally efficacious for rheumatism, paralysis, appendicitis, piles and pimples, and which are so well known that properly to name and describe them requires the use of three languages; their curative powers so familiar as to be understood only by Chinese expert herbalists who acquired knowledge "of the precious secrets" only through tradition and by scientific learning so modern as to have been handed down generation after generation for centuries by Chinese herbalists and ancestors of the defendant, and which are so general and so common as to be had only at a Chinese store in San Francisco, or at a Chinese institute conducted by a Chinese expert herbalist, can in no sense be regarded as a domestic family remedy. It is anything but that. The defendant and his counsel calling the herbs a family remedy is of no significance. As well call a family remedy any compound of any or all kinds of familiar or unfamiliar bark, roots, herbs or weeds grown in the Orient or the Occident, and put out as a "cure-all" by a charlatan to deceive the credulous. Still further, the obvious purpose of the statute is to prevent practicing medicine without a license. Under the statute, any one who shall diagnose, treat or advise for any physical ailment or condition of another, for a fee, compensation or consideration, is regarded as practicing medicine. If any one does that without a license, he offends, no matter what remedy, substance or thing he may prescribe, give, administer or advise. He cannot exculpate himself by showing that he gave, administered or advised a domestic family remedy, or any other substance or instrumentality; much less a concoction or compound which is a mere subterfuge, or one whose curative powers are known only to so-called Chinese expert herbalists. He offends, though he may give or administer but castor oil, or Hostetter's bitters, or a boiled concoction of bark, roots or herbs, or may give nothing, and may only advise exercise or rest. Notwithstanding the defendant's play on words that he "did not diagnose the case or any other case," nevertheless, from even the things and facts testified to by him, he held himself out, undertook and attempted to do just that. Perhaps not as taught at modern medical institutions, but all the more offended because he did it *à la chinoise*. But whatever difference of opinion there may be on the record as to whether he diagnosed a physical ailment of Smith, or whether Smith diagnosed it for him, there certainly can be no doubt that he, without a license and for a consideration, treated Smith for an ailment. And since this is so, it is wholly immaterial what he gave or administered, or advised, whether a family remedy or not. The claim made that he charged only for the herbs and nothing for diagnosis, consultation or treatment was, like his concoction, a mere pretense, and an attempt to exculpate himself by bookkeeping. As well say one charged nothing for an operation, but charged $500 only for bandages and antiseptics.

Society Proceedings

COMING MEETINGS

American Academy of Ophth. and Oto-Laryn., Chicago, Oct. 5-7.
Amer. Assn. of Obstetricians and Gynecologists, Pittsburgh, Sept. 14-16.
American Association of Railway Surgeons, Chicago, Oct. 13-15.
American Electro-Therapeutic Association, Atlantic City, Sept. 14-16.
American Public Health Association, Rochester, N. Y., Sept. 7-10.
American Roentgen Ray Society, Atlantic City, Sept. 22-25.
Association of Military Surgeons of the U. S., Washington, Sept. 13-15.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Indiana State Medical Association, Indianapolis, Sept. 23-24.
Kentucky State Medical Association, Louisville, Sept. 21-23.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Michigan State Medical Society, Grand Rapids, Sept. 1-2.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
Missouri Valley Medical Society, Des Moines, Sept. 23-24.
New Mexico Medical Society, E. Las Vegas, Sept. 6-8.
Oregon State Medical Association, Portland, Sept. 9-10.
Pennsylvania State Medical Society, Philadelphia, Sept. 20-23.
Utah State Medical Association, Salt Lake City, Sept. 28-29.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Insanity, Baltimore

July, LXXII, No. 1, pp. 1-221

1 Relation of Psychiatry to State. S. E Smith, Richmond, Ind.
2 Publicity and Public Mind. D. S. Freeman, Richmond, Va.
3 Recent Extension of Out-Patient Work in Massachusetts State Hospitals for Insane and Feebleminded. L. V. Briggs and A. W. Stearns, Boston.
4 *Some Neglected Phases of Immigration in Relation to Insanity. A J. Rosanoff, Kings Park, N. Y.
5 *Optic Neuritis and Color Fields in Diagnosis of Syphilis, Neurasthenia, Hyperthyroidism, Dementia Praecox, Manic-Depressive Insanity, and Third Generation Syphilis. H. G. Thomas, Oakland, Cal.
6 *Syphilis as Etiologic Factor in So-Called Functional Neuroses and Psychoses. J. D. Ball, Oakland, Cal.
7 *Thalamic Gliosis in Dementia Praecox. M. E. Morse, Worcester, Mass.
8 *Treatment of Paresis and Tabes Dorsalis by Salvarsanized Serum. (To be continued.) H. A. Cotton, Trenton, N. J.

4. **Neglected Phases of Immigration.**—Rosanoff claims, as the result of investigation, that there is no evidence to show that there is a greater proneness toward mental disease in the foreign-born than in the native population. The much-feared menace of an increased incidence of insanity in the future generations, as resulting from immigration, is not real, but imaginary.

5. **Optic Neuritis.**—Syphilis, especially hereditary syphilis, Thomas claims, is infinitely more common than any authorities have admitted or dreamed. The clinical evidences show the stigmata in the third, fourth and even more generations. Neurasthenia is absolutely caused by syphilis. It is not a psychoneurosis, but a distinct physical disease of the brain and cord. The psychoneurosis element is entirely secondary to and caused by syphilis. Dementia praecox, manic-depressive insanity, general paresis are only different grades of the disease. Insanity is cerebrospinal syphilis of different degrees, ranging from irritation, mild inflammation to actual degeneration of the tissue. Hyperthyroidism, hypothyroidism, interstitial nephritis (with possibly a small percentage of exceptions), and chronic sinusitis, are but symptoms that appear in syphilis. Tuberculosis has long been known to develop most easily in syphilitics, as the tissues are much less resistant. Cancers appear to be most frequent in syphilitics. In all cases Thomas has investigated he has seen absolutely no evidence that alcohol is the causative factor in insanity. It has always been syphilis. The neurasthenics are unbalanced; that is, the syphilitic brain craves; the subject drinks; alcohol poured into a syphilitic brain is disastrous. The nonsyphilitic alcoholic parents do not beget the idiot, defective children, but the alcoholic syphilitics do.

6. **Syphilis as Etiologic Factor.**—Out of 151 adult neurasthenics 100 per cent. showed optic neuritis, varying from mild to severe types; 46 per cent. showed scaphoid scapulas; 27, or 17 per cent., exhibited enlarged thyroid; 38, or 25 per cent., admitted syphilis; and 75, or 49 per cent., gave evidence of hereditary syphilis, either in stigmata present or in family history. Of the children exhibiting neurasthenic symptoms, 46 in number, 33, or 71 per cent., either had evidences of hereditary syphilis or had parents who gave histories satisfactory to any careful clinician. These 46 children also had optic neuritis; and 29, or 63 per cent., had scaphoid scapulas; 4, or 8 per cent., showed enlarged thyroid. Of 27 manic-depressive cases, 100 per cent. showed optic neuritis; 14, or 51 per cent., showed characteristic color field; 21 or 77 per cent., showed scaphoid scapulas; 8, or 29 per cent., exhibited enlarged thyroid. The 41 mentally deficient children, mostly juvenile court cases, gave satisfactory clinical evidence of hereditary syphilis, either in signs or family history, for all; 18, or 43.97 per cent., gave positive Wassermann. All three cases of migraine showed optic neuritis and scaphoid scapulas; and all gave decidedly suggestive family histories. The hysterical cases, 14 in

number, gave 14, or 100 per cent., optic neuritis; 3, or 21 per cent., scaphoid scapulas; 2, or 14 per cent., enlarged thyroid; 12 gave suggestive family histories.

7. **Thalamic Gliosis in Dementia Praecox.**—Morse states that some cases of dementia praecox in the fifth and sixth decades show a gliosis in the thalamus, which is more advanced and active than in other parts of the nervous system. This gliosis may be both peripheral and focal. Patients with other psychoses who died at about the same ages did not, in the cases examined, present a similar thalamic gliosis.

8. **Treatment of Paresis and Tabes Dorsalis.**—The total number of cases reported by Cotton is sixty-six, and in all 600 treatments have been given. Of this whole number some have only been treated for a short period and consequently cannot be used for comparative study at present. Therefore Cotton has selected thirty-one patients who have been treated for at least six months, but in all but a very few cases the treatment has been continued for over two years, or the patients have been observed for that length of time.

Archives of Internal Medicine, Chicago

August 15, XVI, No. 2, pp. 149-340

9 *Attempt to Determine Diagnostic Importance of Head's Zones of Hyperalgesia. L. Langstroth, San Francisco.
10 Apparatus for Quantitative Collection of Urine from Women. O. Folin and W. Denis, Boston.
11 *Bacterial Flora of Lymphatic Glands. A. L. Bloomfield, Baltimore.
12 *Study of Case of Paroxysmal Hemoglobinuria. C. C. Dennie, Boston, and O. H. Robertson, San Francisco.
13 Study of Respiration and Circulation in Picrotoxin Convulsions. L. J. Pollock and W. H. Holmes, Chicago.
14 More Recent Developments in Study of Anaphylactic Phenomena. H. Zinsser, New York.
15 *Amaurotic Idiocy. J. M. Wolfsohn, San Francisco.
16 *Studies on Circulation in Man. XIII. Blood Flow in Hands and Feet in Certain Diseases of Nervous System. G. N. Stewart, Cleveland.
17 Tumors of Sympathetic Nervous System and Medulla of Adrenal Glands, Especially Malignant Neuroblastoma. F. Harbitz, Christiania, Norway.
18 Potassium Poisoning in Nephritis. W. G. Smillie, Boston.

9. **Diagnostic Importance of Head's Zones in Hyperalgesia.**—In a series of 460 hospital cases examined by Langstroth hyperalgesia was a frequent finding in visceral disease. In diseases of the lungs hyperalgesia was found in 3 per cent. of the cases, or in 13 per cent. of those who complained of pain. In diseases of the heart and aorta, hyperalgesia was found in 7 per cent. of the cases, or in 18 per cent. of those who complained of pain. In diseases of the stomach, hyperalgesia was found in 24 per cent. of the cases, or in 37 per cent. of those who complained of pain. In diseases of the liver and gall passage, hyperalgesia was found in 25 per cent. of the cases, or 58 per cent. of those who had pain. In diseases of the intestines, hyperalgesia was found in 10 per cent. of the cases, or in 22 per cent. of those who had pain. In diseases of the kidney and ureters hyperalgesia was found in 45 per cent. of the cases, or in 71 per cent. of those who complained of pain. Whole dorsal areas as outlined by Head were rarely found, but certain maxima were frequently found. The large number of areas over which hyperalgesia may be found in disease of each viscus, and the number of viscera supplied by each segment, made hyperalgesia of practically no importance in diagnosis, with the possible exception of diseases of the kidney, in which it had a somewhat characteristic form.

11. **Bacterial Flora of Lymphatic Glands.**—None of the twenty-nine strains of bacteria isolated by Bloomfield from thirty-two lymph glands could be shown to be the cause of specific diseases.

12. **Paroxysmal Hemoglobinuria.**—The patient reported on by Dennie and Robertson was a congenital syphilitic with characteristic physical findings and a strongly positive Wassermann. He suffered from paroxysmal hemoglobinuria with typical attacks following exposure to cold. These attacks could be induced at any time. The characteristic hemolysis occurred under proper conditions in the test. It was shown by experiments that the patient's serum, red blood cells and complement must be present throughout the whole reaction, or hemolysis will not take place. The failure of the hemolytic reaction to take place unless the elements are first chilled together, the authors claim, is not due to an inhibiting substance which is active at blood temperature but inactive in the cold, as the sheep-rabbit system is in no way affected when brought into proper relation with this system. The failure is probably due to the peculiar makeup of the hemolytic amboceptor. The hematuria following a moderately severe experimental exposure to cold resulted from destruction of only approximately 6.3 c.c. of blood. Over 90 per cent. of the hemoglobin set free was excreted in the urine within two hours, and 96 per cent. in four and one-half hours. The authors believe that the very rapid excretion of hemoglobin by the kidneys probably explains the absence of any increased amount of urobilin in the stools.

15. **Amaurotic Idiocy.**—Wolfsohn's patient was a girl aged 6. Neither her parents nor any of her antecedents were of Hebraic extraction. Both parents are living and well and are not related. The daughter of a maternal uncle "had no control over her body at birth and died of brain trouble at between 4 and 6 months." A maternal granduncle died of "brain fever" at 14 years. There is no specific history of either parent. The Wassermann test in the mother's serum was negative. She had one miscarriage but no stillbirths. The patient was born at full term after two days' labor terminating with hard, high forceps delivery. The child was fed with proprietary foods from the first and never nursed. Its mother claims that the infant was kept drunk with gin for the first month of life. She was a fat but not strong child. A severe attack of pertussis occurred in the second year, but subsided without complications. This was soon followed by "inflammation of the bowels" with high temperature, but recovery was complete. From 2 to 2½ years the patient ran, played and talked—an active, healthy, apparently normal, child. At 3 she had "black measles." This was followed by "food poisoning" after eating canned deviled ham. The patient nearly succumbed. About three months later she had an attack of "indigestion" accompanied by unconsciousness and stiffness of the whole body. Recovery ensued which was followed by measles.

Just about this time (age 3½ years) the mother noticed that the child had a slight limp. A chiropractor was called who found the hip was "out" about one-half inch. This he replaced without benefit to the child. The patient's eyes began to "wander with a bewildered look" and a few days later she awakened with "attacks of crying and trembling and rigidity of the arms and legs which lasted a few minutes." These attacks increased in frequency, as many as twenty a day being noted. Sometimes one side alone, sometimes both sides, and at others the head or arms alone were convulsed. After some of the attacks the patient showed strabismus the rest of the day. A sudden noise or jar would bring on a "spasm." Because of increasing rigidity, which became rather constant about six months after onset, the patient was unable to help or feed herself and could not walk. From a bright, healthy, active child, within six to eight months she became a dull, apathetic, inactive invalid who gradually ceased to notice objects about her. The bowels were obstipated, necessitating daily enemas. Urination was involuntary. Generalized convulsions occurred about every week and lasted from three to five minutes. Twitchings, or rather tonic spasms of the quadriceps femoris, all the muscles of the shoulder girdle, arms, hands and neck developed and were continuous during sleep. The introduction of stovain (1/30 gr.) into the subarachnoid space controlled the spasms for six hours. Finally the spasms of the masseters became so severe that the lower jaw was dislocated. Meantime dysphagia and marasmus became very marked, the temperature rose suddenly to 105 and the patient died, three years after the onset of the disease. The brain alone was removed, three hours after death, by Dr. J. Oliver, whose studies on the pathology of this case are detailed.

16. **Circulation in Man.**—In early unilateral brachial neuritis the blood flow in the affected hand was found by Stew-

art to be decidedly greater than in the normal hand. This is interpreted as due to partial paralysis of the vasoconstrictor fibers in the nerves involved in the pathologic process. In long-standing unilateral neuritis with decided atrophy of the affected part, the blood flow is less on the side of the lesion than on the normal side. In peripheral neuritis affecting mainly muscular nerves, the changes in the blood flow of the hands and feet are not so conspicuous as when the cutaneous nerves are also involved, since a large portion of the total flow in these parts must belong to the skin. In hemiplegia there is, in general, a marked deficiency in the blood flow in the paralyzed members. In tabes, the blood flow in both hands and feet, but especially in the feet, has been found decidedly subnormal and the vasomotor reflexes feeble. In lead poisoning (without paralysis), the tendency to reflex vasoconstriction was conspicuous. This seemed to be the case also in alcoholic neuritis. In alcoholic intoxication and in a case of excessive cigaret smoking, the opposite was observed, namely, a tendency to marked reflex vasodilatation.

It is suggested that, in some cases, examination of the blood flow might aid in the detection of malingering, when the attempt is made to simulate certain neuropathologic conditions. It seems probable that the differential diagnosis, for instance, between such conditions as cerebral hemorrhage and alcoholic intoxication, or between hysterical palsy and paralysis due to an organic lesion, in doubtful cases might be facilitated by blood-flow measurements.

Boston Medical and Surgical Journal

August 12, CLXXIII. No. 7, pp. 225-262

19 Origin and Aims of Massachusetts Anti-Tuberculosis League. V. Y. Bowditch, Boston.
20 What Anti-Tuberculosis Organizations Can Do to Help State Department of Health. A. J. McLaughlin, Boston.
21 Present Situation in Regard to Local Tuberculosis Hospitals. J. B. Hawes, 2d, Boston.
22 Local Tuberculosis Dispensaries. W. G Phippen, Salem, Mass.
23 First Annual Report of Massachusetts Anti-Tuberculosis League. S. H. Stone, Boston.
24 Reporting Cases of Tuberculosis. W. P. Bowers, Clinton, Mass.
25 Tuberculosis Associations as Health Educators. M. M. Davis, Jr., Boston.
26 Responsibility and Opportunity of Teacher in Preventing Tuberculosis. T. F. Harrington, Boston.
27 Medical Inspection of School Children. F. L. Dunham, Brookline, Mass.
28 Tuberculosis Work in This State. A. F. Acton, Boston.

Bulletin of the Johns Hopkins Hospital, Baltimore

August, XXVI, No. 294, pp. 273-308

29 *Relation Between Clinical and Laboratory Data in Tuberculosis. A. H. Caulfeild, Toronto.
30 *Some Cultural Studies on Tubercle Bacillus. S. A. Petroff.
31 Dietl's Aphorisms on Phlebotomy. N. B. Gwyn, Philadelphia.
32 Early Diagnosis of Pulmonary Tuberculosis. L. Hamman, Baltimore.
33 *Results Obtained from Induced Pneumothorax Treatment of Pulmonary Tuberculosis: Brief Report. M. F. Sloan, Townson, Md.
34 Brief Epitome of Results of Sanatorium Treatment. S. Wolman and I. I. Hirschman.
35 *Concerning Occurrence of Tubercle Bacilli in Circulating Blood. C. R. Austrian and L. Hamman, Baltimore.

29. **Relation Between Clinical and Laboratory Data in Tuberculosis.**—From continued observation, utilizing both the two laboratories and the clinical findings, Caulfeild has come to regard a marked inhibitive serum reaction as significant of high resistance to the tubercle bacillus, and particularly so if the tuberculin sensitiveness is either marked or minimal. Whether a marked inhibitive serum reaction can be found with a nonactive tuberculosis, Caulfeild claims cannot possibly be satisfactorily determined by observations on human beings. In fact the actual proof of the relationship of tuberculin sensitiveness and the serum reaction to the clinical progress can only be proved by experimental work with animals. In November, 1912, the author collected samples of blood from different cattle, and at the same time made an intracutaneous or subcutaneous tuberculin test, or both. Thirty-two animals have been so examined and certain of these repeatedly tested. The results showed correlated data very comparable to those obtained with human beings. In only one instance did Caulfeild obtain an indifferent reaction with an absolutely tuberculin-negative reaction. As the animal was an expensive thoroughbred it was not necropsied. One animal, a Jersey cow, showed marked complement fixation on four different occasions between July and November, 1914. This cow retrogressed so rapidly from July that she had to be killed in November, and the necropsy showed very extensive tuberculosis. The tuberculin reactions had always been very marked. Moreover, this was the only animal that gave complement fixation, all the others showing either the indifferent or various degrees of the inhibitive serum reaction.

30. **Some Cultural Studies on Tubercle Bacillus.**—A culture medium containing whole egg, beef or preferably veal juice and gentian violet has yielded uniformly positive results in Petroff's work. This medium contains: One part of meat juice, two parts of the egg (white and yolk), gentian violet sufficient to make a solution of 1:10,000. Equal parts of fresh sputum and 3 per cent. sodium hydroxid are shaken well and incubated at 38 C. (100.4 F.) for from fifteen to thirty minutes, the time for incubation depending on the consistency of the sputum. This mixture is then neutralized to litmus paper with hydrochloric acid and centrifugalized at high speed for ten minutes, the supernatant fluid is decanted and the sediment inoculated into the medium. Feces are collected in wide-mouthed jars, a fresh morning specimen giving the best results. The feces are diluted with three volumes of water, mixed well and then filtered through several thicknesses of gauze to remove solid food particles. The filtrate is saturated with sodium chlorid and left undisturbed for a half hour. At the end of that time all bacteria will be found floating. This floating film is collected with a deflagration spoon in a wide-mouthed bottle, and an equal volume of normal sodium hydroxid is added. This is shaken well and left in the incubator, at 38 C., for three hours. It should be shaken every half hour, neutralized to sterile litmus paper with normal hydrochloric acid, centrifugalized, and the sediment inoculated into several tubes containing the medium.

33. **Results Obtained from Induced Pneumothorax Treatment of Pulmonary Tuberculosis.**—Of 43 patients treated by Sloan and his associate Hamman according to Forlanini's method, from three months to three and a half years, 18, or 41 + per cent., have died, and 25, or 58 + per cent., are living. Of these 25 living, 8 or 19 + per cent. of the whole, are doing ill; 11, or 26 + per cent. are doing well and are working part time. Some of these are inclined to resume their former full working time, but refrain from doing so on medical advice. Six, or 14 + per cent., have resumed all their former business and social obligations. Five of these have been working for over two and one-half years. The induced pneumothorax treatment applied to 42 patients with moderately or far advanced pulmonary tuberculosis and one with bronchiectasis, and in whom the prognosis was bad, influenced the progressing course of the disease little or none at all in 60 per cent. It did, however, stop distressing symptoms in a large number of these. It has given, in 11 per cent., perfect health and complete working capacity for over two and one-half years.

35. **Occurrence of Tubercle Bacilli in Circulating Blood.**—In pulmonary tuberculosis Austrian and Hamman were unable to demonstrate the presence of tubercle bacilli in the blood in a single instance, notwithstanding the fact that many of the patients when examined were in the last stages of the disease. In animals, when the disease remains localized in the lungs, tubercle bacilli are not found in the circulating blood. When the disease becomes generalized, as it does in the last stages of pulmonary infection and very soon after overwhelming intravenous injections, circulating tubercle bacilli are frequently demonstrable. The evidence presented points strongly against the mobilization of tubercle bacilli by the injection of tuberculin. A larger number of the positive results was revealed by the method of animal inoculation than by the microscopic examination of the sediment obtained by treating blood according to the acetic-acid-antiformin method.

Indiana State Medical Association Journal, Fort Wayne

July, VIII, No. 7, pp. 323-366

36 Heredity in Relation to Malignant Diseases. V. H. Moon, Indianapolis.
37 Importance of Early Diagnosis of Cancer. C. N. Combs, Terre Haute.
38 Precancerous Lesions. W. D. Gatch, Indianapolis.
39 Relationship of Gastric Ulcer to Gastric Cancer. G. W. McCaskey, Fort Wayne.
40 Roentgen Ray Diagnosis of Cancer of Gastro-Intestinal Tract. A. M. Cole, Indianapolis.
41 Treatment of Inoperable Malignant Disease. B. P. Weaver, Fort Wayne.
42 Indications and Contraindications for Operative Treatment of Cancer. E. Walker, Evansville.
43 Cancer in Indiana. J. N. Hurty, Indianapolis.

Iowa State Medical Society Journal, Des Moines

July, V, No. 7, pp. 263-310

44 Some Variations in Sphenoidal Sinus as Found in Anatomic Laboratory of S. U. I. H. J. Prentiss, Iowa City.
45 Diagnosis of Sphenoidal Sinus Empyema. W. F. Boiler, Iowa City.
46 Intestinal Obstruction. B. C. Everall, Waterloo.
47 Cytology of Blood Stream in Apparently Normal Individuals. J. B. Rogers, Independence.
48 Case of Purpura Fulminans. M. L. Turner, Des Moines.
49 Uterine Displacements. J. E. Ridenour, Waterloo.
50 Ureteral Kink; Report of Case. A. J. Farnham, Waterloo.

Journal of Cutaneous Diseases, New York

August, XXXIII, No. 8, pp. 555-610

51 *Histopathology of Mycosis Fungoides. F. C. Knowles, Philadelphia.
52 Lichen Sclerosus Valvae. D. W. Montgomery and G. D. Culver, San Francisco.
53 Significance of Eosinophilia in Dermatology. M. L. Ravitch and S. A. Steinberg, Louisville, Ky.

51. Histopathology of Mycosis Fungoides.—The characteristic features of the histologic picture of mycosis fungoides, according to Knowles, consists in the great multiformity of cells, including plasma cells, numerous mitoses, the location of the cellular infiltration in the upper corium, the papillary and subpapillary portions, and the papillae, and marked changes in the epidermis. Mycosis fungoides is distinguished from the syphilitic granuloma by less multiformity of cells, more plasma cells, and the greatest infiltration of the cellular elements surrounding the widely dilated blood vessels in the latter disease. Mycosis fungoides is differentiated from the tuberculous granuloma by the lack of multiformity of the cellular infiltration, which is not located around the blood vessels, the large number of plasma cells, giant cells with central caseation, and the early disappearance of the collagenous bundles in the latter affection. Mycosis fungoides is eliminated from sarcoma cutis by the regularity in size and shape of the cells, the presence of a fine fibrillar network between the cells, the fact that the growth begins in the reticular layer and remains limited to it unless ulceration occurs in the latter condition. Mycosis fungoides is excluded from the various leukemic and pseudoleukemic growths of the skin by the finding of a pure lymphocytic infiltration of the corium and subcutaneous tissue, stopping with a very sharp line just beneath the papillary layer in the latter diseases. Most authorities agree as to the absence of mitoses, of plasma cells, and imperfect giant-cell formation in leukemia cutis. The deduction is obvious, that as mycosis fungoides gives a distinct histologic picture, the disease is a separate entity.

Kentucky Medical Journal, Bowling Green

July, XIII, No. 8, pp. 305-354

54 Malignant Growths of Prostate. C. G. Huffman, Louisville.
55 Roentgen Therapeutics. J. J. Rodman, Owensboro.
56 Roentgen Diagnosis. M. Casper, Louisville.
57 Conservation of Human Life. B. P. Earl, Charleston.
58 Two Hundred and Four Cases of Labor with Two Hundred and Eight Births. J. F. Jones, Mount Sterling.
59 Duty of Physicians to Themselves, to Profession and to Laity. W. G. Kingsolving, Eddyville.
60 Cerebral Concussion and Compression. J. F. Daugherty, Demossville.
61 Relation of Hospital Nurse to Physician, and Relation of Physician to Nurse. S. E. Dock, Paducah.
62 Tabes Dorsalis and Paresis. C. H. Kendall, Morgan.
63 Treatment of Dysentery. W. L. Mosby, Bardwell.

Lancet-Clinic, Cincinnati

July 31, CXIV, No. 5, pp. 93-112

64 Original Work on Exclusion of Pyloric Antrum for Ulcer. W. Bartlett, St. Louis.
65 Modern Dosage of Diphtheria Antitoxin; Report of Case of Laryngeal Diphtheria. A. J. Bell, Cincinnati.
66 Appointment and Management of Local Examiners. J. H. Florence, Houston, Texas.
67 Case of Epistaxis of Syphilitic Origin. G. A. Hinnen, Cincinnati.

Laryngoscope, St. Louis

July, XXV, No. 7, pp. 385-537

68 Index Medicus of Oto-Laryngology for 1914 and Abstracts of Important Papers Published.

Maine Medical Association Journal, Portland

July, V, No. 12, pp. 431-456

69 Heart-Block, or Adams-Stokes Disease; Report of Case. I. B. Gage, Atlantic.
70 Organization of National and Local Forces in Campaign Against Cancer. C. E. Lakeman, New York.

Medical Record, New York

August 14, LXXXVIII, No. 7, pp. 257-298

71 *Bone Graft Wedge in Treatment of Habitual Dislocation of Patella. F. H. Albee, New York.
72 Lying-In of Gargamelle. D. W. Montgomery, San Francisco.
73 Seven Clues to Baldpate. W. P. Cunningham, New York.
74 Thermo-Couple Thermometer. A. F. Holding, New York.
75 Advantages of Kelly's Method of Cystoscopy in Women. H. N. Vineberg, New York.
76 *Dependence of Tuberculosis on Respiratory Insufficiency of Upper Air Tract. W. S. Bryant, New York.
77 Multi-Pollen Vaccines in Treatment of Hay Fever. H. Iskowitz, New York.
78 Relation of Low Temperature Fermentations as Affecting Sanitary Character in Milk. J. M. W. Kitchen, East Orange, N. J.
79 Causation and Treatment of Pellagra. T. Shaw, San Antonio, Tex.

71. Bone Graft Wedge in Habitual Dislocation of Patella.—A semilunar incision is made by Albee extending to the outer side of the patella sufficiently long to reach below the tibial tubercle and to above the external condyle. Without unduly disturbing the underlying joint structures, the external condyle is incised with a broad thin osteotome on its external surface, making a bone incision of from 1½ to 2 inches in length, and about ½ to ¾ inch below its anterior articulating surface, and nearly in line with the long axis of the femur. The bone incision allows the anterior surface of the external condyle to be raised to a plane above the internal condyle, by producing a greenstick fracture near the intercondylar groove, the object being to place a permanent and rigid obstacle in the way of the outward displacement of the patella. When the anterior segment of the external condyle has been pried forward sufficiently to demonstrate its obstructing effect, the width of the bone gap thus formed is measured with calipers and a section of bone sufficiently large to fill this cuneiform gap is removed from the crest of the tibia through the lower portion of the same skin wound extended below the tubercle. Before the graft is removed, it is drilled obliquely in one or two places so that it may be pinned to the under portion of the external condyle when put into place. Dowel pins, made from an additional portion of the bone removed from the crest of the tibia at the time the graft is obtained, are rounded to fit the drill holes in the graft.

76. Dependence of Tuberculosis on Respiratory Insufficiency of Upper Air Tract.—One of the most important requirements for the prevention of tuberculosis as well as for its treatment, is an abundant and continuous supply of fresh, pure air. Another requirement, every bit as necessary as the fresh air supply, is a healthy mucous membrane. Any rhinopharyngeal obstruction removes the possibility of the presence of either of these requirements for immunity to tuberculosis. Therefore, as the most successful means to prophylaxis, Bryant advocates not out-of-door life; not an abundance of fresh, pure air; not avoidance of overcrowding; not forced feeding; not the absence of tuberculosis bacilli, either human or bovine, from the food; not the segregation of infected individuals; although all these are useful measures, but the providing of free rhinopharyngeal passages, which prevent an abnormal susceptibility of the

mucous membrane and allow free ingress of a sufficiently abundant supply of fresh, pure, stimulating air to the lungs.

Modern Hospital, St. Louis

August, V, No. 2, pp. 71-144

80 Joseph L. Hudson Memorial Building of Harper Hospital, Detroit. W. Smith, Detroit.
81 Organization of Domestic Departments of State Hospital for Insane at Howard, R. I. A. H. Harrington, Howard, R. I.
82 Occupation for Mental Cases During Institutional Care. C. W. Sawyer, Marion, Ohio.
83 Meat Extracts, Proprietary Preparations and Beef, Wine and Iron. J. P. Street, New Haven, Conn.
84 King's Daughters' Hospital at Portsmouth, Va. F. E. Leslie, Portsmouth, Va.
85 Trend of Modern Hospital Service. J. A. Hornsby, Chicago.
86 Educational Function of Hospitals. L. F. Jermain, Milwaukee, Wis.
87 Hospital's Duty to Medical Science for Furtherance of Human Welfare. J. L. Yates, Milwaukee, Wis.
88 Hospital Superintendent and Architect. W. C. Hill, Boston.
89 Hospital Equipment. L. M. Warfield, Milwaukee, Wis.
90 Progress in Nursing. H. Leck, Detroit.
91 Effect of Legislation on Schools of Nursing in California. A. Jamme.

New York Medical Journal

August 14, CII, No. 7, pp. 329-380

92 Treatment of Obesity. B. Robinson, New York.
93 Cardiovascular Disease. E. E. Cornwall, New York.
94 Therapeutic Indications for Various Electrical Currents. W. B. Snow, New York.
95 Study of Drug Addiction. T. J. Mays, Philadelphia.
96 Tic or Habit Spasm. M. Grossman, New York.
97 Value of Some Tests of Renal Permeability. R. H. Greene, New York.
98 Treatment of Nervous Syphilis. C. R. Ball, St. Paul.
99 *Bone Pin Graft in Painful Flatfoot, Paralytic Valgus, and Other Painful Deformities of Foot. R. E. Soule, New York.
100 Roentgenoscopic Evidence in Appendicitis. P. Eisen, Chicago.
101 Newer Therapeutics in Otology. Use of Mixed Vaccines. S. Moskowitz, New York.
102 Need of Urethroscope in Diagnosis of Pathological Conditions in Anterior Urethra. J. Broadman, New York.

99. **Bone Pin Graft in Flatfoot.**—The astragaloscaphoid joint is exposed through an incision about 2 inches long on the dorsum of the foot, in line with the tendon of the anterior tibial muscle and just internal to it. The ligaments attached to the upper border of this joint are incised and freed. The articular cartilages of the head of the astragalus and corresponding concavity of the scaphoid are removed so as to preserve the ovoid head of the astragalus and the concavity of the scaphoid. The foot is adducted to a normal positon, and a hole is drilled from before backward through the inner extremity of the scaphoid bone and into the head of the astragalus, in a direction somewhat obliquely across the foot upward toward the body of the astragalus. The hole is from 1½ to 2 inches in depth, and in diameter according to the size and weight of the patient from one eighth to three sixteenths of an inch. The drill is disengaged from the motor and left in positon in the drilled hole, thus holding the foot in the desired corrected position until the bone pin is obtained and inserted in its place. This bone pin is removed from the crest of the tibia and shaped to fit the hole drilled to receive it. This bone pin is driven into position immediately after the drill is removed from its hole and while the foot is accurately held by an assistant. Should the pin be longer than needed and protrude at the point of entrance into the scaphoid bone, it is cut off flush with the bone surface. The skin wound is closed with catgut without drainage, and dressings are applied. A smooth, snug, plaster-of-Paris splint is applied, reaching from the toes to above the flexed knee, which is not removed for four weeks, when the portion including the knee is cut off. The remainder is allowed to remain for from two to four weeks longer, when the entire splint is removed with the wound dressings, and the foot is strapped as for flatfoot. This gives support and also permits some motion of the joints of the ankle and foot. Passive and active exercises are then begun in order to develop the musculature of the leg and foot. In adults, after six weeks, slight weight bearing on the foot can be permitted and function and weight bearing are increased as time and freedom from discomfort indicate.

Oklahoma State Medical Association Journal, Muskogee

August, VIII, No. 3, pp. 91-120

103 Infant Feeding from Standpoint of Country Pediatrist. C. A. Johnson, Kiowa.
104 Treatment of Infantile Diarrheas. H. M. Reeder, Asher.
105 Tuberculosis in Children. W. A. Fowler, Oklahoma City.
106 Tuberculosis. H. C. Childs, Tulsa.

Ophthalmology, Seattle

July, XI, No. 4, pp. 641-905

107 Eyelids and Lachrymal Apparatus of Birds. C. A. Wood, Chicago.
108 Higher Preparation in Ophthalmology and Otolaryngology. F. C. Todd, Minneapolis.
109 Report of Ocular Findings in Two Cases of Xeroderma Pigmentosum. L. W. Dean, Iowa City, Iowa.
110 Trachoma and Its Treatment. L. W. Fox, Philadelphia.
111 Etiology and Psychology of Ocular Imbalance. A. A. Bradburne, Manchester, England.
112 Inefficacy of Iodoform in Case of Tuberculous Iritis. F. Tooke, Montreal, Canada.
113 New and Safe Technic for Cataract Operation. W. A. Fisher, Chicago.
114 Examination of School Children's Eyes, Ears, Noses and Throats. F. Allport, Chicago.
115 Relation of Eyes to Rifle Shooting. R. O'Connor, Oakland, Cal.
116 Some Noncycloplegic Methods of Refraction. W. L. Pannell, New York.
117 Economics of Eye, Ear, Nose and Throat, Together wtih Economics of Entire Body (Physical Economics). E. E. Holt, Portland, Maine.

Public Health Journal, Toronto

August, VI, No. 8, pp. 365-418

118 Administration of Toronto Department of Public Health. H. L. Brittain, Toronto.
119 Milk Supply in Relation to Tuberculosis in Ontario. J. Race, Ottawa.
120 Some of Troubles of Rural Medical Officer of Health and Their Remedy. M. Powers, Rockland, Ont.
121 Playground Attendance and Playground Director. H. S. Curtis.
122 Realm of Hapsburgs. F. Withrow.

Southern Medical Journal, Birmingham, Ala.

August, VIII, No. 8, pp. 655-738

123 *Statistical Study of Personal Association as Factor in Etiology of Pellagra. P. E. Garrison U. S. N. P. A. Schule, New York.
124 Dietetic Treatment of Pellagra, with Report of Eleven Cases. Y. A. Little, Milledgeville, Ga.
125 Pellagra Status in Panola County, Miss., with Remarks on Etiology and Treatment. G. H. Wood, Batesville, Miss.
126 *Unusual Condition of Nails in Pellagra. W. C. Brownson, Asheville, N. C.
127 *Pellagra Treated with Cacodylate of Sodium. Report of Sixteen Cases. B. H. Booth, Drew, Miss.
128 Pellagra in Panama. B. H. Frayser, Panama City, R. de P. and D. O. Smith, Washington, D. C.
129 Pellagra: Cause and Cure. R. T. Dorsey, Atlanta, Ga.
130 Pellagra as Postoperative Manifestation, with Report of Case. A. DeT. Valk, Winston-Salem, N. C.
131 Pellagra in Egyptian Asylums, 1913. J. W. Babcock, Columbia, S. C.
132 Pellagra in Mississippi. E. H. Galloway, Jackson, Miss.
133 Twenty-Seven Penetrating and Perforating Gunshot Wounds of Abdomen, with Three Deaths. L. Guerry, Columbia, S. C.
134 Prolapsed Ovaries. W. S. Gardner, Baltimore.
135 Intestinal Obstruction. C. Hutchinson, Pensacola, Fla.
136 Ovaritis in Typhoid, with Consequent Amenorrhea and Sterility. R. B. Slocum, Wilmington, N. C.
137 Diaphragmatic Hernia. Report of Five Cases. J. D. S. Davis, Birmingham.
138 Consistency of Cesarean Section in Nephritis and Eclampsia. W. W. Crawford, Hattiesburg, Miss.
139 Some of the Troublesome Sequelae in Accident Surgery. S. Leigh, Norfolk, Va.
140 Simple Emergency Splint (Banana Crate) for Local Railway Surgeons. J. M. Miller, Thomas, W. Va.
141 Case of Cerebral Abscess, Secondary to Chronic Suppurative Otitis Media, Cured by Surgical Intervention. H. O. Reik, Baltimore.
142 Some Phases of Tonsil Question. F. D. Sanger, Baltimore.

123. **Statistical Study of Personal Association as Factor in Etiology of Pellagra.**—In the endemic centers studied by Garrison and Schule, 42 per cent. of the pellagrous households presented multiple cases. Sixty per cent. of the cases occurred two or more to the household. The age and sex distribution of both first and subsequent cases in the household corresponds roughly with the distribution of the general population. Adult females form a considerably larger proportion of first cases in the household than of subsequent cases. When the first patient in the household is a housewife or a child, there is a much greater tendency for the development of subsequent cases in children. When the first patient in the household is a wage-earner, subsequent cases in

children are extremely rare. The time interval between the first and subsequent cases in the household is quite variable. Twelve months is the interval most commonly observed.

126. **Condition of Nails in Pellagra.**—In two cases of pellagra seen by Brownson a leukonychia was observed on each nail, a white band crossing the nails transversely.

127. **Pellagra Treated with Cacodylate of Sodium.**—Booth has obtained uniformly good results from the intramuscular injections of cacodylate of sodium in pellagra cases. From his experience in this disease he believes that the arsenicals, when administered intramuscularly, have a much more beneficial, in fact altogether different, effect than when administered by the mouth.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

August, XII, No. 140, pp. 225-256

1 *Tuberculoma of Pons Varolii; Pulmonary Tuberculosis in Boy Aged Three and One-Half Years. L. Guthrie.
2 Localizing Brain Symptoms (Hemiplegia and Hemispasm) As Early Events in Tuberculous Meningitis. C. O. Hawthorne.
3 *Hernia of Stomach Through Diaphragm in Child Aged Nine Years. W. J. S. Bythell.

1. **Tuberculoma of Pons Varolii.**—Guthrie's patient presented the following symptoms: When sitting up, the chin constantly deviated toward the left side, and the head inclined toward the right shoulder. Eyes, negative. Complete paralysis of left sixth nerve. Eyeball strongly turned inward. No outward movement beyond midline. Power of inward movement of right eye was also lessened. Complete paralysis of left side of face. No loss of sensation on either side of face. The tongue was protruded straight. Soft palate moved normally. Hearing was unaffected. Apparently only the left sixth and seventh cranial nerves were paralyzed. Upper extremities, no apparent weakness nor hypotonia, nor tremors, nor ataxy. Tendon jerks not exaggerated. Lower extremities, movements free, no spasticity nor hypotonia. Knee-jerks active, rather more so on the right side. Ankle clonus absent. Plantar responses sluggish and flexor in type. Tonsils enlarged, and also slight enlargement of posterior cervical, axillary and femoral glands.

About three weeks after admission slight vertical nystagmus was noted, and a fortnight later he appeared to be sensitive to fairly sharp pin pricks all over the trigeminal area on both sides. No signs of implication of other bulbar nerves were discovered, nor was there any evidence of involvement of the descending motor tracts. He was seized with general convulsions and died five hours afterward.

On section, the pons was found to be occupied in its center by a tuberculous mass about 1 inch in diameter. Histologically, the tubercular focus was found to be much more diffused than the macroscopic appearance indicated. None of the pontine nuclei or nerves could be identified. As the brain was removed from the base of the skull, a small tumor, about the size of a cherry, was left behind, loosely attached to the cribriform plate of the ethmoid. It was of a dark red color; its center on section was soft and caseating. Two or three similar masses were found just beneath the cortex on the frontal lobes apparently arising in the infolded pia mater. They were but loosely connected with the brain substance. The cerebellum was free of such foci of infection. The ventricles were not distended. Throughout the lungs many miliary tubercles were found scattered. There was some fibrosis at the left lung apex with dilatation of the bronchioles. The bronchial glands were enlarged, pale and soft, but not obviously caseating, although distinctly tubercular. A few tubercles were found on the pleural surface.

3. **Hernia of Stomach Through Diaphragm.**—In Bythell's case the stomach was herniated through the esophageal opening. The other abdominal organs were normal. The previous history consisted of attacks of persistent vomiting for some six months, the condition steadily getting worse. Apparently there was never at any time much abdominal pain.

British Medical Journal, London

July 31, II, No. 2848, pp. 165-204

4 Observations on Six Hundred Eighty-Five Cases of Poisoning by Noxious Gases Used by the Enemy. J. E. Black, E. T. Glenny and J. W. McNee.
5 Phlebotomus or Sandfly Fever. C. Birt.
6 Sandfly Fever in Chitral (N. India). G. F. Graham.
7 Sandfly Fever in Peshawar. J. W. Houston.
8 Bionomics of Maltese Phlebotomi. P. J. Marett.
9 Transport of Cases of Fractured Thigh. C. M. Page.
10 Movement of Diaphragm in Early Pulmonary Phthisis. H. Walsham and W. Overend.
11 *Beta-Naphthol Poisoning Occurring During Treatment of Ankylostomiasis. W. B. Orme.
12 Diagnosis of Gout. J. B. Berkart.
13 Care of Illegitimate Baby. A. D. Fordyce.

11. **Beta-Naphthol Poisoning During Treatment of Ankylostomiasis.**—Orme warns that in individuals suffering from diseases of the kidneys beta-naphthol should be used with utmost caution, if at all.

Journal of Laryngology, Rhinology and Otology, London

August, XXX, No. 8, pp. 297-328

14 Warfare Injuries and Neuroses. W. Milligan and F. H. Westmacott.
15 *Abnormally Long Styloid Process Causing Throat Symptoms. W. S. Syme.
16 Otolaryngological Cases from Military Hospital. A. Ryland.

15. **Abnormally Long Styloid Causing Throat Symptoms.**—The patient whose case is reported by Syme was a medical man, aged 43, rather stout, and with a short thick neck. Three years ago he had a severe tonsillitis. He had suffered from a sensation of dragging in the left side of his throat, worse on swallowing. Some shooting pain was experienced in the left ear, in which also he was slightly deaf at times. At first he was inclined to associate these sensations with the previous tonsillitis, but as the discomfort increased he examined his throat carefully, at first by sight and then with his finger, when he discovered a firm substance about the middle of the left tonsil. On examination with the mirror the throat appeared normal. With the finger a hard nodule was felt about the middle of the tonsil. It gave the impression of being situated in the tonsil and movable with it. A cartilaginous nodule suggested itself, though the dragging sensation on swallowing, the pain shooting into the ear, and a feeling of resistance rather than of actual swelling on that side of the neck externally, made one keep in mind the possibility of it being a long styloid process. The tonsil was enucleated with the snare under local anesthesia. Firm resistance was encountered on tightening the snare. After removal of the tonsil, on examining with the finger, a sharp point of bone was felt piercing the sheath of the constrictor. The muscle was pressed outwards as far as possible and a portion of the styloid process an inch in length was broken off with forceps. The after-history was that of an enucleation, and the symptoms previously complained of disappeared.

Journal of Tropical Medicine and Hygiene, London

July 15, XVIII, No. 14, pp. 157-168

17 Cases of Trypanosomiasis Treated in England. C. W. Daniels.
18 *Administration of Emetin During Pregnancy and Menstruation. A. J. Chalmers and D. Papatheodorou.

18. **Administration of Emetin During Pregnancy and Menstruation.**—In the case of a woman suffering from amebic dysentery, and in the third month of pregnancy an injection of 4 cg. of emetin (alkaloid) was given intramuscularly by the author, with the result that sixteen hours later the patient complained of severe pain on the right side of the pelvis. This pain was increased by pressure, speaking or coughing. As pain and tenesmus from the dysenteric attack were also severe it was decided to give another 4 cg. of emetin, as it was not clear that the pelvic pain was really uterine. Three hours after this second injection she com-

plained of strong pains in the uterus and, at rare and irregular intervals, she experienced a peculiar sensation in the lower part of her abdomen, which she compared to the opening and shutting of a hand. As the abdominal wall was thin and lax the uterus could easily be felt, but nothing abnormal was detected. It was, however, decided to give her repeated small doses of tincture of opium, and later a hypodermic injection of morphin and atropin was administered, but neither of these relieved the pains. As the amebae had disappeared from the feces, and the pains had gradually declined, ceasing entirely 36 hours after the first injection, it was decided to give no more emetin. The lady made a good and quick recovery from her dysentery, and the pregnancy was apparently unaffected. With regard to the action of the drug when given during menstruation the case of a lady is cited, one who was receiving a second course of emetin treatment for amebiasis from which she was apparently cured. Menstruation appeared during this treatment of ½ grain doses daily, but suddenly ceased on the second day of the menstrual period after the third injection of the drug and did not reappear though the injections were stopped. Two subsequent periods were perfectly normal.

Lancet, London

July 31, II, No. 4796, pp. 213-266

19 Observations on Treatment of Wounds in War (Cresol Paste). W. W. Cheyne.
20 *Results of Hypertonic and Permanganate Treatment in One Thousand Cases of Cholera. L. Rogers.
21 Removal of Shrapnel Time-Fuse from Left Shoulder. A. E. M. Woolf.
22 *Persistence of Antibodies in Blood of Inoculated Persons as Estimated by Agglutination Tests. G. Dreyer and A. C. Inman.
23 *Value of Turpentine as Hemostatic. G. G. Turner.
24 Signification of Acetone Bodies in Urine. B. Derham.

20. **Results of Hypertonic Saline and Permanganate Treatment of Cholera.**—In 1906 Rogers commenced giving normal saline solutions in large amounts intravenously, and the mortality fell from 59 to 51.9 per cent., only to rise again in 1907 (when he was absent on leave) to 59.9 per cent. In 1908 he commenced the use of hypertonic salines intravenously, and the mortality at once fell to 32.6 per cent. Late in 1909, on adding large quantities of permanganates by the mouth with a view to destroying the toxins in the bowel by oxidation, a further reduction in the mortality was obtained, to 25 per cent. in 1,003 consecutive cases in the course of six years. During the last three years the mortality has been 23.5 per cent., and in the first half of 1915, which is the time of the year when the mortality is nearly invariably higher than in the second half, it has fallen to 20 per cent., or practically one-third of the rate in the same hospital during the 11 years before Rogers commenced his investigations.

22. **Antibodies in Blood.**—All the normal individuals examined by Dreyer and Inman had received one or two doses of army typhoid vaccine within the period from August, 1914, to the end of March, 1915. The agglutination tests were carried out in the course of the last ten days in April. For at least eight months after a single or double dose of typhoid vaccine the serum of every inoculated person contained relatively large quantities of antibodies — namely, agglutinins. The maxium content of agglutinin per cubic centimeter of serum found in any inoculated person was 1,500 standard agglutinin units; and no inoculated person showed less than 30 units per c.c. of his serum. On the other hand, in no case, of 30 persons examined at different times and places, has the serum of noninoculated individuals, who had not had typhoid fever, ever exhibited an agglutinin content reaching 10 units per cubic centimeter of serum. Just over half the persons examined between four and six months after inoculation showed an agglutinin content of 130 units or more per cubic centimeter of serum. Persons who received two doses of vaccine usually, but not always, exhibited a higher agglutinin titer than those who had only one dose. Although the titer of serum in persons who had not been inoculated before, and only received a single dose of vaccine, may in some instances at first be as high as or even higher than that of those who received two doses, it was found that after a certain lapse of time it falls to a lower level than in the latter individuals. In persons who had been inoculated before (within six years) the agglutinin titer maintained a high level for a longer period than in the case of those not previously inoculated. The importance of repeated inoculation is therefore clearly not so much that it induces of necessity a higher initial immunity, but that it ensures with certainty a more persistent one.

23. **Turpentine as Hemostatic.**—The principal sphere of turpentine as a hemostatic, according to Turner, is in cases of secondary hemorrhage in which no bleeding point can be caught but in which hemorrhage is nevertheless alarming. Turpentine is an antiseptic, and gauze saturated with it keeps wonderfully sweet; while by its action on the living tissues it gives rise to a slimy pus which greatly facilitates the removal of the gauze in the course of forty-eight hours. The only local inconvenience to which it may give rise is some blistering of the skin, which need not occur if care is exercised in its application. It may also be of great help in primary hemorrhage.

Archives mens. d'Obstétrique et de Gynécologie, Paris

July, IV, No. 7, pp. 257-288

25 *Sterilization in Interests of the Hygiene of the Race. E. Essen-Moeller (Lund).
26 *Danger for Fetus from Disguised Morphin Given Parturient. (Tocanalgine ou antalgésine. Analgésique obstetrical). L. Tissier.
27 Measures to Repress Feticide. (La lutte contre l'avortement et le relèvement de la natalité en France). G. Vitoux.

25. **Sterilization and Race Hygiene.**—Moeller discusses in particular the question as to the advisability of rendering women sterile who suffer from habitual puerperal psychoses requiring asylum treatment up to six months after each childbirth. In five cases of the kind he performed salpingectomy after the third, fifth, eighth or ninth pregnancy. In two other cases he sterilized an imbecile woman pregnant twice, once from incest, and an epileptic IV-para. He reviews the history of such measures in America, adding that the alienists of Switzerland in their annual meeting in 1905 unanimously voted in favor of legislation for operative sterilization in certain cases. The benefit to the race from shutting off the further production of feebleminded is shown anew by the statistics for Sweden. With a population of five and a half millions, there are records of 18,000 insane and 14,000 idiots, 20,000 imbeciles and 7,000 epileptics. Some assert that these individuals procreate in numbers above those of the other elements of society. Sterilization arrests this without the by-effects or irreparable condition left by castration. He does not approve of legislation on the subject of artificial sterilization. "While approving of the optimism that inspired the legislative measures adopted in America," he remarks, "for my part I can regard them only as premature. Our knowledge of the science of heredity is still too imperfect to justify the consequences of such sweeping measures. It seems to me a little unjust to pass laws on a subject that is not yet comprehended by public opinion. This is shown by the fact that in the state of Iowa, for instance, the law has never been applied in practice. The delicate nature of the question and the possibility of error and abuses are not done away with by legislation." Protection against these lies in the physician's sense of personal responsibility, but he regards it as absolutely indispensable that a skilled consultant should approve.

26. **Dangers of Morphin—Tocanalgine—for the Fetus.**—Tissier exclaims that in all ages fraudulent claims and promises to banish the pains of parturition have met with ready credence on the part of the public. Only a few years ago Chevalier Ramognino was flooding the marts with his circulars and pictures extolling the efficacy of his *lotion de délivrance*. "And as late as last summer," Tissier continues, "under a scientific façade, a vast enterprise was skillfully launched, with the connivance of a physician-pharmacist, and very nearly succeeded. From the start, the promoters of Tocanalgine spoke with such positive assurance that not one physician ventured to doubt their assertions and, at the

first, the confidence of the medical men among us was captivated. Notwithstanding all this, the remedy was a lamentable failure. The findings of the chemists analyzing it tore off the mask of this remedy of secret composition and upset its game. The deception was enormous."

"As the promoters seem to be pushing it again," he continues, "improbable as this would seem," he reiterates that the remedy in question is simply morphin, which, it is claimed, has had its toxicity annulled by yeast while losing none of its powers as an anesthetic, or even having them enhanced. The first reports were extremely favorable; the pains of labor were certainly abolished and the infants born in mild apnea were soon revived. But the laboratory men insisted that yeast is unable to annul the toxic action of a stable body like morphin, and interrogation of the responsible head of the firm making the remedy showed such ignorance of pharmaceutic reactions that the questioners were stupefied. "In short, except for the variable addition of ammonia or yeast, the remedy was nothing but morphin. The particularly aggravating circumstance is that there was no exact dosage and that sometimes there was more and sometimes less of the active substance. Four ampules taken at random contained respectively 1.57, 1.95, 2.50 and 2.60 per cent. morphin hydrochlorate and no ammonia hydrochlorate and no oxydimorphin." . . . "The women did not suffer from the use of the remedy; it might even be said that all were actually relieved by it. But this cannot be said of the children; the susceptibility of infants to opium is well known. Many of them were born apparently dead and for long minutes inspired the gravest concern, to state it in the mildest terms. Some had particularly deplorable effects from it in this respect, but circumstances have prevented the publication of their experiences."

Tissier used the remedy twice, but says he will never try it again; each time extreme efforts to resuscitate the child were required for half an hour in the first and for five or six hours in the second case. In other cases of which he knows, it proved impossible to revive the children. "In one case delivery proceeded normally in a few hours without complications, but the husband, a medical officer serving at the front, had left strict orders to give the remedy, which was done. The child never cried and died the twenty-sixth hour. The magic transformation of the maternity ward into a palace of silence is something that any physician can always realize with morphin. But Tocanalgine, Antalgésine and Antalgine, with the *lotion de délivrance,* miracle waters and other balms, which were at least harmless in themselves, should be relegated to the museum of cast-off accessories of farces and comedies."

Bulletin de l'Académie de Médecine, Paris

July 6, LXXIII, No. 27, pp. 1-24

28 Serotherapy of Cerebrospinal Meningitis. P. Menetrier and A. Pascano.
29 The Soldier's Ration. (Dans la ration actuelle du soldat en campagne il faut diminuer la viande et augmenter les légumes et le vin). A. Gautier.
30 Recovery After Extraction of Scrap of Shell from Inner Table of Parietal Bone Three Weeks After Injury. Oui.
31 Unreliability of Pyoculture. E. Agasse-Lafont.

July 13, No. 28, pp. 25-72

32 *Typhoid in the Vaccinated. L. Landouzy.
33 Measures Proposed to Discourage Importation of Foreign Drugs. Grimbert.
34 Wine in Soldier's Ration, and Alcoholism. L. Landouzy.
35 Pyoculture and Opsonic Index. F. Trémolières and P. Loew.
36 *Infusion into Severed Vein during Amputations. (L'injection massive de sérum dans la veine fémorale au cours de l'amputation de cuisse et la désarticulation de la hanche). M. Savariaud.
37 *Typhus in Algeria. Ciavaldini.
38 Abuse of Antiseptics and Sea Water in Dressing Wounds. M. de Fleury.

32. **Typhoid in the Vaccinated.**—Landouzy declares that the number of antityphoid inoculations made is of far less moment than the dosage. He also insists that the statements of the soldiers in regard to preceding inoculations are liable to be vague and confusing; they do not really know what was done to them, and the various vaccines differ widely in strength. For these and other reasons he thinks that the reports of "typhoid in the vaccinated" must be viewed, as a rule, with considerable skepticism.

36. **Infusion During Amputations.**—Savariaud refers to amputation of the thigh or exarticulation of the hip joint. The danger of operative shock is so imminent with these serious operations that he sought to ward it off by injection of saline directly into the femoral vein. It is thus possible to infuse up to 3 pints (1,500 gm.) in two or three minutes. As the ligated femoral artery is under one's eyes at the same time, the pulsation in it shows at once how the blood pressure is rising. He remarks that the surgeon returning after an absence of two or three minutes and finding the full pulse beat would be apt to think that his patient had been changed. The advantages of this technic are obvious; especially that there is no need to seek for a vein in the exsanguinated patient. Another advantage is that the smaller arteries begin to bleed and can thus be readily located and ligated. If a little air gets into the vein, it seems to be absorbed harmlessly on the long journey to the heart; he has never had any trouble from this source, although he worked with an ordinary enamel irrigator and tube.

37. **Typhus in Algeria.**—Ciavaldini relates that the natives in Algeria have suffered much from the war as the price of grain rose. Exanthematous typhus appeared in the cities and prisoners and spread among the tribes. In his district one tribe had twenty-four cases, with two deaths, but he succeeded in restricting the epidemic to the tribe in question by keeping it together in one place, which the members were not allowed to leave, and keeping them supplied with food. The café in town where the first infection was derived was also isolated. By this means typhus was stamped out in his district.

Presse Médicale, Paris

July 15, XXIII, No. 32, pp. 253-260

39 Effect of and Protection Against Asphyxiating Gases. (Etude clinique, anatomo-pathologique et histo-chimique des cas d'intoxication par les gaz irritants employés par les allemands à Langemarck). R. D. de la Rivière, J. Leclercq and F. Lévy.

July 22, No. 33, pp. 261-268

40 *Portable Filter, Sterilizer and Cooler for Drinking Water. L. Binet.
41 *Locke's Solution for Arrest of Hemorrhage in and Rinsing Out of Wounds. J. Gautrelet.
42 *Auscultation of Venous Pulse. O. Josué.

40. **Improvised Filter and Cooler.**—Binet improvised the tank shown in the illustration, using a large pail or can to which a stout handle was fastened. A tin box was soldered over a hole in the bottom. The floor of this tin (candy) box was perforated with rows of holes, and a spring was attached to the cover and to the bottom of the box. The spring is enclosed in a tube made by rolling up a sheet of tin, obtained, with solder, from tin cans. A chain is attached to the water-tight cover of the box, and the box is filled with alternate layers of charcoal and well-packed cotton. Suspended in the stream, the pail soon fills up with the filtered water. Then by loosening the chain, the spring cover drops back water-tight on the box, and the whole pail, full of filtered water, is ready to be carried off to use. The water can be sterilized with potassium permanganate, 0.03 gm. to the liter, or six drops of tincture of iodin to the liter, or with a calcium hypochlorite tablet.

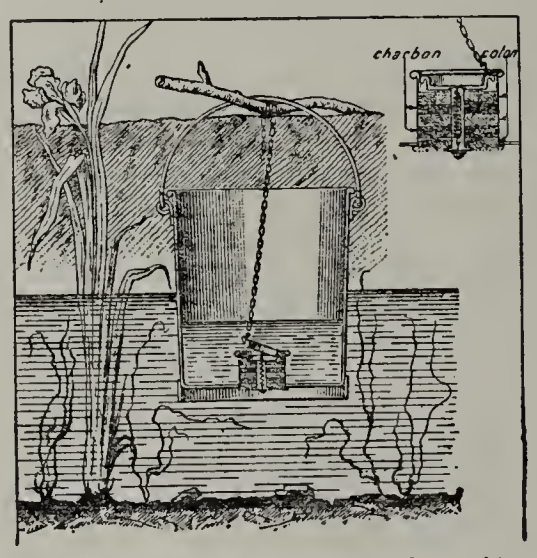


Diagram showing construction of portable filter.

41. **Locke's Solution in Hemorrhage.**—Gautrelet expatiates on the importance of Locke's solution as the "sérum physi-

ologique par excellence." It respects the natural defenses more than any other fluid known, and hence should be used exclusively for cleansing out wounds and arresting hemorrhages, and for intravenous infusion. The formula for it he gives as 8 gm. sodium chlorid; 0.2 gm. each of calcium chlorid, potassium chlorid and sodium bicarbonate, with 1 gm. glucose and 1,000 c.c. distilled water, the whole oxygenated to saturation.

42. **Auscultation of Venous Pulse.**—Josué gives an illustrated description of his method of ausculting the jugular vein, which is proving very instructive. It differentiates at once total bradycardia from heart-block bradycardia and permits precision diagnosis of complete arrhythmia resulting from auricular fibrillation and extra-systoles. The stethoscope is applied at the base of the neck, as close as possible to the clavicle, between the sternal origin and the clavicular origin of the sternomastoid muscle. The stethoscope is worked in between these tendons of the sternomastoid and is held slanting at an angle of 45 degrees. Some skill is required not to press too hard on the vein or be misled by a murmur in the adjacent carotid. The patient must lie flat, without a pillow, and the room must be absolutely quiet. The radial pulse should be palpated at the same time. A number of tracings in health are given and the differences are pointed out between these and the tracings in cases of heart block and total arrhythmia. The auscultation findings and the pulse tracings always showed complete agreement, and this was the means by which the former were interpreted at first.

Archiv für Gynaekologie, Berlin

CIV, 2, pp. 189-392. Last indexed May 1, p. 1532

43 Heteroplasia in Carcinoma of Uterus. L. W. Strong (New-York).
44 *Case of Congenital Scoliosis. P. Werner.
45 *Cancer of the Placenta; Two Cases. (Chorioma malignum.) P. Böhi.
46 Case of Tuberculosis of the Placenta and Fetal Membranes. W. Lanz.
47 Fate of the Ruptured Point in Ovarian Follicle. (Schicksal der Follikelsprungstelle). W. Strakosch.
48 Dwarf Growth with Polydactylia. (Zwergwuchs). P. Werner.
49 *Prognosis in Puerperal Fever Based on Bacteriologic and Histologic Findings. K. Warnekros.
50 Efficacy of Oxidation Product of Narcotin Alkaloid of Opium — Cotarnin — in Gynecologic Hemorrhage. (Cotarnin und seine Anwendung.) H. Offergeld.

44. **Congenital Scoliosis.**—The child presented several other deformities and examination revealed bicornis deformity of the uterus.

45. **Cancer of the Placenta.**—Böhi's two cases bring to sixty-two the number of cases on record of malignant chorioma of which he has knowledge. In his first case a VI-para of 35 was delivered normally of an infant weighing 2,700 gm. that died in a few days. It was dropsical and the heart was pathologic, the liver rudimentary. Adherent to the placenta by a long pedicle was a sarcomatous tumor the size of a small child's head. It seemed to be complete in itself, and there was no further trouble for a year afterward, when signs suggesting incipient pregnancy or cancer developed. The uterus was curetted and all has seemed to be in good order during the year since. A colored plate shows the sarcoma, shaped like a pear with a very long stem. In the second case a woman of 27 was delivered normally of a healthy child, but the expulsion of the placenta was followed by expulsion of a loose, tough tumor the size and shape of an egg. Both women were frail but free from kidney or heart disease, and the tumor in both was partially sarcomatous although mainly of placenta structure. Colored plates show the macroscopic and microscopic aspects of both.

49. **Prognosis of Puerperal Fever.** — Warnekros devotes eighty pages and seven colored plates to the bacteriologic and histologic findings in cases of puerperal fever as correlated with the course and outcome. They demonstrate beyond question, he says, the importance and reliability of the information to be derived from continued bacteriologic control of the blood in all cases of abnormally high temperature in parturients. On the one hand, it warns against needless operative measures based on a mistaken, purely clinical, diagnosis. On the other hand, it sounds the alarm in time, when the local process is becoming a general infection, and enables its arrest at once by suitable measures.

Berliner klinische Wochenschrift

July 19, LII, No. 29, pp. 761-780

51 Gas Phlegmons in Roentgen Picture. M. Martens.
52 Bullet in Tissues Turns on Transverse Axis. (Umdrehung der modernen Spitzgeschosse im Wundkanal um ihre Querachse). W. Levy.
53 Influence of Milk and Its Antibodies on Action of Hemolytic Toxins. H. Sachs.
54 Ready-Made Culture Mediums. (Ueber Ragitnährböden.) M. Feiler.
55 Action of Hypophysis Extract on Asthma; Etiology of Asthma. E. Riese.
56 Localization of Metal Foreign Bodies by Roentgen Stereogram. (Der Salow'sche Tiefenmesser.) L. Katz.

Deutsche medizinische Wochenschrift, Berlin

July 15, XLI, No. 29, pp. 845-876

57 Orthopedic Appliances for the Wounded. (Kriegsorthopädisches.) O. Vulpius. Concluded in No. 30.
58 *Mechanics of the Heels of Shoes and Proper Care of the Feet. (Vor- und Nachteile des Stiefelabsatzes sowie die Aufgaben einer vernunftgemässen Fusspflege.) A. Ritschl. Commenced in No. 28.
59 *Angina Pectoris and Raynaud's Disease. T. Schott.
60 Bacteriologic Diagnosis of Diphtheria. H. Berlin.
61 Agglutination Test in Dysentery. (Widalsche Typhusreaktion bei Y-Ruhrkranken.) M. Soldin.
62 Combination of Ultraviolet Light and General Diathermy in Treatment of the Wounded. V. Hufnagel, Jr.
63 Sterilizing Brick Oven. (Zur Beseitigung der Läuseplage.) Rudolph.

58. **Heels.**—Ritschl gives diagrams to show that over-high heels affect injuriously not only the foot itself, but throw the whole weight-bearing mechanism more or less out of gear. By extending a moderately high heel backward, the tendency to pes sursum flexus, as with paralysis of the muscles of the calf, is automatically corrected. In conclusion he appeals to physicians, as the leaders in enlightening the public in matters of health, to teach the necessity for properly constructed shoes and for regular gymnastic exercises of the feet as the most important element of the motor apparatus. The strength and the well being of the entire body depend in a large measure on the condition of the feet, and their development in children should be watched over with special care to avert injurious influences.

59. **Angina Pectoris and Raynaud's Disease.** — Schott reports a case in which angina pectoris developed in a man with the nervous-trophic and vasomotor phenomena of Raynaud's disease—the whole probably to be ascribed to chronic intoxication of a chemical nature from inhaling nitrite dust in handling explosive powders. Incipient arteriosclerosis was the only other possible causal factor to be discovered.

Medizinische Klinik, Berlin

July 18, XI, No. 29, pp. 795-822

64 Typhus. (Diagnose und Krankheitsbild des Fleckfiebers auf Grund eigner Erfahrungen). C. Bäumler. (Anatomische Befunde bei Fleckfieber). L. Aschoff.
65 *Connection Between Gynecologic Disease and Insanity. (Aetiologie und Therapie von Frauenkrankheiten bei Irren). L. Fraenkel.
66 Arsenic in Flour; Thirty-Six Persons Poisoned. (Ueber Arsenikvergiftung.) P. Michaelis.
67 Sporadic Case of Intestinal Anguillulasis. L. Korczynski.
68 Improvised Clothing Sterilizer. (Zur Abtötung von Kleiderläusen.) Wegner.
69 Disease of the Penis. E. Portner.
70 *Acute Yellow Atrophy of the Liver in Syphilitics. M. Michael.

65. **Connection Between Gynecologic Disease and Insanity.**—Fraenkel reports as a very suggestive fact that gynecologic examination revealed that a large percentage of 286 women inmates of the insane asylum at Lublinitz were found virgines intactissimae and a number of others probably the same, but in only 18 of the 286 were the gynecologic findings normal. The hymen is generally regarded as a protection of the internal genitals, gynecologic disease generally developing only after the hymen has been torn. This renders

peculiarly significant the fact of the frequency of pelvic anomalies in insane women. The article is continued.

70. **Acute Yellow Atrophy of the Liver in Syphilitics.**—Michael argues against the conclusions of Halbey in his report of a case of acute yellow atrophy of the liver under salvarsan treatment for syphilis (mentioned in these columns July 3, 1915, p. 61). Michael recalls that a number of cases have been published in which this affection or simple jaundice led to an examination of the patient revealing hitherto unsuspected and hence untreated syphilis. He has had two cases of this kind in his practice in a single month recently. Consequently he reiterates that the salvarsan should not be summarily ineriminated as the cause of yellow atrophy of the liver.

Münchener medizinische Wochenschrift, Munich

July 6, LXII, No. 27, pp. 905-940

71 Tuberculin Treatment of Children; Forty-Five Cases. H. Koch.
72 Importance of Nervous System as a Factor in Exophthalmic Goiter. (Zur Theorie des Basedow.) A. Oswald.
73 Rupture of Trachea in Boy. (Berstungsrupturen der Trachea.) C. Hörhammer.
74 Substitutes for Bread. (Zur Frage des Brotersatzes.) O. Raab.
75 Reeducation after Injury of the Brain. (Uebungsschulen für Gehirnkrüppel.) E. Fröschels.
76 Rigor Mortis. (Zur Kenntnis der Totenstarre und der physiologischen Vorgänge im Muskel.) L. Wacker. Commenced in No. 26.
77 Wounds of the Spinal Cord. (Verletzungen des Rückenmarks im Kriege.) J. Leva and Bittorf.
78 Estimation of Nervous and Psychic-Nervous Affections. G. Aschaffenburg.
79 Healed Vaccination Pustule Flares up Again Four Months Later during Diphtheria. Eggebrecht.
80 Plastic Operation with Extensor Digitorum. (Ersatz der Interossealmuskulatur der Hand durch Extensor digitorum communis.) C. Müller.
81 Bridge Devices for Extension in Plaster Casts. (Gipsklammer.) J. Stoeger.
82 Union of Surgery and Orthopedics the First Step in Welfare Work for Maimed Soldiers. E. Blind.
83 *Epidemic of Influenza Brought on by Overexertion. (Eigenartige Truppenepidemie.) Heilbronn.
84 Improvised Arrangement for Proctoclysis. (Improvisation des Rektaltropfeneinlaufes.) E. Gelinsky.

July 13, LXII, No. 28, pp. 941-972

85 Fat Content of the Human Spleen. (Zur Lehre vom Fettgehalt der menschlichen Milz.) A. Schmincke.
86 *Compact Transformation of Spongiosa of Bones. (Osteosklerose und Anämie.) F. Reiche.
87 Cure of Gangrenous Process in Lung by Artificial Pneumothorax. V. Reichmann.
88 Dislocation of Metatarsal Bones. (Zum Kapitel der seltenen Fussläsionen.) W. S. Moench.
89 Dietary of Average Family in Denmark. (Nahrungsmittelverbrauch dänischer Familien.) M. Hindhede.
90 Psychic Origin of Functional Nervous Disturbance in the Ear. (Hysterische Funktionsstörungen des nervösen Ohrapparates im Kriege.) J. Zange.
91 Gunshot Wounds of the Intestines through the Back. (Retroperitoneale Darmverletzungen durch Rückenschüsse.) A. Peiser.
92 Protection Against Lice. (Entlausungsofen.) E. Seligmann and R. Sokolowsky. (Zur Frage des persönlichen Lausschutzes.) V. L. Neumayer.
93 Magnifying Spectacles to Utilize Relics of Vision. (Wie kann man schwachsichtig gewordenen Soldaten das Lesen wieder ermöglichen?) W. Stock.
94 Paraguay Tea — Yerba Mate — as Substitute for Tea and Coffee. A. Richter.
95 String Attached to Sound Arm Aids in Use of Improvised Prothesis. Rosenstrauss.
96 Ligation of the Carotid. V. Franz.
97 Training School in the Base Hospital. (Lazarettunterricht.) K. Frickhinger.
98 Folding Operating Table. (Verbesserter Feldoperationstisch nach Axhausen.) E. Boerner.

83. **Influenza After Overstrain.**—Heilbronn is the medical officer for a troop detailed for railroad construction. The general health had been constantly good until the men had to work extra hard in the rain for two days; 105 developed sore throats or bronchitis in consequence, and thirty-seven presented typical influenza. He relates the circumstances to call attention to the way in which the barriers to infection were evidently thrown down by fatigue and exposure, and all came down at once. The epidemic confirmed anew the remarkable contagiousness of influenza and the importance of isolation in prophylaxis. This proved useful, besides, from another point of view, as two men thus promptly isolated proved to have typhoid.

86. **Osteosclerosis and Anemia.**—Reiche recalls that Sick published last year three new cases of that general affection of the bones in which compact bone substance usurps the place of the spongiosa, while the entire bone seems to contain a larger proportion of lime than usual. Sick's patients were a brother and sister of 2 and 3½ and a cousin, a girl of 15. Reiche has had a patient with this osteosclerosis, as he calls it, under observation for a number of years. He is now 37, delicately built and pale, but alert and at the head of a large mercantile establishment. The spleen and liver are much enlarged and the osteosclerosis and anemia—the latter probably the result of encroachment on the bone marrow by the general bone process—have all persisted in a practically stationary phase during seven and a half years to date. The bone affection is known to have existed back into childhood, as a history of repeated fractures suggests abnormal fragility of the bones. His parents were syphilitic and he responded positively to the Wassermann test.

Therapie der Gegenwart, Berlin

July, LVI, No. 7, pp. 241-280

99 Diagnosis and Treatment of Six Types of Chronic Joint Disease. (Chronische Gelenkerkankungen.) T. Brugsch.
100 *Pure Salicylic Acid in Treatment of Acute Articular Rheumatism. J. Zadek. Concluded in No. 8.
101 *Treatment of Duodenal Ulcer. L. Strauss.
102 *Treatment of Wounds with Ultraviolet Rays. M. Kork and A. Bäumer.
103 Present Status of Optochin in Treatment of Pneumonia. G. A. Waetzoldt.

100. **Salicylic Acid in Acute Articular Rheumatism.**—Zadek admits that salicylic acid is not a specific for acute rheumatism; it does not actually cure the disease but it reduces the pain and enables the joints to be moved freely, while the temperature also declines under it. These same results may occasionally be obtained by physiotherapy, but the salicylic acid medication accomplishes it with infinitely less trouble and inconvenience to both patient and attendants, and the effect is usually far more thorough. But, he adds, neither the salicylic medication nor anything else known will ward off relapses and involvement of new joints and of the heart.

101. **Duodenal Ulcer.**—Strauss reports two cases to illustrate the importance of a presumptive diagnosis of duodenal ulcer when men over 40 have long suffered from disturbances suggesting hyperacidity, especially when the men have been leading a nervously strenuous life. Both his patients had taken sanatorium treatment for their assumed hyperacidity. The pains became so severe in the first case that the man came to the hospital, where he was kept for further observation. He died the next morning and a perforated duodenal ulcer was found at necropsy. The other patient presented the very same clinical picture except that he had once had considerable blood in his stool, ascribed to hemorrhoids at the time. When blood again appeared in the stools, duodenal ulcer seemed certain, and the digestive tract was left in complete repose, not a drop of water or even ice was allowed by the mouth, and no nutrient enemas, merely salt solution by the drop method in the rectum. After twenty-four hours, sips of water were allowed and the fourth day sips of chilled milk. The man was soon free from symptoms and feels still quite well to date, three months later, and there is not even occult blood in the stools. Strauss is ready to operate at the slightest return of trouble, but does not think operative measures required otherwise as the man is no longer under nervous strain. If the patient was liable to excitement and overwork, Strauss would advise an operation at once, as these two cases and others in his experience sustain the assumption of a preponderant nervous element in duodenal ulcer.

102. **Phototherapy of Wounds.**—Kork was unable to detect any influence from the utraviolet rays on deep lying wounds and other lesions, fistulas, etc. With superficial lesions, the effect was inconstant.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 1, XXXVI, No. 52, pp. 801-816

104 Experimental Research on Diathermy. (Sul valore reale della diatermia come mezzo di produzione di calore nei tessuti vivi e morti dell'organismo.) G. Setzu.

Policlinico, Rome

July 18, XXII, No. 29, pp. 957-988

105 The Teeth and Jaws in War. (L'odontoiatria nell'esercito e nella marina in tempo di guerra.) A. Chiavaro. Commenced in No. 28.
106 Operations on the Urethra. (Appunti di chirurgia uretrale.) L. Garovi.

July 25, No. 30, pp. 989-1020

107 Restoration of the External Ear. (Plastica del padiglione dell' orecchio.) S. Gucciardello.

July, Surgical Section, No. 7, pp. 313-360

108 *Retroperitoneal Blood Cyst. G. Paganelli.
109 *Functional Capacity of Kidneys Determined by Test Ingestion of Urea. (La prova dell'azoturia, come metodo di esame della funzione renale.) E. Pirondini. Continued.

108. **Retroperitoneal Blood Cyst.**—Paganelli's patient was a woman of 43 who had had abdominal pain for a time after a fall down stairs, but then there were no further disturbances for fifteen months. Then a hard and nonsensitive tumor became evident in the left abdomen under the ribs. It increased in size and in a few months induced colic pains, and one night there was clotted blood in the stools. The tumor proved to be a large retroperitoneal cyst, containing 200 c.c. of blood and serum, and was easily shelled out. It had evidently developed from a traumatic hematoma.

109. **Alimentary Azoturia as Test of Kidney Functioning.**—Pirondini thinks that very valuable information may be obtained from supervision of the elimination of urea in the urine after drinking rapidly 300 c.c. distilled water in which has been dissolved 10 gm. of urea. As preliminaries the bladder is emptied and the subject lies down for half an hour; the bladder is then emptied anew, with the catheter, and then the glass of water with the urea is taken. The urine is then examined for urea at half-hour intervals thereafter for over two hours. His research on the healthy and on persons with kidney disease shows that ingestion of urea modifies to a notable degree the urea content of the urine. The modifications are most pronounced soon after taking the urea, and the test can be applied by the same technic as for Albarran's polyuria test. In this instalment of his communication he gives the curves recorded in a number of healthy persons, reclining or up and about. They harmonize with the findings with test polyuria.

Riforma Medica, Naples

July 17, XXXI, No. 29, pp. 785-812

110 *Primary Tumors Originating in Sheaths of Arteries and Veins; Two Cases. (Contributo istologico e clinico intorno ai tumori primitivi delle guaine vascolari.) V. Marcozzi.
111 Tonsil Extract Useful in Glycosuria and Diabetes. (L'opoterapia delle glicosurie semplici e del diabete mellito, mediante la somministrazione di estratto di tonsille palatine.) G. B. Farmachidis.

July 24, No. 30, pp. 813-840

112 Experimental Transplantation of Joints. (Sui trapianti articolari.) R. Falcone.

110. **Tumors in Vessel Sheaths.**—Marcozzi was unable to detect any pathognomonic features in his two cases or in those on record. The structure may be of any type of tumor, sarcoma, endothelioma, etc., and usually they are easily enucleated. His patients were young men and the tumors were of mixed sarcoma structure. One was in the neck and one at the root of the thigh. Both were adherent to the neighboring artery and other tissues, but each was successfully removed.

Brazil-Medico, Rio de Janeiro

June 15, XXIX, No. 23, pp. 177-184

113 Nomenclature of Leishmaniosis in South America. (Bouba e leishmaniose são doenças distinctas. Synonymias das leishmanioses na America do Sul.) A. A. da Matta.

June 22, No. 24, pp. 185-192

114 Bacteriologic Diagnosis of Epidemic Cerebrospinal Meningitis. A. Moses.

Semana Medica, Buenos Aires

June 17, XXII, No. 24, pp. 747-774

115 *Injections of Hypertonic Sugar Solution and Indications. (Las inyecciones de suero glucosado hipertonico.) J. F. M. Gomez.
116 Latent Peritonitis. E. P. Siri.
117 Electrocauterization for Tuberculosis of the Larynx. (La galvanocauterizacion en la tuberculosis laringea.) D. A. Vagni.
118 Horse Serum plus Epinephrin Cures Incoercible Vomiting of Pregnancy; Two Cases. (El suero de caballo y la adrenalina en los vomitos incoercibles del embarazo.) G. B. Cavazzutti.
119 Safety Regulations in Underground Work. (El trabajo de los obreros en sotanos y subsuelos. Su reglamentacion.) J. M. Obarrio.
120 Leishmaniosis in South America. (Contribucion al estudio de la fisonomia clinica, clasificacion y sinonimia de las leishemaniosis en la America del Sud.) A. A. da Matta.

115. **Hypertonic Sugar Infusion.**—Gomez reports experiences which testify to the diuretic, nourishing and diagnostic importance of intravenous infusion of a 30 per cent. solution of sugar. He tabulates the details from a number of cases of various diseases, all confirming his statements. He also tabulates the details of some cases in which the functional capacity of the liver was tested by intravenous injection of a 30 per cent. solution of sugar. When only a tenth of the injected sugar can be recovered from the urine, the assumption of insufficiency on the part of the liver is amply justified. His figures show the beneficial effect of the hypertonic sugar infusion in typhoid, pleurisy, cirrhosis of the liver and neuritis. His dosage was intravenous injection of 500 c.c. of the 30 per cent. solution plus ingestion of 150 gm. of sugar dissolved in 500 c.c. of water. The experiences related were at the Pitié Hospital at Paris, 1914-1915, where Gomez is "extern" and chief of the radiology laboratory in Professor Enriquez' service. He took an hour and a half each time for the intravenous injection of 500 c.c. of the 300 per thousand solution of glucose.

Russkiy Vrach, Petrograd

Feb. 21, XIV, No. 8, pp. 169-192

121 Amebic Dysentery. I. P. Vassilieff.
122 Fish Poison, Its Physical and Chemical Properties and Toxic Products of Suppuration. S. V. Konstansoff. Commenced in No. 7.

Feb. 28, No. 9, pp. 193-216

123 Sanatoriums in the Mountains of the Caucasus for the Tuberculous. O. A. Chechott. Commenced in No. 8.
124 Fusiform Bacilli in Scarlet Fever. V. N. Klimenko.
125 Wounds of Fingers in War. V. N. Markoff.
126 Alkali and Acid Production by Diphtheria Bacilli. V. S. Vesseloff.
127 *Pathology and Etiology of Arteriosclerosis. N. N. Anichkoff. Commenced in No. 8.

March 28, No. 13, pp. 289-312

128 *Diet in Stomach Diseases. B. P. Varipaieff.
129 *Wolff-Junghans' Test for Cancer of the Stomach. S. S. Katznelson.
130 *The Thyroid Secretion in Normal and Pathologic Conditions. N. E. Osokin.

127. **Arteriosclerosis.**—According to Anichkoff, arteriosclerosis or atherosclerosis is not a degenerative hyperplastic, but an infiltrative hyperplastic process of the walls of the vessels, because experiments on rabbits fed with cholesterin showed the walls of the vessels to be infiltrated with this substance. These infiltrations are accompanied by reactive changes in the form of phagocytosis around the infiltrated places, and fibrous, connective tissue proliferation which occurs quite early. In the second stage, atheromatous ulcers form, as the result of destruction of the newly formed tissue. In the floors of the ulcers cholesterin can be found. This, the degenerative stage, is but a secondary phenomenon, the primary one being the process of infiltration with cholesterin. This is not the product of decomposition, as is generally thought; it is brought from outside and deposited within the walls of the vessels. In rabbits, cholesterin seems to be the sole cause of arteriosclerosis, which can always be produced in them by feeding them with cholesterin, even with the smallest doses, provided it is given for a long time, or it is aided by some other factors, such as increased blood pressure. In human beings, narrowing of the aorta, when there is cholesterinemia, may and does usually lead to arteriosclerosis above the place of stenosis. In other words, a combination of mechanical causes and choles-

terinemia may lead to arteriosclerosis in man. Of these two factors, the cholesterinemia is the more important, the mechanical causes being of secondary value. Anatomic changes in the intima, such as its hypertrophy, are predisposing factors making the vessels susceptible to sclerosis, as they then more readily become infiltrated with cholesterin. This is the reason why arteriosclerosis is a senile affection.

128. **Gastric Ulcer and Hyperacidity Diet.**—Varipaieff has somewhat modified Yarotzky's diet for treatment of hyperacidity and gastric ulcer. At 6:30 a. m. he gives a teaspoonful of bismuth subnitrate with from 3 to 7 drops of belladonna. At 7 a. m. a teaspoonful of calcined magnesia with from 3 to 7 drops of belladonna, and at 7:15 two raw eggs (beaten up). At 9 a. m. (beginning the second day), one teaspoonful of calcined magnesia or calcium carbonate, (calcaria carbonica) and at 9:15, two eggs. At 11 a. m. (the third day) a teaspoonful of magnesia or calcium carbonate and two eggs. At 1 p. m. is given a rectal injection of a solution of sugar (30 gm. of glucose to 500 gm. of water): at 4 p. m. a second rectal injection of the sugar solution. At 6 p. m. several doses of oil, altogether about 100 or 150 gm. oil, after the stomach contents have thus been rendered alkaline. Thus the patient is getting from 1,000 to 1,500 calories during the twenty-four hours. The loss in weight with such an insufficient diet is noticeable only during the first two or three days. This dieting was kept up until the pain disappeared, not less than a week. Milk was not allowed until the second or third week, and by this time the pure oil was stopped. No narcotics were given except the belladonna, and this on account of its specific action on ulcers of the stomach. The treatment must be, of course, individualized. It was successfully carried out on twelve patients whose histories are given.

129. **Albumin Test for Cancer of the Stomach.**—Katznelson studied the reaction of Wolff-Junghans in 21 cases of achylia and in 14 with various degrees of acidity, but all without blood to be detected in the stomach. He did not wash the stomach before giving the test breakfast. In 9 cases of malignant achylia, with complete absence of hydrochloric acid and total acidity not exceeding 16, or total anacidity as in 7 in this group, he found the albumin index between 200 and 400. In 10 cases of benign achylia the index ranged from 20 to 30. In 2 cases of doubtful achylia, cancer probable, it was 100 and 400. (Wolff and Junghans' method for estimation of the albumin in the stomach content with cancer, and their views as to its significance, were summarized, from their original communication, in The Journal, July 8, 1911, p. 173.) The reagent is a mixture of 0.3 parts phosphotungstic acid; 1 part hydrochloric acid; 20 parts alcohol and water to 200 parts. They apply the test to a set of beakers containing the stomach content diluted in turn from 0.25 up to 10 per cent. In each beaker 1 drop of reagent is superimposed on the diluted stomach content. The index is the dilution in the first beaker in which no ring forms at the point of junction with the reagent. The albumin index is thus the figure representing the dilution: 10, 20, 40, 80, 100, 200 or 400. In Katznelson's cases, he thus found the albumin index in 9 cases of gastric cancer from 200 to 400 (average 355). In his 10 cases of benign achylia it was only from 20 to 80, (average 55). Hence it seems that an albumin index below 80 speaks for benign conditions, above 100 for malignant forms of achylia. As this test is so very simple it must be considered an extremely valuable method for differentiating between malignant and benign achylia. Cases in which even small amounts of hydrochloric acid are present are not suitable for this test, as there is liable to be considerable albumin in the stomach content. The index ranged from 100 to 400 in 14 patients with different proportions of hydrochloric acid in their stomach content although cancer could be positively excluded.

130. **Thyroid Secretion in Normal and Pathologic Conditions.**—Osokin studied the changes in the thyroid after injections of pilocarpin, epinephrin and thyrolytic serum, and found that epinephrin increases the secretory activity of the thyroid. After its prolonged use the gland becomes exhausted, with subsequent atrophy of the cellular elements. Normally there are a number of cells in the thyroid which seem to be peculiarly active.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 26, I, No. 26, pp. 2223-2294

131 Influence of Roentgen Rays on Menstruation. L. F. Driessen.
132 *Bilirubin Content of the Blood Serum in Health and Disease. (De gele kleurstof van het bloedserum.) L. S. Hannema.

July 3, II, No. 1, pp. 401-468

133 *Cerebrospinal Meningitis in the Netherlands. F. J. Hagen and R. R. Rochat.
134 *Analysis of the Pulse Curve in Man. (Polskromme bij den mensch.) K. L. F. Kaiser.
135 Roentgenography in Case of Tabes before Development of Ataxia. H. C. Geuken.

132. **Bile Pigment in the Serum.**—Hannema discusses the causes and significance of the presence of bile pigments in the blood, especially bilirubin. In thirteen cases briefly summarized, the determination of the bilirubin content was of no aid in making the diagnosis as the patients all had unmistakable jaundice, but it permitted estimation of the effect of treatment. The experiences reported apparently demonstrate that every serum contains some bilirubin. Also that in consequence of disturbed elimination of bile, abnormal quantities of bilirubin may pass into the blood, but that this does not inevitably induce jaundice. He describes the technics for estimation of the proportion of bilirubin in the serum sufficiently exact for all practical purposes. In some cases the figure representing the bilirubin content of the blood serum may afford valuable information for differential diagnosis when jaundice develops.

133. **Meningitis.**—A few cases developed in the garrison at Amersfoort and a number of healthy carriers were found. They were isolated and their clothing and rooms disinfected: none of them contracted the disease. On reexamination one or two weeks later, the meningococci seemed to have disappeared. Placards of twelve paragraphs were hung up in the barracks, warning of the serious character of epidemic meningitis and giving means to avoid it and avoid infecting others. By these measures the disease was apparently stamped out before it got much headway. In all the cases that developed there was an exanthem or petechiae but not so diffuse as with an eruptive disease.

134. **Study of the Pulse.**—Kaiser's article is illustrated, showing the application to the pulse of a small instrument devised for another purpose but which is proving extremely useful for recording the pulse both in the clinic and in experimental research. Kaiser has found it more reliable than any other means he has ever tried. The tracings obtained with it are remarkably distinct. The principle is to fasten a large ring, something like an oval napkin ring, on the artery, and then place inside the ring a drum which has a cork cone fastened in the center. The cork cone rests lightly on the artery and moves with it. (The writer of this article, just a week before its publication, succumbed to the consequences of a severe fall, aged 51. He had made a special study of the pulse and blood pressure and the pressure in the abdominal cavity, and published a number of important works on them.)

Hospitalstidende, Copenhagen

July 14, LVIII, No. 28, pp. 685-708

136 Paralysis from Whooping Cough; Four Cases., (Lamhed ved Kighoste.) S. T. Sørensen.

July 21, No. 29, pp. 709-732

137 Congenital Deformity of the Fingers, and Pathogenesis. C. Otto.

Ugeskrift for Læger, Copenhagen

July 8, LXXVII, No. 27, pp. 1089-1122

138 Health and Pathology of Arctic Eskimos. (Om Sundhedstilstanden blandt Polareskimoerne.) P. Freuchen.

July 15, No. 28, pp. 1123-1168

139 Exstrophy of the Bladder with Cancer at Sixty-Two. (Et Tilfælde af total Ectopia vesicae med Vaginadefekt og sekundært udviklet Cancer vesicae hos en 62-aarig Kvinde.) E. Petersen.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 10 CHICAGO, ILLINOIS SEPTEMBER 4, 1915

CUTANEOUS CANCER OF THE EXTREMITIES *

H. H. HAZEN, M.D.

Professor of Dermatology, Georgetown University, School of Medicine; Professor of Dermatology, Howard University, School of Medicine

WASHINGTON, D. C.

Skin cancers may arise from different layers of the surface epithelium, from different structures in the skin, such as hair follicles, sebaceous glands, and sweat glands or ducts, or from congenitally displaced epithelial structures. There are really but four important groups of cutaneous carcinomas, the prickle-celled, the cuboidal-celled, the basal-celled and the nevocarcinoma or malignant mole. The neoplasms arising from the hair follicles take on the structure and peculiarities of the basal-celled group, and the growths originating from the glands are very rare, although they do occasionally occur.

The prickle or spino-celled cancers must be sharply divided into two groups, cancer proper and the malignant wart. The former are to be clinically distinguished by their rapid growth, their deep infiltration, their rough, almost verrucose surface, and their tendency to metastasize to the lymph glands. On section the cancerous acini are large and appear as fine white lines radiating downward. The latter are distinctly wart-like from the onset, may be more or less pedunculated, and have no cancerous infiltrate at the base, although there is often an inflammatory hardness there. Microscopically both are characterized by the large size of both the alveoli and of the individual cells, and by the fact that epithelial whorls or pearls are usually formed. The cells usually stain better with an acid than with a basic dye.

The cuboidal-celled tumors are difficult to distinguish in the gross from the preceding group. Microscopically the alveoli are large and the cells are also large, but never form epithelial pearls. These growths act very much as do the prickle-celled ones, for they frequently form growths in the glands.

The basal-celled carcinomas grow slowly, have a smooth surface, do not deeply infiltrate the tissues, and when sectioned fail to show large alveoli. On microscopic examination the cels are small and stain intensely with the basic dyes. for further details of this group, Krompecher's monograph[1] may be consulted.

The nevocarcinomas or malignant pigmented moles are not universally conceded to be epithelial in origin, as Fordyce[2] has well pointed out. Nevertheless, since certain of these tumors have been shown to be epithelial,[3] and since practically none of them have been proved to be of mesoblastic origin, it seems only right to include them in this study. As is now well known, these neoplasms usually arise from pigmented moles that have been the subject of irritation, and speedily form metastatic nodules in the skin, viscera and glands.

Because of the failure to distinguish between the various types of cutaneous cancer, many of the older articles on carcinoma of the extremities are practically worthless from a modern point of view. Howard Fox[4] has recently reported an interesting case of cancer of the hand which metastasized to the mediastinal glands, and has reviewed the literature. After studying various articles, notably those by Heimann,[5] Gurlt,[6] von Winiwarter,[7] Neumann,[8] Bulkley and Janeway,[9] von Brunn,[10] Volkmann[11] and Franz[12] he comes to the conclusion that cancer of the limbs is comparatively a rare disease as compared to cutaneous cancer in other portions of the body. Fox, referring to cancer of the hand, further says: "In spite of the malignancy of these cases from a microscopical standpoint, there can be no doubt that clinically they are relatively benign, generally running a slow course, and only late, if at all, invading the lymphatic glands." On the other hand, in a discussion[13] of this paper both Schalek and Corlett reported cases in which metastases had occurred, while Wile called attention to the fact that cancers originating in arsenical keratoses usually metastasized.

Bloodgood[14] has consistently contended that the lymphatic glands should be removed in all cases of prickle-celled cancer of the body, no matter where located, but especially on the limbs, for here it is always easy to remove the draining lymphatics. Steiner,[15] writing from the clinic of Dollinger, states that a routine practice is made of removing lymph glands in all cases of cancer of the extremities. A summary of the literature would seem to indicate that

---

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Krompecher: Der Basalzellenkrebs, Jena, Fischer, 1903.

2. Fordyce, John A.: Melanomas and Some Types of Sarcoma of the Skin, THE JOURNAL A. M. A., Jan. 8, 1910, p. 91.

3. Gilchrist: Jour. Cutan. Dis., 1899, xvii, 117. Waelsch: Arch. f. Dermat. u. Syph., 1900, xlix, 249. Whitfield: Brit. Jour. Dermat., 1900, xii, 267. Darier: La pratique dermatologie, iii, 1903. Schalek: Jour. Cutan. Dis., 1900, xviii, 147. Ravogli: Jour. Cutan. Dis., 1901, xix, 1.

4. Fox: Jour. Cutan. Dis., 1915, xxxiii, 22.

5. Heimann: Arch. f. klin. Chir., 1898, lvii, 911.

6. Gurlt: Arch. f. klin. Chir., 1880, xxv, 421.

7. Von Winiwarter: Beiträge zur Statistik der Carcinome, Stuttgart 1878.

8. Neumann: Beitrag zur Kenntnis der Extremitäten-Krebse im Anschluss an zwei Fälle der Freiburger Klinik, Inaug. Diss. Freiburg im Breisgau, 1911.

9. Bulkley and Janeway: Med. Rec., New York, lxxiii, 465.

10. Von Brunn: Beitr. z. klin. Chir., 1903, xxxvii, 227.

11. Volkmann: Samml. klin. Vortr., 1889, No. 102.

12. Franz: Beitr. z. klin. Chir., 1902, xxxv, 171.

13. Schalek and Corlett: Jour. Cutan. Dis., 1915, xxxiii, 29.

14. Bloodgood: Progressive Med., December, 1904, 1907, 1908, 1912.

15. Steiner: Deutsch. Ztschr. f. Chir., 1906, lxxxii, 363.

cutaneous cancers of the extremities are not especially common, that they are more common on the lower than on the upper limbs, that they always follow some precancerous conditions, that they are usually of the prickle-celled type, that they are rare on the palms of the hands, and that when occurring on the backs of the hands they are relatively benign. Regarding their tendency to form metastases there is considerable diversity of opinion.

With a view of clearing up the last point, which is of great practical importance, especially now that radium, the Roentgen rays, fulguration, desiccation, and similar nonoperative procedures are making great bids for the treatment of these conditions, I present the statistics shown in Table 2, derived largely from Dr. Bloodgood's surgical-pathologic laboratory of the Johns Hopkins Hospital, from the surgical wards of the Freedman's Hospital and from my own practice.

TABLE 1.—DISTRIBUTION ON UPPER AND LOWER LIMBS OF THE VARIOUS TYPES OF CANCER

	Prickle	Malignant wart	Cuboidal	Basal	Malignant mole
Upper limb...	19	5	0	4	1
Lower limb...	18	0	4	6	1
Total	37	5	4	10	2

There were a total of fifty-eight cases (Table 1). It will readily be seen that the commonest tumor is the spino-celled one, and that the basal-celled one ranks next. Malignant warts are much commoner on the upper than on the lower extremity, while the reverse is true of the cuboidal-celled carcinomas. Cancer of the upper limb is just about as common as is cancer of the lower limb.

Studying the prickle-celled growths, we find that they sprang from the following precancerous dermatoses, and that metastases occurred as shown in Table 2.

TABLE 2.—METASTASES OCCURRING IN PRICKLE-CELLED GROWTHS

Origin	Total Cases	Cases Followed Three Years	Metastatic Cases
Roentgen-ray dermatitis.....	2	2	2
Scar of burn.....	8	5	3
Scar of trauma.....	6	4	1
Ulcer	2	0	?
Wart	7	2	2
Senile keratosis.....	2	1	0
"Pimple"	4	3	1
Arsenic keratosis.....	1	1	1
Blastomycosis	1	1	0
Bone sinus.....	1	0	?
Undetermined	3	1	1
Total	37	20	11

The observation that cancer originating from Roentgen-ray dermatitis and from arsenic keratosis usually metastasizes is borne out here. Cancer springing from the scars of burns has given a rather high percentage of metastatic growths.

TABLE 3.—METASTASES WITH REFERENCE TO LOCATION OF PRIMARY GROWTH

	Total Cases	Cases Followed Three Years	Metastatic Cases
Finger	4	2	2
Back of hand.....	8	3	1
Wrist	1	0	?
Forearm	1	0	?
Elbow	2	1	1
Upper arm.....	3	2	1
Foot	2	2	1
Ankle	3	1	0
Lower leg.....	7	4	2
Knee	2	2	1
Thigh	4	3	2

With respect to the influence that location of the primary growth has on the liability to metastatic formation I present Table 3.

In such a small series of cases it is impossible to determine just what influence position has on the liability toward metastasis, but it would appear to have very little. The high percentage of metastases in the followed cases is notable. It will probably be objected that most of these cases were surgical ones, and that they were severe cases and of long duration. Now, as a matter of fact, in six of the metastatic cases, the primary cancerous changes had been present for three months or less. In one notable case there was a cancer of the lower leg that had existed for two months. Under divided doses of the Roentgen rays the primary growth healed and stayed healed, but five years later metastases developed in the inguinal glands and the patient succumbed. In the other ten instances recurrence in the glands followed amputation in five cases and local surgical removal in five. The nine patients who stayed cured for more than three years were all subjected to local operation alone.

A study of these few figures should clearly show that prickle-celled cancer of the skin is comparable to cancer of the breast, tongue or lips, and just as no good surgeon would think of treating a true cancer of these organs by local removal alone, so should he shrink from the mere local removal of an analogous condition of the cutis. In many instances it is impossible to tell the exact nature of a cutaneous cancer. Here the correct procedure is undoubtedly to excise the entire growth and then make a study of it. To attempt to cure a malignant neoplasm of the limbs without first ascertaining its nature is both foolhardy and dangerous, to say the least, and will undoubtedly result in the sacrifice of many lives.

There were four cases of cuboidal-celled cancer, one of which originated from a varicose ulcer of the leg and was cured by the cautery. One developed on the scar of a bed sore on the thigh and was cured by local excision. Another originated in a senile keratosis on the thigh and recurred in the inguinal glands seventeen months after local excision. The last occurred in the scar of a trauma on the thigh, and promptly recurred in the inguinal glands after local excision. All growths were of less than one year's duration. All were in women. It is plainly evident that cuboidal-celled cancer is analogous to spino-celled cancer in the way that it metastasizes, and that it should be treated accordingly.

There were five cases of malignant warts, three on the back of the hand, one on the wrist and one on the forearm. All originated in warty growths. Bloodgood,[16] in a careful study of malignant warts, comes to the conclusion that they never metastasize and that complete local removal is sufficient to effect a cure. Yet in one case in this series metastasis and death did follow a local operation, probably not a complete one. Inasmuch as these growths are more common on the back of the hand than elsewhere, inasmuch as they show a spino-celled structure, and inasmuch as they very rarely metastasize, it is probable that those who have stated that cancer of the hand is a benign affection have had most of their experience with this variety of tumor.

There were ten basal-celled cancers, which arose from the following dermatoses:

Ulcer	6
Scar or burn.....	1
Pigmented mole.....	1
"Pimple"	1
Nodule	1

16. Bloodgood: Progressive Med., December, 1904, p. 147.

They arose in the following areas:

Finger	1
Hand	1
Upper arm	2
Ankle	1
Lower leg	4
Thigh	1

In one remarkable case the glands later developed metastatic growths that showed all of the peculiarities of a spino-celled carcinoma. So far as known there were no other metastases in this group.

In two instances there were multiple melanotic growths, secondary to pigmented moles. One occurred on the arm of a woman who had suffered but a single trauma to a pigmented mole. This immediately ulcerated and was excised, but promptly recurred. During the next five years there were a number of local operations. She then entered the hospital with a mass of inoperable glands in the axilla, but with no signs of metastatic growths in the body. It is more than probable that a complete early operation, including the axillary glands, would have resulted in permanent cure. The other instance occurred in a negro man, this being probably the only case on record of a malignant mole in one of this race. The primary growth was in the sole of the foot. There were metastases both to the glands and to the lungs, and death speedily ensued.

CONCLUSIONS

1. Carcinoma of the skin of the limbs is not a common affection.
2. The majority of skin cancers arising in these locations are prickle-celled neoplasms, and the majority of these metastasize, some at an early date.
3. Inasmuch as a certain diagnosis can only be made in the early cases by the gross or microscopic appearance, and inasmuch as it is usually deemed unsafe to excise a bit of tissue for examination, it is plain that the proper treatment is to excise the growth in toto and make the diagnosis from the entire growth. If it is found to be of a cuboidal or spino-celled variety the neighboring glands should be removed.
4. The basal-celled growths can be treated by local removal with perfect safety.
5. It is possible that the prognosis in some cases of malignant mole is not absolutely bad if a wide local and glandular operation be done at the onset.
6. Malignant growths always arise from a preexisting abnormality, so are usually preventable.

The Rochambeau.

ABSTRACT OF DISCUSSION

Dr. A. Ravogli, Cincinnati: This paper has a great deal of practical interest on account of the frequency with which we see these growths on the hands. I see very often—especially in farmers—the beginning of epithelioma on the back of the hands, between the thumb and index finger, on the metacarpal region of the hand. Sometimes they are of very slow growth, and take a long time until they reach a certain point, after which they grow very fast. As the author stated, they involve the epitrochlear and subaxillary glands in a brief time.

The question of blastomycosis has to be overruled. I had a case sent to me as carcinoma of the hand, and I found it necessary to remove all the affected tissues, which I did; instead of having a resistant tissue, there was only a decayed condition, like a poultice. I found under the microscope that this was a case of blastomycosis, which has a very deleterious action in the tissues, and sometimes affects the subaxillary glands. Sometimes I have seen the epithelioma of the back of the hand preceding that of the lower lip. I find there is some relation between those parts by rubbing the lips with the back of the hands. In a gentleman from Indiana with an epithelioma, first on the back of the hand, and then on the inferior lip, I obtained perfect recovery. I removed the growth with a curet and cauterized it with my method. Then he was treated with Roentgen rays. He died at about 74 or 75 years of age, and the reproduction of the epithelioma was not verified. When we put the knife in these growths we open the blood vessels and make possible the absorption of cancerous cells into the blood or lymph circulation, or underneath the tissues. Therefore, according to my experience, the best thing is scraping with a sharp curet the epithelioma, and after scraping, the use of the caustic.

Dr. Sherwell claims great good with strong nitrate of mercury. I advocate my method of compound solution of cresol, formaldehyd and perchlorid of iron, mixed in the same proportions and applied on a tampon of cotton for five or ten minutes. The formaldehyd has a peculiar cornifying action on the epitheliomatous cells, the compound solution of cresol dissolves the plasma cells, which involve the cancerous elements forming the little nests; and then the perchlorid of iron stops the lymphatic blood and vessels, preventing absorption. In the case of the Indiana farmer I had splendid results with this method.

Dr. Richard L. Sutton, Kansas City, Mo.: This paper of Dr. Hazen is an extremely interesting one, and contains far more than would appear on first thought. He has his own statistics and those of Dr. Bloodgood. They are not clinical statistics, but statistics backed by pathologic findings.

I have seen but few cases of cancer of the limbs. They are rare in the Middle West, as well as elsewhere. But carcinoma of the dorsal surface of the hands is fairly common. In the majority of instances the lesions are of the squamous variety, and in my experience secondary involvement of the lymph nodes is not unusual. Consequently the only safe plan of treatment is radical excision, followed, if the subsequent histologic examination and symptoms should indicate it, by removal of the neighboring lymph nodes. Superficial cauterization with carbon dioxid snow, silver nitrate, and similar agents is worse than useless; it is criminal. Roentgen and radium therapy may be employed as an adjuvant measure, but if the operation is properly performed these agents will not be needed. Above all, I would suggest that one be exceedingly careful in dealing with these cases. Early and radical treatment is indicated, and there is far more danger of undertreatment than of overtreatment.

Dr. Douglass W. Montgomery, San Francisco: Epithelioma of the extremities is not frequent. Dr. Culver and I have had some cases, but we have not had any with metastases. One patient I saw not long ago was of peculiar interest diagnostically. The lesion lay behind the external malleolus, and when the patient came to me first some years ago it was very small and looked like a small ulcus cruris. Recently I was called to see the patient in consultation, and the ulcer had grown in the meantime and resembled a gangrenous ulcer of the leg of the fulgurating type, due to streptococcic infection. I advised treatment in accordance with this opinion.

I was subsequently again called in consultation, and as I examined the lesion it struck me that its border was altogether too rolled and too large for ulcus cruris, and it gradually dawned on me that the lesion was an epithelioma. Its treatment presented a very grave question. To cut it out as recommended here today would involve such loss of tissue that an amputation would be preferable, and yet an amputation for such a lesion would not commend itself to the patient. Nevertheless, we are compelled from Dr. Hazen's findings to accept the fact that these growths are much more dangerous than I, for one, ever realized.

Dr. Harry E. Anderson, San Francisco: The fact that half-way measures in the treatment of these conditions are extremely dangerous cannot be too strongly repeated and emphasized. I think most of us agree in the use of the

Roentgen ray as intensively as possible. Most of the cases of complicated epithelioma are in patients who have had the early lesion treated with the half-way measures advocated from time to time.

Dr. George M. MacKee, New York: I agree that the best way to treat a malignant epithelioma is by excision. The knife, however, should not enter the growth. If there is the slightest suspicion that malignant cells have been left in situ either radium or the Roentgen ray should be employed as a postoperative prophylactic measure, and this treatment should also be applied to the neighboring lymphatics. The fact that some cases of malignant cancer will respond to radium or the Roentgen rays without the aid of surgery certainly speaks in favor of using these agents postoperatively. It should be remembered that the basal-cell epithelioma is sometimes fatal. I have seen three cases end in death. I have never seen a basal-cell epithelioma change its character and become a squamous-cell growth. I have personally seen only one case of basal-cell epithelioma on the back of the hand. This was in a young man who had taken arsenic for several years. He suffered from arsenical pigmentation, palmar keratoses and had about fifty superficial basal-cell epitheliomas scattered over the body.

Dr. Everett S. Lain, Oklahoma City: This has been especially interesting because Dr. Hazen, Dr. Sutton and Dr. MacKee are leading writers on epithelioma, and the statistics given are corroborative of my own in treating epitheliomas of the extremities. My treatment of this disease on the hands has not been very satisfactory. In fact, in my paper I say this location on the body is most unsatisfactory. The first step, I believe, is to block the absorbing channels, the blood vessels, with the Roentgen ray, and then turn the patients over to the surgeon.

Dr. Howard Fox, New York: In regard to the frequency of cancer of the extremities, we have heard the statistics of Heimann, who showed that out of twenty odd thousand cases of cancer in general, only 207 affected the extremities. That is indeed a small proportion. My study of a year ago was confined to cancer of the hand. I found that cancer of the hand is microscopically malignant, though it seems to run a comparatively benign course clinically. My conclusions were based on a résumé of the literature, and not from personal experience, as we see few cases of cancer of the hand in New York. I agree with Dr. Sutton that in possible cases of cancer of the hand or extremities a microscopic examination should always be made to avoid mistakes in diagnosis, as in my case, in which the possibility of an epithelioma did not occur to any of those who examined the lesion.

Dr. H. H. Hazen, Washington, D. C.: I think carbon dioxid snow is one of the most abominable things ever brought out. I have seen four cases on which snow had been used, and each one was made worse, although pronounced a cure by the men who applied it. No more carbon dioxid for me in the treatment of cancer.

I think probably dermatologic excision with a knife would open up the channels, but not a surgical excision. By a proper surgical excision I mean cutting one-half an inch outside the malignant area, and not getting the knife into any of the cancerous material. I fear that dermatologic operations are less radical.

Dr. Ravogli referred to the curet and cauterization with nitrate of mercury. Dr. Sherwell admits that he has not followed these cases, but thinks he has had about 10 per cent. of recurrences.

We do not follow our cancerous cases as we should. In Bloodgood's clinic, there were three or four cases which were curetted and cauterized afterward. We tried to trace them up through the physicians who sent them in, but none of them had followed them up.

There is one way of taking out a cancer when there is little margin, and that is by the actual cautery, as in cancer of the lip and tongue. I think that is preferable to the knife, and you have material for pathologic study. We do not want to produce any larger scar than necessary, but the cure is many times more important than the cosmetic result.

I want to make it plain that we must distinguish between prickle and basal-celled neoplasm. The latter can be removed locally, and the former should be so treated as to block the migration of the cancer cells. The statement that basal-celled growths become malignant can be explained by the fact that cuboidal-celled tumors are often mistaken for basal-celled ones, and also that a basal-celled tumor may occasionally change in type.

SALVARSANIZED SERUM IN SYPHILITIC NERVOUS DISEASE

SOME SALIENT FACTS: THE METHOD, THE DRUG, THE RESULTS *

C. EUGENE RIGGS, A.M., M.D.

ST. PAUL

The clinical history of syphilis with its therapy is in the process of making, and is greatly in need of restating. Especially is this true of nervous syphilis. The reports of many investigators are so incomplete, so lacking in scientific accuracy, as to cloud their findings and give rise to great confusion and difference of opinion. Paucity of experience, the failure to follow lines of procedure marked out by previous well-known and competent investigators, substituting therefor personal and theoretical modifications, are all important factors in the production of this deplorable condition. There are but few Noguchis or Marinescos, few Swifts and Ellises.

There must be mutual endeavor; a cooperation of effort, so to speak, along definite lines among those interested in the therapy of syphilitic nervous diseases, if order is to come out of chaos and definite and reliable data be obtained.

Mattauschek found from the examination of 4,134 cases of syphilis that 3.19 per cent. of the patients infected suffered from cerebrospinal syphilis. If we believe with Robertson and Klaudner that syphilis is a septicemia, that the organism is invaded by the spirochetes within a day or so after infection, that the nervous system is involved from the beginning, and that the majority of syphilitics are essentially candidates for nervous syphilis from the very outset, the all-important thing in the treatment of this disease is the early recognition of the primary lesion. This is readily effected by the means of dark-ground illumination or a microscopic examination of the exudate of the sore, be its resemblance to a hunterian chancre never so slight. This is the psychologic moment in the treatment of syphilis.

Gibbard and Harrison have observed that relapses are more than doubled when medication is begun in the secondary rather than the primary stage, and they believe that by the employment of modern therapeutic methods syphilis may be limited to its earliest manifestations and that eventually congenital syphilis will cease to exist. A most valuable addition to our knowledge of syphilis is the significant fact that the nervous system is subject to an early spirochetal invasion. Serology has enlightened us greatly on this point. Ravaut has found an abnormal spinal fluid in 67 per cent. of his cases of secondary syphilis; Dreyfus in 80 per cent.; Robertson and Klaudner in 70 per cent.;

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Gennerich in 90 per cent.; Mattauschek in 80 per cent.; Nonne and Mantoux in 40 per cent.; Wile and Stokes in from 60 to 70 per cent., and the latter believe that in every case of secondary syphilis there is more or less involvement of the nervous system. Wechselmann states that in the majority of cases of syphilis the spinal fluid shows an increased protein content. An examination of the spinal fluid of 221 patients in the early stages of syphilis by Wechselmann, Wilhelm and Dinkelacker, showed positive findings in 158, and of these there were nervous symptoms in 98; in the 63 negative cases there were nervous symptoms in 32.

Similar investigations of the primary period have elicited equally interesting results. A pathologic spinal fluid is common; an increase in the albumin and globulin content, with or without pleocytosis, is often observed. The Wassermann reaction is the least to be relied on; a negative spinal fluid is of diagnostic value only when all symptoms indicative of nervous involvement are absolutely lacking. One of Krida's patients, with a chancre on the lips of two weeks' duration, showed a marked increased protein content in the spinal fluid.

Certain neurologic findings, such as headache, involvement of the second and eighth nerves (the latter, according to Benario, being more frequently involved in early syphilis than any of the other cranial nerves), modification of sensibility, changes in the reflexes, positive Babinski, pupils unequal and differing in their reaction, etc., are frequently demonstrable in both stages.

"The way the central nervous system is involved in early syphilis," says Coriat, "is certainly surprising, and this is also borne out by the spinal fluid tests. I am making complete neurologic examinations of all cases of constitutional syphilis, in all of its stages, without nervous complaints." [1]

The neurologic findings may, or may not, be associated with definite serologic changes. Either one of these may exist independently of the other. Quincke and Mayer consider that there is a parallelism between pleocytosis and the neurologic symptoms; the former is believed to bear a relation to the severe headaches (Jeanselme and Barbe). If the serologic changes only are present we have what Ravaut calls the "preclinical" stage of nervous syphilis, which may last for months or years before the first clinical sign makes its appearance. I have now under observation two cases in which fifteen years elapsed between infection and the first manifestation of nervous symptoms. Serology enables us to recognize this preclinical period in its incipiency when treatment is most effective.

THE METHOD

As to the best method for the use of salvarsan in nervous syphilis, the profession is hopelessly at variance. There have been too many contributions by men whose training and acquaintanceship with the more delicate methods of diagnosis were too faulty to permit of their drawing reliable neurologic conclusions. "The stage of temperate and critical criticisms of results," says Schwab, "has evidently not yet been reached." There are two modes of treatment that merit serious consideration, viz., the intensive and the intraspinal methods. The former, when given intravenously and combined with the intramuscular injections of mercury, is of unquestioned value; some believe that the results are in every way equal to those obtained by the intraspinal methods (Sachs, Strauss and Kaliski). This procedure, when practiced by the injection of salvarsan at the upper part of the nates, in the loose tissues between the subcutaneous fat and fascia (inunctions or injections of mercury being given in the intervals), may be harmless and practically painless, but in the light of the studies of Tilney and Woolsey in vital staining with solutions of trypan blue, is clearly inefficient. These investigators have shown that if solutions of this agent are injected subcutaneously or intra-arterially, the skin and thoracic and abdominal viscera stain readily while the central nervous system absolutely escapes. If the solution be injected intravenously, the stain reaches the dura and pia mater, but does not penetrate the nervous tissue. When the injection is given intraspinally, the membranes are affected as before and the dye penetrates the nervous tissues through the walls of the veins and capillaries, affecting even the epithelium of the latter. These experiments would indicate that intravenous injections of salvarsan are not sufficient in parenchymatous syphilis, however valuable they may be in luetic meningitis, endarteritis and gumma. It has also been demonstrated that diseases of the meninges and their adjacent nervous tissues are best therapeutically influenced by the employment of intraspinous methods. If, as Mott states, the cerebrospinal fluid is the lymph of the nervous system (and it has never been positively shown that it does not reach the most remote nervous tissues by way of the subarachnoid spaces and their communicating canalicular system), it is by this medium and through its channels that therapeutic agents can best be conveyed to the lesions deeply situated in the cortex.

Since affections of the meninges, such as influenzal, pneumococcic, and epidemic cerebrospinal meningitis, are not responsive to any other than subarachnoid therapy, it would seem to follow that syphilitic affections of the membranes and their adjacent nervous tissues can best be treated by the intraspinal administration of spirocheticidal drugs.

Intraspinal medication is one of the most notable of the many notable achievements of modern medicine. The intraspinal method, like every new procedure, has suffered more at the hands of its overenthusiastic friends than from the most pitiless criticism of its enemies. The conclusions of partisanship are based on the illusions of hope, not on the solid foundations of clinical and biologic fact. I can best make clear the present status of intraspinal medication by a brief review of its literature and by a few excerpts from personal communications to me from representative American workers.

Ehrlich, in his address on chemotherapy before the International Medical Congress, August, 1913, referred to the intraspinal use of salvarsanized serum as practiced at the Rockefeller Institute, as being "not only novel but suitable in so far as it obviates all possible ill effect on the sensitive central nervous system, by employing a serum obtained from the patient himself, while at the same time it is possible to apply the curative agent in sufficient quantities."

Drs. Purves Stewart and Harry Campbell both advise the treatment of nervous syphilis by intraspinal injections. "It is too early to claim," says the former, "that we possess a cure for tabes or general paralysis, but we can, in suitable cases, do a good deal toward arresting both diseases; time alone can tell whether

1. Dr. Coriat's work along this line will appear when he and Dr. Sanborn publish their results of the treatment of nervous syphilis based on over 700 injections.

such arrests are permanent." "In parenchymatous syphilis," says the latter, "the intrathecal treatment is the only one yet devised which is capable of arresting the morbid process."

Mott, in his address before the section of Neurology and Psychological Medicine of the British Medical Association at its last annual meeting, said that "the late degenerative forms of syphilis of the nervous system (and I refer especially to general paralysis) have not been cured nor even greatly benefited by any treatment with salvarsan or neosalvarsan, whether administered intravenously or intrathecally." He admitted, however, that his personal experience did not warrant his speaking authoritatively. In the ensuing discussion McDonagh stated that he had observed some remarkable results from the intraspinal injection of salvarsanized serum in cerebrospinal syphilis, but no better than he had obtained from inunctions of mercury and intravenous injections.

Turner stated that it was too soon to express an opinion, but it seemed to him that as good results were obtainable from inunctions as from intraspinal injections. Grainger Stewart believed that in nondegenerative nervous syphilis, intraspinal injections undoubtedly accomplish good, while in paresis and tabes their value was not yet clear.

Eskuchen thinks that the Swift and Ellis method does not influence the objective tabetic symptoms, that the subjective symptoms can be benefited and in some instances the disease is apparently arrested. Myerson is hypercritical in his objections to the use of salvarsanized serum; he suggests, however, that further trial be made in selected groups of cases. Krida states that it is imperative to eradicate every manifestation of nervous early syphilis, from both the clinical and the laboratory standpoints, and that it is here, where the usual methods fail, that intraspinal therapy finds its largest field.

According to Cutting and Mack, the treatment of general paresis with salvarsanized serum "may not be a solution of the problem, but the work thus far shows that it deserves a thorough trial."

"Personally," says Dr. Coriat, "I highly favor the treatment of syphilitic and so-called parasyphilitic diseases of the central nervous system with salvarsanized serum."[2]

Dr. Jelliffe says:

> There is no doubt that the Swift and Ellis method is along the right lines. My opinion is that there is much to be done in the way of perfecting the technic and that at the present time a number of new avenues are opening up, and we cannot really tell what the future is going to be. Certainly there is very little danger, although some bad results have been met with. On the whole, it is a step forward and not backward.

Dr. Sanborn says:

> I cannot state to you the attitude of the Boston men in general in regard to this treatment, but I believe those who have had any number of patients under observation think that the treatment is rational and is productive of much good and is more efficient than intravenous salvarsan alone. I have personally administered 372 intraspinal injections in private cases, and either I myself or my assistants have given a total of 720 of these injections. I have not been successful in rendering the spinal fluid negative in paresis; in tabes a negative Wassermann may be obtained in most cases if a sufficient number of treatments are given.

2. The citations made from Drs. Cotton, Coriat, Jelliffe and Sanborn are from personal communications to the writer.

There are four kinds of intraspinal medication: first, the injection of mercurialized serum, as advocated by Byrnes; second, the procedure of Swift and Ellis—the in vivo method; third, the in vitro method, viz., the direct intradural injection of neosalvarsan as practiced by Wechselmann, Marinesco, Marie and Levaditi, and Ravaut and Wile; fourth, the employment of both the in vivo and in vitro methods as suggested by Cotton and Smith.

Following along the lines of investigation laid down by Horsley and Ravaut, Byrnes satisfied himself that the intraspinal injection of mercurial salts was to be preferred to the unstable, complex arsenical preparations, and he selected the albuminate of mercury as being the most suitable for this purpose. He has reported thirty-two cases of nervous syphilis treated in this manner, and he regards it as equal in efficiency, if not superior to, salvarsanized serum. Cotton says that caution should be observed in its administration.

I believe that the clinical and serologic results thus far obtained make good the claim of efficiency for the in vivo method, and I agree with Dr. Smith that the untoward results observed in intraspinal medication are due to "the so-called later improvements and simplifications of technic," and the direct method of injection. Another year's observation but confirms the assertion of Dr. Hammes and myself before this section last June that "the preference of this method [Ravaut's] . . . over the safer and equally effectual Swift and Ellis process is to us unjustifiable and inexplicable." Sachs, Gordon and Weisenburg have during the past year reported deaths following the use of the Ravaut method. Corbus and also Fordyce advise that the Swift and Ellis procedure be the one of choice. Personally, I think the in vitro method is basically wrong; I cannot conceive it possible to inject intradurally any known arsenical compound in sufficient strength to become absolutely spirocheticidal without at the same time compromising the welfare of the patient. The arsenical preparation that will attach itself to the guest and not affect the host is yet to be discovered. Coriat believes that the good effects of salvarsanized serum are due not so much to the arsenic as to the antibodies it liberates. According to Stühmer, it is very difficult to determine whether antibodies play any additional therapeutic rôle; the good effects of the serum, he thinks, are due, not to free salvarsan, but rather to some oxidation products which by heating are separated from their loosely synthetic combination and again become active.

Cotton advocates a more strenuous therapy in the future than in the past. The small amount of salvarsan given intraspinally every two weeks he regards as effective only for a few days. It does kill some spirochetes; then in the intervening time the progress goes on and the remaining spirochetes continue to be active. During all this period the patient is deteriorating. When finally the biologic reactions become negative the subject is in a mildly demented state from which recovery does not appear probable. He advises a combination of the Swift and Ellis method and the Ogilvie modification, using the former one week and on alternate weeks the latter. Smith has recently reported twelve cases in which he had used the Swift and Ellis with a modified Ravaut method; the latter was followed by unfortunate complications after the second injection, and was discontinued. He now injects as high as 30 c.c. of undiluted serum weekly (Swift and Ellis) with a more speedy response and no ill results.

The true rôle of subdural therapy in nervous syphilis is one of prevention rather than cure. The frequent occurrence of changes in the nervous system and spinal fluid in early syphilis cannot be too strongly emphasized.

Hauptmann says that a positive Wasermann in the cerebrospinal fluid in secondary syphilis is an expression of a true syphilitic cerebrospinal disease. A neurologic and laboratory examination should be made in every case, for only by an early recognition of the nervous invasion with prompt and radical treatment can subsequent inflammatory and degenerative changes be guarded against.

THE DRUG

"Salvarsan," says Wassermann, "is in my opinion the mightiest weapon in medicine." Gibbard and Harrison state that when mercury alone was used there were 83 per cent. of clinical relapses, but with the use of salvarsan and mercury, only 3.9 per cent. had recurred. They prefer it to neosalvarsan, as they regard it as much more active in corresponding doses. According to Nelson and Haines, salvarsan has given them in nine months 64 per cent. of negative serums, whereas neosalvarsan gave 33.3 per cent., and they think salvarsan should always be used if one wishes to give his patients the best possible results in the shortest possible time. "Salvarsan is the most potent remedy," say Craig and Collins, "in our armamentarium in the treatment of syphilis of the nervous system." They believe it to be much more potent than neosalvarsan.

Wechselmann thinks that salvarsan alone should be used in the treatment of syphilis, and this conclusion is based on the observation of 45,000 injections of this drug. Ehrlich and Dreyfus prefer old salvarsan to neosalvarsan, but use the latter when a mild, nonirritating action is desired, although frequently the treatment is begun with neosalvarsan (Conzelman). Many medical men advise that mercury be administered in the intervals between the injections. Collins refers to potassium iodid as a "blighting delusion" and to the administration of mercury by the mouth as a "futility."

The relative merits of mercurialized and salvarsanized serum, are still *sub judice*. The cases in which the former have been tried have been too few and the time too short to warrant any expression of opinion. As to salvarsanized serum much can be said. According to Hough: "The researches of Ehrlich and others have shown that salvarsanized serum has a distinct spirochetacidal power, a power greater than that exercised by salvarsan itself" (Siebert). Swift and Ellis believe that "there is definite evidence that this form of treatment has a curative action on the syphilitic process."

In the light of all the evidence the diversity of opinion that still exists regarding the utility of salvarsan is most surprising. This seems to be almost as marked as when Ehrlich in 1909 first announced his discovery of this truly remarkable synthetic substance.

THE LANGE COLLOIDAL GOLD REACTION

Dr. Hammes and I have studied the colloidal gold reaction[3] in sixty cases. Eleven paretics gave the typical paretic curve, namely, a complete decolorization in the first three or four tubes with some changes in the next four—5555443200. In one paretic with an acute maniacal onset the colloidal gold solution decolorized completely in every dilution up to the tenth tube. In one case of clinical paresis with negative blood and spinal fluid, the colloidal gold reaction was negative; one case of taboparesis gave the curve for paresis. In ten cases of tabes the curve was somewhat variable, seeming to bear a distinct relation to the intensity of the Wassermann reaction.

In two cases of typical clinical tabes all reactions, biologic and colloidal gold, were negative. Five (50 per cent. of our tabetics) with positive blood and spinal fluid gave what might be called a tabetic curve, namely, 3444432000, with slight variations in the intensity. An atypical case, in which the symptoms were most suggestive of an incipient tabes or paresis, reacted in the syphilitic zone. Three tabetics gave the characteristic paretic curve.

The curve in our cerebrospinal syphilis cases, six in number, was such as occurs in the syphilitic zone. In one case of clinical cerebrospinal syphilis with a positive Wassermann in the blood and spinal fluid, the gold solution reacted negatively; in another similar case the serobiologic findings were all negative, while the gold solution reacted in the syphilitic zone. In two cases of tuberculous meningitis and one case of pneumococcic meningitis the curves were similar, namely 0123343210. In one case of pneumococcic meningitis associated with spinal syphilis of three months' duration, the curve was similar to that observed in our cases of acute meningitis.

Two cases of syphilitic endarteritis and apoplexy with positive blood and spinal fluid gave a typical paretic curve. A case of tabes associated with cerebrospinal syphilis gave an atypical curve suggestive of both. Two cases of spinal cord tumor, one a fibromyxoma in the cervical region, one a cyst in the lumbar region, gave similar curves: 0000001233. We have found in the following conditions no reaction: a case of transverse myelitis, three of multiple sclerosis, five cases of essential epilepsy, one of involutional melancholia, three normal spinal fluids, two cases of Sydenham's chorea, one subacute degeneration of the posterior columns with primary anemia, one Friedreich's ataxia, one progressive muscular dystrophy (Erb), and two alcoholics.

Treatment has produced no change worth recording on the colloidal gold curve except in three cases of tabes.

THE RESULTS

The recent statements of Schwab that "clinical improvement in paresis as a result of this treatment [Swift and Ellis method] is a thing that no one of recognized standing has as yet asserted," and of Ravine that salvarsanized serum administered intraspinally (Swift and Ellis) gives only laboratory improvement; that its chief asset is the original intravenous injection; that clinical recoveries are not reported; that patients have been made decidedly worse, and that fatalities have occurred are in the light of the following facts most amazing.

In speaking of intraspinal therapy (Swift and Ellis) as used in nine cases, Barrett says:

> Enough time has not elapsed to warrant passing final judgment: . . . but the improvement, or at least the increase in the proportionate number and length of remissions, has been encouraging *and justifies the undertaking of this treatment in all early cases.*

Dr. Blumer states that "thirteen cases of general paresis, taboparesis and tabes have been treated with salvarsanized serum *with encouraging results.*"

3. I am greatly indebted to Dr. Archibald Leitch for his painstaking care in the investigation of the Lange colloidal gold reaction.

Hough, according to Wardner, sums up the work of Swift and Ellis at the Rockefeller Institute, Myerson of the Psychopathic Hospital, Boston, and Asper of Baltimore, as follows:

> There has been marked improvement in the syphilitic inflammatory processes and in many cases the patients with tabes especially have shown pronounced clinical improvement.

Taylor of Boston, in referring to the results obtained by the Swift and Ellis method in the Neurological Department of the Massachusetts General Hospital and in a limited number of private cases, says:

> In otherwise obstinate cases of tabes the results have been encouraging. It is believed that a certain modification in the course of general paralysis may result if taken early. At times it appears that cerebrospinal syphilis yields more promptly to this than to other forms of treatment; several cases suggest the possibility of complete cure; no permanent ill effects thus far have been experienced.

Dr. Hammes and I have administered over 200 injections of salvarsanized serum (the Swift and Ellis procedure). There have been no ill effects, aside from one case of aseptic chemical meningitis in which there was speedy recovery. Our results are very similar to those of Dr. Taylor. Remissions occurred in three out of eight paretics. One patient relapsed after four months; the other two are apparently perfectly normal. The blood serum and cytochemical reactions were practically normal; the spinal fluid only remained mildly positive. Like Dr. Sanborn we have thus far been unable to get a negative spinal fluid in paresis.

In 75 per cent. of our tabetics the spinal fluid has become negative and all but two out of twenty-two cases have been bettered clinically. The gait has improved, the lightning pains have lessened or disappeared, the bladder symptoms have cleared up, while at the same time there has been a decided change physically for the better.

All of our cases of cerebrospinal syphilis have improved clinically, cytochemically and biologically, with one exception in which treatment seemed to have no beneficial effects.

Dr. Cotton says that his statistics show that 50 per cent. (paretics) make tremendous improvement and *that includes all cases treated, many of them in the last stages.* Of the favorable cases, and by that he means the new cases, *at least 75 per cent. have shown very marked remissions.* About sixty patients are living outside of the hospital. There have been several relapses in cases which were pretty far advanced and seemed to improve wonderfully at first. He has had no untoward symptoms, but he reports several cases of mechanical meningitis, such as I described a year ago before the American Neurological Association. The patients quickly recovered.

Of the three following cases, one is paresis in which the mental condition became normal after the fifth injection; the other two are tabetic cases in which the improvement clinically and serobiologically is notable.

Case 1.—B. was first seen Aug. 19, 1914. Insurance agent, 34 years old, family history negative. Personal history: Uses tobacco and alcohol moderately; gonorrhea in 1904; denies syphilis. Present complaint began about June 1, 1914, with lack of mental concentration and inability to handle his business. Gradually became disoriented and confused, had delusions of grandeur, thought he was the best agent in the country, etc.; at times became greatly excited and had to be put in restraint. Physical examination negative. Neurologic examination: Pupils respond sluggishly to light and accommodation; marked increase of knee jerks; otherwise negative. The blood serum and spinal fluid gave a positive Wassermann; the latter showed increased pressure with globulin excess and 12 lymphocytes to the cubic millimeter. The colloidal gold reaction was typical of paresis. He was given eleven injections of salvarsanized serum (Swift and Ellis); his mental condition became normal after the fifth; after the eighth the Wassermann in the blood became negative. When he left us the spinal fluid still reacted positively; its pressure was normal; there were seven lymphocytes to the cubic millimeter and the Noguchi was mildly positive.

I have under my care at present a paretic who was acutely maniacal; after the second injection of salvarsanized serum the excitement disappeared and now he appears perfectly normal, his elation and grandiose ideas have also disappeared.

Case 2.—C. was seen first June 12, 1914: 29 years old, news agent; family history negative. Personal history negative, with the exception of gonorrhea in 1914; denies syphilis. Present trouble began about one year ago with occasional attacks of shooting pains; for the past three months there has been a tottering gait with difficulty in starting the flow of urine. After a strong laxative the bowels and bladder evacuated involuntarily. For the past three months sexual power has been markedly impaired. During April, 1914, he noticed a feeling of tightness around the waist which has gradually disappeared; he also felt numbness in both feet. Physical examination negative. Neurologic examination: Pupils respond to light and accommodation, but are irregular, the right being larger than the left; marked Romberg; ataxia of both upper extremities; loss of knee and Achilles jerks; impaired muscle sense of both lower extremities; blood and urine normal; blood serum and spinal fluid gave a positive Wassermann. There was increased pressure of the spinal fluid with a positive globulin and 42 lymphocytes to the cubic millimeter. After the third intraspinal injection his blood became negative, and the spinal fluid after the seventh; cytochemically it was also normal. His gait greatly improved, as did also his bladder functioning; the lightning pains have disappeared and he has gained 16 pounds in weight. When I last saw him he was walking without a cane.

Case 3.—A., 43 years old, married; family history negative; seen first Jan. 11, 1915. Personal history: No alcohol but tobacco in excess. Denies venereal disease, but admits exposure; one child living and well; wife has had no miscarriages. Illness began about twelve years ago with pain and soreness in joints of the feet and both heels, relieved by potassium iodid and inunctions of mercury. These conditions would recur every year or so and were relieved by this treatment. Almost two years ago he noticed that the feet were numb and were awkward and clumsy; about six months ago numbness developed in both hands and up to the elbows, also around the scrotum. Bladder and sexual functions normal. Occasional lancinating pains. Physical examination negative. Neurologic examination: Light response sluggish in both eyes, accommodation normal, left pupil larger than right; marked Romberg, no ataxia of upper extremities and deep reflexes normal. Lower extremities: knee and ankle jerks lost, superficial reflexes normal, impaired tactile sense extending from feet to knees with loss of muscle sense. Blood and urine normal. The blood serum and spinal fluid gave a positive Wassermann, with increased pressure in the spinal fluid, Noguchi positive, 18 lymphocytes per cubic millimeter. After the second injection the Wassermann in the blood became negative; after the fourth injection the Wassermann in the spinal fluid became negative in 0.7 c.c.; Noguchi mildly positive, four lymphocytes per cubic millimeter. He has received five injections of salvarsanized serum intraspinally. There has been a decided improvement in the lightning pains and in the gait; the numbness has left the upper extremities and

is very much better in the lower; there is a great improvement in the general health.

Treatment is usually regarded as contraindicated in cases of clinical tabes in which the biologic and cytochemical reactions are negative. Recently Dr. Hammes and I have each had such a case in which the intraspinal use of salvarsanized serum produced very decided improvement. The spinal fluid in my patient reacted positively after the first injection.

While in some patients there is a definite periodicity in the pains following an injection, in others their occurrence is most erratic; sometimes, but rarely, there will be no pain at all, at others they will vary in their manifestation from fifteen minutes to five hours. The cessation of tabetic pain Craig and Collins regard as the single greatest benefit following the use of salvarsan.

CONCLUSIONS

1. Every patient with constitutional syphilis, especially in the early stages, should be examined neurologically and serobiologically, and if there be found any symptoms of nervous involvement or an abnormality of the spinal fluid, intraspinal injections of salvarsanized serum should be given until a clinical and laboratory cure is effected. Bernstein advises this procedure as a prophylactic measure in all cases of syphilis, particularly in the primary and secondary stage.

2. Lange's colloidal gold solution is a valuable aid in diagnosis, possessing a marked corroborative value. Paresis gives a characteristic curve (in over 90 per cent. of our cases) so constant, say Grulee and Moody, that "one may venture a diagnosis without other findings, either clinical or laboratory." There is a distinctive tabetic curve which was present in 50 per cent. of our cases. The colloidal gold reaction differentiates clearly between paresis and cerebrospinal syphilis. In tuberculous meningitis the colloidal gold solution reacts markedly. Nonsyphilitic cases sometimes give a vague discoloration which may or may not invade the syphilitic zone, *but which has no special significance.*

3. Intraspinal medication (Swift and Ellis method) is a sane and safe form of therapy, and in the hands of competent men is practically devoid of danger. In cerebrospinal syphilis and tabes, results obtained by conservative workers are most encouraging, and in some cases little less than marvelous. When paresis can be treated in the early, the toxic, stage, before serious degeneration of nervous tissue has ensued, an arrest of the disease may reasonably be expected. Is it too much to hope for a cure?

1019 Lowry Building.

ABSTRACT OF DISCUSSION

DR. G. W. ROBINSON, Kansas City, Mo.: Dr. Riggs' results do not differ greatly from mine. Some have condemned this treatment after giving one injection of salvarsanized serum. This is no test. I give my patients from six to twelve injections, giving one weekly. I have used it for eighteen months and have given personally about 300 injections. I have treated about thirty paretics. Four did not improve. About half of them are now at home living normal lives. Of course I do not know how long they will remain well and do not say they are cured. I have had no accidents whatever. I use 20 to 30 c.c. of undiluted serum intraspinously. I have not used salvarsan or neosalvarsan directly in the spine. I think it is a dangerous procedure. I also believe it not safe to treat patients sitting. I formerly gave my treatments to patients sitting, but I now have them lying down while taking the treatment. I have never seen anything to equal this treatment in its results in paresis.

I have not seen any Wassermann reactions made negative after once being positive in paresis. But if the patients act all right after taking the treatment, conduct themselves and affairs with ordinary prudence, I think we have helped them whether we have made their serologic condition normal or not. Many persons, how many we do not know, are living normal lives with an abnormal serology. I have seen a case of third nerve palsy with contralateral hemiplegia disappear after three injections of salvarsanized serum. It will certainly stop the pains and visceral crises of tabes more quickly than will any other treatment.

DR. C. R. BALL, St. Paul: Five years ago I began treatment of cases of paresis with some idea of attaining an improvement in them. I took my impulse from a report of the treatment of such cases made by Donath of Budapest in which he used injections of sodium nucleinate to obtain a febrile reaction, and also a leukocytosis. Since then I have used the tuberculin method of Wagner of Vienna, the so-called intensive treatment, intravenous salvarsan injections in combination with mercury, and the salvarsanized serum intraspinally. So far as the results obtained by these different methods, there does not appear to be a great deal of difference. Remissions may occur after all of them. If my limited experience will permit me to form any conclusion as to the preference in method, I would be inclined to say that the febrile and leukocyte-producing methods along with tonic procedures have, all things considered, given the best results. Looking back over this period of five years and noting that all of the cases in which remissions occurred have again relapsed, some of the patients already dead and all of them better off if they were dead, I am beginning to ask myself if any of these methods of treatment in paresis is really worth while. At best only a temporary respite is obtained in a disease which thus far in our therapeutic endeavor has proved to be absolutely incurable. I was in the East recently and I made a particular effort to inquire at some of the large state institutions what their results were with these newer methods in the treatment of paresis. The invariable answer was, "We are not using them any more. The result obtained does not justify the effort." Nonne in a recent communication says that as yet he has been unable to see that these methods produce results in any way superior to the older methods of treatment. During the past three or four years there has been a perfect furor in the treatment of nervous syphilis, and consequently much confusion and a vast amount of contradictory evidence exists with reference to it. It seems to me that one thing is clear, however, and that is that many of the therapeutists arrive at the conclusions which they intended to prove in the beginning of their articles. In my use of the Swift and Ellis method I have followed the advice of Swift and Ellis, which was that the salvarsanized serum was not to be administered in all cases of cerebrospinal syphilis, but only in selected cases, and in those which did not respond to the other forms of treatment. In such cases I do not feel that I have obtained any further advantage, and in some cases former improvement has been lost. I do not believe that salvarsan is being used as much today as it was in the beginning of the so-called salvarsan era.

DR. FRANK R. STARKEY, Philadelphia: I am sure we all appreciate Dr. Riggs' efforts in helping to elucidate this subject, but I am convinced that as time goes on we will hear less and less of salvarsan. Last year at Atlantic City much of the program was given over to salvarsan and the discussion was voluminous; the literature was congested with salvarsan articles, and nearly all of this literature and of these discussions were favorable to salvarsan. We have heard all and more than all of the good results obtained from salvarsan, but we have by no means heard all of the bad results. In Philadelphia recently one of our prominent members read a paper in which he said that he had been administering 0.9 gm. salvarsan every four days, and that he got brilliant results, notwithstanding the well-known fact that it takes from three to four weeks to eliminate a

dose of salvarsan. What effect does it have on the kidneys and other structures while in the body and while being eliminated? Time alone will show its destructive action on the organs, including the nervous system. That we are now having more cases of early involvement of the nervous system in syphilis when salvarsan has been employed cannot be denied.

At one of our hospitals there has been a number of deaths from salvarsan which have not been reported; on the other hand I saw a patient with paresis in this institution who was having jacksonian attacks at intervals of about fifteen minutes. Salvarsan was advised but could not be obtained. The next day the man was 100 per cent. better. The day following he was still better, although no salvarsan had been used. The third day salvarsan was employed, and all of the improvement that was obtained was attributed to its use. In 1908 I pointed out the relation of the glands of internal secretion to tabes and other nervous conditions, and ten years earlier the relation of these glands and their secretions to each other and to the sympathetic and central nervous systems. I believe that the more closely we examine our tabes patients for disturbances of the glands of internal secretions, the more frequently we will find them. It is not necessary to have a frank case of myxedema acromegaly or Addison's disease, but the balance of equilibrium that normally exists between these glands can easily be demonstrated to be disturbed. The sex glands may be most conspicuously involved, or not infrequently the pituitary or thyroid may be the one showing most prominent symptoms. Pseudomyxedema or hypopituitarism or hypothyroidism may be present secondary to a hyperactivity of these organs. This follows chronic irritation or inflammation here just as it does where other organs are involved, and their activity becomes inhibited by destructive inflammatory changes.

Dr. G. H. Moody, San Antonio, Tex.: Many years ago, before we had salvarsan, I saw a good many cases of paresis and we treated them systematically and persistently with mercury. Some of them improved a great deal and were at times in apparently good condition; others did not improve. Since salvarsan has come I have tried very hard to convince myself that we have a remedy for paresis. I have not given it in a very large series of cases (only about forty) but I am sorry to say that my experience has been disappointing. I do not believe I can say for certain that we have cured a case of paresis. I have seen a great many cases improve. I have had many cases referred to me which had been diagnosed as paresis that I did not believe were paresis; those patients have improved, and some are apparently well. I would say also that in the absence of something better I am still giving our patients salvarsan and salvarsanized serum. As to the bad effects which Dr. Starkey mentioned, I cannot say that all of my cases have been free from bad effects. I have had no immediate bad effects, and for that reason I do not believe the technic has been faulty. One of my cases, within a month after the administration of salvarsanized serum, began to degenerate more rapidly than a case of paresis ought to; another in two months, and another in three or four months, degenerated more rapidly than I had ever seen cases do before. Whether the salvarsanized serum had anything to do with it, I do not know; but it points to the same opinion as expressed by Dr. Ball and Dr. Starkey that the possible degenerative effects may have to be reckoned with. We have to remember that patients improved under mercury and these cases apparently stayed better for a long time, and we can at least hope for the same thing from salvarsanized serum; but I am afraid we are going to be disappointed if we promise a cure in paresis or in tabes.

Dr. W. J. G. Dawson, Eldridge, Calif.: Nothing has been said on heredity; the cases I wish to speak about are the feebleminded. After about 800 examinations by the Wassermann test, the report showed that only 4 per cent. or 5 per cent. of our cases reacted. We have given salvarsan to most of them. We began by using the old salvarsan, but in one case there seemed to be a bad result. It did not occur immediately; it was probably a couple of weeks or more before symptoms of meningitis developed. We have been using neosalvarsan in the majority of our cases since and all I can report about it is that it sometimes changes a + + + positive to a negative. However, I can see little or no improvement in the mental condition.

Dr. A. W. Hoisholt, Napa, Calif.: The latest writers on cerebrospinal syphilis and paresis tell us it is practically impossible to differentiate clinically between the two in many cases; not even at necropsy can one be sure of the difference. That being the case, I think it may account for the variation in reports concerning the cure of paresis. I remember very well (having been about a quarter of a century connected with the treatment of paresis) the energetic treatment that was given with mercury and iodid years ago, and I once reported sixty-nine cases. In many cases I have seen retrogression in their symptoms, and it occurred to me that the fatal terminations were hastened the more energetic the treatment given. That used to be the report of the majority of writers. In regard to salvarsan, I can only corroborate Dr. Ball's experiences. I wish to mention a case which came to me recently which throws a rather peculiar light on salvarsan. The patient was a colleague who had tabes. He had been in the hands of the best men in the country and came to me for an opinion as to whether or not he should have the Swift-Ellis treatment. He had received thirty-two treatments of salvarsan, most of them (twenty-six out of the thirty-two) intravenous injections, and he still survives. I think the old German saying applies to this case:—*"Allzu viel ist ungesund."* I advised him to take a rest from all treatment for a while.

Dr. George P. Sanborn, Boston: Since January, 1913, I have had under treatment by the Swift-Ellis method between 150 and 160 patients with neurosyphilis, to whom nearly 900 treatments have been given. There have been no deaths and no injurious effects so far as I am aware. Salvarsan and salvarsanized serum we have considered theoretically indicated as our best spirocheticides, applied, so far as possible, where they are needed. Treatment is directed to eradication of infection and has no regenerative action on degenerated nerve tissues. Freed or partially freed from the stress of disease, the patient may be expected to improve to the extent his physiologic mechanism is capable of. The efficiency of the method can be judged to a great extent by its effect in causing to disappear the positive Wassermann reaction, pleocytosis, globulin, and possibly the colloidal gold reaction as found in syphilitic spinal fluid. Their disappearance after treatment must be taken as evidence of initial success against the infectious process.

In our group of cases complete serologic examination has been made of all spinal fluids as obtained, so that in each case we have a series of data from beginning to end of treatment. Since pleocytosis may be taken as indicative of syphilitic irritation, its reduction following treatment favors the conclusion that the latter has to some degree controlled the irritative process. In 104 of the cases treated there was initial pleocytosis. After but one combined treatment, the average drop in cell count was 40 per cent.; seventy-six patients were treated sufficiently to reduce the cell count to normal. Of these seventy-six, one third became normal after one or two treatments; 56 per cent. after from three to five; 8 per cent. required six, and 3 per cent. more than six treatments. The greatest number of treatments necessary to reduce cell count to normal was ten, in one case.

Globulin in excess is also a sign of syphilitic irritation. In about 20 per cent. of the cases it became negative and in nearly all the remaining, less strongly positive. The Wassermann reaction, always more difficult to reduce than the others, became negative in fifteen of forty-nine tabetics having initial positive reaction. Nearly all the others have shown consistent tendency to become more weakly positive. In no case of paresis has it been possible to secure a negative Wassermann reaction in the spinal fluid.

The colloidal gold reaction, another evidence of abnormal protein, has been carried out as routine and frequently has tended to become less intense as treatment has progressed.

Clinical improvement sooner or later is to be observed in a large percentage of cases. Perhaps the best clinical evidence of efficiency of the Swift-Ellis method is the almost invariable subsidence of root pains in tabes, even in cases in which they have been most severe. Clinical expectancy must be tempered by the fact that the treatment can have no direct regenerative action on degenerated tissues.

DR. H. G. BRAINERD, Los Angeles: I simply want to ask Dr. Riggs if he finds any difficulty in keeping the spinal fluid free from Wassermann reaction, cell count and globulin after he has once secured such a thing. We found that it could be accomplished and hoped that our patients were cured, but were disappointed to find that the clinical symptoms recurred and the spinal fluid Wassermann became more positive, with a larger cell count than ever before, and increased globulin content.

DR. CECIL E. REYNOLDS, Los Angeles: I wish to mention two cases in further illustration of Dr. Ball's observations:

One was a child about 3 years old who had congenital syphilis—a case of Dr. Ross Moore's. There was no definite paralysis, although the reflexes were altered on one side, but the child was not getting along well and Dr. Moore asked me to give it salvarsan in his absence, which I did—a very small dose. There followed a marked brachial and facial palsy, with deviation of the head to the right, coming on in about two weeks. I turned back an osteoplastic flap and found an arachnoid cyst over the midfrontal and midprecentral areas.

Another case was that of a very athletic young man of 35 who had contracted syphilis eighteen months before. He had started a course of intravenous salvarsan in the East and had been continuing in Los Angeles, having had his last dose about six weeks previously. Coming to Los Angeles for another injection, he registered at a hotel in a perfectly sober condition. I was first called to see him in the small hours of the morning. He was quite unconscious and undergoing endless contortions on the floor, having smashed up all the furniture, in a state of acute delirium. I had him taken to a hospital and in spite of all kinds of medication he had fits for thirty-six hours. He regained consciousness once after bleeding, but soon passed into status epilepticus and died after about forty hours. Dr. Stanley Black examined the cortex and could find no cell degeneration, but only acute congestion. I have never before seen such severe epilepsy commencing in such a recent case of syphilis and probably salvarsan had some effect in causing it. In regard to the intraspinal injection of salvarsanized serum, I have been favorably impressed on the whole.

DR. FRANCIS X. DERCUM, Philadelphia: I am convinced that the day has not yet arrived to form definite conclusions as to the value of salvarsan in paresis. It is true that in a number of cases remissions ensue after salvarsan treatment, both intravenous and intraspinous. However, we should bear in mind that remissions equally pronounced and equal in duration have followed the older methods of treatment or simple physiologic procedures, or have often occurred spontaneously. In many instances, too, salvarsan fails to produce any results whatever and there is some reason for thinking that in some instances the intensive treatment shortens the duration of life. We are in grave danger of being carried away by our enthusiasm. During the last thirty or forty years the profession has passed through a number of therapeutic epidemics. I need only recall in this connection the Bergeon treatment in tuberculosis and the hanging treatment in locomotor ataxia, not to speak of the various psychotherapeutic measures which have from time to time been the vogue.

DR. PHILIP HILLKOWITZ, Denver: I cannot speak from the neurologic, but only from the laboratory standpoint, and can only confirm what has been said in the paper and discussion, that as regards paresis we have never succeeded in making the Wassermanns negative. For that matter, in old cases of syphilis of twelve to fifteen years' standing without any cerebrospinal symptoms, it has been impossible to get the Wassermann negative in the serum by specific treatment. As regards tabes, there has been occasionally a return to the negative, but only in a small number of cases. From the theoretical point of view I can only repeat what the chairman has said about the therapeutic efficiency of salvarsanized serum—that by injecting 6 to 9 gm. of salvarsan and removing a small amount of blood within an hour, the amount of arsenic must necessarily be infinitesimal and we cannot therefore explain *a priori* the supposed beneficial results. If then the clinicians are not so very enthusiastic on this treatment, it stands to reason that we must view the therapeutic effect of this drug with more skepticism than we have done heretofore.

DR. W. A. JONES, Minneapolis: I saw in the National Hospital in London, last year, three tabetics lying side by side. They were the ordinary laborers of the streets, and were more or less robust, more or less alcoholic, and all syphilized. One was treated with salvarsan, one with mercury, the third was given no treatment, and he made much more prompt recovery than did those who were medicated. I wonder if we have not gone to too great extremes and if we had better not get back to more rational lines of observation and treatment. I have had some fatalities in my serum work, and a number of failures and frequent relapses, and on the whole the work is rather unsatisfactory. One fatality was in a most promising case; following his intraspinous injection of salvarsanized serum, he had the most violent attack of purpura hemorrhagica I ever saw and lived only four days after its inception. I think the selection of cases should be very carefully made and the treatment should be very carefully carried out.

DR. WALTER V. BREM, Los Angeles: When Swift and Ellis announced their intraspinous treatment I welcomed it with enthusiasm and used it in about 100 cases; but my enthusiasm soon waned. I have had a number of patients who improved at first. The tests in the spinal fluid reduced considerably with the first and second treatments and then remained there and I could make no further impression on them. I used the whole serum in some cases of this kind and drew the blood fifteen to twenty minutes after the injection of a full sized dose. Swift himself has recently reported that the result of this treatment was probably not due entirely to the salvarsan in the serum; that he had treated two patients with serum alone from syphilitic patients who had not been given salvarsan and had obtained good results both clinically and serologically from the use of this serum.

I was much interested in the mercurialized serum reported by Byrnes, and have given over twenty intraspinal injections of mercurialized serum. I have obtained results in two patients that I could not get with the salvarsan, but in the others I failed. This, however, may be due to the fact that I was unable to use the quantity of mercury Byrnes used on account of the intense reactions, and that nearly all the patients have been paretics. I began by giving one mg. and got a most intense meningeal reaction. This patient had 33 per cent. reduction in the Wassermann test of the cerebrospinal fluid after one treatment. The next week I gave him a half milligram of mercury and he had no headache or fever, and had another reduction which made a total reduction of 50 per cent. in his Wassermann test. The next time I gave him another half milligram and found that there had been no further reduction in the spinal fluid. The next time I gave him ¾ milligram and the spinal fluid showed a considerable increase in the Wassermann test. I am unable to give that patient more than ½ to ¾ milligram on account of the intense reaction. The other cases have responded variously, but nearly all have had rather intense reactions.

I believe that the logical treatment of syphilis of the nervous system is by the subdural route, if we can get a drug that will kill the spirochetes without injuring the patient too much. The treatment of epidemic meningitis and of tetanus by the intraspinal use of serums seems to be evidence of that. I think this is the line of work which will eventually become the ideal method of treating these diseases.

Dr. George A. Moleen, Denver: From the diversity of opinion expressed here (which is simply an echo of that which has gone over the medical world) I think one can hardly assume any other position than that of doubt. Beginning with the original statement of Ehrlich, with reference to salvarsan, which certainly led us to jump with enthusiasm; and when Swift and Ellis announced that by the incubation of serum from a previously salvarsanized patient we could by inoculation destroy the spirochete, we also jumped, and the application of it in these cases seemed at that time to be a most wonderful advance.

I was much impressed a few weeks ago when I saw a patient who had been secured against the recurrence of syphilis as a result of a single injection of salvarsan four or five years before in Massachusetts; he showed unmistakable evidences of paresis. On the same day a man of 74 years was referred complaining of headaches and other evidences of arteriosclerosis, and I learned during the taking of the history that he had had syphilis at 19. He had taken mercurial treatment after the secondary flora and had no recurrence whatever, nor had he had further treatment. The comparison of these two cases is to me very significant; and the question arises whether, if we had, or were to have, a syphilitic infection, would we rather have been treated fifty years ago, than now?

The relation of arsenic and the nervous system has been one which heretofore has been looked on with suspicion, because we looked for parenchymatous degeneration following the use of large quantities of arsenic, or even small quantities over a long period of time. This leads up to the question as to whether or not these nervous degenerations are the result of the specific virus on tissues and whether the resistance of those tissues is not lowered, and whether it is not even more vulnerable to destruction than it was before. It is a question time alone can decide. It would be interesting, as suggested, to use inactivated, non-salvarsanized serum, such as has been used in epilepsy and in certain forms of skin eruptions, and see if parallel cases taken as control would not show amelioration.

Nucleinate of soda injected in the vein gave good results in paresis and good results in tabes. It may be that the use of inactivated serum might produce parallel results to those we have obtained with salvarsanized serum. I believe we are all more or less in doubt; it requires time, careful observation, and, most of all, conservative judgment.

Dr. C. Eugene Riggs, St. Paul: I am heartily in accord with Dr. Jelliffe that the Swift and Ellis treatment is a step in the right direction, though I am far from feeling that it is the final step. I believe that this form of treatment at present is the most efficient. I was far from making any claim for the cure of paresis; what I did say was that it *increased the tendency to remission.* Before I came here I had under my care a stalwart man in the maniacal stage, so acute that it required ten men to put him in restraint. Three injections of salvarsanized serum had a most marvelous effect. I had a conversation with him before I left home and his talk was perfectly rational.

Dr. Brainerd has asked as to the ultimate effect of this treatment on the serobiologic reactions of the spinal fluid. I am unable to answer this because I have not yet had opportunity to accumulate the necessary data. May I, however, quote a sentence from a letter received recently by Dr. Hammes from Dr. Swift: "The benefit in most of the tabetics seems to have been permanent. In some in whom the Wassermann reaction was not negative in the cerebrospinal fluid, there has been a relapse. But of course we do not consider these patients as cured."

Form of Exercise.—Barring heavy athletics, youth may be given a free choice of practically all games and forms of amusement. A warning should be sounded for the man past middle age who might attempt to adopt some of the strenuous games more suited to youth, but in general such risks are infinitely less than the opposite mistake—that of taking no exercise.—*Public Health Reports,* May 7, 1915.

DIFFICULTIES IN THE DIAGNOSIS OF SINUS THROMBOSIS*

H. B. GRAHAM, M.D.
SAN FRANCISCO

The difficulties encountered in the diagnosis of sinus thrombosis of otitic origin have always been recognized as many and severe on account of the large number of diseases simulated and the few symptoms which are common to all cases of the affection. The closer we study our necropsy material and the published cases which have puzzled the diagnostician, the more uncertain we become concerning what our position in the matter should be at the bedside.

The classical cases should not leave much uncertainty in our minds and should impel us to an early radical treatment, but there have been so many doubtful cases published of late, that we are more apt to err on the side of too great radicalism in this day, than on the side of conservatism.

The signs and symptoms of thrombosis (called in future signs) may be divided into:

1. Local signs; those due to the mechanical presence of a thrombus in the vein.

The edema back of the mastoid is produced by an inflammatory trouble in the periosteum covering the mastoid and becomes of value as a help in the diagnosis of sinus thrombosis only when it is localized over the emissary vein region; this tenderness over the emissary again can only be used as suggestive in case other signs are present, for it is oftener present in simple mastoiditis. Signs of this character may truly become of great value in cases that have shown little or no mastoiditis, for it is in cases showing sclerosed mastoids that we are particularly prone to see thrombosis. The swelling and tenderness over the jugular have been so marked, in cases, that the jugular could be rolled under the finger as a stout strand, and tenderness was confined entirely to the vein. At other times, in case of marked septic involvement of the vein, there is simply a diffuse tenderness and swelling located in the whole neck such as is recognized in a Bezolts abscess. Oppenheimer[1] has described a unilateral lymphoid pharyngitis or tonsillitis associated with a unilateral adenitis at the angle of the jaw, which I have never noticed, but which is quite reasonable, though one could imagine it might be associated with any deep inflammatory process in connection with the ear.

The stasis in the veins of the head has been recognized for some years. It is so fleeting and is so dependent in case of examination of the disk veins on the personal equation of the examiner that one should be very careful about allowing the sign to weigh in the diagnosis in doubtful cases.

Of very great importance is the physical appearance of the bone over the sinus and of the sinus itself, at operation. Only by uncovering a sinus can one be sure of its exact condition; still if the bone is not pathologic in appearance and the blue vein can be seen through the thin layer of bone, one can be safe in a diagnosis of noninvolvement in the presence of no symptoms referable to the vein.

---

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Oppenheimer: Ann. Otol., Rhinol. and Laryngol., 1911, p. 109.

In many cases with operation, we find a comparatively free mastoid only to expose an extradural abscess after following a small dark colored sinus or granulation area over the sinus. These hidden abscesses are prone to produce changes in the sinus wall, covering it with granulations, which, if disturbed, open the way to an infection of the vein content. The firm nonresistant vein may or may not be filled with a thrombus, and it is well in cases that have shown few general symptoms to wait before exploring the vein even with a needle.

2. Signs referable to the entrance into the blood stream of toxins or bacteria or both, from the diseased vein and its content.

The chilly sensations, chills and rapid rise and remission of temperature are too well known in the septic cases to need much comment. Let me remark here that one is astonished at times at the complacency with which these startling symptoms occurring in ear cases are looked on by many practitioners.

One chill alone is not enough to confirm a diagnosis, suspicious as it may be. Bondy[2] reports a case in which, ten days after a radical operation, the patient had a severe chill and high fever. The next day the temperature was normal and remained so. One should always wait for a second chill before operating or have enough other evidence to make a pretty positive diagnosis.

A very valuable sign is the presence of a sudden change in the general condition and appearance of the patient. He stands with difficulty, feels suddenly exceptionally nauseated, is thin, haggard and aged looking, with a sallow, dry appearance of the skin, which is so characteristic of all cases of septicemia. This transformation from a cheerful, possibly feverish-looking patient to the quiet dejected object may take place inside a half hour; even without the presence of chills, a high fever should put the attendant on guard.

The blood in the septic cases shows both an increased leukocyte, and increased polymorphonuclear count and with the presence of several rising counts may help, although any collection of pus may produce the same picture.

3. Signs referable to the lodgment in remote areas of particles from the thrombus.

These consist of joint pains and swellings and edemas over remote areas with heart irregularities due to an endocarditis. They are not frequent, but when present are of the utmost value in the diagnosis.

4. Signs referable to the extension of the inflammatory process to the meninges.

The severity of these signs seems to have no relationship to the extent of involvement of the meninges. Intense vomiting, headache, slow pulse and Kernig have been reported by Hoffman[3] in a case of simple serous involvement all of which disappeared on emptying the vein, and we all have seen cases of extensive meningitis with but few, if any, symptoms referable thereto.

The headache, dizziness and choked disk are the most frequent of these signs and have been more insisted on as diagnostic features on account of their comparatively early appearance. The slow pulse, vomiting, Kernig, mental excitability and paralyses are more the signs of a purulent meningitis, and occur as a rule so late that the case has become hopeless. This is not always the case, as in children we are very apt to get an early stiffness of the neck or a Kernig early in a serous meningitis or meningeal irritation from pressure. This I have seen several times in simple cases of acute otitis media. An explanation of the choked disk accompanying some cases showing the above symptoms is very hard to obtain, because it does not always occur even in cases of thrombus involving the lateral sinus, the petrosals and the cavernous. Bartels[4] in his analysis of five cases comes to the conclusion that it must be due to the intracranial complication accompanying the thrombus and not to stasis in the vein itself.

Through the study of the pathologic anatomy it will be readily seen that the course taken, or picture presented, by each case will depend on two factors, one the less important, the resisting powers of the patient; the other the local condition, that is the organism producing the trouble with its accessibility to the general blood stream and the general physical condition of the thrombus itself. A noninfected thrombus or one whose ends are sterile is not going to produce the same picture that one will which is throwing a virulent organism into the stream or casting off small particles to produce secondary thrombi. In order to explain, therefore, our clinical picture, we must analyze the various local pathologic conditions found, and naturally the most important is the bacteriologic element. The question immediately arises, Is the thrombus due to bacteria in the vein or to some toxic influence of the bacteria on the vein and its contents? I do not believe we are in a position to answer this question at present as we have not enough data at hand. The experiments so far made are not conclusive enough to allow us to draw a conclusion one way or the other.

Cases have been reported which showed a noninfected thrombus, but there is a chance of error here, for more careful observers have pointed out that one portion of the thrombus examined was infected and another, from which the culture was taken, was sterile. I believe that in most cases there is a direct bacterial invasion producing the thrombus, but that in isolated instances there may be a toxemia producing injury to the vein without an entrance of the bacteria, or again that the primary focus within the vein may show bacteria and that the growing ends may be sterile, or that portions of the thrombus may be secondarily infected.

There is no doubt but that the presence of bacteria in the peripheral circulation is of great diagnostic help in judging the case, but too much weight should not be placed on the blood cultures if negative. The work done along this line, although somewhat confusing at present, is leading to valuable data in all directions.

Duel and Wright[5] made positive blood cultures from the blood in uncomplicated cases of otitis media and mastoid suppurations. Their methods were repeated in eleven cases by Libman and Cellar[6] with negative results. These men came to the following conclusions after an exhaustive study of the subject:

1. With few exceptions uncomplicated mastoid infections give negative blood cultures.

2. With few exceptions sinus involvements give positive cultures at some time or other.

2. Bondy: Internat. Centralbl. f. Ohrenh., 1913, pp. 29, 149.
3. Hoffman, R.: Ztschr. f. Ohrenh., 1897, xxx, 17.
4. Bartels: Ztschr. f. Augenh., 1909, xxi, 23.
5. Duel and Wright: Tr. Am. Otol. Soc., Jan. 1, 1909.
6. Libman and Cellar: Am. Jour. Med. Sc., cxxxviii, 409.

3. Cases of mastoid disease that have been properly operated in which a bacteremia exists with clinical symptoms that cannot be accounted for, are cases of sinus thrombosis.

4. Streptococci remain in the blood in cases of sinus thrombosis either because there is still trouble present in the veins or because endocarditis has been established, which latter possibility is very infrequent.

5. An increasing number of colonies indicates a grave prognosis.

6. An absence of bacteria in doubtful cases would make one hesitate to explore for a thrombus until the possibility of all intercurrent disease had been excluded.

7. A negative blood culture with persisting symptoms excludes an endocarditis.

Sondern[7] claims that he has found a positive blood culture in six cases with the mastoid alone involved without the sinus. Kobrak[8] examined twenty cases of acute otitis media in the first few days of fever and found the blood free of bacteria; later he examined only the more severe cases and found a positive blood culture only in those cases that were pyemic. He observed that if the number of colonies was on the increase the prognosis was poor. Oppenheimer[1] studied one hundred cases of mastoiditis, obtaining negative blood cultures in all uncomplicated cases and in fifty cases of involvement of the lateral sinus there were forty-two positive cultures. Gruening[9] reports seven positive cultures out of ten thrombosis cases examined.

Our cases, though small in number, are significant in that out of five cases examined by Dr. Dickson all showed negative blood cultures, and among the cases was one of marked pyemia and one of sinus thrombosis, in which there were metastatic involvements of the joints. The work of Leutert, Schubert, Neurnberg, Kasslauer, as well as those quoted above, as Oppenheimer says, can not be easily refuted, and when work appears that is at variance with theirs it is in all probability due to errors in technic. The great drawback in all the culture work is the delay involved. These cases must be handled promptly to get results and the clinical signs will remain our most valuable asset.

In addition to the delay involved, in our bacteriologic work we have learned to recognize an additional drawback to even an assumption of a diagnosis by the frequency of occurrence of that type of case due to a bacterium of low virulency or to the presence of a so-called noninfected thrombosis. These cases were formerly thought to be very infrequent, but that is an error as is evidenced by the later literature on the subject.

I have found nine cases reported which progressed with a symptom-free course throughout; seven cases more are reported exhibiting no rise in temperature; other cases are reported in which the patients had had chills but at the time of operation were fever free, and still other cases are on record in which organized thrombi were discovered in the sigmoid sinus at necropsy some time after the mastoid disease had become quiescent.

To this array of cases, I wish to report the following case of infected sinus thrombosis progressing without symptoms referable to the sinus and in fact so quietly as to cause practically no alarm to patient or operator:

F. M., a Portuguese barber, aged 38, entered the clinic May 27, 1914, complaining of lack of appetite, excessive night sweats and dry cough, having lost 13 pounds' weight in three weeks. Urinalysis showed a large quantity of albumin, hyaline, granular, cellular and pus casts, many cells and leukocytes, bile stained. No tubercle bacilli were found in the sputum. Blood, white blood cells, 6,600; polymorphonuclears 55; lymphocytes 25; large mononuclears 10; eosinophils 2; basophils 2. No ear trouble was noted. The patient appeared only the once at the clinic at this time, but returned Oct. 15, 1914, six months later, when he said his former troubles had all cleared up; but he was now complaining of a painful swelling over the ear. He stated that four weeks previously he had had a three-day discharge twenty-four hours after an acute pain. The pain had persisted but the discharge had ceased permanently. One week after the pain there was a swelling behind the ear which had increased steadily; there were no chills and no fever.

On examination I found a fluctuating swelling over the mastoid region extending to the eyes and to the middle of the head above and behind. The posterior superior canal wall was bulging. The hearing was fairly good. The urine contained a slight cloud of albumin and a few hyaline casts. Blood, red cells, 3,900,000; hemoglobin, 93 per cent.; white blood cells, 17,400; polymorphonuclears, 61; lymphocytes, 29; large mononuclears, 4; eosinophils, 1; transitionals, 1. Wassermann, negative; temperature, normal.

At operation the mastoid was found full of granulation tissue, the sinus in close proximity to a small antrum. The sinus had been uncovered by the pathologic process. There was a total thrombosis of the sinus with a breaking down of one portion so that a large cavity was present in the sinus. There was a fistula in the skull leading into this cavity and the scalp was lifted from the skull by a large quantity of pus. The fistula through the skull was at least a half-inch posterior to the mastoid cells. A smear showed a gram-positive diplostreptococcus. Succeeding the operation the patient made an uneventful recovery save for a scalp abscess which was later opened.

After the operation it was thought by Dr. Barkan and myself that pressure on the jugular on the opposite side produced an appreciable filling of the veins of the disk, but other observers were not able to confirm our observations. This case therefore ran, with this possible exception, a symptom-free course. Chills or chilly sensations were absolutely denied by the patient, who claimed also that he had had no fever (confirmed by thermometer at time of examination). The patient had suffered no inconvenience and would not have appeared at the clinic had it not been for the swelling behind the ear and the edema of the eyelids, as his pain was minimal.

Originally the thrombus must have been formed by the chemical action of the pathologic process in the mastoid and not by a passage of the diplostreptococcus into the vein. This thrombus having been formed became infected later at the point of original contact and the wall of the vein gave way as well as the content of the vein only after a strong barrier had been formed for the blood stream.

It is interesting to note that in this case, in spite of a total occlusion of the vein and in spite of the fact that the septic process had reached well over the meninges beyond the vein, there were no symptoms whatsoever from the side of the meninges, no choked disk, no headache, no stiffness of the neck, no paralysis of the sixth nerve, no disturbance of mentality. Probably the fistula through the skull had something to do with this.

7. Sondern: Ann. Otol., Rhinol. and Laryngol., xx, 621.
8. Kobrak: Allg. med. Centr.-Ztg., 1907, lxxvi, 299; Verhandl. d. deutsch. Odont. Gesellsch., 1907, xv, 93.
9. Gruening: New York Med. Jour., June 25, 1909.

Were it not for Passow's case[10] we would be inclined to attribute all intracranial symptoms appearing in sinus thrombosis cases to the toxic influence of the bacteria, on account of the freedom from these symptoms in all fever-free cases save his. In his case severe meningeal symptoms appeared on the formation of a fever-free thrombosis, to disappear promptly on its evacuation.

The diagnosis of the presence of a thrombosis in a case of suppurative otitis is often difficult enough, but it becomes doubly so when we consider the possibility of the simultaneous presence of other affections. The literature is full of mistakes and undoubtedly many have been made that never have seen the light of day in print. Malaria, endocarditis, tuberculosis, hysteria, puerperal processes, typhoid, pneumonia, adenitis, erysipelas, syphilis and, in children with measles or scarlet fever, a nephritis or adenoid infection, have each in turn been taken for a sinus thrombosis.

Probably the most frequent mistake in diagnosis is that of malaria, on account of the similarity of the temperature curve. Urbantschitsch[11] has collected six cases in the literature with simultaneous occurrence of otitis media and malaria; in each case the symptoms were taken for those of sinus thrombosis.

Urbantschitsch's case was that of a 14-year-old girl with acute mastoiditis operated February 29, at a time when the fever was 37 to 38 C. (98.6 to 100.4 F.), exhibiting no signs of any complication. A sinus thrombosis was discovered at operation and removed. The patient recovered perfectly, leaving the clinic on April 2 and returning June 1, complaining of ringing in the ear, lessened hearing and a reopened perforation with a small amount of pus in the canal. The appetite was poor and the patient weak. On June 16 the temperature was 39 C. On the 18th, 20th and 22d there were chills; plasmodia were discovered on the 23d. In this case there was no splenic enlargement.

I wish to report a case of malaria which did not end so fortunately, occurring in the Stanford University clinic:

G., aged 50, an American tanner, was seen Aug. 17, 1914. The patient lived in Los Angeles until ten months ago when he began work on the Sacramento River. Eight years ago he had typhoid; erysipelas two years ago; he had had no acute rheumatism; no malaria. About two years ago, he had an attack of chills and fever associated with pain in the lumbar region, lasting about one week. He has been deaf in the left ear since the attack of typhoid. The patient came to the clinic on August 17, complaining of tinnitus, pain over the ear and of a previous discharge from the left ear. He said that two months previous he had suddenly had a feeling as though an insect had entered the canal; there had been pain but no nausea, vomiting or vertigo; after ten days there was a watery discharge which later became thick and purulent. On examination the temperature was found to be 99.8 F. There was some tenderness over the mastoid. The drum was thick, swollen, dull red and gave the impression one finds in a *Streptococcus mucosus* infection after three weeks. A paracentesis gave a mucoid secretion after politzerization. The patient complained of a heavy, dull, full feeling in the head, not an ache, and a clinical diagnosis of a capsulated bacterial invasion of the middle ear with meningeal irritation was made and the patient sent to the hospital for operation.

At operation the mastoid was found to be made up of many cells containing a thick red mucous membrane and much blood-tinged mucus. The sinus was uncovered and was found to be clean and well filled. The secretion contained few pus cells, few red blood cells, no bacteria as shown in the slides. In the culture tubes a few isolated small colonies of streptococci were found which were considered to be a contamination. August 21: Blood count: white cells, 6,600; polymorphonuclears, 69; lymphocytes, 21; large mononuclears, 6; eosinophils, 2.5; basophils, 5; transitionals, 5; 200 counted. No plasmodia were found. On the 18th, 20th and 22d there were rises of temperature to 103 F. and on the 22d a chill. On the 22d a search of one hour was made in specimens taken one hour after a paroxysm and no plasmodia were found. On the 21st, Dr. Dickson found some tenderness along the descending colon. The liver and spleen were not palpable. On the 20th, the cerebrospinal fluid was normal in cell count bacteriologically and chemically. On the 24th, diazo reaction was negative. On the 24th, the right eye ground was normal. The left showed a diffuse edema of the disk, edges blurred and indistinct, veins swollen. Diagnosis by Dr. Barkan was of fresh neuritis opticus. There was some nystagmus to the right.

It was decided on account of the chill, the eye findings, and the negative findings for typhoid and malaria, to open the sinus. The dura of the middle and posterior fossae were uncovered and both found clean. The sinus was opened and found normal. Following the operation the mentality of the patient became clouded and the knee jerks were lessened. No stiffness of the head and no Kernig was noted. On the 26th the Widal test was negative. On the 28th the blood was found to be filled with *Plasmodia malariae* (the ring forms of the estivo-autumnal type). The cerebrospinal fluid showed no bacteria but contained many red blood corpuscles mostly containing ring forms of plasmodia. The patient died on the 28th. The necropsy showed a somewhat enlarged spleen 125 by 95 by 5 mm., an otitis media acuta, malarial septicemia. Smears from the cerebellum and cerebrum showed the majority of the red blood cells in the capillaries containing fully developed small parasites with much pigment; few roseates, few small soquet rings, sometimes occurring in the same corpuscle with the large forms. Several large phagocytes full of black pigment were noted. The marrow and spleen contained many pigmented cells, a moderate number of fully developed malarial parasites in the reds. The adrenals contained mostly young forms. The middle ear showed many polynuclear leukocytes, many small diplococci and short chains.

The occurrence of an acute discharge from the ear due to the presence of the plasmodia is unknown, according to a personal communication from Capt. Craig, U. S. Army. The fact that no bacteria were found in the secretion from the wound at the time of the operation is extremely interesting and would lead one to suspect that the plasmodium could produce such discharges were it not that a few streptococci were found in the middle ear at necropsy. Still these may have been introduced subsequent to the operation. That the plasmodia were not observed in the peripheral circulation after careful search does not mean that they were overlooked, as others have observed the phenomenon of late appearance in cases with the estivo-autumnal varieties. Dr. Gellineck of San Francisco has observed such a case, in which repeated careful search was made with negative result and suddenly the peripheral circulation became literally filled with the organism.

Not any less interesting or important in our differential diagnosis is the fever-producing abdominal syphilis, which progresses with a picture that is typical of malaria or sepsis. This interesting disease has been studied by Mannaberg,[12] Gehrhardt[13] and others, and occurs far more frequently than was formerly sus-

10. Passow-Wagner: Charité-Ann., xxxiii.
11. Urbantschitsch, E.: Monatschr. f. Ohrenh., 1909, p. 29.
12. Mannaberg: Ztschr. f. klin. Med., 1907, lxii, 253.
13. Gehrhardt: Berl. klin. Wchnschr., 1900, p. 1046.

pected. The fever may be preceded by a marked chill and rise of temperature to 104 each day, persisting for months, as Mannaberg reports in one of his cases of hereditary syphilis. The presence of this affection, together with mastoiditis or chronic suppurative otitis, is not to be belittled, for in this day of the radical operation many cases of syphilis of the ear come to operation. Downing[14] describes a case in which he had operated for an acute mastoiditis, in which seventeen days later the patient developed a temperature of 102 daily, preceded by a chill. Quinin was used in spite of a negative examination for malaria, without result. The leukocyte count was 6,000 and the patient did not appear septic. Salvarsan was administered on the 15th day of the chills with an immediate cessation of all symptoms.

209 Post Street.

ABSTRACT OF DISCUSSION

Dr. Cullen F. Welty, San Francisco: In one part of his paper Dr. Graham speaks of meningitis simulating sinus thrombosis. He cannot, neither can I, or any one else operate in such a case in the hope of finding a sinus thrombosis. The cases that are found by accident are entirely different. They do not have symptoms. I have had two such cases; one, a neglected acute mastoid, with no symptoms whatever of sinus thrombosis. The sinus, accidentally uncovered by a chisel, revealed a discolored spot the size of the little finger nail. It was incised and the clot removed. There was no elevation of temperature before or after operation. The jugular was not ligated. In the second case of neglected acute mastoid of three months' duration there was no temperature or chill. In curetting out the mastoid I encountered a second abscess cavity that proved on careful observation to come from the sinus. A few years ago Neumann of Vienna reported eight cases; mine not included. Since then quite a few cases have been reported.

Dr. Graham reports a case of malaria mixed up with a discharging ear. Such conditions are indeed difficult of correct diagnosis. If it is a case of sinus thrombosis, so much valuable time is lost in bacteriologic work that the patient grows profoundly more septic, chances of recovery are much lessened and many things may happen. This case recalls a case reported by Dr. Hastings of Los Angeles at the meeting in Portland. In this case the bacteriologist made a positive finding of malaria. Further examination several days afterward gave a negative finding for malaria. Then the patient was operated on and died in a short time. I relate this case as it has a bearing on what I have to say in connection with malaria and sinus thrombosis. I feel it much safer for the patient to make an incision of the sinus so one can speak in definite terms as to what one has to accomplish. There is a near possibility of having malaria and sinus thrombosis in the same individual. This must always be borne in mind.

This naturally leads one to the bacteriology of sinus thrombosis. What I am about to say is from conclusions drawn from literature and from my own cases. With a given number of cases on the one side without bacteriology, and the same number on the other side with bacteriology, and the diagnosis dependent on the bacteriologic findings, more patients will die from delay in conjuring on the bacteriologic work than by the other procedure. If there are classical symptoms, operate early and do not delay. This delay is what causes the infections that kill. Suppose you do an unnecessary operation and open a healthy sinus; so long as you are clean about your work, nothing will happen, or will only rarely happen. I opened one sinus accidentally in a labyrinth operation. It was more or less bother to me through the entire operation, but nothing happened at all. The consensus of opinion in ear literature is such that I do not consider it a serious accident to happen. A few years ago the blood culture promised much for us in this condition, but it has not stood the test of time.

Dr. George F. Cott, Buffalo: I was amused by what Dr. Welty has just said. I never heard of an operator taking out a thrombus accidentally. We do not take out the thrombus because it is there, but because it is septic. I can recall five cases at present in which the temperature began to rise at the end of a week after a radical operation, and went up to 104 or 105, then down to subnormal. That kept on for a week. There was a thrombus which was removed at the first operation. That man is still living, and I am going to watch until he dies and after the postmortem prove that I am right. It does no harm, so what is the use of taking it out? You can do the same thing with a thrombus in any other part of the body. I have one in my leg that has been there six or seven years. It may be necessary some day to take it out but now it does no harm.

Dr. D. H. Trowbridge, Fresno, Calif.: I have operated in six or seven of these cases of sinus thrombosis. One case in particular I recall on hearing this paper. This patient came in with a history that he had had one or two attacks of vomiting without especial reason for it. This was not after he came under my observation, but while he was in the hands of his general physician. On arriving his temperature and pulse were practically normal, with a slight discharge from the right ear. He had no history of any suppurative ear trouble before; had a history of being struck with a stone or something like that, but nothing serious. This man I kept under observation for a week or ten days, and finally, temperature and pulse remaining practically normal all the time, having excluded everything else, I did a mastoid operation. I think there were probably five or ten drops of pus found in the antrum. After this his pulse remained practically normal, no chills, no rigors, none of the symptoms one would expect in sinus thrombosis. I had, however, a general feeling that the man had a sinus infection. During that time one of the eye and ear men of San Francisco happened to be in consultation with me in another case and I had him go over the man carefully. His opinion was that the man had absolutely no trouble in the sinus. After that, in probably a week or ten days, the man had a metastatic abscess at one of the joints, I think the knee, and this, of course, made the diagnosis clear. When I opened the sinus it was absolutely full of pus. The sinus and jugular were thoroughly removed. The man had no typical symptoms whatever. If I had examined him alone I might have thought that I had overlooked something. He did not have a blood culture, but the blood count was not exceedingly high, and yet he had a vein that had been full of pus for two or three weeks. This patient lived about three months following the operation and then died from what I thought was meningitis. The mastoid and sinus wound had healed.

Dr. Norval H. Pierce, Chicago: I would like to support Dr. Cott in his position in regard to aseptic thrombosis in the vein. I have seen quite a number of aseptic thrombi in the lateral sinus, and I have let them very discreetly alone, with no bad effects. I do not believe that opening a sinus in a septic field in mastoid disease is without danger. In fact, I am convinced that it has distinct danger. We are liable if we plunge into every sinus that we see—if that is our routine—to kill quite a number of patients by infecting a healthy sinus. Based on rather a large experience I am exceedingly conservative about operating in lateral sinus disease. I have almost formulated a rule with myself that I shall not operate before the fourth day after the initial symptoms. I have seen two cases of malaria, for instance, and quite a number of cases of erysipelas that could not be differentiated from septic thrombosis. I operated two weeks ago on a patient who had been operated in the East for an acute mastoid with a fistulous discharge back of the ear and considerable true pus coming from the external auditory canal. A few days after arrival in Chicago the father telephoned me that the child had had slight fever; the fever had gone to 100; whereas for two weeks before she had

14. Downing: Ann. Otol., Rhinol. and Laryngol., 1912, p. 1044.

been without fever. I sent her to the hospital and next day there was consultation of a good many eminent otologists, and they all decided to operate, except one man who said he thought the patient should be treated by conservative methods. I insisted on operation. The patient had had a frontal headache since and before the operation and during the course of this after treatment there had been exacerbations of temperature, pulse, etc. I took the responsibility of this case and operated, cleaned up everything very thoroughly, and everything went all right for twenty-four hours, when the patient had a chill, the temperature went to 105 and continued for thirty-six hours between 105 and 103, then descended, followed by another chill and elevation of temperature, and quite profuse perspiration. The blood count was something like thirteen or fourteen to eighteen thousand. I took the blood count three or four times a day, the polymorphonuclears being something like 69 per cent. I was very much worried, as you can imagine, having insisted on the operation, and I went so far as to cancel my reservation to attend this meeting, when to my great joy on dressing the case one morning a little red spot appeared anterior to the ear; it was a case of erysipelas. You cannot differentiate these cases and the only thing to do is to wait. I do not believe that valuable time is lost in obscure cases. I believe it is a distinct advantage to wait, and in 100 cases they will come out better than if you immediately jump in and open every case of sinus that has symptoms of sepsis.

DR. HARRY L. POLLOCK, Chicago: Dr. Graham did not touch on a very important thing regarding the diagnosis in double otitis media. I remember one case in a child with double otitis media, both about the same time and with the same discharge, in which there was an unquestionable sinus infection. There was a question of which side was causing the trouble. An otologist diagnosed thrombosis, and said he would have to open up one side and possibly the other; but the people objected and the case came to us in the hospital. On examination, we noticed on the left side less discharge than on the right, so we told the people that the sinus thrombosis was on the left side. We operated and found it on that side and the patient made an uneventful recovery. This was some years ago, before the West-Beck symptom had been brought to our attention. This consists of compressing the opposite jugular and getting a dilation of the veins of the forehead and fundus oculi. In four cases I found it was positive and operation proved the contention. I tried it in quite a number of cases of mastoid in which I suspected thrombosis. Some cases were negative and it was positive at other times, but I did not operate without the other classical symptoms. In the four the test was absolutely positive.

DR. H. B. GRAHAM, San Francisco: I have not touched on the treatment of these sinus thrombosis cases; the paper is limited entirely to the diagnosis. The treatment is very important, but ought to be written up in another paper. Treatment is entirely dependent on the diagnosis. I am sorry that anybody would ever give the impression that opening a vein in a septic field is of little importance. It is a very serious proposition and I should like it to go on record here that opening a vein in a septic field is taking your patient's life in your hands. It is a dangerous proposition. It is far better not to open that vein and take the chances of a future operation than to open that vein and not have a chance for a future operation. Patients have died from the accidental opening of a vein while doing a mastoid operation.

The question of double otitis is an interesting subject and one that has caused a great deal of trouble. There is a case on record of Oppenheim in which he operated on one side; there had been an examination made of the other ear and the drum was found intact but slightly reddened. His attention was called to the fact that there was trouble on that side. He opened up the right side, expecting to do a sinus exenteration, but found the sinus free and sent the patient to bed. The patient died. At necropsy a sinus thrombosis was found on the other side, which could have been attended to if the left side had been opened.

CASEIN-MILK FEEDING IN INFANCY AND CHILDHOOD *

WALTER GELLHORN, M.D.
SEATTLE

The foremost aim of modern pediatrics is to spread the knowledge that there is no better food for infants than mother's milk, and as a result the rather neglected research of the digestive disorders of nursing infants is beginning to occupy a larger space in the medical literature. The better acquainted the profession is with these disorders, the smaller will be the number of children who are weaned unnecessarily and exposed prematurely to the dangers of artificial feeding. But the unavoidable fact that there always will be a very large number of infants for whom only artificial food is available has stimulated the endeavor to find the standard food which, like breast-milk, will require quantitative rather than qualitative alterations. The encouraging results obtained with such modifications as advised by Friedenthal and by Schloss[1] give reasonable hope that the near future will bring us a milk organically and inorganically so closely approximating mother's milk that it might be called a fair substitute. But it already has been pointed out that, aside from hypothetic biologic differences, chemical limitations alone will never permit the creation of an absolute substitute. Furthermore, it would be necessary to imitate colostrum also, the great importance of which, for the first days of life, is recognized.[2]

The therapeutic value of these adaptations to human milk is not yet sufficiently investigated, and for the present the interest of the profession is centered on recent methods of curing certain nutritional disorders without attempting to simulate breast-milk in their preparations. Of course no modification, not even human milk, will be successful unless used correctly and with proper confidence, conditions which make a knowledge of the infantile organism in health and disease an essential requirement. A physician with such equipment will be able to overcome a great number of nutritional disorders with comparatively simple methods, especially if utilizing the knowledge that a single constituent of the milk is not harmful in itself, but only if fed in incorrect relation to the others, both the organic and inorganic ones. Such individualization requires exceptional skill, and those recent modifications already contain the different constituents in a correlation which makes the milk of great therapeutic value in most of the nutritional disturbances of a fermentative origin.

The first and most important representative of this class is the albumin-milk advised by Finkelstein and Meyer,[3] the therapeutic success of which is based on its antifermentative action. This effect is obtained through the reduction simultaneously of whey and lactose and through an increase of casein and calcium. The value of albumin-milk is praised by every one who has had an opportunity to use the correct preparation, and all agree that they obtained results where formerly breast-milk alone could have saved the child. The greatest handicaps for the use of this valuable modi-

* Read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Schloss: Säuglingsernährung, 1912, S. Karger.
2. Langstein: Lehmann's Jahres Kurse, 1912, 1913.
3. Finkelstein and Meyer: Jahrb. f. Kinderh., lxxi.

fication are the taste and the difficult preparation (the powdered product is unreliable), facts which led to recommendations of simpler substitutes.[4] Engel[5] succeeded, through skilful handling of rennet, to obtain a finely divided coagulum of casein and fat from which is poured off part of the whey. He avoids by his method the difficult breaking up of the cheese and the addition of buttermilk, which cannot be obtained everywhere in perfect form. The disadvantage of his modification, with which he obtained excellent therapeutic success, lies in the not fully eliminated, uncertain action of rennet and the great care necessary in warming the milk to feeding temperature. Stoeltzner[6] and Feer,[7] in their modifications, dispense with the use of rennet entirely. They reduce whey and lactose by diluting their milks, and add prepared casein and calcium to obtain the antifermentative action and the much desired formation of fat-soap stools in diarrheic conditions.

Stoeltzner adds 20 gm. of a casein-calcium preparation, larosan, to a formula consisting of 500 c.c. of milk and 500 c.c. of water, and adds to the latter, after a few days, from 1 to 5 per cent. of dextrimaltose, according to the case. His milk conforms pretty closely to albumin-milk with the exception of the lower percentage of fat.

Feer uses sodium caseinate, and increases the calcium by giving up to 3 gm. of calcium lactate daily if casein. Both authors recommend their modifications as permanent food for healthy infants.

My own observations conformed pretty closely to the experience of these authors, but after a short trial I found that with my material I could improve results by making not only the carbohydrates but also the fat a variable constituent. Recently Miller[9] and Hoobler[10] have published similar views. Hoobler reports a satisfactory substitute for albumin-milk in using 16 ounces of fat-free buttermilk, 16 ounces of water and 10 gm. of powdered casein. His mixture contains 2.8 per cent. protein, 0.25 per cent. fat and 2 per cent. carbohydrates, to which cream can be added, if advisable. The drawback to this formula lies in the difficulty of obtaining the proper buttermilk. The powdered casein he recommends has been used in my County Hospital practice for economical reasons, and was found just as valuable as Feer's and Stoeltzner's preparations. Its strong odor is restricting its usefulness considerably in private practice, in which I now am employing the sodium caseinate almost exclusively. It is equal in value to larosan and much cheaper.[11]

We have known for years that casein fed in daily quantities from 15 to 20 gm. is harmless for the youngest nursing infants, and recent investigations by Holt and Levene[12] and by Bosworth and Bowditch[13] have proved the same for bottle babies even in much

COMPOSITION OF CASEIN MILK AND OTHER MILKS

	Proteins	Fat	Lactose	Ash	Chlorin	P_2O_5	CaO	K_2O	Na_2O
Albumin-milk	30	25	15	4.9	0.4	1.28	0.93	0.87	0.69
Stoeltzner's milk	35	17.5	23	...	....	1.22	1.36	....	....
Feer's milk	26	23	20	4.4	0.25	1.35	1.05	0.87	0.59
Casein-milk	30	11.5	23	4.6	0.5	1.4	0.6	0.8	0.8

necessary. He emphasizes especially the high fat content of his mixture, obtained through the addition of 20 per cent. cream. His formula[8] consists of: 500 c.c. of whole milk, 50 c.c. of cream, from 10 to 50 gm. of dextrimaltose, 15 gm. of sodium caseinate, and 600 c.c. of water. This means that he added to his milk 10 per cent. of cream, from 1 to 10 per cent. of dextrimaltose, 3 per cent. of sodium caseinate and about as much water as milk and cream together. The calorific value of 1,000 c.c. of this milk amounts to 600 calories. The treatment will have to begin with varying quantities, according to the case, as advised by Finkelstein for his albumin-milk but the increase in carbohydrates can be postponed a little longer, because both modifications, Stoeltzner's and Feer's, contain more sugar from the beginning. In favorable cases the full amount of food should be reached inside of one week or ten days, that is, according to Feer, 100 c.c. of milk per 2 pounds of body weight. The difficult task is the determination of the time for increasing the carbohydrates. Stoeltzner reports for his larosan-milk the same good results as with albumin-milk, and is supported herein by a number of writers. Feer states that in some of the severest cases his casein-cream-milk has proved inferior to albumin-milk, which seems to be of higher therapeutic value on account of the freshly coagulated larger quantities. Thomas and Hornemann demonstrated that high casein feedings increase the resistance of suckling pigs against tuberculosis, and Langstein reports clinical observations which show that such feedings increase the immunity of infants against infections in general. My own experience with high protein feedings, which I have used empirically for years, has never demonstrated the development of lowered resistance in my patients, and I was very glad to learn through Feer and Stoeltzner of methods employing increased quantities of casein systematically.

The following modification, made from 4 per cent. milk and used almost exclusively for the cases reported, does not represent more than an adaptation of their teachings to my material:

17 ounces of skimmed milk (skimmed by dipper after two hours).
1½ ounces of cream (the first from the top).
17 ounces of water.
3 level teaspoonfuls sodium caseinate.

The mixture is boiled, if used therapeutically, and pasteurized if for rather prolonged feeding periods. It represents a skimmed milk to which 10 per cent. of

4. The limitation of this paper forbids the discussion of all the different substitutes recommended.
5. Engel: Deutsch. med. Wchnschr., 1913.
6. Stoeltzner: München. med. Wchnschr., 1913.
7. Feer, E.: Jahrb. f. Kinderh., July, 1913.
8. Both modifications have to be boiled.
9. Miller: Arch. Pediat., 1914.
10. Hoobler: Arch. Pediat., 1914.
11. It seems that practically any powdered casein will be serviceable, provided it is not too old and is clean. No preparation of this kind should ever be dispensed in a glass bottle.
12. Holt, L. E., and Levene, P. A.: The Influence of High Protein Feeding on the General Metabolism, on the Intestinal Flora and on the Body Temperature of Infants, Am. Jour. Dis. Child., November, 1912, p. 265.
13. Bosworth, A. W., and Bowditch, H. I.: Casein in Infant Feeding, Am. Jour. Dis. Child., August, 1914, p. 120.

cream and 2 per cent. of casein have been added.[14] The calorific value, after addition of 5 per cent. dextrimaltose, amounts to about 440 calories per thousand c.c., and the tabulated comparison shows that it contains only half as much fat as albumin-milk, two thirds of its calcium and 0.8 per cent. more of lactose.

In case the relation between calcium and fat should be unsatisfactory in an individual case, additions of calcium lactate will prove of assistance; as much as 5 gm. per day have been given.[15] The additional sugar used was dextrimaltose (from 1 to 7 per cent.) in private practice and granulated table sugar in the County Hospital, the latter without apparent bad results. In practically all the cases barley or oatmeal water (1.5 per cent.) was used in place of water.

Following Feer's advice, the attempt was made, and usually with success, to reach the full amount inside of ten days, that is, 100 c.c. of skimmed milk with 10 c.c. of cream and 2 per cent. of sodium caseinate per about 2 pounds of body weight.[16] In the majority of cases, the increase of fat to 2 and 2.5 per cent. of the total mixture was started at first after that time, but some children required a higher percentage of fat sooner.[17] In severe cases an addition of sugar was not started before the third or fourth day. According to the case, a water period from six to twenty-four hours accompanied by an enema and castor oil preceded the administration of the milk.

In successful cases the diarrheic stools became formed inside of a few days, frequently even after twenty-four hours. The alkaline movements resembled buttermilk stools. The appearance of very hard stools was an indication for an increase in fat and sugar.

It was characteristic in favorable cases that the formerly very restless children became quiet and appeared happy even at a time when the food supply was quite insufficient. The initial loss in weight was comparatively small in the majority of children. Among the great number of children, kept on this food for considerable time, only one case of infantile scurvy developed. The child was raised on this modification until 8 months old, when it began to refuse anything but the milk for several weeks, and was easily cured by forced feedings of vegetables and fruit juices.

During the last year no child was kept on the preparation much longer than the symptoms required, because it was found that in a number of cases the weight increased more rapidly on the ordinary modifications, for which the tolerance had increased considerably during treatment. A few days after the mixture had been fed in a quantity adequate to the child's weight, the casein was dropped abruptly.

This report is based on the observations of 163 children of which reliable data could be obtained. The investigations were started twenty-two months ago. Nineteen of the children were younger than 1 month, seventy-three were from 1 to 6 months old. Only thirty of these children were treated in hospitals. According to clinical classification there were:

1. Children with normal stools, twelve. The majority of these children had to be weaned abruptly. There were two failures; both children became more or less colicky and did not gain satisfactorily.

2. Premature children, two. Both babies were two months premature. One was started on the fourth day of life and did well in spite of a severe ophthalmoblennorrhea. The other baby received at first mixed feeding for about two weeks.

3. Mixed feeding, eighteen, with good results, especially marked in infants formerly suffering from dyspepsia on breast-milk alone. In most of these babies, ordinary cow's milk modifications had caused dyspeptic symptoms.

4. Atrophic babies, twelve children, very much under weight and producing more or less dyspeptic stools. One failure, no death.

5. Infants suffering from acute and subacute intestinal indigestion, seventy-two. Under this heading are included difficult feeding cases and the milder and severest forms of the acute stages. There were five failures, no death.

6. Alimentary intoxication, one. The child could not be saved.

7. Dysentery, three, with one death. The child came under treatment on the seventh day of the disease. In the other two patients there was no outspoken superiority of the food to be noticed.

8. Eczema, twelve. In all cases the movements improved rapidly, but in two of them no influence on the skin condition was noticeable.

9. Carbohydrate dyspepsia in older children, twenty. Here the food proved exceedingly valuable to take the place of plain milk, which could not be digested.

10. Parenteric infection, four.

11. Typhoid fever, one.

12. Postoperative feeding, two. In all these cases, meteorism was favorably influenced.

13. Tetany with rachitis, four. In all these children the preparation had been started on the third or fourth day without recurrence of symptoms.

CONCLUSIONS

1. Casein-milk feedings have been found to be successful as temporary food in allaitement-mixte and whenever it was necessary to wean a very young child abruptly. Although they do not seem to produce any harm during prolonged use, the advantages they offer are not sufficiently clear to recommend their substitution for the ordinary milk modifications in normal children.

2. They cannot replace breast-milk in some of the severest cases, but in the great majority of nutritional disturbances, as seen in private practice, they will be found to be of assistance. They are indicated in disorders of a fermentative origin, and can be fed here in rapidly increasing doses regardless of the stool picture, provided the child does not develop symptoms of alimentary intoxication. Through their use may be avoided the prolonged or repeated therapeutic hunger periods with their deteriorating influence on the child's organism, which are so frequently the cause of turning an originally mild into a serious disorder.[18]

Cobb Building.

14. With the milk at my disposal an addition of 2 per cent. casein proved sufficient. One teaspoonful of sodium caseinate equals 3.5 gm.

15. Aschenheim gives from 7 to 10 gm. without causing any harm.

16. Feer found that 100 c.c. of whole milk, etc., per 2 pounds of weight will cover the child's need. In using skimmed milk this quantity will be insufficient in most cases until more cream is added.

17. Milk (4 per cent.) allowed to stand two hours after delivery: upper 1½ ounces of cream = 16 per cent. fat; 2½ ounces = 12 per cent.; 3 ounces = 15.8 per cent. fat.

18. In addition to the references already given, the following may be consulted:

Leopold, J. S.: Experiences with Whey Modified Milk in Infant Feeding, Am. Jour. Dis. Child., September, 1914, p. 196.
Wegener: München. med. Wchnschr., 1914.
Forcart: München. med. Wchnschr., 1913.
Ostrowski: Arch. f. Kinderh., 1914.
Rost: Arch. Pediat., 1914.
Stolte: Jahrb. t. Kinderh., lxxiv.
Aschenheim: Monatschr. f. Kinderh., 1913, xii.
Leichtentritt: Arch. f. Kinderh., 1914.

THE HISTOGENESIS OF THE REPRODUCTIVE PROCESSES IN MAMMALS*

HENRY O. MARCY, A.M., M.D., LL.D.
BOSTON

One of the most interesting questions presenting itself to the investigator, and which has been surrounded with the deepest mystery, is that of the vital processes of the reproduction of animal life. From the earliest periods of medicine may be traced the results of observation and the deductions therefrom which have given rise to speculative theories and beliefs.

Fabricius[1] made careful studies of the placenta. He demonstrated that the placenta varied in position, shape, and size in mammals, laying emphasis on the form of a placenta found in the human animal. He concluded that the single placenta found in the human female, the mouse, the rabbit, the guinea-pig, the dog and the cat, is associated with the presence of incisor teeth in both jaws and with distinct toes. When the placenta is found multiple, as in the sheep, the cow, and goat the incisors are present in one jaw only, and the hoofs are cloven.

Malpighi[2] was among the first to make careful scientific studies of the changes which take place in the uterus and the developing ovum. The microscope had become an instrument of value. Histologic changes were traced by him with a skill worthy of the great master which he was. His name is deservedly prominent on the roll of the famous teachers and investigators of his period. He is entitled to the appellation of "The Founder of Microscopic Anatomy." His study of the secretory glands and their structures led to the inference that the secretion is formed in terminal acini, standing in open connection with the ducts.

William Hunter of London[3] studied the early development of the placenta of woman with extreme care and his beautifully illustrated folio volume will ever remain a classic of English medical literature.

William Hunter's work on the reproductiveness of woman must remain of permanent value. In Plate 32, Figure 36, he gives a careful drawing of the decidua vera of the fifth week of pregnancy.

> It plainly appears that the decidua in this case was a thick membrane of gelatinous texture, which had lived and adhered to the whole triangular cavity of the fundus uteri; that the tubes terminated on its internal surface; that the chorion was lodged in its duplicature, or was surrounded with its substance; and that in the proportion as the chorion would have been extended in the progress of gestation, it would have encroached on the cavity of the decidua, stretching its interior lamella or decidua reflexa, till at length, the cavity being obliterated, that interior lamella would have come into contact with the inside of the decidua.

He describes an abortion at the ninth week when the embryo hangs by a slender navel string from the inside of the placenta. The amnion, the chorion, and the decidua reflexa are adherent to one another. Here the larger and more crowded branches of the shaggy vessels which shoot from the external surface of one part of the chorion mix with the decidua, or uterine part, to form the placenta.

Here is seen a portion of a chorion which afterwards becomes the uniform transparent membrane. It is covered with fewer and more delicate floating vessels, which lose themselves in the decidua reflexa. The embryo is seen through it.

Montgomery of Dublin published a most interesting book on human gestation, emphasizing a discovery of his own, made and published four or five years previous, of a peculiarity in the structure of the decidua vera.

> If the ovum is expelled entire, we have the uterine decidua covering the substance under examination and distinguished by its soft, rich, pulpy appearance and strong red color; its external or uterine surface being rough and unequal and when well freed from the coagulated blood and immersed in water, exhibiting numerous small round foramina, capable of admitting the head of a pin; while its internal surface is smooth, generally thrown into slight, soft folds, and exhibits little or no appearance of foramina; any that may be perceptible being of very minute size. These characters, which are always to be recognized without difficulty, are sufficiently distinctive of the structure under consideration; but there is another, not hitherto noticed by anyone as far as I am aware, although it is probably one of the most remarkable features in the organization of this peculiar product. Repeated examinations have shown me that there are, on the external surface of the decidua vera, a great number of small cup-like elevations, having the appearance of little bags, the bottoms of which are attached to, or embedded in, its substance; they then expand or belly out a little, and again grow smaller towards their outer or uterine end which in by far the greater number of them, is an open mouth when separated from the uterus; how it may be while they are adherent I cannot at the present say. Some of them which I have found more deeply embedded in the decidua vera are completely closed sacs. Their form is circular, or very nearly so; they vary in diameter from a twelfth to a sixth of an inch, and project about a twelfth of an inch from the surface of the decidua. Altogether they give one the idea of miniature representations of the suckers of the cuttle-fish. They are not confined to any part of the surface of the decidua, but I think I have generally found them most numerous and distinct on those parts of it which were not connected with the capillary rudiments of a placenta, and at the period of gestation which precedes the formation of the latter as a distinct organ. They are best seen about the second or third month and they are not to be found at the advance periods of gestation. I confess that I am not prepared (nor indeed is this the place) to offer any very decided opinion as to the precise nature or use of these decidual cotyledons, for to that name their form, as well as their situation, appears strictly to entitle them; but from having on more than one occasion observed within their cavity a milky or chylous fluid, I am disposed to consider them reservoirs for nutriment fluids separated from the maternal blood, to be thence absorbed for the support and development of the ovum. This view seems strengthened when we consider that at the early periods of gestation the ovum derives all its support by imbibition through the connection existing between the decidua and the villous processes covering the outer surface of the chorion.[4]

Prof. Charles S. Minot, in his "Theory of the Placenta," says:

> According to the views explained in the preceding pages, I hold the placenta to be an organ of the chorion; that primitively the chorion had its own circulation, and formed the discoidal placenta by developing villi, which grew down into the degenerating uterine mucosa. By the degeneration of the maternal tissues, the maternal blood is brought close

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Fabricius: De Formato Foetu, 1624, Folio.
2. Malpighi, Marcello: Born in 1628, died in 1694; he was Professor of the University of Bologna about twenty-five years. He was appointed physician to Pope Innocent XII, and for some years lived in Rome.
3. Hunter, William: Anatomia Uteri Humani Gravidi.
4. Montgomery, W. F.: Signs and Symptoms of Pregnancy, London, 1837.

to the villi, and the degeneration may go so far that all the tissue of the uterus between the villi and the muscularis uteri go to form the so-called decidua; the placenta receives its fetal blood by the means of large vessels running in the mesoderm of the allantois. From this discoidal chorionic placenta, the zonary placenta of carnivora, the diffuse placenta of the lower primates, and the metadiscoidal placenta of woman, have been evolved.

Dr. Minot was a man of erudition and enthusiastically devoted to science. By his recent death Harvard University has lost one of her famous pupils and distinguished teachers. His postgraduate education was in Germany, and to the last he adopted as correct the conclusions of the German school. All this I accepted as fundamentally correct until I became acquainted with the researches of Ercolani, professor in the great University of Bologna. I found by accident in a second-hand book store in Paris a very cheaply printed unpretentious volume published in Algiers, Africa, a translation in French by Dr. Andreni, of a certain portion of the investigations which had been conducted by Professor Ercolani. As a prize essay it had received an award from the Academy of Science at Paris.

Ercolani was a count, and cousin of the present king of Italy; like my old master, Professor Virchow of Berlin, he was equally celebrated as a leader in the great political struggles for the elevation of his people, and as an enthusiastic devotee of science educated in the schools of the great Antonio Alessandrini, whose diligence the pupil early imitated. Under the most lamentable poverty of means, he contributed to the foundation of those monuments of marvelous industry, the Bologna museums of comparative anatomy and veterinary pathologic anatomy.

The high renown which Ercolani had acquired in the sciences, together with his profound learning, procured for him many honors. He attained the highest offices of Bologna's most famous university, in which he was several times president of the medical faculty and twice rector of the university. Aided by government, he was enabled to erect new buildings and furnish the school of veterinary medicine with modern appliances for successfully carrying on original investigations in the department of comparative anatomy and physiology. Although widely known by his many original contributions to science, he is deserving of, and he receives, world-wide repute for his long-continued investigations of the placental development in vertebrates.

In our Harvard library, I found in the Bologna Transactions of the Academy of Sciences the original papers, with illustrations, published from time to time, having been presented by him as contributions to the academy. Convinced of the singular value, as well as the originality of his work, I collated and presented to the English reading public my first edition, which included all his anatomic researches up to the date of the publication. The closing chapters were written especially for this American edition. In 1884 I published a second and enlarged edition, which included also Professor Ercolani's researches on the pathologic conditions of placental development, with a careful analytic review of the whole subject, written while yet suffering from the dire malady which speedily thereafter terminated his life.

In the preface to the second edition of my translation of Ercolani's work I say:

I have myself confirmed many of the observations of the learned author and I have therefore repeated assurance of the correctness of his statements and deductions. As if, with the foreknowledge of his untimely end, immediately before his death, Prof. Ercolani reviewed his entire work in extenso with a long résumé of his carefully established conclusions. This summary is also included in the present volumes. I am convinced of the correctness of Prof. Ercolani's teaching. I hold in admiration the remarkable ability and certainty by which he arrived at conclusions so far-reaching and demonstrated with singular clearness nature's uniform law of the unity of anatomic type in a simple and fundamental plan of embryonic nutrition and development.

The present occasion offers an opportunity to review very briefly some of the more important deductions to be made therefrom. The studies of reproduction by the medical profession have been chiefly limited to the human species. Nothing is more complex or confusing, more a veritable labyrinthine riddle,[5] than the fully developed human placenta.[6]

There are many and varying factors which must be taken into careful consideration in the study of the miracle of reproduction. Many of these must necessarily be eliminated from this article. First and most important is the matured ovum, which is usually impregnated in the fallopian tube. The cellular segmentation which goes on in the first days; the implantation of the ovum and its subsequent development, is a chapter foreign to the histogenesis of uterine life in the present discussion, except so far as pertains to the nutrition and growth of the fetus. Even here, we must limit ourselves for the most part to the early histologic changes which occur in the fetal structures.

The two important series of structures presenting themselves for investigation in the anatomy of the placenta are the fetal villi, of the chorion and the maternal villi. These component parts form the placenta. The complexity of its structure in any given mammal is dependent on the degree to which, in the course of its development and growth, the maternal and the fetal portions have become interblended.

In the study of the reproductive processes of woman, these changes early become so complex that, except in the first weeks of pregnancy, very few definite conclusions can be drawn. The study of the changes taking place in the lower animals has been of the highest value. To William Turner of Edinburgh,[7] and G. V. Ercolani of Bologna, Italy, two of the most distinguished scientists of comparative anatomy, we are chiefly indebted for the elucidation of this problem. Turner arrived at the conclusion that the utricular glands are secreting structures, that they enlarge during pregnancy, and that their secretion is poured out between the mucous membrane and the chorion.

The demonstration seems complete that the main factor in the nutrition of the entire mammalian family, reduced to its simplest terms, is—a villus of secretion, maternal, and a villus of absorption, fetal. The maternal villi have their origin in the utricular glands, which are active during the entire reproductive period of the female.

These glands take on a singular activity at the so-called period of heat in the lower animals and about

5. The deductions of the earlier writers were clothed in fable quite as much as the Golden Fleece.

6. Ercolani, Giovanni Battista: The Reproductive Process — Its Histology, Physiology and Pathology, Demonstrating the Unity of the Anatomical Type of the Placenta in all the Mammalia and the Physiological Unity of the Nutrition of the Foetus in all the Vertebrates. Translated by Henry O. Marcy, A.M., M.D., Boston, Houghton, Mifflin & Co., Riverside Press, 1884.

7. Turner, William: Lectures on the Comparative Anatomy of the Placenta, Edinburgh, 1876.

the period of menstruation in woman. In woman, these glands greatly enlarge and a proliferated portion breaks down in the processes of menstruation, quite to their base.

This disintegration goes on during the entire period of uterine activity. It may be playfully designated as "cleaning house" for the tenant which may never take possession, regardless of the sign "to let."

In extra-uterine fetation in woman, remarkable changes take place in the uterus proper, especially in its inner coats. Here the glands, instead of undergoing the destructive processes of menstruation, take on a change not very unlike the first processes of impregnation. In some instances a veritable decidua is formed and the thickened velvety structure of the mucous membrane, with a greatly increased vascularity, is seldom wanting.

These maternal changes are instructive in their bearing on the development of the decidua vera in woman. In the first stages of uterine development, the chorion, which is the most external of the fetal membranes, is uniformly covered with delicate, slender villi of a soft, velvety appearance.

It is common knowledge that in woman the chorial villi in the early stage of development pertain almost uniformly to its entire surface and are at first interblended with the entire decidua vera. Later on, absorption takes place and these nearly disappear, leaving a translucent membrane except at, or near, the placental site. Then most complex changes take place, the chorial and the maternal villi interblending in the most confusing manner.

In the mare is found one of the simpler forms of placental development. The chorial villi persist during the entire period of gestation, for the most part uniformly developed, and here we find the intradigitation of the chorial and the placental villi comparatively easy for study, giving us perhaps the best demonstration of the simple plan of fetal nutrition — a villus of secretion in close approximation to, and blended with, a villus of absorption.

It is of extreme scientific interest to trace the multiple variations in the entire group of the mammalia. To this subject, however, we can only allude. In the ruminants, the villi are collected in large tufts called cotyledons, scattered over the surface of the chorion in very considerable numbers. In the cow, in one instance, I think I observed about eighty of them scattered uniformly over the entire chorion. These villi soon assume a complex form, budding from the side and end, and frequently assume an arborescent shape. The primal villus is the stem and the offshoots form the branches; these last are highly vascular.

The epithelial lining of the mucous membrane of the uterus is columnar in form in nearly all mammals. The utricular glands may be described as branching tubes which vary in length and direction in different mammals. My old friend Dr. G. J. Englemann of St. Louis[8] determined that no glands exist in the human uterus at birth. At the tenth year he found the glands assuming a tubular shape, becoming numerous and extending through the thickness of the mucosa into the muscular coat. Only at puberty do they become well developed and of active function.

Harvey[9] maintained that the fluid secreted by the cotyledons was absorbed by the fetal villi. Needham, of London,[10] yet more clearly insisted on the fact that the cotyledons were in function only secreting, while Haller[11] expressed the thought in a single sentence so terse that we quote: "In ruminantibus manifestam fit, matrem inter et foetum, non sanguinis sed lactis esse commerciam."

Analysis of this fluid by N. Gamgee[12] shows that it is alkaline, and contains besides water, albumin, fat and inorganic salts. A long known and well-established fact is that rudimentary cotyledons are never wanting in the nonpregnant state, but it remained for Ercolani to demonstrate that on the site was developed a new organ of glandular character and that it differed from the diffuse placenta chiefly in being developed over circumscribed areas and possessing a more complex character.

The single placenta, whether zonarial or discoidal, offers difficulties far greater to its satisfactory study because of its complexity of formation.

The bibliography of the subject forms a chapter in the literature of anatomy and physiology of exceptional interest to the special student, although most confusing to the seeker after knowledge. An admirable sketch of the observations made in this field of inquiry is found in the work of Ercolani above referred to.

We select for careful examination the gravid uterus of the rabbit. A transverse section of the placental site in the earlier period of pregnancy, about the end of the second week, shows three parts, each clearly distinct.

(1) The muscular wall of the uterus.

(2) The placental neoplasm which is developed on the inner uterine surface.

(3) Above this the old uterine mucous membranes tumefied and about to undergo destructive changes.

Two most noteworthy conditions appear. The uteroplacental vessels have a lumen almost double the vessels from which they proceed, and, notwithstanding their greater volume, they show in their walls none of the anatomic characteristics which serve to distinguish the arteries from the veins, and which are clearly visible in the uterine vessels. The second and even more important fact is that these vessels, instead of the ordinary walls, are surrounded with a uniform envelope of cells of a special character, which cannot be distinguished from the cells of the decidua serotina and the maternal placental tissue. The special characteristics of the walls of the vessels, composed, as they are seen to be, of only the endothelium, is an objection to the supposition that their development could proceed from the vascular net-work of the old transformed mucous membrane. This is emphasized by the exceptional fact that the old uterine mucous membrane is detached from the muscular wall, and, with its glands, is undergoing a process of rapid destruction. These facts place it beyond all doubt that the uteroplacental vessels and their surrounding cells are the result of a real neoformative process. In all animals having a single placenta the decidua vera and the decidua reflexa are of new and distinct formative character. The decidua vera is composed of newly formed cells, which are early arrested in their development, and superimposed on it is the old uterine mucous membrane, usually easily distingunished by its glands, and which, later, is seen in process of destruction and

8. Englemann, G. J.: Am. Jour. Obst., May, 1875, p. 32.
9. Harvey: Opera Omnia, Leyden, 1737.
10. Needham: Padua, 1656.
11. Haller, London, 1767.
12. Gamgee, N.: Vet. Rev., No. 46, Edinburgh, 1864.

interblending between the external layer of the ovum and the internal uterine wall.

In most animals the newly formed placental vessels have a uniform diameter and constitute a network of small meshes, which reaches as far as, and is firmly joined to, the chorion. In the meshes of this network are found the fetal vessels which unite and enter the cord. By injection of these we have a better demonstration of the relations established between the fetal and maternal portion of the placenta. A careful study affords convincing proof that the umbilical arteries ramify and end in a thin, fine network of capillaries in the chorial villi, and are in close contact with the cellular covering which clothes the maternal vessels. Demonstrative evidence of this relationship in the human placenta has been frequently observed by myself when the placenta has been undisturbed in its connections with the uterus for a considerable period after the death of the fetus. The chorial villi become shrunken and easily separate from the decidual sheath, the cells of which remain unchanged.

In certain of the lower animals (for example, the *Cavia cobaya* or guinea-pig) Ercolani has observed that the maternal vessels become dilated in their terminal loops. This is of the greatest importance, since it furnishes an example in rudimentary condition of that which takes place in an extreme degree in the human placenta.

The destructive changes in the uterine mucous membrane of woman after conception are limited to the epithelial layer. After the separation of the decidua vera from the internal uterine surface, it is observed that the muscular wall is covered by a mucous membrane identical with that lining the uterine cavity before impregnation. The uterine mucous membrane is little more than a simple layer of epithelium, and the reproduction of this is all that is required to restore the internal surface of the uterus to its primary state.

During the early period of development of the human placenta the decidual cells form a richly vascular compact layer surrounding the chorial villi. For a limited time the relationship between the parts is not so intimate that they cannot be separated. At this stage, before the maternal vessels become ectasic, the form of development is not unlike the diffused or disseminated placenta.

Charles Robin states that in proportion as the villi of the chorion subdivide and increase in volume the superficial capillaries of the maternal placenta are largely dilated and form delicate vascular folds, which are interposed between them. The dilatations of the interposed maternal capillaries increase in direct ratio to the development of the chorial villi.

The walls of the proliferating branches of the villi are necessarily forced against the decidual layer of cells covering the ectasic thin-walled maternal vessel. Thus this is introflected, and a close union ensues. In this manner the so-called placental lacunae are formed in the fully developed placenta, and from this very deceptive appearance it has been held as a demonstrated fact that the fetal villi swim in the maternal blood.

Dr. John Reid was among the first to enunciate the belief that the fetal villi, in projecting, push before them the membranes forming the limiting wall of the placental sinuses, each of them in this way receiving an investment. Schroder van der Kolk and Goodsir taught that the processes of the decidua were prolonged over each villus, and thus separated it from the maternal sinus.

Braxton Hicks states that the placental sinuses, as usually represented, do not exist. He thinks the changes in the fetal blood are effected by endosmosis, but suggests that the follicles of the decidua may secrete a fluid which is poured into the intervillous spaces for absorption by the villi.

The epithelial covering of the vascular loop of the fetal villus is wanting because of the intimate relation which has been established between it and the secretory villus, which never loses its own epithelium. The form of the vascular loop of the maternal villus varies very greatly. In the quadrumana and in woman the dilatations become lacunose and are actually enormous.

All the vertebrates during the period of embryonic life, in order to complete the marvellous phases of their development, require a special nourishment, which is always furnished them by the mother. This is conveyed to and converted into its own substance by the embryo, and however many and considerable may be the differences met in these two fundamental factors, the unity running through them readily appears under two general forms, represented by the yolk of the egg in the oviparous animals and by the placenta in vertebrate mammals. In the first the maternal element is stored up in a mass by the mother, and emitted with the ovum in the quantity needed by the embryo to complete its development. In the second this nutritive material is furnished by the mother from the placenta, which elaborates it as needful for the developing embryo. These materials, in every case, are absorbed and conveyed to the fetus by means of its own vascular appendages. Thus nutrition is carried on during the development period in all vertebrates by a single law of physiologic modality. The typical anatomic form in the two fundamental parts of the placenta, however wide the variation, is always identical. It consists of a villus of new formation, maternal as well as fetal, each composed of an internal vascular loop surrounded by a cellular layer and covered by an outer epithelium. The office only of the villi is different—the fetal absorptive, the maternal secretive. These villi always come in contact more or less intimate, but the walls of the vascular loops never in any instance touch. This is the more to be emphasized since it invalidates the idea hitherto held, and yet almost universally taught, that the mode of the nutrition of the fetus is an interchange between the two bloods by endosmosis and exosmosis. The different ways of the interblending of the fetal and maternal villi give the complex and confusing picture of placental formation.

The belief that the lacunae were really large cavities as they certainly appeared, and not the maternal vessels greatly dilated, was held as a truth proved and indisputable; and it was through this belief that two other deceptive appearances were received as actual truths; namely, that the villi floated in the maternal blood, and that the epithelium covering them appertained to the fetus instead of to the mother.

This is another demonstration of science, showing that the great fundamental plan and law, in the last analysis, is based on pure and simple truth.

180 Commonwealth Avenue.

OBJECTIVE PSYCHOLOGY OR PSYCHOBIOLOGY WITH SUBORDINATION OF THE MEDICALLY USELESS CONTRAST OF MENTAL AND PHYSICAL *

ADOLPH MEYER, M.D.
Director of the Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital, and Professor of Psychiatry, Johns Hopkins University
BALTIMORE

A few years ago the American Psychological Association discussed the question of a course in psychology for medical students. Since then the problem has been taken up in the Johns Hopkins Medical Department, last year in a course which I gave with the collaboration of Prof. J. B. Watson and Prof. Knight Dunlap, and this year in a course which I gave alone. The time allotted was two afternoon hours a week in the spring trimester of the second year, altogether twenty hours.

My first step was to find the standpoint of my students, many of whom had had courses in psychology at college. I asked them to state what relation psychology had in their minds to physiology and pathology. I was at once confronted with a lack of definiteness and agreement which is the inevitable consequence of the fact that there is but little mutual understanding among the teachers of psychology, and little applicability of what is taught either to the plain man's needs in viewing mental life, or to the physician's needs.

I found that most students had the conception that psychology deals with the mind as physiology deals with the body. They contrasted mental functions and physical functions, and had more or less vague notions of the doctrine of psychophysical parallelism which has governed science during the last fifty years or more. Most students, however, assumed an influence of mind on body and of body on mind after the fashion prevailing before the ingenious truce attained by Fechner's parallelism; and in this they evidently were prompted by plain sense rather than by any dogmatic theory. In the discussion there certainly was no evidence of any solid metaphysics worthy of that name and no realization of the often discussed and specially dreaded problem of interactionism.

I am not surprised at this state of affairs, for when I look around among my colleagues I find few well-defined attitudes. There are those who see no sense in studying mind beyond what is done in the physiology of the brain. There are, however, others who recognize the facts of suggestion, the rôle played by the emotions not only in hysteria, but even in Graves' disease; but just how the thing works, many believe to be beyond human ken. One of my colleagues expressed his views in last year's address before the Medico-Psychological Association, in which he emphasized the subjective character of the mental facts, suggesting in fact if not in word that mind can be of use to the physician in the form of symptoms, but not as causes and objective facts like the other objective facts of medical observation.

The difficulty lies in the hesitancy to accept a frankly biologic view of the reactions and behavior of man. As soon as mental attitudes and mental activities are accepted as definite functions of a living organism, mentation and behavior is treated as a real chapter of the natural history of man and animal, and psychology ceases to be a puzzle supposedly resisting the objective methods of science. "Mental attitudes" and "mental activities" certainly are doings and activities of definite individuals; we see them and prove them to be present or absent, or changed as attitudes and actions of others as truly as we know them in ourselves. We may know some of our own mental states in more detail; but that which counts is attitude, activity, and behavior, observable in any one, and sometimes rendered more accessible by inducing the subject to amplify his activities verbally or in other ways until we know the facts, that is, until they have been made objectively evident.

I am specially anxious to make plain what is meant by the fundamental assertion that what is of importance to us is as observable and as objective as any other fact of natural history. What is of importance to us is the activity and behavior of the total organism or individual as opposed to the activity of single detachable organs. It is more than cerebration; we must take our domain broadly as behavior and passive and constructive adaptation of the entire individual. It differs from the ordinary physiology because it represents an integration of biologic activity on a specific level through its having the characteristic of more or less consciousness and because of its hanging together by associative function. From the point of view of science, behavior and mental activity, even in its implicit or more subjective forms, is not more subjective than the activity of the stomach or the heart or blood serum or cerebrospinal fluid or the knee jerk. Each individual has his own mental activity, but to say that we cannot see it and make it accessible and understand it in others is a philosopher's scare like the statement that we can never know whether the world exists, because we know only mental states or processes. Common sense has never worried about the reality of the world. I hope we shall soon be agreed on the fact that we need not worry about the psychobiologic reality and the objectivity of those actions and internal workings of living beings which we call mentation and behavior. I should quit being a physician and a teacher if I felt compelled to doubt the possibility of my studying and knowing your minds and those of my patients well enough to draw practical conclusions from such knowledge. If solipsistic philosophy were true one might as well retire into absolute solitude. By making of mind something like the religious-philosophic concept of the soul, something opposed to the body instead of a function of the individual as a whole, traditional philosophy and psychology have rendered us a poor service.

The first step in a course of psychology for medical students is to restore in them the courage of common sense. It is not necessary to start the course with a discussion of the unconscious and the subconscious, and with hypnotism and psychanalysis and other specialized and more or less unfamiliar domains. On the contrary, I urge the student to trace the plain life history of a person and to record it on what I call the life chart; the result is a record of a smooth or broken life curve of each one of the main organs and functions, and in addition, a record of the main events of the life of the whole bundle of organs, that is, "the individual as a whole" and of the facts which determined and constituted his behavior. This realm of

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

objective and determinable facts of the individual as a person constitutes what we as physicians need to know as psychology. The science dealing with these facts I call psychobiology, in order not to step on the toes of the introspectionist who might want to reserve the term "psychology" for the traditional type of subjective psychology. Its facts are behavior in the widest sense of reactive and constructive adaptation of the completely integrated organism. We ask: What are the individual's assets: the reactive and associative resources in the form of effective and expressive activity and its abortive forms, conations, affections, cognition, discrimination, and reconstructive and constructive imagination? Under what conditions are they apt to go wrong and under what conditions can they be modified again for the better? You can readily see that we are dealing with the absolutely objective and positive facts, peculiar only in the way in which they hang together by association in the wealth of equivalents and combinations, and in the varying extent and depth to which they implicate the parts of the integrated organism. So much for the student's general orientation with its restoration of the common-sense attitude.

As an instance of the study of assets, we take up the Binet-Simon and other genetic standards and survey the successive epochs of human life and their psychobiologic problems: infancy; then the period of acquisition of signs and language; the early childhood passing into what Joseph Lee calls the "Big Injun" stage and the school childhood; the preadolescent and adolescent period; the period of emancipation; the period of adult aggressive life; the period of maturity; the matron's period; and the period of senescence—each with its own psychobiologic features and problems.

Within this broad and clearly biologic frame, the student becomes ready to see a proper setting for the more detailed and specific chapters, among which I take up first the cognitive-representative data: reactions to things present (sensation and perception), reactions to things absent (memories and images), reactions with ideas and words and concepts or orientation; all activities depending more or less directly on the collaboration of brain and sense-mechanism. Then we take up the affective processes which determine the general trend of association and involve, beside the brain, mainly the sympathetic system and internal secretions, as Cannon has so well shown lately; and then the overt actions, specified as effective and expressive, and the laws of habit-formation, memory and association, and conation or will and its relation to instinct. We then consider the various degrees of consciousness and attention; and we introduce the data of hypnotism and the subconscious determining influences shown in the association experiment.

On this ground, we take up the genetic account of several leading functions or instincts as given in Pyle's "Outlines of Educational Psychology" and incidentally the psychobiology of sex life.

A review of the nonmental components of the mental integrations, the foundation of fatigue, and waking and sleep states, of the share of the circulation, of internal secretion, and of brain organization, rounds off the course and leaves us with a well-checked outline of examination of the mental resources and reactive tendencies of any patient, to be used and developed in the third and fourth year courses in psychopathology and psychiatry.

Psychobiology as thus conceived forms clearly and simply the missing chapter of ordinary physiology and pathology, the chapter dealing with functions of the total person and not merely of detachable parts. It is a topic representing a special level of biologic integration, a new level of simple units having in common the fact of blending in consciousness, integrating our organism into simple or complex adaptive and constructive reactions of overt and implicit behavior. I contrast (1) mentally or more or less consciously connected reactions, and (2) nonmental reactions of individual detachable organs which may as well be studied in the test tube and isolated and then certainly give us no evidence of consciousness. With this frank contrast we avoid panpsychism and solipsism and absolute subjectivism and all the other bugbears confusing the medical and lay mind and the would-be scientific psychologists. We keep on the ground of common sense and teach the student to study individuals or persons, in addition to making a study of the special organs, and in this study of individuals we deal definitely with objective facts which we must learn to specify and demonstrate, to account for genetically, to study for their effects and for means of modifying them for better or worse, just as we study the heart functions and not only the murmurs and the lesions, and the kidney function and the carbohydrate regulation or any other objective fact of biology and physiology and pathology. Reduction of the essential facts to terms of an experiment of nature, and study of the modifiability of the experiment is the fundamental law and aim of medical science, and this holds clearly enough for the psychobiologic assets as well as for any other type of reaction.

In harmony with this conception, the concepts of mental and physical must undergo a readjustment, as the concepts of sunrise and sunset had to undergo a reinterpretation. Science deals with a world of things, facts, and relations appearing in several distinct levels or types of integration. Physics deals with one set of aspects of matter and ether; chemistry with another, namely, the laws of behavior of atoms and their affinities and combinations; physiology with a biologic level, that is, those objects and their parts which grow by reproduction and metabolism; and as psychobiology we treat the functions of total organisms which blend in more or less consciousness in a manner constituting a special level of integration which has been especially and most characteristically enriched by the interindividual and social development of language. This level of integration we treat as psychobiology when considered as actual functioning and behavior of living organisms. All that which constitutes psychobiology to the physician is, therefore, also physical as well as mental. We can further recognize an ultrabiologic level of facts when we consider the products of such functioning, as logic and mathematics or theory of relations, or as history and record of the human race, including also the more than biologic realms of fact, philosophy, and religion. In this way we obtain an orderly perspective of the various sciences, but eliminate the contrast between physical and mental.

It is desirable, I think, to make the student feel that he does not have to draw too sharp a line between mentally integrated and nonmentally integrated activities. Many reflexes or instincts or reactions can appear on

the physiologic level or on the psychobiologic level. The difference lies in the mode of hanging together, the setting and the extent and kind of possible interrelations.

On the physiologic level the reactions last as long as the stimulus, are commensurate with the stimulus, and occur as it were according to the laws and requirements of contiguity.

The entering into the psychobiologic level brings in a more extensive scope of potential links and interrelations with the laws of consciousness and of associative relations.

The reaction becomes part of what I describe to the student as a burst or geyser of daily activity, with laws of blending and laws of falling into trends laid down according to the principles which experience with this special level of biologic regulations must furnish us. The student must realize that the mechanisms of the psychobiologic level are not limited to the type of consciousness which we know in waking life and which most psychologists cultivate exclusively. Watson's work shows that there are many problems which can be studied accurately with practical disregard of the "contents of consciousness," as we are apt to call the "implicit" links of action. Many conditions will, however, become intelligible only if we take into consideration the special characteristics of special types of consciousness, such as the dream states, half-dream states, states of distraction, hypnosis, and special affective states, the study of which can do full justice to the fact that some of these special states will prove open to explanation and reproduction or at least facilitation by the introduction of detachable physiologic lifts, chemicals, narcotics or internal secretions, of which we know that they can produce modifications of the hanging together of psychobiologic trends.

To sum up: From time immemorial the physician has been urged to treat not only the diseased organs or the condition, but also the patient. And of late years we have learned to realize that indeed some disorders can be explained, and treated, as abnormal and unhealthy ways of the person rather than as disorders of any one special organ; rather as disorders of the combination and its behavior. Every medical teacher gives some advice on this topic of doing justice to the personality; oftenest, and probably too often, he feels that the talent for dealing with personality must be inborn and cannot be hammered in by any training.

Of late years the difficulties in the total unified adjustment and behavior of our patients have been more and more reduced to intelligible processes: defects of development, intellectual, affective, or conative, improper use of the assets, etc. Instead of mere vague ideas of something requiring special handling, we have today a growing body of facts in the way of habit disorders, harmful substitutions and the like which must be heeded in helping the patient to reach his best ground. How can the student be helped to command these facts most quickly? We teach him physics and chemistry and biology and physiology. Who teaches him the elements of these reactions which we call behavior and mentation? He enters on this field with confused and confusing notions; how is he to straighten them out?

The first condition for productive work in this field of psychobiology as in any other, certainly, is controlled procedure and methods of description and record and experimentation which come up to definite standards. It is clear that psychobiology and psychopathology have principles to offer which go beyond the dilettante realm and form a fairly clean-cut body of methods and helpful procedures: not only safe neurologic methods and safer methods of work with internal secretions as such, but also safer methods of inducing and directing associative and nonassociative processes and associative material serving the best demands of the various types of make-up.

The difference between modern psychology and the older form is that we can no longer be satisfied with mere plausible statements and amplifications of the obvious, but must test and verify objective facts under controlled conditions and controlled modifications.

In my own teaching, I am determined not to put curiosities and the sensational to the forefront. Students whose interest goes toward such sensational things can in time be reached even with this conservative scheme if they have the right stuff in them. On the other hand, stagy psychology can be maintained to advantage by but few teachers and few workers and it fails with the bulk of our clinical method. We must discourage the ever-lurking interest in the occult and semioccult and replace it by solid confidence in reliable methods and by determined interest in matters obviously calling for serious objective study.

This hasty survey might easily gain by further amplification. I trust it may give an idea of the entire practicability of a course of study of objective behavior and mentation useful and essential to every student and physician; likely to give a sane balance and to furnish protection against extreme and one-sided vagaries or equally unnecessary psychophobia, which have so long marred the efforts of physicians in their working with the personality of the patient as well as with the individual organs. Saner views will make us physicians juster and more capable and less likely to drive a lot of sensible but misguided people into obscure mystical cults and ourselves into passing fads and fashions, and empty squabbling before a justly distrustful public, and they also will make unnecessary that new profession of "clinical psychologist" and efficiency psychologist for which a medical training will become obligatory if we physicians show the sense and capacity to furnish the needed psychobiology as a necessary and obligatory part of our training.

101 Edgevale Road, Roland Park.

ABSTRACT OF DISCUSSION

Dr. Thomas J. Orbison, Los Angeles: This matter of parallelism I have not been able to grasp. Consider the phylogeny of the physical part of us and of the mental part of us—I cannot see when they join. Take our nervous system, from the ovum down through the nine months of intrauterine life in which evolution has speeded through so many centuries. We know that in a moment the organism is ready to go from one element to another, and the first breath the infant receives has changed that child so that it can never return one step. I have never been able to determine to my own satisfaction (and I suppose I never shall) how the physical and mental interact; how really intimate these two are, and where they differ. Probably I do not make myself clear, yet I would like to know more about what parallelism really means—how the mental and the physical come together, and is the soul a negligible quantity? If Dr. Adolf Meyer can understand such an ambiguous question as that, I would like to hear more explanation.

Dr. Josephine A. Jackson, Pasadena: I was glad Dr. Meyer brought up the point that personality is not some-

thing we are born with, but something we can have developed in us—something that can be hammered into us. Possession of "personality" connotes a knowledge and understanding of the reactions of the individual as determining his behavior. Each individual, because he is an individual, is different from everyone else; each has to be handled for himself alone. As Dr. Meyer said, treat the patient, not the disease. The individual differs in different periods of his life in his reactions; certain accidents and environments make him different; if we study we can understand and it will help us to handle the patient.

DR. ANDREW L. SKOOG, Kansas City, Mo.: I liked very much the statement Dr. Meyer made regarding common sense. He has gone over the field of preparation of the medical student, before his course of study, in psychology or morbid psychology, and the more or less confusion which exists in his mind. I think when we are teaching students either neurology or psychiatry, we should constantly bear in mind common sense. We are dealing with a complicated subject, perhaps complicated because of the preparation of the student when he appears before us. Therefore, to reiterate, bringing before the student common sense ideas is of the greatest importance.

The subject of objective psychology has been discussed thoroughly. I admire the work of Bechterew which has been done with animals. The study of animals is very interesting, and to these investigations may be added also that of infants and young children.

DR. CECIL E. REYNOLDS, Los Angeles: I would like to mention one point in connection with the question that Dr. Orbison has brought up. If we assume, accepting Dr. Stoddart's views, that disturbance at the synapses is a cause of confusional insanity—that the normal relation of the dendrites of the cortical cells is disturbed—then we can bring into relation the views that Dr. Dercum has expressed on the toxic origin of mental disease with the psychical manifestations we are familiar with; for example, in confusional insanity. In the same way, if you regard the condition of sleep as a normal retraction of the dendrites, it is conceivable that those things that most affect our mind in the waking state will cause persistent interlacing of the dendrites concerned, with the resultant persistence of thought, especially deeply rooted desires, symbolized and distorted in a dream.

DR. ADOLF MEYER, Baltimore: It would be unfair to delay the work of the section by an attempt to answer in full the question of Dr. Orbison, because it would mean to reiterate a great deal of what is contained in the paper. I can best illustrate what I mean by referring to the remark of Dr. Reynolds. He has drawn our attention to Dr. Stoddart's view of confusional insanity, as if he thought all mental disorders should be explained by neurone-retraction. Dr. Stoddart has, by the way, lately come out as the most extreme Freudian in the English language. I would like to ask who on earth ever saw those dendrites wiggle in exhaustion psychoses. How much more important it is to look for what we can see. We want to rehabilitate the study of that which we see in every patient; to study every activity, every function of the individual or personality as a whole for all it can teach us, before we enter on confusing discussions of pure and often improbable hypotheses. I eliminate psychophysical parallelism because it brings more confusion than help. To my mind there does not seem to be any necessity of cultivating confusion over that which does not exist. I think it is greatly to the advantage of our science and our standing before a sensible public if we speak mainly of things which we can demonstrate, rather than to speak about synapses, hypothetical disorders, of which at the present time very few people know anything. The main purpose of the introduction of an objective psychobiology into the range of objective facts of physiology and pathology is to enable us to remain on a ground of common-sense and direct observation of the activities of the individual as a whole—facts which we cannot afford to ignore or to handle without training.

COMPARATIVE RESULTS OF THE WASSERMANN TEST

A CLINICAL STUDY

ALEXANDER A. UHLE, M.D.
AND
WILLIAM H. MACKINNEY, M.D.
PHILADELPHIA

Several months ago we were consulted by a man whose future advancement to an important position was jeopardized because his record contained a diagnosis of syphilis based on a positive Wassermann reaction. He denied ever having had syphilis. A careful study of the history of this patient revealed the fact that while suffering with a sore throat, he consulted two physicians, one of whom diagnosed tonsillitis, and the other suspected syphilis. His blood was examined, found positive, and the condition pronounced syphilitic. He was placed on active treatment, and at the end of one year, four blood tests were made with contradictory findings. During the year preceding our observation, no treatment was taken. His history and a physical examination led us to believe that a diagnosis of syphilis had been made on unwarranted grounds. The patient's blood was submitted to five serologists, all of whom reported a negative reaction. A luetin test was negative. From the data obtained it was very questionable, in our judgment, that this patient ever had syphilis, and this opinion was rendered.

Shortly before this, we were consulted by a serologist who, out of curiosity, had examined his own blood, and to his surprise found it strongly positive. Rather than rely on another test made by himself, he requested us to submit several specimens of his blood to different serologists. His history eliminated a clinical diagnosis of syphilis; all of the tests were returned negative. It was fortunate that both of these patients were able to banish the thought of syphilis from their minds. On the other hand, probably all of us have observed examples of that unfortunate class of syphiliphobiacs who can never be convinced that they have not syphilis, when once told that the Wassermann test is positive.

For several years it has been our practice to have a Wassermann test made on every patient who has syphilis, or one who gives a doubtful history of syphilis. Our experience has taught us that a Wassermann test made by a competent serologist is of great value; especially is this so when two or more serologists agree in their reports. It may be said that the serologist exercises more care in his technic than does the physician in the study of his case. The Wassermann reaction is of only relative value, and should be considered with a careful history and study of the case. Under no circumstances should a diagnosis of syphilis be based on the result of the Wassermann reaction alone. The serologist's report should be positive or negative, and if it is at variance with the clinical expectancy, other specimens of blood should be submitted to several serologists for confirmation. Theoretically a negative Wassermann reaction should be uniformly obtained in a normal person, or one suffering with a disease other than syphilis, whereas a positive reaction should be found in all patients presenting active manifestations of the disease, except in the first few days of the chancre. A negative Wassermann

reaction does not exclude syphilitic infection, since such a test may be obtained in the early stage of chancre, or as a result of very active treatment, or in latent syphilis when the foci of disease are not active to the extent that antibodies may be detected by the test. In early chancre, spirochetes are present in abundance, yet the blood serum is usually found negative. In latent syphilis, a negative Wassermann reaction at times becomes positive after active treatment. In certain cases of nervous syphilis, the serum Wassermann reaction may be negative, and the spinal fluid Wassermann reaction positive. A formerly negative spinal fluid Wassermann test may become positive after an intraspinal injection of salvarsanized serum. Many competent observers have reported positive luetin tests with a negative serum Wassermann test.

Each serologist selects a technic which he regards as the best, and checks his work with known positive and negative controls. Should the Wassermann report vary with the clinical expectancy, especially if the test is repeated with the same result, the serologist is apt to regard his test as of greater importance than the clinical diagnosis. Certain factors, irrespective of the test itself, are regarded by the serologist as responsible for the discrepancy; these factors include the age of the serum, infected serum, nonsterile test tubes, the

TABLE 1.—NORMAL AND NONSYPHILITIC CASES

No. of Tests	Laboratory	Negative	Doubtful	Anti-complementary	Positive				Negative, Per Cent.	Positive, Per Cent.
					+	++	+++	++++		
107	A	93	6	0	5	3	0	0	86.8	7.4
97	B	91	0	2	1	2	1	0	91.7	4.1
64	C	59	0	1	0	3	1	0	92.1	6.2
96	D	71	1	9	10	0	3	2	73.9	15.6
97	E-1	88	1	0	0	3	2	3	90.7	8.2
87	E-2	79	1	0	0	3	2	2	90.8	8.9
33	F-1	32	0	0	1	0	0	0	96.9	3.1
11	F-2	8	1	0	1	1	0	0	72.1	18.1
32	F-3	30	1	0	1	0	0	0	93.7	3.1
38	G	36	1	0	1	0	0	0	94.7	2.6

character of the glass of the test tubes, changes in the blood the result of faulty metabolism, influence of alcohol, etc.

It frequently happens that there are conflicting reports submitted by several serologists, or that two or more reports from the same serologist do not agree. It can be readily understood, especially in such a complex test as is the Wassermann, why these discrepancies should exist in reports from different laboratories; but we cannot understand conflicting reports from the same serologist on specimens from the same individual withdrawn at the same time under identical conditions.

After we had discussed these discrepancies in the Wassermann reports with several serologists, it was decided that a series of blood specimens taken under identical conditions from approximately three hundred patients be submitted for examination, to ascertain to what extent the above-mentioned factors influence the Wassermann test. In the beginning of this study the tests were made by four serologists, and later three others cooperated, making seven in all. These serologists are all representative men connected with teaching institutions and hospitals. They have been designated in these reports as laboratories A, B, C, D, E-1, E-2, F-1, F-2, F-3 and G. All, with the exception of E and F, submitted one report; E submitted two reports with different antigens, F three reports with three different antigens, and G a majority report using three different antigens.

The blood was collected (*a*) from normal individuals who denied syphilis; (*b*) from patients in private and hospital practice who suffered with diseases other than syphilis, and (*c*) from syphilitics in practically every stage of the disease. With a few exceptions, all syphilitic patients had been under our care for some time, and several Wassermann tests on them had been reported before this study was undertaken.

This report is based on an analysis of 325 specimens of blood collected from 292 individuals, and submitted to at least four serologists. On thirty-three patients, two or more series of tests were made. Of the 292 individual cases, twenty-five were normal, seventy were suffering from diseases other than syphilis, and

TABLE 2.—COMPARISON OF TESTS BY DIFFERENT LABORATORIES

No. of Tests	Laboratory	Negative	Doubtful	Anti-complementary	Positive				Positive, Per Cent.
					+	++	+++	++++	
PRIMARY SYPHILIS CASES									
4	A	0	0	0	0	0	0	4	100
4	B	0	0	0	1	0	0	3	100
3	C	1	0	0	0	1	0	1	66.6
4	D	0	0	0	1	0	0	3	100
4	E-1	0	0	0	0	2	0	2	100
3	E-2	0	0	0	0	2	0	1	100
1	F-1	0	0	0	0	0	0	1	100
1	F-2	0	0	0	0	0	0	1	100
1	F-3	0	0	0	0	0	0	1	100
2	G	1	0	0	0	1	0	0	50
SECONDARY SYPHILIS CASES									
18	A	1	0	0	0	0	1	16	94.4
17	B	0	0	2	0	0	1	14	88.2
14	C	0	0	0	0	4	1	9	100
17	D	2	0	0	0	0	2	13	88.2
16	E-1	0	0	0	0	0	0	16	100
16	E-2	0	0	0	0	1	1	14	100
7	F-1	1	1	0	2	0	0	3	71.4
5	F-2	0	0	0	0	0	0	5	100
6	F-3	0	0	0	0	1	0	5	100
10	G	4	1	0	1	1	1	2	50
TERTIARY SYPHILIS CASES									
16	A	3	0	0	2	0	0	11	81.2
12	B	0	0	0	1	1	1	9	100
8	C	1	0	0	1	0	0	6	87.5
10	D	2	0	2	1	1	0	4	60
15	E-1	1	0	0	1	0	0	13	93.3
13	E-2	1	0	0	4	0	0	8	92.3
2	F-1	1	0	0	0	0	1	0	50
2	F-2	0	0	0	1	0	0	1	100
2	F-3	1	0	0	0	0	0	1	50
2	G	1	0	0	0	1	0	0	50

197 were syphilitics in various stages of the disease. The reports from the different laboratories were collected in groups under headings of normal persons, nonsyphilitic diseases, and primary, secondary, tertiary, eye, nervous, congenital and latent syphilis. A glance at the reports in table form is very interesting and extremely instructive, but space does not permit of their publication. We can only summarize the results of the study and state how far the various factors enumerated above may account for discrepancies in the Wassermann report. Approximately half of all the specimens submitted were collected in sterile test tubes, the remainder in nonsterile tubes; the sterile tubes were thoroughly cleansed in normal saline solution, plugged with cotton and sterilized in an autoclave; the nonsterile tubes were used as obtained from the dealers. In every case the blood was withdrawn through a sterile dry needle inserted into a vein in the forearm, and collected in test tubes of 5-c.c. capacity. The date of collecting the specimen

and the date on which the test was performed by each serologist were recorded with the object of determining how far the age of the serum affected the test. The condition of the stomach, whether full or empty, was also noted; the process of digestion was considered to be finished three hours after eating. In many instances, the blood was taken many hours after eating and after thorough purgation. In syphilitic cases, a clinical expectancy of positive, negative or doubtful was determined before the specimen was submitted, and of which the serologist was not cognizant until the completion of the study; this clinical expectancy was based on our personal knowledge of the case, the type and activity of treatment and the results of previous Wassermann tests. In every instance in which two

TABLE 3.—COMPARISON OF 168 TESTS REPORTED BY LABORATORIES A, B, C, D, E-1 and E-2

No. of Tests	Laboratory	Negative	Doubtful	Anticomplementary	Positive				Positive, Per Cent.
					+	++	+++	++++	
168	A	98	13	0	8	7	2	40	33
168	B	113	0	7	9	5	5	29	28
168	C	124	2	1	3	20	4	14	24
168	D	79	0	2	23	13	15	36	51
168	E-1	96	3	0	7	14	7	41	41
168	E-2	94	3	0	0	16	10	45	42

or more specimens from the same individual were sent at the same time or subsequently, different names were used.

In a series of twenty-nine cases, eight nonsyphilitic and twenty-one syphilitic, the blood in each instance was collected in fourteen sterile test tubes, seven of which were at once infected with virulent cultures of *Bacillus typhosus*, *Staphylococcus pyogenes aureus* or streptococcus, and an infected and noninfected specimen sent under different names to each serologist. In another series of thirteen cases with nervous diseases of suspected syphilitic origin, the blood serum Wassermann was comparatively controlled with the spinal fluid Wassermann. Of 197 syphilitic cases, eighty-eight were latent; in this group we include patients we know to be syphilitic, but who at the time of this study showed no clinical signs of the disease, irrespective of the duration.

On twenty-five normal persons there were twenty-seven series of tests, with no less than five reports in each series. All the serologists agree in a negative report in twenty-one series of tests and disagree in six. In each instance of disagreement, a positive report was not submitted by more than one laboratory. In two cases in which the tests were repeated, one serologist reported in one case, first a positive, then a negative, while another reported in the second case a negative at the first examination and then a positive.

Seventy-four series of tests were made on seventy patients, all of whom denied syphilis and presented no clinical evidences of syphilis, but suffered with some other disease. Of these seventy patients, there were four on whom the reports varied considerably, two or more positive reports being submitted by different serologists in each case. The blood of one of these patients was examined four times. This case is very interesting. On the first examination there were four positive and no negative reports; twelve days later three positives and two negatives; the following day five positives and one negative, and six weeks from the first examination, two positives and four negatives. On account of the great number of positive reports, this patient was repeatedly questioned regarding a possible syphilitic infection. He flatly denied any such infection, nor had he taken treatment for syphilis. The luetin test was negative. Analyzing the reports on this patient, we find but one laboratory, E, consistently positive; laboratory A reports one positive and three negatives; B, two positives and one negative; C, two positives and one negative, and D, first positive, then negative, again positive and finally negative. If this patient is to be considered syphilitic it must be solely on Wassermann tests, which, to say the least, are decidedly inconsistent. The second patient whose blood examination was repeated had four negatives and one positive at the first examination and six negatives and two positives at the second; positive tests were not obtained by the same laboratory twice. In the third case there were four positives and two negatives; the luetin test was negative. In the fourth case, six laboratories reported positive, two negative, one doubtful and one anticomplementary. This patient was referred by a neurologist with a diagnosis of brain tumor; the spinal fluid was examined with nine negative results and one positive. Of the remaining sixty-six patients whose blood was examined only once, all serologists agree in a negative report in fifty-six, and in ten cases one laboratory disagrees with the others in presenting a positive report.

Forty series of tests were made on thirty-six patients with primary, secondary or tertiary syphilis. All agree in a positive reaction in twenty-five; in fifteen they disagree. With one exception there was only one negative reported in each of the examinations in which the tests disagreed; this exception was noted in a patient with a tuberculous syphilid of the leg which subsequently responded to antisyphilitic treatment. In this case the laboratory reports showed seven negatives and three positives. Of the remaining fourteen tests in which one report differed with the others, the tests were repeated in four; in each case the second test showed a positive report by the laboratory which first reported a negative.

TABLE 4.—PERCENTAGE RESULTS OF FIFTY-SIX CASES BY ALL LABORATORIES COMPARED TO CLINICAL EXPECTANCY

Positive Expectancy		Negative Expectancy		Doubtful Expectancy	
Laboratory	Positive, Per Cent.	Laboratory	Positive, Per Cent.	Laboratory	Positive, Per Cent.
A	44.8	A	0	A	11.1
B	27.5	B	0	B	0
C	31	C	0	C	11.1
D	75.8	D	33.3	D	66.6
E-1	55.1	E-1	5.5	E-1	44.4
E-2	55.1	E-2	5.5	E-2	44.4
F-1	37.9	F-1	11.1	F-1	11.1
F-2	68.9	F-2	27.7	F-2	77.7
F-3	44.8	F-3	5.5	F-3	22.2
G	27.5	G	0	G	11.1

In eye and nervous syphilis, the Wassermann reactions varied considerably. In forty-one series of tests made on patients with various syphilitic eye or nervous lesions, there were twenty-eight disagreements.

One hundred and eight examinations were made on eighty-eight patients who to our knowledge had syphilis, but who at the time of the examination presented no clinical lesions. Many had been under constant treatment for various periods of time, and others had received recent active treatment. Repeated examinations were made on sixteen, thirteen of whom had two examinations, two had three examinations, and

one had four. The reports from the laboratories were so inconsistent and the reports from the same laboratory varied so extremely in cases of repeated examinations that an analysis is practically impossible.

Table 1 presents the results of all the tests made by the serologists on normal persons and nonsyphilitic patients, together with the number of tests performed by each. Analysis shows that a positive Wassermann test was obtained in from 2.6 to 18.1 per cent.

Table 2 presents the serologic findings in primary, secondary and tertiary syphilis; the percentage of positive tests in active syphilis varies from 50 to 100 per cent.

Table 3 summarizes the comparative results obtained in 168 series of tests, made by each of five serologists. An analysis shows that all the laboratories agree in their findings in 47 per cent. They vary in one result in 20 per cent., in two results in 12 per cent., and in more than two in 21 per cent. In other words, if a specimen of blood from the same individual be submitted to five serologists, there is one chance in two that the reports will agree.

In fifty-six cases, ten reports were received in each case from seven serologists. They have been classified according to a positive, negative or doubtful clinical expectancy, in each case. It will be observed that the laboratories reporting the greatest number of positive reactions, in cases in which a positive reaction was expected, also reported the greatest number of positive reactions when the clinical expectancy was negative or doubtful.

Analyzing the reports, we find that all the laboratories agreed in 21 per cent., they disagreed materially in 19 per cent., and varied in from one to four of the ten results in 60 per cent. Of the latter, 20 per cent. varied in one test, 20 per cent. in two tests, 12 per cent. in three tests, and 8 per cent. in four tests. In other words, if a specimen of blood from the same individual be submitted to ten tests by different serologists, there is one chance in five that the tests will agree.

Space does not permit of detailing the technic of each serologist; however, four used only specific antigen, one submitted two reports in each case using two different cholesterinized antigens, another submitted three reports, using two cholesterinized and one specific antigen. Comparing the positive reports submitted by each laboratory with the total positive results in all cases, they vary from 9.1 per cent. to 58.5 per cent. With two exceptions, the lowest percentages of positive reactions were obtained by the laboratories using specific antigen, and at the same time they agree more consistently with the clinical expectancy.

After carefully considering the results of the Wassermann test, the clinician cannot help but be disappointed in its accuracy. When we consider that various representative serologists report positive findings in from 2 to 18 per cent. of normal individuals, and that in active syphilis, in which the clinical diagnosis is certain, some serologists report only 50 per cent. of positive results, there is every reason to discredit the diagnostic value of the test. In suspected latent syphilis and in syphilis under active treatment, the most extreme variations occur, and in these conditions, in which the clinician needs its help the most, it is the least accurate. Notwithstanding the numerous discrepancies in the Wassermann reports, our experience with this test over a period of several years has convinced us that it is of great value and should be regarded only as a link in the chain of evidence for or against the disease.

From the experiments undertaken, we have proved to our own satisfaction, and to the satisfaction of the serologists associated in this work, that it makes no difference whether the blood is collected in a sterile or nonsterile test tube; whether infected with the above-mentioned pathogenic organisms or not infected; whether the specimen is one or several days old, or whether the blood is collected when the stomach is full or empty. In a few instances marked acidosis was present, but it did not influence the test from the standpoint of clinical expectancy. We are firmly convinced that the antigen used by the serologists is not wholly responsible for the discrepancies in the Wassermann report, and there is every reason to believe that a cholesterinized antigen will give a higher percentage of positive reports than a specific antigen. Leaving aside the element of personal equation, serologists cannot obtain uniform results unless a standardized antigen is employed and a uniform technic agreed on.

1701 Chestnut Street.

DELUSIONS OF PERSECUTION AS A BIOLOGIC DEFENSE REACTION*

CHARLES LEWIS ALLEN, M.D.
LOS ANGELES

The life of the individual is a constant struggle, and is made up of a series of reactions having as their end the opposing of influences which tend to limit this life, or at least to prevent its development along the most favorable lines. Psychologists have come to believe that these reactions, which in their sum go to make up human conduct, are determined, in the main, by inherited tendencies which have been evolved in the struggle for existence of a long line of ancestors dating from the lowest forms. These tendencies have been developed in order to carry out the three great ends of organized beings; namely, defense from danger, procuring of food, and reproduction. The mechanisms to accomplish the first of these ends, requiring the most prompt and active reaction — protective mechanisms — were earliest and most firmly established.

These protective mechanisms vary immensely, from the methods of concealment of the lower forms of animals, through the armor of the turtle and armadillo, the venom of the serpent, the offensive odor of the skunk, the fleetness of the hare and the antelope, the teeth, the claws, and the strength of the tiger, to the capacity of man through his superior knowledge and reasoning power to invent weapons which more than compensate his lack of speed and strength.

Not the least of these human defense mechanisms, however, is developed in the ability of man to analyze the conduct of his fellows and to provide against any manifestations of hostility on their part. This ability varies immensely in different individuals, depending on their mental makeup, education and environment, state of health, good or ill fortune, etc., and in accordance with the laws of adaptation it tends to be sharpened by adversity and dulled by ease and comfort.

---

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Also, for the development of the critical faculty, we are largely dependent on the harmonious working of the somatic and the psychic functions. The deformed or sickly individual is only too apt to be exaggeratedly sensitive and, expecting slights and opposition, to react excessively to trivial causes, and a similar attitude is even more frequently dependent on defective mental makeup. From the other side, an actually unfriendly attitude sharpens the critical faculty, and, in a person of morose and suspicious temperament, the reaction may assume a pathologic intensity. These instinctive defensive reactions, being earliest and most strongly developed, are apt to persist longest, and, in mental disorganization unchecked by normal inhibition, may be set off by stimuli ordinarily inadequate.

Our study of the somatic symptoms having failed to enlighten us greatly with regard to the phenomena observed in insanity, the tendency of late has been to return to the mental symptoms and to investigate them in the light of the reaction of the individual to influences from within and from without. To have pointed out this way is not the least service of the psychoanalytic school.

Certainly, among the most striking of all the symptoms of mental alienation is the development of delusional ideas. Among these ideas, those of persecution are especially frequent, and while they are particularly characteristic of paranoia, they are present, at times, in practically all forms of insanity.

Different as may be the modes of life of different peoples, ideas of persecution present, the world over, certain general similarities which alone would seem to indicate that they have some common basis.

In common with other delusions, they center about the personality, the ego, of the subject, and have, as their content, the notion that influences inimical to him are at work, to the prejudice of his person, his rights or his honor, or are endeavoring to injure him through those dear to him. The means supposedly employed to this end have varied greatly with the state of culture and environment, the sorcerer and the demon having today largely given place to the forces of nature as utilized in electric apparatus, wireless telegraphy, the dictograph, etc., though the rôle of poison is still as important as ever.

The mechanism of delusion formation has been much disputed, but all authorities are agreed on the importance, in the genesis of delusions, of fallacious perceptions, and particularly of the affective state of the subject. Into the causation of hallucinations we cannot enter here. It is, however, common experience that actual perceptions are greatly modified by the emotional condition of the individual at the time and may be wrongly interpreted if this state varies greatly from the normal. Conceptions arising on a basis of actual, though falsely interpreted, perceptions are themselves falsified and are readily connected into a delusional system. Since delusions are not the product of previous experience, they cannot be corrected by reference to it, but they are doubtless modified by the strong hereditary tendencies already alluded to. For their development and formation, a total alteration of consciousness is necessary, so delusion formation indicates a "general disturbance of the total psychic condition . . . Delusions are aroused by the variation of the affective condition which translates slumbering hopes and fears into conceptions. That these conceptions become delusions is due to the failure of judgment, this in some cases, through pathological emotional excitement, in others through clouding of consciousness, in still others through a weakness of the understanding." (Kraepelin). Now all of our reactions are originally determined by sensations arising from within and from without.

Crile has developed this idea in his recent works on "Anoci-Association" and "The Emotions." He asserts that trauma to the chest and abdomen stands first in the production of shock, and suggests that this is because these regions are the most abundantly supplied with "nociceptors," probably since they were originally the special points of attack of beasts of prey; hence stimulation here calls forth the most energetic neuromuscular defense reaction, and results in the greatest nervous exhaustion, which is translated as shock. This reactive tendency, transmitted through countless ancestors, has become so fixed that it persists today though the necessity for it no longer exists.

For Crile, the emotion of fear is the "representation of injury" and calls forth the same defensive mechanisms of muscular tension, increased adrenal and thyroid secretion, etc. These may be excited not only by actual physical contact, but also through the distant receptors, as by sight, hearing and smell.

Darwin long ago called attention to the fact that men through countless generations have attempted to escape from their enemies by fight, or by flight, and that the great exertions necessary in either case have, as their final result, palpitation of the heart, sweating, pallor, trembling and the prostration of complete exhaustion, phenomena identical with those of fear, and suggested that when fear is strongly felt, though there is no exertion, the same results tend to appear, through the influence of inheritance and association.

Cannon has shown that emotional states, such as fear, are accompanied by greatly increased adrenal secretion, which has the function of raising the blood pressure and energizing the muscles, while Crile's examination of the brain cells in animals subjected to fear alone, without trauma, has disclosed changes similar to those found after exhaustion and trauma. According to the last-named author, an animal "driven strongly by emotion" shows (1) mobilization of the energy-giving compound in the brain cells; (2) increase of epinephrin, thyroid secretion and glycogen, increased power of oxidation in the muscles; (3) accelerated circulation and respiration and raised temperature; (4) altered metabolism. All these to increase the motor efficiency while other organs not contributing to this end have their function inhibited.

Phylogenetic influences are so strong that though an enemy is not attacked physically, these weapons are nevertheless made ready. The emotion of fear cannot but suggest the idea of danger.

In the majority of cases of insanity, the earliest symptoms are unrest, sleeplessness and often disturbing dreams. The patient may be aware of a certain alteration in his consciousness of self and often enough we hear the complaint that "things look strange," and "everything is changed." We have all experienced the feeling of apprehension and unrest which seems dependent on sensations apparently rising up from the abdominal cavity, and the emotions so aroused are certainly akin to fear. Now, fear, being the emotional condition associated with the perception of danger, would naturally give rise to defense reactions, and if the cause for fear is unclear, no enemy being in sight, this defense reaction will not proceed to the actual physical preparations for combat, but only to the awak-

ening of conceptions of danger which, on account of disordered judgment-forming capacity, take definite form as ideas of persecution.

It may be objected that in paranoia, the form of insanity characterized *par excellence* by delusions of persecution, the genesis of these delusions is slow and gradual, and can hardly be connected with an emotional state. Also, fallacious perceptions, though frequently present, are usually developed later than the delusions. Now, the paranoiac possesses an originally defective mental constitution, in some ways resembling uncivilized man in his egotism and lack of altruism. He is naturally distrustful and suspicious, and, while his reasoning power may be good, he misinterprets ordinary happenings in the sense of his exaggerated ego and is ever ready to see opposition, if not danger, and to react to these misinterpretations, much as the savage does to the unfamiliar, by a defense reaction, that is, by ideas of persecution. Again, according to the views of Specht, paranoia has in its evolution the closest relations with manic depressive insanity, the ideas of grandeur developing in connection with the exaltation and increased feeling of self of the manic phase, those of persecution being similarly connected with the affective tone of the depressed phase.

Such are the considerations which suggest to me that delusions of persecutions should be looked on as a species of defense reaction traceable to the inherited instinct of self-protection.

From the work of Cannon and others it would appear that the internal secretions, especially those of the adrenal, the thyroid gland and the liver, play a part in the preparation for defense and are increased in strong emotions, notably in that of fear. May it not be possible that we have in this fact some explanation of the circumstances that delusional conditions, especially delusions of persecution, are so frequent at the times of presumably greatest change in the function of the ductless glands, namely, about puberty and the climacteric?

Possibly the further study of the functions of these glands, so much in the minds of the medical profession today, may throw a more definite light on this subject.

The Cancer Death Rate in New England.—The *Public Health Bulletin* of the Massachusetts Department of Health (May-June, 1915, p. 127) observes that the New England states generally have a higher death rate from cancer than any other group of states. The census reports for 1913 showed a cancer death rate of 78.9 per hundred thousand for the entire registration area of the United States. Each of the New England states has a cancer death rate higher than this. The rate of Connecticut (85.1) is the lowest; Vermont's, which is the highest, is 111.7. The rates of the other New England states are, respectively, Maine, 107.5; New Hampshire, 104.4; Massachusetts, 101.4, and Rhode Island, 93.3. Compared with Kentucky's cancer death rate of 48, these figures seem high indeed. They indicate that 6,817 persons died of cancer in New England during 1913. The *Bulletin* remarks that these figures do not necessarily signify that the people of New England are more susceptible to cancer than those of other regions. The proportion of inhabitants over 40, or at the cancer age, is greater in the northeastern extremity of the United States than in other parts of the country; and to this facts the Census Bureau attributes the relatively high cancer death rate in the New England States. In New England as elsewhere, however, the cancer death rate is higher than it should be; and the publication of these figures from the Census Bureau has stimulated an active educational campaign against the disease.

SOME FACTS CONCERNING THE BLIND

FRANK ALLPORT, M.D.
CHICAGO

Some facts concerning the blind population have been gleaned from the 1910 census of the United States, and have been thought sufficiently interesting to present in greatly condensed shape. Much has, of course, been omitted.

The total blind population of the United States is 57,272. Of these, 32,443 are males, and 24,829 are females. The male majority is doubtless largely due to the extra liability of males to accidents, owing to their occupations, etc. There are 62 blind persons in every hundred thousand of the population of the United States. There are 2,390,000 blind persons in the world. Egypt has more blind persons proportionately than any country in the world, having 1,325 to every hundred thousand of population.

The twelve countries having the least blindness are as follows: Belgium (before the war) had 43 blind persons to every hundred thousand of the population; Canada, 44; Netherlands, 46; Saxony, 47; New Zealand, 47; Western Australia, 50; Hong Kong, 51; Prussia, 52; Denmark, 52; Germany, 60; New South Wales, 60, and the United States, 62.

In the United States, the twelve states having the least blindness are as follows: North Dakota, 28 blind persons to every hundred thousand of the population; Wyoming 32; Washington, 38; Nebraska, 38; Minnesota, 42; Oregon, 44; New Jersey, 44; Montana, 44; South Dakota, 45; Colorado, 47; Idaho, 48, and Connecticut, 49.

The six states having the most blindness are as follows: New Mexico, 169 blind persons in every hundred thousand of the population; Nevada, 118; Arizona, 95; Kentucky, 94; Tennessee, 89, and Virginia, 80.

The excessive blindness in these states is probably due to the prevalence of smallpox in New Mexico, Nevada and Arizona, and the ravages of trachoma in Kentucky, Tennessee and Virginia. Mining accidents in the first three states also have much to do with the number of blind persons.

About half of the blind population are over 60 years of age. This is probably due to the fact that cataract, glaucoma, etc., are largely diseases of old age. It is quite likely that these figures are not entirely correct, as it has been found difficult to collect reliable data concerning the blindness of babies, as ophthalmia neonatorum is usually considered a disgraceful disease, and parents frequently endeavor to conceal its existence.

The six foreign countries producing the most blind United States residents are as follows: Ireland, 169 blind persons to every hundred thousand of the United States population; Canada, 168; Netherlands (including Belgium and Luxemberg), 158; Mexico, 148; England and Wales, 116, and Germany, 106.

These figures are probably due to the large number of immigrants from these countries, the large number of old persons, the ignorance of the Irish and the Mexicans, the insanitary life, medical ignorance, carelessness and superstitions of the two latter countries, and the hazardous mining occupations of the Mexicans.

The six foreign countries producing the least number of blind United States residents are as follows: Hungary, 14 blind persons to every hundred thousand

of the United States population; Italy, 19; Russia, 22; Austria, 26; Finland, 27, and Belgium, 46.

Of the male blind population, about 32 per cent. are single and about 67 per cent. are married, widowed or divorced. Of the female blind population, about 29 per cent. are single, and about 70 per cent. are married, widowed or divorced.

Of the male blind in the United States, 25 per cent. are gainfully employed, while only 5 per cent. of the females are gainfully employed. The gainfully employed are mostly native-born white persons, the foreign-born doing less to gain a living, and the negroes still less.

The six occupations chiefly chosen by male blind persons are as follows: farmers, 1,768 persons; broom makers, 665; musicians, 646; hucksters and pedlers, 401; piano tuners, 349, and chair caners, 242.

The six occupations least chosen by male blind persons are as follows: fancy workers, 6 persons; nurses, 7; saloons, 12; printing, etc., 13; hammock and net makers, 18, and organ grinders, 17.

The six occupations chiefly chosen by female blind persons are as follows: musicians, 167 persons; farmers, 127; servants, 120; laundresses, 109; knitters, 102, and fancy workers, 86.

The six occupations least chosen by female blind persons are as follows: insurance and real estate, 1 person; retail merchants, 1; newspaper carriers, 1; organ grinders, 1; news dealers, 2, and professional entertainers, 3.

7 West Madison Street.

INTRATRACHEAL ETHER ANESTHESIA IN THE SURGERY OF THE BRAIN AND SPINAL CORD*

CHARLES H. WATT, M.D.
BALTIMORE

Intratracheal insufflation anesthesia has advantages over the older forms of administration, especially in the surgery of the brain and spinal cord.

Since the introduction in 1909 of this method,[1] intratracheal insufflation anesthesia has been employed successfully in the Johns Hopkins and many other clinics in all types of cases; but as its general use is unnecessary, it has been employed in this hospital chiefly in operations about the head and neck, and in the thorax and spinal canal. Its advantages over other methods in operations on the brain and spinal cord have been so striking that I feel it will not be amiss to call attention to some of them, in the hope that the method may receive a more careful consideration.

The distinguishing features of this method, as pointed out by Meltzer,[2] are as follows:

1. "By bringing the pure air directly to the larger bronchi, and by driving out the vitiated air from the bronchi through the force of the returning air stream, that part of the 'dead space' is eliminated which is represented by the mouth, pharynx, larynx and trachea."

2. "The practically continuous recurrent air stream prevents the invasion of indifferent or infectious foreign matter from the pharynx into the trachea."

Other advantages which it possesses over the various ordinary methods of ether administration will be mentioned below.

In perhaps no domain of surgery is a quiet, uniform anesthesia of such importance as in that of the brain and spinal cord; and for this reason a specially trained anesthetist is regarded as essential by many operators. Undoubtedly anesthesia in cases of brain tumor is more difficult than in the average surgical case; and this is due to the fact that in the presence of increased intracranial pressure the respiratory center is at a disadvantage, and consequently labored respiration and cyanosis are likely to be present. Such cyanosis, aside from its danger as a respiratory hindrant, may add enormously to the difficulties of a cranial operation, for there is a great increase in the venous bleeding from the scalp and the bone, an engorgement of the cortical vessels, and an increase in intracranial tension so great that the opening of the dura may be a dangerous procedure. Especially, perhaps, in the cerebellar operations is the matter of cyanosis important; for with tumors in the posterior fossa compressing the medulla, cyanosis of slight degree may be sufficient to cause respiratory paralysis. It was not an uncommon experience with the drop ether method of anesthesia to have a patient on the operating table suddenly cease to breathe; and the giving of artificial respiration under such conditions was often awkward and wearisome. Coughing, straining and vomiting also add to the difficulties of a cranial operation. One need only to have seen, during a coughing spell, the engorgement of the cortical vessels, the rapid herniation of the cortex through a dural opening, sometimes with rupture of the pial vessels, to comprehend the seriousness of such an occurrence.

Of the embarrassment incident to obstructed respiration and cyanosis, to coughing and straining during operation, the anesthetist has been relieved almost completely by the use of intratracheal ether anesthesia. The presence of a tube in the trachea prevents obstruction to respiration by the soft parts of the mouth and pharynx, and relieves the anesthetist of the burden of holding the jaw and shifting the head in order to give free entrance of air. This method allows a smooth, even depth of anesthesia to be maintained by a constant measured amount of ether vapor; thus cyanosis, straining and coughing may be avoided.

Very striking are the records of the pulse charts. For an operation of three or more hours' duration, the pulse line may be almost straight. Any deviation from the straight line, therefore, is significant and demands interpretation. The effect on the pulse rate of a sudden, sharp hemorrhage, for example, would be more strikingly registered. One has, however, a prompt and efficient method of artificial respiration should respiratory paralysis occur.

There are minor advantages to be mentioned. The Auer-Meltzer method permits ready manipulation of the head. The anesthetist may be entirely isolated from the operative field, and, relieved of the care of maintaining easy respiration, devote himself, undistracted, to the general condition of the patient.

Up to December, 1914, the insufflation method has been employed in this clinic thirty-five times in operations on the brain and spinal cord. I have studied the records of these cases with especial reference to the anesthesia, noting particularly the effect on the pulse,

* From the Department of Surgery, Johns Hopkins University.

1. Meltzer and Auer: Continuous Respiration Without Respiratory Movements, Jour. Exper. Med., 1909, xi, 622.

2. Meltzer, S. J.: Intratracheal Insufflation, THE JOURNAL A. M. A., Aug. 12, 1911, p. 521.

the duration of the anesthetic period, the presence and effect of cyanosis and hemorrhage, the time required to regain consciousness, and the postoperative complications, and have made comparisons with an equal number of unselected neurologic cases in which ether was administered by the drop method. In the series are included simple decompressions, osteoplastic resections, removals of the gasserian ganglion, cerebellar explorations, and operations on the spinal cord.

Pulse.—On Chart 1 is recorded the average pulse at beginning and end of the anesthesia, and its maximum rate in the course of the seventy operations—thirty-five by each of the two specified methods.

The difference in the effect on the pulse rate is quite marked. With intratracheal anesthesia the average increase was twenty-seven beats; with drop ether the average increase was forty-seven.

Time Consumed.—The average duration of the intratracheal anesthesia was two hours and thirty-four minutes; of the drop ether, two hours and twelve minutes. In one of the Auer-Meltzer anesthesias the period of administration was more than five hours. The operation, a severe and difficult one, was for the removal of an angioma from the spinal cord. During the entire five-hour period the pulse at no time exceeded 120 beats per minute; the average rate was 112. The anesthesia was uniform, and the patient's condition excellent throughout.

Cyanosis.—In these thirty-five cases there was cyanosis in none, while in four of the drop ether cases the cyanosis was so great as to cause considerable apprehension; and in two of the latter the operation was abandoned on account of hemorrhage and deep cyanosis.

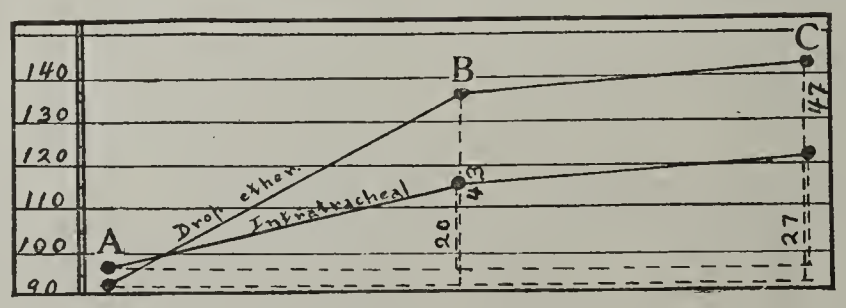


Chart 1.—Total cases: *A*, anesthesia begun; *B*, end of operation; *C*, maximum pulse rate.

Recently, however, in a case with anesthesia by the intratracheal method, cyanosis persisted throughout the operation. This patient died a few hours after operation, and at necropsy an enlarged thymus was found to be pressing on the innominate vein.

Hemorrhage.—In one case in which the intratracheal method was used, the operation had to be abandoned on two occasions because of profuse hemorrhage. The bleeding was attributed to a spongy and highly vascular condition of the bone; there was no cyanosis. No other case of hemorrhage occurs in this series.

Of the drop ether cases it is noted in six that there was "terrific hemorrhage"; four of the six were deeply cyanotic. In each case the pulse reached 180, and in two of the six became, for a time, imperceptible.

Time Required to Regain Consciousness.—While the records do not indicate the exact time at which the patients were believed to have regained complete consciousness, it has been noted repeatedly that the postoperative stupor passes off more rapidly after intratracheal than after drop ether anesthesia. This is what might be expected. The even flow of a definite, accurately controlled and constantly maintained percentage of ether vapor into the alveoli of the lungs enables the anesthetist to keep the patient just at or at any desired point beyond the borderline between consciousness and unconsciousness. The inconstant percentage of ether inhaled by the drop method does not admit of such precision, and consequently the anesthesia must be more profound. A patient anesthetized by the intratracheal method may have, therefore, less of the drug to eliminate. Again, if after the ether is stopped the tube be left for a while in the trachea and pure air driven through it, the elimination of the ether will be hastened.

Postoperative Complications.—That the presence of a soft tube in the trachea rarely does harm seems to have been proved. Meltzer[2] has shown that the presence of such a tube carrying a current of air into the lungs diminishes the liability to pneumonia by producing a return current of air sufficiently strong to prevent the invasion of foreign or infectious material. The number of our cases is too small to justify any inferences in regard to this point, except to note that no case of pneumonia occurred in this series.

So far as postoperative nausea and vomiting are concerned, neither method seems to have the advantage. Not in a single case has there been the slightest evidence of injury to the vocal cords, but in a few cases there was apparently a mild tracheitis; this was not sufficiently severe to cause the patients to complain, and was detected only by suggestive questioning.

In two cases there was bleeding from the pharynx, undoubtedly caused by the pharyngoscope. In one of these the patient vomited blood-stained material for a few hours after operation. This complication might be avoided by more careful manipulation of the instrument.

In the cerebellar cases the advantages of the intratracheal method are particularly striking.

In six cerebellar cases the anesthesia was given by the intratracheal, in eight by the drop method.

Chart No. 2 graphically shows the difference in the average pulse rates. With the intratracheal method the average increase in pulse rate at the end of the operation was 13; the average maximum increase was 17. By the drop method the average increase in pulse rate for approximately equal periods was 67, and the average maximum, 69. We have found the insufflation method almost equally superior in operations on the spinal cord, especially in the high thoracic and cervical regions.

Hey Groves,[3] in a recent article, says:

> The writer knows of no surgical operation in which the use of the intratracheal apparatus gives greater satisfaction than in that of laminectomy. Instead of having an anxious, troubled time in which the breathing is often embarrassed and the patient all the time fighting for life, as is the case in ordinary anesthesia given in the prone position, the intratracheal method gives a perfectly quiet and easy anesthesia under absolute control, the patient is never cyanosed, and he suffers very little shock.

There is only one case in this series in which we have had the opportunity of comparing the two methods in the same individual, and the difference is

3. Groves, Hey: Rhizotomy, Brit. Jour. Surg., 1914, ii, 246.

so striking that it seems worth while to report it in some detail.

This patient, R. C., was operated on five times between Nov. 22, 1906, and March 26, 1907. (Case reported by Drs. Harvey Cushing and H. M. Thomas[4]). Dr. Cushing's own words in regard to the anesthesia may be quoted: "Although, as is usual in these cases, the services of an expert professional anesthetist were secured, the patient took the anesthetic (ether) execrably, breathing badly throughout its administration. The resultant cyanosis was so great that in spite of the tourniquet there was considerable venous oozing, not only from the scalp, but from the diploe as well." Owing to the loss of blood and resultant fall in blood pressure, the opening of the dura was deferred.

No anesthetic was necessary for the second operation.

With regard to the third operation, Dr. Cushing notes: "Chloroform was employed, but the drug was taken just as badly as ether had been on the previous occasion. The tourniquet was again applied . . . much difficulty was again experienced in checking the dural bleeding."

Chloroform was again used for the fourth operation. "The patient again took the anesthetic in the worst possible fashion. There was extreme cyanosis and, as at the first operation, a great deal of bleeding was encountered near the median line." The operation was again postponed because of a marked fall in blood pressure and increase in subdural tension. The fifth operation, at which three subcortical cysts were removed, was done without an anesthetic and without any discomfort to the patient.

This patient reentered the hospital, Nov. 6, 1913, with a return of the previous symptoms. Nov. 19, 1913, a craniotomy under intratracheal ether anesthesia was performed by Dr. Heuer and two subcortical cysts were removed. The following note in regard to the anesthesia was made by Dr. Dandy: "As the patient had marked difficulty under the anesthetic at the previous operations, the intratracheal method was used at this time. It proved very satisfactory, and at no time during the operation did the patient become cyanotic or have any respiratory difficulty. The operation was performed without a tourniquet. There was very little bleeding; this was readily controlled, despite the amount of scar tissue present."

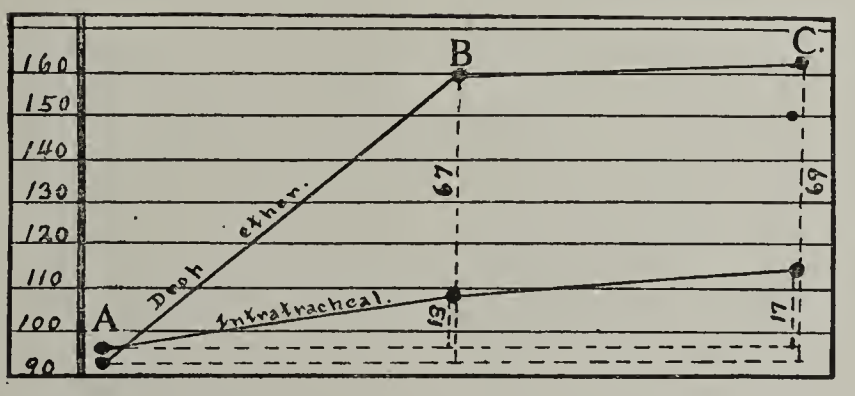


Chart 2.—Cerebellar cases: *A*, anesthesia begun; *B*, end of operation; *C*, maximum pulse rate.

In this case the time of operation was three hours and forty-five minutes. At the beginning of the operation the pulse rate was 120 and blood pressure 130. At the end of the operation the pulse rate was still 120 and the blood pressure 100.

I do not wish to convey the impression that I consider this case a typical one, for it is not very common to encounter a patient who so consistenly takes both ether and chloroform by the usual methods so badly. However, disquieting anesthesias are more common in this class of cases than in any other — just the class in which a smooth anesthesia is most desirable and essential.

Although this case may not be considered an average one from the standpoint of the drop method, it has to be considered such from the standpoint of the intratracheal method, for practically all of our cases have behaved in like manner.

4. Thomas, H. M., and Cushing, Harvey: Removal of a Subcortical Cystic Tumor at a Second-Stage Operation Without Anesthesia, THE JOURNAL A. M. A., March 14, 1908, p. 847.

ADVANTAGES OVER OTHER TYPES OF ANESTHESIA

Local.—While this method is rarely employed in this country, it is nevertheless quite popular in a number of the foreign clinics, notably those in Germany. Its popularity abroad may be attributed, at least to a large extent, to the fact that many of these patients are very difficult subjects for general anesthesia. In such subjects the difficulties of anesthetization are increased in operations on the brain, owing to the awkward posture and frequent changes in the position of the head which are often necessary. In these clinics postoperative pneumonia is relatively common after a general anesthetic.

Advocates of the local anesthesia method claim that there is less loss of blood because the operation can be done with the patient in a sitting or semiprone position. On the other hand, operators who have tried both methods state that there is no appreciable difference in the degree of hemorrhage. However, if one is desirous of having the patient in the sitting posture, the intratracheal method can be used as easily and efficiently as with the patient prone.

Operations on the brain under local anesthesia are a severe trial to the patient, necessitating two-stage operations; added to this is the psychic effect on the conscious patient produced by the sights of the operating room.

The intratracheal method has all the advantages of the local method without its disadvantages.

Intrapharyngeal. — As we have had very little experience with this method, the criticism must be entirely theoretical.

There is perhaps no essential difference between these two methods, since they are both based on the same principle—the delivery of a constant stream of air, containing a known percentage of ether, directly into the trachea and to the epiglottis, respectively. There are a few minor points in favor of each, and while one clinic employs one method, another clinic may employ the other with equally satisfactory results.

With the tube in the trachea, the "dead space" is much smaller than when the tube simply passes down to the epiglottis, and therefore the percentage of vitiated air constantly present is correspondingly smaller. The intrapharyngeal method sometimes necessitates the presence of a second tube in the stomach to prevent the accumulation of gases there. This is unnecessary in the intratracheal method, provided one is certain that the catheter is in the trachea before driving in the vapor.

With the tube opening directly into the pharynx, one would expect an occasional obstruction to occur, owing either to an accumulation of secretions or to the soft tissue occluding the opening. This cannot happen when the tube is in the trachea.

Again there arises the point before emphasized in regard to postoperative pneumonia. The intratracheal method seems to lessen the chances for this complication by means of the recurrent stream of air which it produces, an asset not possessed by the intrapharyn-

geal method. I should expect to find pneumonia more common following the administration of ether by the intrapharyngeal than by the intratracheal method.

The chief point of advantage in favor of the intrapharyngeal anesthesia seems to me to be the ease with which the intubation can be done. However, the introduction of a tube into the trachea itself is a simple matter and requires only a few moments.

The technic for the administration of ether by the intratracheal method has been described so fully in other publications, especially those by Meltzer and Auer, that it will not be necessary to go into it here, as our technic is essentially the same, using the Jackson direct pharyngoscope for introducing the tube. There are, however, a few points in this connection that should be very strongly emphasized.

1. The patient should be thoroughly anesthetized before an attempt is made to introduce the tube; otherwise, this procedure will cause gagging or coughing—factors which often are responsible for the failure of the method.

2. Care should be exercised in introducing the tube, especially if a pharyngoscope is employed, to prevent undue injury to the mucous membrane of the mouth and pharynx.

3. One must be certain that the tube is in the trachea and not in the esophagus before driving in the ether vapor. This may be difficult at times; when in doubt, it is well to drive a stream of pure air through the tube and observe the abdomen for a few moments to see if it distends. We have had two cases in which this mistake was made; but fortunately the error was discovered before serious damage was done.

In some cases the tongue may so fold itself around the tube as to cause obstruction to the return column of air. This difficulty is overcome by introducing a soft rubber double-barrel pharyngeal tube, along the side of the tracheal tube, to the epiglottis. This tube is 7 inches long and has a guard on one end to prevent its slipping down the throat.

CONCLUSIONS

1. Intratracheal ether anesthesia has its greatest field of usefulness in operations on the head, neck and spinal region. The results in cerebellar cases are the most striking.

2. This method is much safer than the drop ether method; the anesthesia is smoother and is more readily controlled. It also offers the most efficient means of artificial respiration.

3. A review of thirty-five cases of anesthesia by the drop ether method and thirty-five by the intratracheal method shows that the pulse is more regular and less rapid under the latter and that hemorrhage and cyanosis are reduced to a minimum.

4. Although the use of the intratracheal method in the surgery of the brain and spinal cord is becoming more general, it has by no means attained the popularity it deserves.

A Little Knowledge of Health.—The old and oft-repeated saying, "A little knowledge is dangerous," is not wholly true; for even a little knowledge on health matters is better than complete ignorance. But no one should be content with just a little knowledge as long as there is opportunity to get more. Neither should we be puffed up with or overrate the little we have, but, as the advertising man says, "keep everlastingly at it" to get more.—*Bulletin Chicago School of Sanitary Instruction.*

INTRANASAL ANTRUM OPERATIONS

WITH REPORT OF NINETY CASES*

HARVARD McNAUGHT, M.D.
SAN FRANCISCO

That not all the problems connected with the pathology and treatment of antral diseases have yet been solved is evidenced by the differences of opinion expressed in nearly all discussions of this subject. As an instance of this we find men of note stating the proportion of cases of dental origin as all the way from 8 per cent. (Hajek) to 100 per cent. (Tilley). Opinions as to the operative or other procedures necessary in diseases of this cavity vary: probe puncture washing, removal of nasal wall leaving turbinal intact or sacrificing some portion of it, and the various forms of oronasal operation being types of treatment advocated.

It is the object of this paper to report, as briefly as possible, the results of ninety consecutive intranasal operations on the antrum of Highmore for chronic suppuration, and to give some observations made incidental to these. The pathology and anatomy will be omitted, as they are familiar to all. I would, however, like to digress from the strict text long enough to call attention to a mooted point in the pathogenesis of this disease, namely, the dental or nasal origin of the trouble. Dentists are becoming more insistent that from 75 per cent. upward of infection comes from the teeth. The experience of most rhinologists will not bear this out. On the contrary, time has steadily reduced the proportion until we are now willing to concede only that from 8 per cent. (Hajek) to 20 per cent. (Skillern) have such origin. Roentgen-ray examination will not definitely decide this question. Osteitis being present, it has been shown in many cases to proceed from the antrum to the tooth, so its mere presence will not alone be determinative of the offending factor. Our main proof at present must come from clinical evidence. In my series of cases very few have had to be referred to the dentist, and the conclusion must be drawn that the teeth alone are comparatively seldom responsible.

During the past three years I have operated in ninety consecutive cases of chronic antral suppuration by the intranasal route and observed them until the present time. The first patient was operated on three years ago and the last three months ago. One cannot say how long the antrum must drain before deciding whether reoperation by the radical method is needed. Personally, I have fixed an arbitrary standard of eight months. A few cases were observed for as long as a year and then the patients disappeared. Later they came back for some other condition, at which time it was noticed that the antrum trouble was cured. During the period of observation it was noted that the discharge steadily decreased in volume and altered in character, becoming thinner and more mucoid. One must conclude that a much longer period than eight months may be necessary to effect a cure in some cases. The objection frequently raised, that few patients will consent to such a prolonged treatment, has not been sustained in my cases; the immediate relief of all symptoms complained of (except pus formation), together with the probability of avoid-

---

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

ing a more severe operation under general anesthesia. were sufficient inducements to my patients to continue treatment. Moreover, they were assured that if ultimately the radical procedure had to be resorted to, it was already half accomplished by having done the intranasal part.

In this series not one failed to be promptly relieved of systemic and referred symptoms. At present in nine cases there continues to secrete a gradually lessening amount of pus. Only in four cases was reoperation ultimately necessary by the radical method. In these four cases cystic and polypoid degeneration of the mucous membrane were found which precluded a cure from drainage and aeration alone. The systemic treatment of some of these patients should be mentioned. In some cases we suspected syphilis in spite of a negative Wassermann, and these were cases of delayed healing. Mixed treatment brought about a rapid betterment of the local condition.

I will mention briefly the types of operation employed intranasally:

First, those contemplating drainage by removal of all or a part of the lateral wall beneath the inferior turbinate. This has been lauded by some, but it will fail to cure all but those requiring only brief drainage, as invariably the turbinate droops and hypertrophies until it closes the opening, thus defeating the object of the operation.

Second, those operating by the enlargement of the natural opening in the middle meatus. These operations are defective and useless, both from a surgical and pathologic point of view; surgically, because they necessitate drainage from the highest point of the antrum; pathologically, because the epithelium of the mucous membrane in chronic disease has lost its cilia and the cells have changed to the cuboid or pavement type and can no longer propel the pus toward the opening.

Third, those in which the nasal wall is removed from the floor upward, with the sacrifice of some portion of the inferior turbinate. Krause's classical operation, consisting of removal of the anterior third of the turbinate and opening through the lateral wall, I consider gives the best results. Reeves has devised a universal antrum punch with which he removes the nasal wall and middle third of the turbinate, beginning his operation in the middle meatus and biting down to the floor. I can recommend his instrument as the best I know of for antral wall removal. I cannot, however, endorse his operation, after having used it in fourteen cases. The chief objections to it are that the field of operation is not easily seen and it is not accessible for after-treatment. Moreover, there are two turbinal ends left to granulate, and the anterior portion of the turbinate prevents the expulsion of the secretions from the nose and subsequently has to be removed.

The method used in my series is practically that of Krause, though modified lately by the advent of Reeves' punch. This modification simply does away with the use of snare and scissors as the turbinal is bitten out by the punch. After anesthetizing the lateral wall with powdered cocain and epinephrin, a probe puncture is made and the antrum filled with 1 per cent. novocain solution with a few drops of epinephrin added. After fifteen minutes a painless and bloodless operation can be done. With a Wilminski perforator, the antrum is broken into in the middle meatus about one-half inch behind the anterior end of the inferior turbinate. Pressing down firmly, the wall and turbinate are crushed through to the floor. Reeves' punch is then used to remove the fragments and enlarge the opening. No packing is used at any time. In the subsequent treatment a nasal douche is not used, as I have found that it not only favors granulation formation, but actually prolongs the discharge of pus. With a curved cotton-wound probe, the opening is painted weekly or oftener with strong silver nitrate solution until healed, and no difficulty has ever been found in keeping it patent. Improvement takes place very quickly in some cases, when apparently at a standstill, if the interior of the antrum is painted with increasing strengths of silver nitrate solution, using as high as a 40 per cent.

One objection that has been made to the Krause operation is that the anterior end of the turbinate should not be sacrificed, as it has a function. The only actual function I can see is to properly deflect the air current to the middle and upper meatus. The loss of this attribute, however, produces no ill results that can be observed. Another objection urged is that a dry nose and pharynx results. A dry nose has never resulted, in my experience, as there is always too much turbinate in these cases and the open antrum furnishes more secretion than normal.

The advantages are that drainage is adequate in spite of the fact that frequently the antral floor is below the nasal. Intra-antral application can easily be made. The opening is so placed that the expiratory blast of air produces a suction on the antral secretions and expels them from the nose, instead of simply on the floor of the nose. It might be mentioned that in cases in which antral disease is complicated by ethmoidal or frontal involvement, the antral operation is the one of election. Drainage of this sinus will so reduce the swelling around the ostia of the other sinuses that no subsequent operation may have to be done, or if it be found necessary later to open these, the diseased area will be much more limited.

The results of the intranasal operation have been so satisfactory that I can but urge that the treatment of chronic antral infection be, first, thorough intranasal operation; second, a period of observation during which little treatment is called for; and third, that if drainage for eight months or longer fails to cure, the radical operation be done.

135 Stockton Street.

ABSTRACT OF DISCUSSION

DR. JOHN J. KYLE, Los Angeles: I would like to repeat the statement I made last week at the Pacific Coast Eye and Ear meeting, that disease of the antrum is a condition that we as specialists frequently overlook, and that most of us in our haste only have our attention drawn to the suppuration of the sinuses by the complaint of the patient. Dr. McNaught evidently has had quite an experience. To have treated ninety cases in such a short period of time is suggestive that this disease is a very common one. In the beginning of my practice I favored all intranasal operations, thinking that there was a minimum amount of danger; but in later years I have come to think more particularly of the Denker combined with the Caldwell operation. If I do the Denker operation I am pretty sure to get positive results; if I do a Krause operation I am not certain. I have come to look on the use of vaccines after doing the radical operation as bringing about quicker results than when I depend on the operation alone.

Dr. Cullen F. Welty, San Francisco: I think it is fitting for the whole field of rhinology to have clear indications, primarily, as to the dividing line between acute and chronic infections of the antrum of Highmore; as to just how long an acute infection can continue, and when it becomes chronic. Requisites for chronicity which I have established for myself (there may be many more), are polypi in and about the middle meatus, polypoid hypertrophy of the middle turbinate, and a wash water that continues to contain cheesy pus foci. In such cases I have performed the Luc-Caldwell operation, and I will say that the pathologic condition of the mucous membrane is such that I am convinced beyond a question of doubt that they could not recover with an intranasal operation. I am of the opinion that a suppuration of the antrum of Highmore not accompanied by the mucous membrane changes spoken of before, can be cured by various minor operations—as washings by the needle, or by irrigations through a tooth root. Such minor procedures that do not destroy the integrity of the nose, are certainly preferable, if one can accomplish the results. It has been my experience that the cases that could not be cured by the procedures spoken of, would not be cured by intranasal operations. Some years ago I tried the intranasal operations and they were not satisfactory in this, that the openings close and the patients do not recover. It is impossible to make smooth the wall that separates the antrum from the nose. To report ninety cases of chronic suppuration of the antrum of Highmore is indeed quite remarkable. In conclusion my inference is obvious. Cases were submitted to the intranasal operation that would have been brought to healing by less formidable procedures, and I am confident that a certain given percentage did not recover. Or if they did, they have relapsed. We should no longer entertain operative procedures for drainage; only for complete cure.

Dr. William R. Murray, Minneapolis: I do not agree with the last speaker that the intranasal method of operating is practically useless. My experience has been that the intranasal operation is very satisfactory in a large proportion of cases of chronic maxillary sinusitis. There is a class of cases in which a Denker or Caldwell operation is indicated, but I believe that in the average chronic case the less radical operation is satisfactory. I have been partial, for a number of years, to the Mikulicz-Krause operation. It is attended, however, by some disadvantages. Crusting frequently continues for a considerable time after the operation; an unnecessary amount of the inferior turbinate is sacrificed; we cannot gain access to the antrum in sufficient degree to remove all diseased bone and tissue which frequently exist. Recently I have been modifying this Mikulicz operation by combining with it the internal Denker operation, thus removing a portion of the anterior wall, a portion of the nasal wall of the antrum, obliterating the angle between the anterior and nasal walls and removing only the anterior end of the inferior turbinate. This allows inspection of the antrum, curetting if necessary, and gives a free opening for ventilation and drainage.

Dr. Wendell C. Phillips, New York: Inasmuch as there seems to be some controversy in regard to the method of operating in chronic disease of the antrum, it would be advisable for the men to report not only their own experience, but the methods that are being followed in the various sections of the country. In the large clinics in New York, except in radical operations done in connection with the Killian frontal ethmoid and sphenoidal sinus operations, the intranasal operation prevails. That is the operation done almost entirely in our large clinics there. That is the operation I do myself. Now in regard to the number of cases which Dr. McNaught has reported, it would seem to me that if the doctor has a large out-door patient practice it would not be at all surprising to get the number of cases which he has mentioned.

Dr. H. B. Graham, San Francisco: There is absolutely no mistake about diagnosis here. These are chronic suppurative maxillary cases. All of the cases in the clinic have been handed over to Dr. McNaught, so that they have not been separated. In the latter part of the period he has confined himself mostly to the Krause operation to see what the effect would be. These cases are not cases of acute maxillary sinusitis in the least; they are cases that have been observed in the clinic for a year to a year and a half before operation, so we know what we are doing so far as operating on acute or chronic cases is concerned. I have had a number of shocks in my life, but one of the most interesting shocks was a case in which I operated in Dr. Hajek's clinic in Vienna, a case of double chronic maxillary sinusitis, on which I did a Krause on one side and a Denker operation on the other. The patient went away to the country after I had operated on her, and came back in a month's time, and the side on which I had done a Denker, under the supervision of Dr. Hajek, was suppurating at a very rapid pace, and the side on which I had done the Krause was entirely well. This does not cover all cases, but it helps out, and it helped me by leading me afterward to adopt the Krause in preference to the radical operation. I think it is well not to take out too much of the mucous membrane of the antrum. We were surprised sometimes after leaving in a markedly polypoid mucous membrane and later operating in the case to find a nearly normal mucous membrane, after it had been properly drained. I have noticed in our work that often we find a polypoid condition of the mucous membrane and on doing the Krause the patient gets entirely well. So in case one has a polypoid condition of the mucous membrane, to brand that case as a nonoperable intranasal case is not correct. That case may recover by simply giving proper drainage and then not using too much water. We have found in all of our intranasal work that the less moisture following operative procedure, the better for the patient. This applies to the frontal sinus and to the radical operation as well as to the acute cases. We wash them out occasionally and clean out the crusts and get the mucus and pus out by applications.

Dr. Fred Stauffer, Salt Lake City: I would like to give my experience in private practice, and I wish to emphasize the remarks just made by Dr. Graham with reference to the importance of establishing proper drainage after curettage. I believe the operation as reported is one that should be tried in nearly every case before a radical operation is performed. That has been my experience, and I believe if the opening is made sufficiently large and one removes a sufficient portion of the wall between the antrum and the nose, the majority of the patients will get well, for the reason that polypoid degeneration is nearly always due to irritation by pus that has been dammed back, and if perfect drainage is secured the mucous membrane will take care of itself. I believe the only cases that really need the radical operation through the canine fossa are those in which the bony walls are involved. I think the intranasal operation should be preferred because patients will consent to an intranasal operation when they would not to a radical operation, and a very large percentage get well by using this operation.

Dr. Justus A. Matthews, Rochester, Minn.: As to the frequency of maxillary sinusitis, we see a great many patients who do not come to the clinic for local symptoms in the nose and throat, but for general operation for various troubles, and one of the most impressive things is that a large number of them have chronic maxillary sinusitis with marked symptoms and even nasal discharge. We go over these cases by routine if there is nothing special that indicates the Roentgen ray, and find in a great many cases chronic sinusitis with local symptoms. I think if the men who doubt the frequency of chronic sinusitis would make a routine examination they would find it is much more frequent than they have heretofore believed.

Dr. Norval H. Pierce, Chicago: I believe Dr. Matthews is correct. Chronic maxillary sinusitis is very much more frequent than I had supposed up to a recent time. I know the postmortem findings show maxillary sinusitis in a tremendously high percentage of cases in individuals who have had no history of sinus trouble. There was a great controversy some years ago when a speaker before the London

Laryngological Society told the members he had operated in a great number of cases of sinus trouble in a rather small town, and as I remember, Sir Felix Semon drew attention to it. He figured out that in this town—which had something like one hundred thousand inhabitants—this operation was out of all proportion to the number of inhabitants, in general inferring that the surgeon was getting too enthusiastic in opening the antrum. So that immediately after that there was a very strong conservatism set in—one of the phases in our work of opening the sinus—and then it took on renewed activity, until today some of us are very conservative regarding the advisability of opening the antrum by the radical operation. I have come to the conclusion that suppuration within the maxillary sinus is much more frequent than we have heretofore believed, from the habit I have gotten into of washing out every case of nasal trouble through the natural opening. There is some variance in opinion as to how many antrums may be irrigated through the natural opening. I do not wish to mislead you at all, or to pose as having extraordinary skill, when I tell you that I can irrigate through the natural opening usually more than 90 per cent. of the patients who come to me. Occasionally I will have to break through the wall, but in a vast majority of cases I get through the natural opening with a Morrell Mackenzie cannula, and it is surprising how many cases show pus—free or agglutinated—in cases that show no shadow of any sort, or syphilis.

DR. G. C. KNEEDLER, Pittsburgh: One point of considerable importance to my mind is the manner in which curettage of the antrum has been done. A curet can be conveniently made by seizing a piece of gauze with the tip of a forceps. With this protected instrument polypi and other foreign matter may be removed without injury to the antral mucosa and the subsequent necrosis of bone which frequently follows the use of a metallic curet.

DR. HOWARD YOUNG MCNAUGHT, San Francisco: I do not think that Dr. Welty needs any specific answer to his insinuation that there was no such number as ninety cases operated on in this city by one individual in three years. I have operated on a great many more than ninety during that period, but this was a series of cases I undertook for one particular purpose. Dr. Matthews took the words out of my mouth, that if a little more care were taken in washing out our cases and diagnosing conditions, more chronic antral disease would be found. However, the results that I have given you are a little better than in some series, and it was to stimulate the accumulation of statistics on this point that I presented the paper. It is time that we definitely understood and agreed as to which is the preferable way of operating. When it comes to the radical operation, I follow the Luc-Caldwell method as the operation of election.

Reliable Death Reports.—The entire public health movement is based on the possibility of diminishing death and sickness. Our knowledge of the cause of death is based on reports of physicians and coroners. The expenses to the community are so heavy, and the necessity of prevention of disease so obvious, that the greatest obtainable accuracy ought to be available, and only the results of verified diagnosis used. Universal autopsy practice is unlikely. Education as to the needs of autopsy for the sake of raising the standard of medical practice and diagnostic skill, and for the sake of public welfare, will slowly prevail against religious objection and racial sentiment. In the meantime we have at hand a means of gathering reliable data by separating the records of death based on autopsy or other equally valid verifications of the cause of death, from deaths which were neither preceded nor followed by sufficient skilled medical or pathologic observation. By such a method we should attain two important objects: We should gather facts concerning the cause of deaths against which little or no criticism could be brought, and we should have parallel records of causes of deaths based, in many instances, on surmise or insufficient scientific observations.—Haven Emerson, M.D., *American Journal of Public Health*, August, 1915.

THE USE OF CONVALESCENT AND NORMAL BLOOD IN THE TREATMENT OF SCARLET FEVER*

ABRAHAM ZINGHER, M.D.
NEW YORK

Beneficial effects have been obtained at the Willard Parker Hospital during the past seven months in the treatment of severe forms of scarlet fever with intramuscular[1] injections of fresh human blood, either convalescent or normal. In a number of such patients, in whom the prognosis seemed doubtful and occasionally even absolutely poor, the life saving effect of from 6 to 8 ounces of blood, repeated once or twice at intervals of four or five days, has encouraged us sufficiently to recommend the treatment in the severer forms of the disease.

The intravenous injection of fairly large quantities (from 2 to 3½ ounces) of convalescent serum has given good results in the hands of Reiss and Jungman,[2] and of R. Koch.[3] This requires greater skill, and necessitates wasting more than 60 per cent. of the blood. These disadvantages are easily avoided by the simple intramuscular injection of whole citrated blood, especially as it has been shown by Meltzer and Auer, and by Morgenroth and Levy that absorption from muscle is very much faster than it is from subcutaneous tissue. In fact, the rapidity of action of substances so injected approximates very closely that following an intravenous injection.

Cases of scarlet fever may be divided roughly into two groups for purposes of blood injection:

1. The early toxic or malignant scarlet fever cases which are seen between the first and fourth day of disease, and show the clinical picture of delirium and restlessness, intensive purple or petechial rash, moderate glandular enlargement and severe angina, with a slight exudate over the tonsils, uvula, and pillars of the fauces. These cases are suitable for the intramuscular injection of convalescent blood, taken from second or third week convalescent scarlet fever cases. Such convalescents are generally available in the wards of large contagious disease hospitals. They should be free from syphilis and tuberculosis. A record of individuals, who are willing to act as donors, for a suitable consideration, can be kept by the hospital authorities. The donors themselves, or the blood taken from them freshly and citrated, may be sent to the homes of private patients, and the treatment can be thus made available for use in general practice. Convalescent blood will deteriorate after a month or two when kept in the ice-box, and it is, therefore, preferable to use only fresh blood. The question of using donors who are several months convalescent may be considered and should be tried on a larger scale.

The effect of convalescent blood in these early toxic or malignant cases of scarlet fever is seen in a critical drop in temperature beginning about six hours after the injection and ending in from twenty-four to

---

* From the Research Laboratory and the Willard Parker Hospital, Department of Health.

1. Zingher, Abraham: A Simple Syringe Method for the Transfer of Blood from Donor to Recipient. Its Application in the Treatment of Scarlet Fever and Other Conditions, Arch. Pediat., 1914, xxxi, 912.
2. Reiss, E., and Jungman, P.: Die Behandlung schwerer Schlarlachfälle mit Reconvalescentenserum, Deutsch. Arch. f. klin. Med., 1912, cvi, 70.
3. Koch, R.: Ueber Scharlachreconvalescentenserum, München. med. Wchnschr., 1913, lx, 2611.

thirty hours. The temperature often reaches normal and will remain nearly normal in the majority of the cases; in others, especially when complicated with severe tonsillar and faucial exudate, associated with inflamed cervical glands, the temperature may rise again for a few days, but rarely to the same height as at the time of injection. Other results, which are quite as striking, can be seen in the early fading of the rash, the improvement in the circulation and the character of pulse, the general condition and mental symptoms. The delirium will frequently disappear, and the clinical eye detect that general improvement, which is so difficult to interpret by a mere temperature, pulse, and respiration record.

2. In the second group are included the later septic cases, seen from the fifth to the eighth day of disease. The rash may have faded entirely, but the membranous exudate over the fauces and tonsils is severe and extensive, and often appears necrotic. The cervical lymph glands are enlarged and tender. The temperature is high and septic in character, varying between 103 and 105 F. The pulse is proportionately small and rapid. A diffuse duskiness is often noticeable over the entire body surface. Pulmonary symptoms may or may not be present. The ears are frequently discharging.

In this group of cases, we would strongly recommend the use of fresh normal blood, which can be readily obtained from one or both of the parents, or some other close relative of the patient. The intramuscular injection of 4 ounces of blood in children up to the age of 4 years, of from 6 to 8 ounces of blood in older children and adults will give most satisfactory results. These blood injections may have to be repeated once or twice at intervals of four or five days. Such repeated injections are made in the same muscles, since the blood is absorbed with great facility. Not much specific effect is claimed for these injections of fresh normal blood; but the nutritive and stimulating properties and normal antibody content of relatively large amounts of normal blood have shown definite beneficial results in some desperately ill patients, and have convinced us that the treatment in septic cases when the prognosis is doubtful or poor should invariably include the administration of such a harmless and yet frequently efficient remedy.

The method of obtaining the blood, and its injection, is very simple: with a 1 ounce (30 c.c.) record syringe, a Lüer syringe or, in an emergency, an easy-working large syringe, and a medium-sized needle (preferably a No. 17 or No. 18 gage platinum iridium needle) the necessary quantity of blood is rapidly aspirated from the median cephalic vein of the donor at the bend of the elbow, and immediately citrated by adding the blood to a 10 per cent. solution of sodium citrate in the proportion of 1 ounce of blood to each cubic centimeter of the citrate solution. This makes the final dilution of the citrate 0.33 per cent. The needle inserted into the vein of the donor should not be removed; the syringe is detached when full, while an assistant carefully fixes the hub of the needle and attaches a 5 c.c. record syringe containing some 1 per cent. sodium citrate solution to keep the needle free of blood. Three or four syringefuls of blood may thus be obtained, before it is necessary to rinse out the larger syringe with a 1 per cent. solution of citrate which is kept ready in a beaker. We prefer to collect the blood in 100 c.c. bottles, each of which contains 2 c.c. of the 10 per cent. citrate solution. To each bottle 2 ounces of blood are added, the bottle being shaken after each addition to distribute the sodium citrate solution. In less than ten minutes, the required amount of blood (from 4 to 10 ounces) is obtained and is then ready for injection into the patient.

The blood is injected into the following regions: triceps, outer regions of both thighs (vastus externus), the calves (soleus) and both gluteal regions. In young children, half an ounce; in older children and adults, 1 ounce is injected into each of these muscles.

The blood serum is rapidly absorbed, as shown by the soft and supple condition of the muscles on the following day, when they will be found to have regained their former size and consistence. Subcutaneous injections of blood are not taken care of so readily as intramuscular injections and lead to extensive discoloration of the skin. We have noted once or twice a painful swelling of some of the injected muscles, which appeared at the end of ten days. This swelling rapidly subsided without any local treatment.

Twenty-three patients were treated at the Willard Parker Hospital with intramuscular injections of blood. They represent the cases with the poorest prognosis selected out of a total of some nine hundred admissions. Fifteen were treated with convalescent blood, which was citrated in a majority of cases. Nine received pooled blood from two or more donors. The amount injected varied from 2½ to 8 ounces. Of the 15 patients, 4 died; of these (*a*) one died from septic bronchopneumonia two days after the injection; (*b*) one died of a streptococcus sepsis nine days after the injection; (*c*) one was moribund when injected intravenously; he seemed to rally slightly, but the treatment was evidently given at a time when the patient's nervous system was entirely overwhelmed by the toxemia; (*d*) the fourth patient, practically moribund at time of injection, had severe meningismus with a marked retraction of the head; he died thirty-six hours after injection. Of the eleven patients who recovered, only five were of the purely toxic type; the remaining six patients had additional severe septic complications, especially tonsillar and faucial exudates, and inflamed cervical glands. The five purely toxic cases showed a critical drop in temperature which varied from 3 to 6 F., after which the temperature remained normal or slightly above normal. In the remaining six cases, the drop in temperature was less marked and was followed by a secondary rise which persisted for a number of days. These secondary temperatures were evidently due to the septic complications.

Eight patients received fresh normal blood: of this group, none died. These cases were far advanced septic cases, several with a poor prognosis. The blood, which was readily obtained from one or both of the parents, was citrated in six. One of the patients received two injections of 6 ounces each; another three injections, each 8 ounces, at intervals of four or five days. As was to be expected, no striking critical drop, but a distinct lowering of the temperature curve was noted, associated with an improvement in the septic complications and the general condition of the patient. The good results in some of these cases are the best proof of the beneficial effect that can be derived from this treatment.

While it is difficult to make any absolute statement or arrive at definite deductions from such a small series of cases, one can only hope that, by continuing

this form of treatment, a larger series of cases may finally be collected that will serve as a more definite guide for the value of the intramuscular injections of convalescent and normal blood. The treatment is easily carried out, is quite harmless, and is within the reach of the general practitioner. The beneficial effects noted in the above group of very severe cases were quite distinct. The rational element in the use of convalescent blood is apparent, so long as the etiology of scarlet fever is not known, and the use of antistreptococcus serum during the past ten years has not given the striking results that were expected from it after the early trials. The rational element in the use of fresh normal blood in the septic cases is found, first of all, in clinical observations of its great empiric value; but also to a large extent, in a consideration of the great nutritive value of homologous blood, its marked stimulating properties, and its well-known antibody content, which exerts a distinct bactericidal effect on many pathogenic organisms.

3915 Broadway.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

PANTOPON. — Pantopium Hydrochloricum. — A mixture of the hydrochlorides of the alkaloids of opium in the proportion in which they exist in Smyrna opium, containing 50 per cent. of anhydrous morphine hydrochloride.

Actions and Uses.—Pantopon (pantopium hydrochloricum) produces essentially the effects of opium, but, being devoid of its extractives, it may be used for hypodermic administration. It is probably absorbed rather more promptly, and is free from the nauseant odor and taste of the ordinary opium preparations. It is used in the same conditions as those in which opium is indicated.

Dosage.—For adults, 0.005 to 0.02 Gm. (1/12 to 1/3 grain) hypodermically or by mouth. One grain of pantopon (pantopium hydrochloricum) is equivalent to:

2½ grains of extract of opium, U. S. P.
4 grains of powdered opium, U. S. P.
45 minims of tincture of opium, U. S. P.

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (The Hoffmann-LaRoche Chemical Works, New York). U. S. patent No. 1,056,219 (March 18, 1913; expires 1930). U. S. trade-mark No. 77,371.

Pantopon (Pantopium Hydrochloricum) Tablets.—Each tablet contains pantopon (pantopium hydrochloricum) 0.01 Gm.

Pantopon (Pantopium Hydrochloricum) Hypodermic Tablets. — Each tablet contains pantopon (pantopium hydrochloricum) 0.02 Gm.

Pantopon (Pantopium Hydrochloricum) Ampules for Hypodermic Administration. — Each ampule contains pantopon (pantopium hydrochloricum) in sterile solution 0.02 Gm.

Pantopon (pantopium hydrochloricum) is a yellowish-gray crystalline powder which is readily soluble in water.

If a few drops of ammonia water be added to an aqueous solution of pantopon (pantopium hydrochloricum) (1:200) a precipitate of the secondary opium alkaloids should form at once (distinction from pure *morphine hydrochloride*).

If from 0.5 Gm. to 1 Gm. of pantopon (pantopium hydrochloricum) be weighed and dried at 100 C. to constant weight, the loss should correspond to from 9 to 9.5 per cent. of the weight taken.

If from 0.5 Gm. to 1 Gm. of pantopon (pantopium hydrochloricum) be weighed, dissolved in water containing a little nitric acid, the hydrochloric acid determined by precipitation with silver nitrate and weighing the precipitate in the usual way, the silver chlorid found should correspond to between 9.8 per cent. and 10.2 per cent. of hydrochloric acid (HCl).

If 0.8 Gm. of pantopon (pantopium hydrochloricum) be dissolved in sufficient water to make 40 Gm. of solution, 2 Gm. of normal ammonia water added, the solutions mixed by circulatory rotation (not by shaking), the solution immediately filtered through a dry filter, and 36.75 Gm. of the filtrate (equivalent to 0.7 Gm. of pantopon (pantopium hydrochloricum) be treated with 10 c.c. of ether and 4 c.c. of normal ammonia water and the assay process completed as described in the Swiss Pharmacopeia, Ed. 4, p. 344, for opium, the tenth-normal hydrochloric acid consumed should correspond to from 47 per cent. to 48 per cent. of anhydrous morphine.

LAROSAN Roche.—Stoeltzner's Casein Calcium.—Calcium caseinate containing calcium equivalent to 2.5 per cent. calcium oxide.

Actions and Uses.—The diarrheal diseases of infancy are now generally treated by dietetic measures. A useful food is that made from the curd of milk and diluted buttermilk, the resultant mixture containing a moderate amount of fat, a small amount of sugar and a large amount of protein (casein) and salts, particularly salts of calcium. Such a mixture being difficult to prepare in a private home, Larosan Roche is offered as a substitute.

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (The Hoffmann-LaRoche Chemical Works, New York City). U. S. patent No. 1,087,515 (February, 1914; expires 1931).

Larosan Roche is prepared by treating a suspension of casein in water with calcium hydroxide in such quantities as to yield a solution neutral to phenolphthalein and then evaporating to dryness in a special apparatus.

It is a light, white, practically odorless and tasteless powder, soluble in water, yielding a slightly opalescent solution, and neutral to phenolphthalein.

If incinerated, it emits an odor characteristic of burning protein and leaves a residue of calcium oxide which should weigh 2.5 per cent. of the amount of material taken.

It is incompatible with acids.

BETANAPHTHOL BENZOATE (See N. N. R., 1915, p. 210). The following non-proprietary preparation has been accepted:

Betanaphthol Benzoate, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York City). No U. S. patent or trade-mark.

Adjustment to Environment as a Condition of Mental Health.—Milton A. Harrington, writing on "The Psychic Factors in Mental Disorder" (*Am. Jour. Insan.*, April, 1915), bases a theory of mental disease on McDougall's work on social psychology. Mental disorder, according to Harrington's concept, is simply a failure to adjust oneself to environment. This may be due to causes within the individual—to the possession of exceptionally powerful impulses or exceptionally poor inhibitory powers, to defective education or to the presence of some physical disorder which interferes with proper mental functioning. Or, on the other hand, this lack of adjustment may be due to the environment itself, which imposes on the individual unnatural and unhealthful conditions. Such conditions of strain and tension, tending to break down a mental equilibrium which otherwise might have remained undisturbed, may occur in a strongly sexed individual whose instincts are denied physiologic outlet and whose circumstances or mental powers do not permit the employment of substitute outlets, as in business, literature or philanthropic work. Harrington suggests that, from this point of view, the problem of mental disorder is not hopeless, although the hope lies in prevention rather than in cure. Preventive measures must be used both on the individual and on the environment. On the one hand, hopeless defectives must be prevented from reproducing their kind, and normal persons must be given an education which will enable them to react satisfactorily to their environment. On the other hand, the environment must be studied and, if necessary, modified so that it does not unduly tax the individual's capacity for adjustment.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, SEPTEMBER 4, 1915

WOUNDS AND HYDROGEN PEROXID

An unusually large number of wounds infected with gas-forming micro-organisms have been observed in the present war. In the treatment of these injuries, ordinarily involving deep-seated lacerations, the use of solutions of hydrogen peroxid is reported to be decidedly beneficial. Despite these positive assurances, it is not easy to defend any tenable theory of the action of the peroxid. Of course, one thinks first of all of the oxygen which is readily liberated from the peroxid in wounds. Oxygen, especially in a nascent form, may have a pronounced chemical effect and bring about oxidation in suitable material. It has been assumed that inasmuch as the gas-forming bacilli are anaerobic in their habits, an atmosphere containing liberated oxygen might inhibit their development in wounds and in the depths of injured tissues. But the persistence of oxygen for any length of time in the midst of tissue clefts is highly problematic; and to this may be added the fact that even many anaerobic organisms are not destroyed or even completely inhibited in the presence of a considerable percentage of oxygen. The bacillus of malignant edema and the organism of tetanus continue to grow in the presence of atmospheres containing small percentages of oxygen. So far as the chemical action of the peroxid, as such, is possibly concerned, it must be recalled that the tissues are rich in the enzyme catalase, which promptly tends to liberate the oxygen and thus change the composition of the original product to an inert residue.

Spiro[1] of Strassburg, who has studied the recent treatment of the wounded in one of the base hospitals, ventures a physical, rather than chemical, explanation of the beneficent action of hydrogen peroxid. Recalling the familiar frothing of the substance when brought into contact with animal tissues, he suggests that the minute bubbles of gas formed serve to expose and open the spaces and pores of the tissues attacked. Larger surfaces are thereby exposed. The disinfectant power of the peroxid solution as such is doubtless small, but the effervescence has a pronounced cleansing action on the wounds, forcing out organisms and particles of destroyed tissue to the surface. The decomposition of the tissues is in this way retarded, and the bacteria are brought into locations where the exposure to the air helps to destroy them in the natural way or through the subsequent use of surface antiseptics.

In this connection, the use of sugar spread on wounds may be considered. This technic also has found some support in the treatment of infected injured areas. It is scarcely likely that products of the fermentation of sugar — organic acids, for example — are responsible for the favorable results. More likely is the explanation ventured by Spiro, based on the usual presence of more than one bacterial variety in an open wound. It is now well known that carbohydrates may alter the preponderance of specific varieties of micro-organisms in certain mediums, just as they are believed to decrease the putrefactive groups by facilitating the growth of the antagonistic acidophil types in the alimentary tract. We may likewise suppose that, in wounds, the presence of readily available carbohydrate in the form of sugar determines the preponderance of less objectionable forms of bacterial invaders.

1. Spiro, K.: Die Wirkung von Wasserstoffsuperoxyd und von Zucker auf die Anaerobien, München. med. Wchnschr., 1915, No. 15, p. 497.

THE METABOLISM IN EXPERIMENTAL DIABETES

In considering the source of the sugar which is excreted in the urine during diabetes, two theories seem plausible. One postulates an overproduction of sugar by the diabetic organism, owing to a lack of some normal control exerted on protein and fat metabolism. The formation of sugar would far exceed the limits of use for this carbohydrate, and a portion of it would be wasted in the resultant glycosuria. The other theory assumes that the tissues experience a loss of power to use sugar. These may be referred to as the overproduction and nonutilization theories, respectively.

The explanation of overproduction held sway for some time, but at present the available experimental facts speak quite clearly for nonutilization. Much of the evidence on either side is based on a determination of the respiratory quotient, that is, the relation of carbon dioxid production to the simultaneous oxygen consumption. When sugar is burned, the respiratory quotient $\frac{CO_2}{O_2}$, is unity; in the combustion of the other foodstuffs it is decidedly lower.

The extensive observations of Benedict and Joslin[1] on human diabetes show that the severity of the disease increases with the lowering of the respiratory quotient. This situation in the respiratory exchange indicates a loss or an impairment of the power of sugar utilization. Other facts are in correspondence

1. Benedict, F. G., and Joslin, E. P.: Publications of the Carnegie Institution of Washington, 1910, No. 136; 1912, No. 176.

with this, notably the often repeated observation of the recovery of administered sugar in diabetics.

The chief dependence must be placed on experiments with animals, in which the conditions can be adjusted to meet the questions at issue. The removal of the pancreas in dogs produces symptoms in many respects similar to a severe type of human diabetes; hence the reliance which has been placed on such experiments. The latest research in this field, conducted at the Institute of Physiology in University College, London,[2] has aimed to attack the question of sugar usage in diabetes by comparing the metabolism of dogs before and after depancreatization. In harmony with earlier experiences, a definite increase of total metabolism, corresponding with the severity of the usual symptoms, was shown. On the average, it amounted to from 15 to 20 per cent. There was the well-known increase in protein breakdown, a destruction out of all proportion to the actual part taken by protein in the oxidations of the organism. By themselves, these facts cannot be used as a deciding argument in favor of either the overproduction or nonutilization theory of diabetes. The chief argument in favor of the latter, however, was the recurrence of the generally low level of the respiratory quotient in diabetes. Finally, the rise of the respiratory quotient which normally occurs after the administration of sugar was once more found to be greatly diminished or absent after the total removal of the pancreas, indicating that complete oxidation of sugar does not occur under these circumstances. The disturbance in the carbohydrate metabolism thus appears to represent a loss of the power of oxidizing glucose.

2. Moorhouse, V. H.; Patterson, S. W., and Stephenson, M.: A Study of the Metabolism in Experimental Diabetes, Biochem. Jour., 1915, ix, 171.

THE PROBLEM OF TERMINAL DISINFECTION

In seeking suitable means of defense against epidemic diseases, the practices of sanitarians have been modified from time to time in accord with the dictates of the newest contributions of the science of hygiene. The development of the art of disinfection, so as to render infectious or contagious matter innocuous, promptly led to a widespread employment of procedures intended to accomplish the desired result. Fumigation is probably the most familiar of all the methods which have received extensive recognition, though it is by no means the only one or even always the most efficient process. Heat and antiseptic solutions have likewise found an extensive field of usefulness, particularly when the disinfection is intended to be applied in a restricted area or to smaller articles or surfaces.

A few years ago, terminal disinfection was the recognized routine after the more common infectious diseases, such as diphtheria, scarlet fever and tuberculosis. Within the past decade there has been a growing tendency in many quarters to abandon terminal disinfection. To understand this change of attitude it must be remembered that there is, in some degree, a natural process of disinfection going on in the environment of disease. Drying, exposure to sunlight, and other agencies are potent factors in bringing about the destruction of infection by processes of nature. Their efficiency increases in direct proportion to the length of time and the degree to which they are permitted to act. Chapin[1] was among the first to advocate partial abandonment of terminal disinfection in certain diseases, such as diphtheria and scarlet fever, in the belief that "the conditions which surround organisms that have been discharged from the patient's body are unfavorable for their multiplication and that the decrease of the organisms, brought about by the processes of nature, is sufficient to reduce the number of remaining organisms to a negligible quantity."

The discontinuance of terminal disinfection has been justified in the eyes of its advocates by the statistics of the incidence of infectious diseases where the comparisons have been instituted. In 1912, the New York City health department abandoned terminal disinfection after diphtheria, except that bedding and like goods were removed to steam disinfecting plants. This rule, however, did not apply to cases which ended fatally, or were terminated by removal to hospital or other quarters; in these cases terminal disinfection was done. At a later date the removal of bedding, etc., was discontinued. Likewise, terminal disinfection after measles, German measles and whooping cough was abandoned, and also after poliomyelitis and cerebrospinal meningitis, except after fatal or removed cases.[2]

Despite the seemingly satisfactory outcome of the omission of terminal disinfection in many places, the wisdom of this course is being seriously debated. It is true that the statistics show no serious increase in the spread of disease in the cases in which they have been studied. Nevertheless, at the last annual conference of State and Provincial Boards of Health of North America, Hasseltine,[3] of the U. S. Public Health Service, seriously questioned the wisdom of the abandonment of terminal disinfection after certain diseases. He makes a plea for more knowledge on the subject before any measure long believed to be efficacious is discarded; and he insists that the point at which natural disinfection becomes sufficiently nearly complete to warrant the discontinuance of terminal disinfection should be determined under more exact conditions than have been obtained in the past.

Of course, it is generally agreed that when unusual circumstances arise, when some rare or peculiarly objectionable disease like cholera makes its appearance, every possible opportunity of destroying even a small

1. Chapin, C. V.: The Sources and Modes of Infection, New York, John Wiley & Sons, 1912.
2. These statements are taken from Pub. Health Rep., 1915, xxx, 2049.
3. Hasseltine, H. E.: The Practical Use of Disinfectants, Pub. Health Rep., July 9, 1915, p. 2049.

amount of infection should be embraced. We doubt whether those who abandon terminal disinfection would claim that the results are ideal. Even if it is true that they are quite as good as under the older system, it may well be asked whether the latter failed because it was useless or because it was not properly carried out. Hasseltine remarks that possibly the disinfection of the past, when done, did not always disinfect. The conduct of such an operation is not a tyro's job. It has been suggested that the abandonment of official disinfection will induce people to do more cleaning themselves. But Rosenau says, "If terminal disinfection prevents the occurrence of only a small number of cases, it would still seem to be worth while."[4] We have no desire to take sides in the issue that has been raised; but the discontinuance of any method of disinfection on the ground that it is useless should be based on substantial evidence.

THE SO-CALLED NEW ANTISEPTIC

Recently the newspapers have contained announcements of a new antiseptic or germicide that has proved, or is to prove, of great value in the treatment of the wounded in the present war. Credit for its discovery is given to Drs. Carrel and Dakin.

The antiseptic referred to is that which Dr. Dakin[5] of the Herter Laboratory, New York — now serving as bacteriologist in a war hospital at Compiègne in France — announced in a paper read before the Académie des sciences in Paris. It is made by the well-known process of adding sodium carbonate to a solution of chlorinated lime. The mixture is thoroughly shaken, and after half an hour the liquid is siphoned off from the precipitate of calcium carbonate and filtered through cotton. To this clear liquid, sufficient boric acid is added to make the preparation neutral or acid, the amount required being determined by titration with phenolphthalein. Such a solution was found to kill staphylococci in two hours.

According to the *British Medical Journal*,[6] about a year ago Professor Cohen, of the University of Leeds, England, entered into communication with Dr. Dakin, a former student, regarding research on antiseptics for surgical use. The arrangement was that the substances elaborated by Professor Cohen should be tested bacteriologically by Dr. Dakin, and that the most promising should be tried clinically by Dr. Carrel.

At about the same time, under the auspices of an English medical research committee, a similar research by Prof. Lorrain Smith, with the assistance of Professor Drennan of the University of Otago, N. Z., Dr. Rettie, a chemical expert, and Lieutenant W. Campbell of the British army medical corps, was undertaken in the University of Edinburgh. Their results were reported in the *British Medical Journal*.[7] The substance which they prepared was made by rubbing up chlorinated lime to a fine powder and mixing it with an equal weight of powdered boric acid. The ideal antiseptic for the field, they concluded, was a dry powder to be applied direct, which, it was believed, has advantage over a solution because it is more portable, and water is often not procurable.

Chlorinated lime, the basis of the so-called new antiseptic preparation, is well known as a powerful disinfectant. Its alkalinity, however, makes it destructive to living tissues except in dilute solution. The same may be said of solution of chlorinated potash (Javelle water), which has been largely used by French surgeons in the present war, and of solution of chlorinated soda (Labarraque's solution.) The advantage claimed for the new mixture is that the preparation, being practically neutral and unirritating to the tissues, may be applied in greater strength than that in which it is possible to use chlorinated lime, Javelle water or Labarraque's solution. Experiments indicate also that the germicidal activity of chlorinated lime is increased by such treatment of the calcium hypochlorite as has been described. Such increase in germicidal activity is generally attributed to the liberation of hypochlorous acid. It has been found that the activity of ordinary bleaching powder is greatly increased by passing through it carbonic acid gas. Any other acid, as boric acid, will do as well. From the chemical point of view, therefore, there is nothing new in this method. That the practical application of such a mixture is not wholly new is proved by an earlier article published by Vincent.[8] He suggested the application to ulcerating and gangrenous wounds of a mixture of chlorinated lime and boric acid.

THE SCHMIDT NUCLEAR TEST FOR PANCREATIC FUNCTION

Abundant illustrations of the failure of so-called functional tests of the activity of various organs of the body to meet requirements occur in medical literature. Many of these procedures have been reviewed critically in THE JOURNAL from time to time, and their shortcomings noted. Among the functional tests which have attracted particular attention in the past decade is the so-called "Kernprobe" or nuclear test for certain types of pancreatic disease. The pathologic disturbances of the pancreas can at best be diagnosed with difficulty, owing to the location and other peculiarities of this organ. On that account, it is all the more important to find reliable indexes of the ability or incapacity of the gland to perform its work.

The nuclear test was proposed by Adolf Schmidt, now chief of the University Clinic at Halle, Germany. It depends on the assumption that the preliminary

4. Rosenau, M. J.: Preventive Medicine and Hygiene, New York, Daniel Appleton & Co., 1913.
5. Dakin: Presse méd. (society proceedings), Aug. 5, 1915.
6. Research in Antiseptics, Brit. Med. Jour., Aug. 14, 1915, p. 261.
7. Brit. Med. Jour., July 24, 1915, p. 129; abstr., THE JOURNAL A. M. A., Aug. 21, 1915, p. 744.
8. Vincent: Presse méd., 1914, xxii, No. 70; abstr., THE JOURNAL A. M. A., Nov. 28, 1914, p. 1986.

stages in the digestion of cell nuclei or nuclear material are dependent on enzymes furnished in the pancreatic secretion. Accordingly, if this is entirely in abeyance, the nuclei of animal tissues like muscle will remain undigested and can subsequently be detected by microscopic examination of the feces. Although the presence of nuclei of the ingested food would therefore point to complete lack of pancreatic flow, the absence of nuclei need not signify the converse, that is, the existence of an unimpaired function; for even a small amount of pancreatic juice might suffice for digestive purposes in the individual cases.

The test here outlined in respect to its underlying principles has received various modifications for application in the clinic of digestive disturbances. Schmidt's clinical form of the test consists in feeding small pellets of muscle tissue enclosed in silk bags. The tissue residue is recovered from the stools, sectioned, stained and examined for nuclei. Some have advocated the use of material with stained nuclei derived from thymus. These details are of secondary importance in relation to the underlying assumption that ordinarily pancreatic juice alone will dissolve the nuclei—an assumption on the truth of which the worth of the test must depend or fail.

The Schmidt nuclear test has not lacked critics who have attributed some digestive power on nuclear tissue to intestinal and even gastric juice, not to mention bacterial agencies. At the Johns Hopkins Hospital it has been possible to apply a crucial test, so to speak, to the problem involved by making observations on a patient known to have a complete absence of pancreatic secretion in the intestinal tract. Atchley[9] added thymus gland, one of the tissues richest in nucleoprotein, to the food of the patient, and estimated the urinary output of uric acid. Inasmuch as the metabolism of the purins derived from the digestion of nucleoproteins leads to a prompt increase in the production of uric acid which is readily demonstrated in a healthy subject, this factor can be used to ascertain whether the nuclear tissue has been digested and the purins have been made available in the gastro-intestinal tract. That this conversion actually occurred in the absence of both bile and pancreatic juice in Atchley's patient was attested by the marked rise in uric acid excretion following the ingestion of 150 grams of thymus as a supplement to a purin-free diet. The exogenous output of uric acid exceeded the endogenous level by more than half a gram. This demonstration of the digestion of thymus nuclei with the production of uric acid independently of the pancreatic secretion, together with a negative result of the Schmidt test in the same case and in many others reported, "definitely points out the worthlessness of the Schmidt nuclear test for pancreatic function."

9. Atchley, D. W.: Nuclear Digestion and Uric Acid Excretion in a Case of Total Occlusion of the Pancreatic Duct, Arch. Int. Med., May, 1915, p. 654.

SALICYLATES, URIC ACID AND GOUT

The desirability of detailed information regarding the drugs which enter most commonly into the therapeutic equipment of the practitioner of medicine is manifest. Salicylates belong in this category. They are employed widely—perhaps not always wisely—especially as "specifics" in acute inflammatory rheumatism or acute arthritis. Salts of salicylic acid form the essential ingredient of many of the secret remedies for these conditions. It has long been known that salicylates will provoke a significant increase in the output of uric acid. According to Rockwood's experiments[1] on man, this effect is confined to the ortho-hydroxybenzoic acid (salicylic acid), and is not obtained by the isomeric parahydroxybenzoic and metahydroxybenzoic acids.

Another chemical substance which, only recently, has come into prominence in therapy, and which likewise induces an increased output of uric acid in man, is phenylquinolin carboxylic acid, sold under the name of atophan. Various American investigators have demonstrated that this effect is accompanied by a commensurately lowered concentration of uric acid in the blood.[2] From this the conclusion was drawn that atophan induces some change in the permeability of the kidneys for uric acid, establishing for this metabolic product a lower level of renal retention, as the result of which there ensues an overflow of uric acid from the blood and tissues into the urine.

Naturally, one asks whether the increased amount of uric acid eliminated under the influence of salicylic acid finds a similar explanation pointing to changes in the renal permeability. New studies by Fine and Chace[3] at the New York Post-Graduate Medical School indicate a close resemblance between atophan and salicylates in this respect. In several instances, the effect of the latter drug was, if anything, even more marked than that of atophan, and caused an almost complete disappearance of uric acid from the blood. No such results were obtained with maximum doses of colchicum, which still enjoys some reputation as a drug in rheumatic affections; nor was quinin hydrochlorid or theobromin sodium salicylate effective in reducing the uric acid concentration of the blood.

Although to the parallelism between atophan and salicylates as analgesics and uric acid eliminants is now added a similarity in their behavior toward the kidney, in so far as this is attested by the lowered concentration of uric acid in the blood, the relation of this factor to attacks of gout is far from solved. Many facts on record, dating from the original con-

1. Rockwood, E. W.: The Influence of the Isomers of Salicylic Acid on Metabolism, Am. Jour. Physiol., 1909-1910, xxv, 34.
2. Fine, M. S., and Chace, A. F.: Jour. Pharmacol. and Exper. Therap., 1914, vi, 219. This gives recent data and the literature on the subject.
3. Fine, M. S., and Chace, A. F.: The Influence of Salicylates upon the Uric Acid Concentration of the Blood, Jour. Biol. Chem., 1915, xxi, 371. Frank, E., and Pietrulla, G.: Arch. exper. Path. u. Pharmakol., 1914, lxxvii, 361.

tentions of Garrod,[4] have suggested a validity for the hypothesis that the attacks are due to increase of the uric acid content of the blood above its saturation point as the result of the inability of the kidneys to excrete the product satisfactorily. With the newer methods of blood analysis, numerous instances have been described in which an increase in the uric acid content of the blood has actually been found. Doubt is again raised, however, by the latest contribution of Daniels and McCrudden[5] on the possible relation of uric acid to typical gouty attacks. They have found in two carefully selected cases of real gout—not atrophic or hypertrophic or infectious arthritis—that theory and fact are not yet in harmony in every instance. There was no more uric acid in the blood of these gouty subjects than in the blood of normal individuals. The concentration in the blood was not altered during attacks of gout, nor was the excretion of uric acid changed during these paroxysms. More anomalous, further, is the fact that attacks of gout came on even when the uric acid content of the blood was greatly lowered during atophan administration, as shown by chemical analysis. When competent investigators thus differ, something remains to be discovered.

Current Comment

A DEBATED FACTOR IN THE METABOLISM OF CHILDREN

Several years ago, W. C. Rose pointed out the constant occurrence of creatin in the urine of children until about the age of puberty. The statement was verified later by Folin and others. Creatinin is, of course, a constantly present constituent of human urine; creatin, a compound very closely related to it, is rarely found as an excretory product of the metabolism except under what may be regarded as abnormal or unusual conditions. Creatin arises in the urine of adults in various forms of carbohydrate starvation; it is present in the renal secretion in severe forms of diabetes, and can readily be induced to appear in the urine of normal man by withholding carbohydrates from the diet. With the replacement of the latter, the creatinuria disappears. Procedures which deplete the store of glycogen in the body are likely to provoke the appearance of creatin in the urine along with creatinin. The estimation of creatin in urine is subject to errors of method which have been discussed in relation to the reported appearance of this constituent in the excretion of children. More significant is the intimation, however, that creatin actually occurs in their urine,[6] but is due to a deficiency of carbohydrate in the diet of childhood. Taylor,[7] of the University of Pennsylvania, has made an experimental investigation of these criticisms under conditions in which they were presumed to be controlled or excluded. He found that creatinuria persists in the child in spite of high intakes of carbohydrate, and insists that there is a partition of creatin-creatinin in the urine of children "naturally and reasonably to be ascribed to incomplete conversion of creatin into creatinin." The absolute figures for the sum of these two constituents compare approximately with those noted in adults when the weights of the children and the probable masses of muscular tissue are considered. This corresponds with Shaffer's postulate of the relation of urinary creatinin to the mass of muscle substance in the adult.

4. Garrod, A.: The Nature and Treatment of Gout and Rheumatic Gout, London, 1859.
5. Daniels, Amy L., and McCrudden, F. H.: The Relation of Uric Acid to Gouty Attacks, Arch. Int. Med., June, 1915, p. 1046.
6. For evidence of the identity of the creatin, see also Morris, J. L.: Creatine and Creatinine Determinations: The Identity of Creatine, Jour. Biol. Chem., 1915, xxi, 201.
7. Taylor, A. E.: On Creatinuria, Jour. Biol. Chem., 1915, xxi, 663.

THE LIVER AND UREA FORMATION

Recent physiology has clearly established two facts of importance in the metabolism of the nitrogenous compounds. One is that the amino-acids resulting from the digestion of proteins in the gastro-intestinal tract are probably absorbed, without undergoing any change, through the intestinal wall, and are distributed by the blood stream to the various tissues of the body. The second fact is the demonstration of the widespread distribution of urea, the end-product of protein metabolism, in diverse parts of the organism.[1] The thoughtful person is accordingly led to inquire how and where the conversion of amino-acid to urea is accomplished. The chemical metamorphosis of nitrogenous compounds which ends in the production of urea requires little time for its completion. Since the classic experiments of von Schroeder in 1882, it has been taught that the liver takes a prominent, or even preeminent part in the function of urea formation. Lately, however, the special predominance of the liver in this connection has been called into question by American investigators. The details of the controversy, involving the question of technic and the validity of certain experimental methods, will scarcely interest our readers. The newest feature worthy of notice here has been contributed by Dr. B. C. P. Jansen[2] of the University of Amsterdam in Holland. He has rescued the liver from its enforced oblivion in relation to the metabolism of amino-acids by demonstrating, in perfusion experiments on the surviving extirpated organ, that it can, after all, play an important part in the formation of urea from these nitrogenous precursors. Good experimental methods can usually be depended on to bring results.

COMPOSITION OF THE PITUITARY BODY

The increasing use of extracts of pituitary glands or of products prepared from them makes it more than desirable to obtain detailed information regarding the composition of these important structures. In the case of other so-called glands of internal secretion, it will be recalled that distinct seasonal variations have been found to exist in respect to the assumed active con-

1. The Distribution of Urea in the Body, editorial, The Journal A. M. A., Sept. 26, 1914, p. 1115.
2. Jansen, B. C. P.: The Function of the Liver in Urea Formation from Amino-Acids, Jour. Biol. Chem., 1915, xxi, 557.

stituent.[1] Large numbers of pituitary glands have been collected in one of the manufacturing plants for organotherapeutic preparations, at the height of the outdoor season, and likewise during the coldest period of the year.[2] These extremes of summer and winter months might be expected to disclose any detectable or important seasonal differences if they exist. The physiologic activity of the different preparations was carefully compared by the isolated uterus method described by Roth.[3] This sensitive standardization procedure showed that no distinct seasonal variation exists in either chemical composition or physiologic activity of the posterior lobe of the pituitary body from cattle. It was further ascertained that the strength seems to be the same both in cattle (herbivora) and in hogs (omnivora). The posterior lobe of the gland of the hog is twice as large in proportion to the weight of the entire pituitary as that in cattle. Approximately 10 per cent. of the beef glands contain colloid masses secreted between the anterior and posterior lobes. This material, however, does not exhibit any pronounced uterus contracting power. Facts like the foregoing ought to render the standardization of pituitary products more easy than in the case of raw glandular material subject to conspicuous changes of composition from month to month.

1. Seasonal Variation in Composition of Thyroid Gland, editorial, THE JOURNAL A. M. A., Jan. 9, 1915, p. 155.
2. Fenger, F.: On the Composition and Physiological Activity of the Pituitary Body, Jour. Biol. Chem., 1915, xxi, 283.
3. Roth, G. B.: Hyg. Lab. Bull. 100, U. S. P. H. S., 1914.

RESTRICTED PRACTICE FOR DRUGLESS PRACTITIONERS

Under the pretext that they were "not practicing medicine," so-called drugless practitioners have prevailed on the legislators of several states to pass laws granting them the privilege of obtaining licenses to treat the sick under educational standards that are lower than are required of physicians. In the majority of these states the law does not permit such practitioners to practice surgery or to prescribe drugs; they are supposed to limit their practice to the use of the method or system of treatment advocated by the particular cult to which they belong. This arrangement, in which the public interests are forgotten, if not deliberately set aside, is indefensible from every point of view. It is class legislation, since it provides unequal standards for different groups of practitioners of the healing art. The limitation of practice is dangerous, since those who undertake to treat the sick should be acquainted with all methods of treatment and be free to use the one which meets the immediate needs of the patient — to save his life, if it is an emergency case, the prompt administration of a drug may be essential. The arrangement is a serious handicap to those drugless practitioners who honestly comply with its provisions, and places a premium on law-breaking, deceit and pretense for those who disregard the restrictions. In short, this scheme of restricted practice provides a limitation which does not limit; it adds to the confusion already existing in the licensing of physicians; it defeats the purpose of the medical practice act, and betrays the public to the hordes of those who are not qualified by training to know whether a patient is sick or well, to differentiate between diseases, to select and apply the treatment most likely to result in a cure, or to take such measures as will prevent the spread of a contagious disease to others. The only way to correct the evils of this bad arrangement, and at the same time safeguard the public welfare, is to require every practitioner of the healing art to meet certain minimum educational qualifications by which it can be known that he has obtained a satisfactory training in the fundamental medical sciences. The interests of the public should not be pushed aside in order to favor any body of practitioners, by whatever name they may be called.

PEPSIN IN GASTRIC THERAPY

It is only a few years since pepsin was widely and freely prescribed in all sorts of gastric disorders. Today this custom is practically discontinued, and even the ubiquitous chewing gum no longer has its sales increased by the device of including the alleged presence of pepsin among its claims. The reason for this decline in the popularity of pepsin as a remedy in digestive disturbances is perhaps to be found in the fact that analyses of the gastric contents have revealed the constant presence of the digestive enzyme in all but the most exceptional cases of organic disease. Furthermore, the administration of pepsin alone rarely gives occasion to suspect that this form of medication produces any curative effects. Recent observations in the laboratories of the University of Chicago have indicated the enormous "factor of safety" which the human organism seems to possess in respect to the pepsin of the gastric secretion.[1] An adult normal person, if hungry, may secrete from 600 to 700 c.c. (20 to 23 ounces) of gastric juice on an average palatable dinner, or about 1,500 c.c. of gastric juice in twenty-four hours. Carlson[1] has found by actual experiment with the product of human secretion that 1 c.c. of the juice will readily digest 10 gm. (150 grains) of finely divided boiled egg-white in three hours. From such data it is easy to calculate that the normal human stomach secretes pepsin far in excess of the actual needs of the gastric digestion of proteins, or at any rate in excess of what is required under ordinary conditions. Carlson remarks that this great excess of pepsin in normal gastric juice probably explains the clinical finding of great reduction in pepsin content without any evidence of impaired gastric digestion, provided that sufficient acid is present.

1. Carlson, A. J.: Contributions to the Physiology of the Stomach, XXV, A Note on the Chemistry of Normal Human Gastric Juice, Am. Jour. Physiol., 1915, xxxviii, 248.

Contamination of Shellfish.—There is undisputed evidence to show that shellfish become contaminated when placed in sewage-polluted water, and that the colon bacillus and the typhoid bacillus will survive for variable lengths of time in the liquor and the body contents of such shellfish after their removal from infected water.—Dr. J. A. Shears, *Monthly Bull.*, New York City Department of Health.

Medical News

ILLINOIS

Diphtheria in DuQuoin.—On account of an epidemic of diphtheria in DuQuoin, the mayor has issued a proclamation forbidding children under 16 to attend picture shows, churches or public gatherings.

Crile in Jacksonville.—At the annual picnic of Cass and Morgan County medical societies, held at the farm of Dr. Carl E. Black, Jacksonville, in Cass County, Dr. George W. Crile, Cleveland, delivered an address on "The Goiter Question," and after the address, Dr. Crile gave his first-hand impressions of the European War.

Fair Abandoned on Account of Cattle Disease.—The Lake County Fair has been abandoned on account of the prevalence of foot and mouth disease. One hundred animals, the property of John Tulley, living east of Halfday, have been slaughtered, and a number of cows and hogs have been killed on other farms in the vicinity. Dr. O. E. Dyson, state veterinarian, is in charge of the situation.

Inspection of Maternity Hospitals.—The State Board of Administration has undertaken the task of the inspection of maternity hospitals and has been in conference with Dr. C. St. Clair Drake, secretary of the State Board of Health, regarding the fixing of standards for these institutions. After this has been arranged, a systematic inspection of institutions of this source will be undertaken.

Psychopathic Institute Instruction.—The superintendents of the state hospitals and the institutions for the feebleminded at Lincoln, have been directed by the State Board of Administration to take a course of instruction at the Psychopathic Institute, Kankakee. Dr. George A. Zeller, Springfield, alienist of the board, is arranging the details and is making the necessary schedule of instruction periods.

More Delay About Sanatorium.—The City Council of Rock Island on August 12, granted full authority to the sanatorium commission to receive bids and let contracts for the construction of the institution. On August 24 the sanatorium board met with the city commissioners at the mayor's office, and the city council by vote, defeated the recommendation of the board that the bid for the general construction work for the tuberculosis hospital, be accepted.

Personal.—Dr. George K. Harris, Vienna, has resigned as superintendent of the Chester State Hospital and Dr. Jerome L. Harrel, Norris City, has been appointed his successor. ——Dr. Frank A. Stubblefield, Jacksonville, for twelve years a member of the staff of the Jacksonville State Hospital, has been appointed medical director of the new Alton State Hospital.——Dr. Harry S. Seiwell, medical director of the Alton State Hospital, has been transferred at his own request to the Watertown State Hospital.——Dr. Hugh S. Schofield, Kankakee, was operated on August 20, in the Emergency Hospital, Kankakee, for appendicitis.——Dr. James Archibald, Breese, has started for Europe where he expects to work with the American Red Cross.——Dr. John W. Geiger, LaSalle, is convalescent after an operation for appendicitis.——Dr. J. N. Swan, Monmouth, has been appointed professor of chemistry in the University of Mississippi.

Chicago

Sanitary Inspectors in Police Stations.—Dr. John Dill Robertson, commissioner of health, has detailed a sanitary inspector to each of the more important police stations, with instructions to operate directly from these stations instead of from the city hall.

Progress of Negroes in Medicine.—On August 22, colored physicians from all parts of the country addressed audiences in the colored churches in Chicago on topics relative to public health and on the three following days clinics were held in Mercy, Cook County, Provident and St. Luke's hospitals, conducted by both white and colored physicians.

To Aid Consumptives.—An order relative to the admission of patients to the Municipal Tuberculosis Sanatorium, was promulgated August 21 by the chief of police, and at the same time small maps were sent to each police station showing the location of dispensaries maintained by the sanatorium in various parts of the city. These maps are to be posted conspicuously in the police stations and all persons making inquiries will be directed to the dispensary nearest the station where the inquirer will receive instruction how to gain admittance to the sanatorium.

INDIANA

Doubled Capacity of Open-Air School.—The board of school commissioners for Indianapolis has doubled the capacity of the open-air school for consumptive children. For the coming year accommodations will be provided for more than fifty children.

Disease Prevention Day.—The governor has issued a proclamation designating October 1 as disease prevention day throughout the state. He urges that exercises be held in the public schools on this day and that municipal, civic and other organizations cooperate to make the effort a success.

Personal.—Drs. Robert C. and Mason B. Light, Broad Ripple, Indianapolis, suffered several hundred dollars worth of damage from a fire at their office, recently.——Dr. General W. H. Kemper, Muncie, celebrated his fiftieth year of continuous practice of medicine, August 19, with a reception in the parlors of the Muncie Commercial Club.——Dr. Charles E. Phipps, Muncie, has been appointed physician at the National Soldiers' Home, Milwaukee.

IOWA

Money Saved for State.—According to figures compiled by Dr. Guilford H. Sumner, Des Moines, secretary of the State Board of Health, the state has been saved about $10,500 during the past year on the purchase of diphtheria antitoxin. The commercial value of the amount used in the state would have been about $15,000, whereas it cost the state about $4,500.

Personal.—Dr. Edgar B. Henderson, Marengo, who has been seriously ill, is reported to be improving and has gone away for a rest of a month. During Dr. Henderson's vacation, Dr. Ruby Helen Payne will have charge of his practice. ——Dr. Theodore W. Kemmerer, Davenport, has accepted the position of assistant professor of pathology and bacteriology in the University of Southern California, Los Angeles.—— Dr. Herbert W. Piper, Conroy, who was seriously injured by the overturning of his automobile near South Amana, August 12, is convalescent.——Dr. Jennie G. Ghrist, Ames, has been elected supreme medical examiner of the Royal Neighbors of America.

MASSACHUSETTS

Grateful for Aid from Boston.—Surgeons in France and Belgium have sent notes of thanks to the Emergency Relief Committee of the Women's Department of the New England Section of the National Civic Federation, for the 321,763 surgical dressings shipped abroad for use in French and Belgian hospitals since the outbreak of the war.

Work of Floating Hospital.—An appeal is made for financial assistance by the Boston Floating Hospital, a unique and serviceable charity, by the aid of which lives of hundreds of children have been saved during the heated months during the last twenty years. The hospital is supplied with a force of competent physicians and nurses and in addition to the life-saving work for children, mothers and elder sisters are instructed in the methods of home care and treatment, the benefits of bathing, fresh air, diet and personal hygiene. The expense of the hospital is from $40,000 to $50,000 a year and a generous response to the appeal is expected and hoped for.

MINNESOTA

Sustaining the Harrison Law.—In the United States District Court at Minneapolis Judge Page Morris has sustained the constitutionality of the Harrison Narcotic Law by overruling a demurrer to the indictment of Dr. Wenceslaus Hovorka of St. Paul. It was contended by the attorney for Dr. Hovorka that the law is unconstitutional in so far as congress attempts to regulate the sale of narcotic drugs within a state in that it is infringing on the police powers of the state.

Personal.—Drs. Joseph C. Michael, St. Paul; Edward J. Engberg, St. Paul; C. A. Hilberg and J. F. Hilberg have been appointed teaching assistants in the Medical College of the University of Minnesota, Minneapolis.——Dr. Joseph C. Michael has been appointed a teaching assistant in the department of nervous and mental diseases of the college and has been assigned to the St. Paul City and County Hospital.—— Dr. James F. Hammond, who left St. Paul, April 12, to join the British army medical corps, is now in active service in the Mediterranean.——Prof. Frederick J. Wulling, dean of the College of Pharmacy of the University of Minnesota, was recently elected president of the American Pharmaceutical Association at its annual meeting in San Francisco.

MONTANA

Personal.—Dr. Frederick W. McCrimmon, Butte, who was seriously injured in a collision between a motor car and a motorcycle, July 18, in which he sustained a fracture of the base of the skull, has improved sufficiently so that he has been removed from the Murray Hospital to his home.——Dr. Harry J. McGregor has opened the McGregor Hospital in the Givens Building, Chouteau.——Dr. Johannes B. Makkyla, Red Lodge, has gone to Europe to work with the Red Cross.

NEW YORK

Sanitary Survey of Syracuse.—Inspectors of the Bureau of Health are making a sanitary survey of Syracuse. This survey includes the inspection of back yards, barns and office buildings and the search for nuisances and unsanitary conditions.

Pharmacists Support Movement Against Fraudulent Patent Medicines.—Following the action of the Bronx County Pharmaceutical Association in endorsing the Department of Health's campaign against "patent medicines," the Westchester County Pharmaceutical Association recently passed resolutions to the same effect.

Course in Public Health.—The College of Medicine of Syracuse University, in order to render service to the state, and to comply with the resolution adopted by the Public Health Council, offers two courses in public health: 1, a six weeks' course in residence consisting of practical laboratory and field work with lectures and readings. This course will be given from April 24 to June 4, 1916, provided not less than fifty physicians register and 2, a correspondence course consisting of 330 hours of various kinds of instruction, the last week being spent in residence at Syracuse. Lectures, laboratory and field work and examinations will constitute the work of the final week. This course will continue from September 21, 1915, until June 10, 1916, providing not less than fifty physicians register. Application for the first course should be filed before April 1, 1916, and for the second course before September 15, 1915. On satisfactory completion of either course, a certificate will be issued. The tuition fee is $50.00 for each course, payable at the time of registration, and all applicants must be graduates in medicine. For further information and application blanks, application should be made to the Secretary of the College of Medicine, Syracuse University, 309 Orange Street, Syracuse.

New York City

Opium Found on Vessel.—Customs House officials recently found opium valued at $3,200 aboard the British freighter *Ardgaroch*, which has been lying at a dock in this city. Four Chinamen responsible for the consignment were placed under arrest.

Work of New York Diet Kitchen Association.—This organization, in a plea for funds to carry on its work, points out that in its eight milk stations it has cared for during the summer 3,035 babies and among these there have been only four deaths from diarrheal disease. This is a new record in the city's campaign to reduce infant mortality.

The Typhoid Epidemic on Hart's Island.—The number of cases of typhoid fever in the Boys' Reformatory and the branch workhouse on Hart's Island has now reached 80 since the first of August and there have been five deaths. The source of the epidemic has not been definitely settled but there is a theory gaining some credence that these epidemics which have been occurring annually may be traced to Potter's Field, which is located on this island, and where over 200,000 unclaimed bodies have been interred.

Health Program for New York City.—Dr. Haven Emerson outlined a health program for New York City. He suggests that the health commissioner's position be made permanent and notes ten matters of health in the city which require attention, namely: sewage disposal; use of alcohol; stricter traffic control; a passable standard for tenement houses; the elimination of mosquito and fly breeding premises; the instruction of the public in food values; physical examination once a year by a physician; the education of the public in hygiene and sanitation; the lodging of the sanitary and administrative control of tuberculosis in one department; and the necessity of notification and registration of communicable diseases.

New Course in Surgery.—New York University announces that it will give a course in surgery as a distinctly philosophic study rather than as a technical science in its graduate school work for the collegiate year beginning in September. The announcement states that the primary purpose of this course is to furnish physicians and medical students an opportunity to study the theory of surgery from the standpoint of its relation to broad biologic laws. It is hoped by this method to develop a broader type of medical practitioner and surgeon. Students enrolling in this course will be required to have obtained either the baccalaureate degree in arts, science, philosophy or letters, or the degree of doctor of medicine from a college of standing.

Unincorporated Public or Private Hospitals.—The Sanitary Code provides that no person, persons, or corporation, other than those specifically authorized by law, shall conduct or maintain any public or private hospital or institution wherein human beings are treated by a physician or midwife, without a permit from the Board of Health or otherwise than in accordance with the terms of said permit. Before issuing a permit the Department of Health will hereafter require that applicants submit three letters of endorsement for the purpose of reference, one as to good character, from a layman; a second as to good character and professional standing from a physician, and a third from some person or persons living in the immediate neighborhood of the proposed sanitarium.

The Mikveh Baths.—The Department of Health has for more than a year been interested in the sanitation of the Mikveh's and has stimulated the formation of the Mikveh Owners Association which, at the recommendation of the Board of Rabbis, has adopted the following rules which all owners of Mikveh's are urged to enforce:

1. The pool to be emptied after every fifteen baths, and at night.
2. The bath to be disinfected by adding two ounces of chlorinated lime for every 1,800 gallons of water, every three hours the bath is in use.
3. Bathers to be required to take preliminary soap baths.
4. Towels to be sterilized after use.
5. No waste water to be allowed to drain into pool.
6. Clean and adequate toilet accommodations to be provided.
7. Walls of room to be rendered impervious to water (by white enamel paint or otherwise) to at least six feet above the floor level.
8. Bathers to be safeguarded from danger of fire.

Fighting the Mosquito.—The Board of Health is taking active measures to combat the mosquito, which has been more of a pest this summer in all parts of the city than for many years. Twenty-one inspectors in the five boroughs have, in addition to their other duties, been making an inspection of unused yards, drains and roofs and have been responding to the numerous complaints that have been pouring into the offices of the Health Department. So far but few malaria-bearing mosquitos have been found but special facilities have been provided by the laboratory of the Health Department for the examination of the blood of persons suffering from malaria in the mosquito infested neighborhoods. The inspectors have found that what is most needed to prevent the growth of the hordes of mosquitoes is public education and the department announces that a pamphlet on this subject will soon be issued for general distribution.

Fine Old Whisky as Dangerous as the Cheap Raw Product.—The *Weekly Bulletin* of the Health Department quotes from the summary of the Investigation Concerning the Physiological Aspects of the Liquor Problem by Dr. John S. Billings, Jr., which was prepared for the Committee of Fifty, showing that the common idea that a large part of the injury to health from the use of alcoholic drinks is caused by the injurious substances in the liquor such as fusel oil and furfurol which have not been properly removed is erroneous as is also the notion that cheap liquors contain larger quantities of such ingredients than others. The injurious effects of the fusel oil are trifling in comparison with those of the ethyl alcohol. The general conclusion is that fine old brandies and whiskies are nearly as likely to produce ill effects as the cheaper varieties of the present time if taken in the same quantities and the injurious effect is in proportion to the ethyl alcohol contained.

Fumigation Abandoned.—On December of 1914 the practice of fumigation of premises after the occurrence of infectious disease was discontinued excepting in Brooklyn where it was continued as a control measure. The results of this experiment have now been made public. In the Borough of Manhattan 193 later cases occurred among 3,451 primary cases of diphtheria. Of these 171, 4.9 per cent. would not have been affected by fumigation, and 22, 0.6 per cent., might have been so affected. In Brooklyn where fumigation was performed, there were 138 later cases among 2,907 original

cases. Of these 110, or 3.8, would not have been affected by fumigation, and 28, or 0.9 per cent., might have been so affected. Thus there were half again as many later cases in Brooklyn where fumigation was practiced as in Manhattan where it was not done. Fumigation will now be abandoned in Brooklyn as well as in the other boroughs of the city and in its place emphasis will be laid on thorough cleaning, opening up to fresh air and sunshine, and renovation by painting, papering and kalsomining.

NORTH CAROLINA

Health Officer Goes to South America.—Dr. William H. Kibler, Rocky Mount, whole-time health officer of Nash County, has resigned to accept a more lucrative position with the International Health Commission in South America, where he will work in the hookworm crusade.

Typhoid and Smallpox in Greensboro.—During June, 24 cases of typhoid fever were reported in Greensboro, 23 of which were in white persons. There were also reported 11 cases of smallpox for the month. The general vaccination now being carried out against both diseases, gives confidence to the belief that both are well under control.

Registry for Tuberculosis Nurses.—The State Sanatorium for Tuberculosis, Sanitarium, which recently inaugurated a training school for nurses, has opened a registry for nurses in the state who have had special experience in tuberculosis and who desire to be registered as special tuberculosis nurses. Requests with credentials and other references should be made to the superintendent, Sanitarium, N. C.

Traveling Public Health Exhibit.—Arrangements have been made whereby the entire public health exhibit of the State Board of Health will make the rounds of the various fairs of the North Carolina fair circuit, starting with Durham County fair, September 31, and closing at Charlotte, October 26. The exhibit will be in charge of a competent demonstrator who will be assisted in various towns by local health officers and physicians.

Perfection of Vital Statistics.—J. C. Jermane of the Federal Census Bureau, Washington, D. C., has completed checking up the records of the Bureau of Vital Statistics of the State Board of Health. A number of physicians have recently been prosecuted for failing to comply with the law regarding the record of vital statistics and it is the intention of the bureau to continue these prosecutions until the records of the state shall be full and reliable.

Harper Sanatorium Rumor Incorrect.—The rumor that Harper Sanatorium, Wilmington, will be taken over by a group of local physicians, is incorrect, as no agreement has been reached between these physicians and the administrators of the estate of the late Dr. Charles T. Harper. Dr. Joseph Akerman, Wilmington, is now in temporary charge of the institution and will continue to look after its affairs in addition to his own private practice.

OHIO

To Establish Medical Library.—The surgeons of the Cleveland City Hospital have agreed to devote the fees received for making out certificates for the state industrial commission patients, to the establishment of a medical library in the institution.

Preventable Disease in Ohio.—The last issue of the *Ohio Public Health Journal* estimates that the state is losing about $100,000,000 a year through illness and loss of life due to preventable diseases. Of the 63,399 deaths in the state in 1913, 28,000 were preventable, and in the same year there were 56,000 cases of preventable diseases. The paper goes on to show that tuberculosis is 75 per cent. preventable; typhoid fever, 85 per cent. preventable; pneumonia, 45 per cent. preventable, and diphtheria, 70 per cent. preventable; that at least one-half of the deaths of infants under 1 year of age, one-third of the diseases of middle life and one-fourth of the ailments of later life, might be prevented.

Personal.—Dr. Willard C. Stoner has returned to Cleveland after spending the summer at the University of Michigan. ——Dr. Robert Henderson, Urbana, who has been seriously ill for a month, is now reported to be convalescent.——Dr. and Mrs. Stephen A. Cunningham, Marietta, have returned from Europe.——Dr. Roy C. Wolcott, Troy, has been appointed professor of internal medicine in the Ohio State University.——Dr. Eugene F. McCampbell, Columbus, secretary of the State Board of Health, has been elected professor of public health in the Ohio State University.——Dr. Howard B. Hills, Youngstown, was operated on for appendicitis at St. Elizabeth's Hospital, August 13, and is doing well.——Dr. Shelby Mumaugh, Lima, was seriously injured and his wife was killed, August 1, when the automobile in which they were riding was struck by a Pennsylvania train at Smith's Crossing.

Cincinnati

Shortage of House Staff.—Dr. Arthur C. Bachmeyer, superintendent of the General Hospital, is facing a serious dilemma. On September 10 seven of the members of the house staff will leave on account of expiration of term of service. Three members of the staff left the institution prior to the expiration of their term of service so that there is now an imperative demand for ten new interns without prospect of a supply.

Personal.—Dr. Thomas H. Kelly of the house staff of Cincinnati General Hospital has been given a leave of absence preparatory to assuming the position of assistant to Dr. Robert S. Morris, Forchheimer professor of internal medicine in the Medical College of Ohio.——Dr. Lowry L. McHenry, assistant resident physician at the Branch City Hospital, has resigned, taking effect September 1.——Dr. Emil M. Strasser, for several years district physician of the sixth and seventh wards, has resigned.——Dr. Leopold J. Fogel, formerly a member of the board of education, who was struck by a motorcycle, August 3, and seriously injured, is improving.

OREGON

Personal.—Dr. John N. Smith, Salem, has succeeded Dr. Frederick H. Thompson, Salem, as superintendent of the State Feebleminded Institute and assumed charge of the institution, September 1.——A. F. Bernard, assistant city chemist of Portland, is ill in St. Vincent's Hospital with diphtheria, contracted it is believed while examining cultures in the laboratory in the City Hall.

New Birth Registration Law.—Under the new births and deaths registration law all physicians and midwives are required to register locally as well as in the state before September 1. In Portland City Health Officer Marius B. Marcellus has notified all physicians and midwives as well as undertakers that they must comply with the law by furnishing names and addresses before that date.

Tick Fever to be Fought.—P. A. Surg. Lunsford D. Fricks, U.S.P.H.S., and Dr. Calvin S. White, Portland, secretary of the State Board of Health, left Portland August 19 for the Warm Springs Indian Reservation where several cases of Rocky Mountain spotted fever have been reported. During this tour of investigation, the counties of Malheur, Grant, Harney and Crook will be inspected. During the last year there were 46 cases of tick fever in Oregon with six deaths.

PENNSYLVANIA

State Meeting.—The sixty-fifth annual session of the Medical Society of the State of Pennsylvania will be held in the Bellevue-Stratford Hotel in Philadelphia from September 20 to 23. The House of Delegates will meet Monday evening, September 20, at 8 p. m.

Rabies.—The discovery of a case of rabies in a cow on a farm in Brighton Township, Beaver County, has resulted in the placing of the entire herd under quarantine by State Veterinarian C. W. Greenlee. One cow was shot and another was found dead. It is believed that the disease was communicated by a collie dog which has disappeared.

Dr. Buchanan Retires.—Dr. John J. Buchanan, professor of surgery in the School of Medicine, University of Pittsburgh, for the past fourteen years, has resigned his active teaching and has been elected professor emeritus. Dr. Robert T. Miller who for the past five years has been associate professor in the Department of Surgery, has been appointed successor to Dr. Buchanan.

State Health Exhibit on Tour.—The health exhibit of the Pennsylvania Board of Health has started on its circuit of county fairs. It will be absent for two months and twenty-one county fairs will be visited. The exhibit is under the charge of Dr. William C. Miller, Bedford, who for several years past has occupied the position of traveling tuberculosis lecturer for the State Department of Health.

Health Safeguards on Railroad.—The rule established by the Pennsylvania Railroad Company in 1913 that a physical examination be made of all dining car and restaurant employees every three months has been changed so that such examinations will be made every month. The railroad company announces that extra precautions have been taken to prevent the spread of communicable diseases on its trains.

Smallpox in Orphanage.—It is reported that 121 persons in the United Brethren Orphanage and Old Folks Home at Quincy, near Waynesboro, have been vaccinated because of smallpox. The matron of the orphanage was said to be ill with the disease. Ninety-seven children were vaccinated. In the Old Folks' Home there were twelve cases of smallpox among twenty-nine inmates. Dr. B. F. Royer of the state health office is in charge and has quarantined the institution.

State Health Board Takes Charge at Erie.—On account of the recent flood at Erie, the State Board of Health has taken charge of sanitary affairs in that city working with the Municipal Health Department. Directions have been given to boil all water not obtained directly from the city mains; to exclude children from the devastated district; to avoid the use of any foodstuffs which have been exposed to flood waters; to burn all garbage and household wastes; and it is advised that all persons exposed to flood water, be given the antityphoid inoculation.

Personal.—Dr. George B. R. Umstad, Phoenixville, who has been seriously ill, is reported to be improving.——Dr. Robert L. Walter, Walters Park, Warrensville, has purchased the Linden Hall property in Doylestown and will remodel the house as a sanatorium.——Dr. James A. Hamma, Carnegie, who last year received a Carnegie hero medal and $1,000, is about to receive from the International Association of Casualty Insurance Underwriters, the George E. McNeill gold medal for rescuing Mrs. Rose Morrison from death under a train in Carnegie in October, 1913.——Dr. George S. Hensyl and Dr. Harry J. Krebs of Mahonoy City were badly and painfully bruised as a result of an automobile collision.——Dr. William D. Martin of Washington County, father of the "Good Roads Day," has been appointed by Governor Brumbaugh a delegate to the Pan-American Congress to be held in California this month.

Adulterated Vinegar.—The state dairy and food commissioner reports that he has purchased in the open markets of the state, 235 specimens of vinegar and as a result of the analyses of these vinegars has forwarded to the makers a letter directing attention to that portion of the Pennsylvania Vinegar Law which relates that all vinegar "made wholly or in part from distilled liquor." The law requires that this shall be branded as "distilled vinegar" and that it shall be free from coloring matter; shall contain not less than four per cent. of absolute acetic acid and that it shall be sold and billed as distilled vinegar. This product, the commissioner finds, has been labeled and sold as "white vinegar," "amber vinegar," "red vinegar," and various other names. The letter furthermore, calls attention to the interpretation of the vinegar law to the effect that no cider vinegar can be sold in the state if it contains any added water, drugs or acids. The letter closes by expressing the hope that the manufacturer will so conduct his vinegar business that the law will be complied with and that by so doing, trouble will be saved for all concerned.

Philadelphia

Personal.—Dr. James C. Attix who has been seriously ill, is now reported to be convalescent and has gone to the Delaware Water Gap to recuperate.——Dr. E. Olivia White, sailed from San Francisco for Hawaii September 1. She expects to make a study of leprosy in the leper colony at Molokai.

Postgraduate Clinics.—Beginning with October 1, Dr. Robert N. Wilson will continue his Friday afternoon postgraduate lectures on the heart. These lectures will be given from 5 to 6 o'clock in the amphitheatre of the Philadelphia General Hospital. There are no fees nor obligations connected with attendance on the course and all physicians and medical students are cordially invited to be present. The lectures will continue every Friday afternoon until April 28, 1916.

New Law Fills Schools.—Enforcements of the new compulsory education law passed by the last session of the legislature with regard to children between 14 and 16 years holding working certificates, may make it necessary for 12,000 of these workers to return to full time in the schoolroom. The new law requires after Jan. 1, 1916, that all children must have completed the sixth grade before leaving school. It is said the Board of Education will recall all of the 20,000 working certificates now held by children under 16 years.

Drug Law Enforced.—The federal authorities on August 24, started investigation of the habit-forming drug situation in this city and as a result it is claimed 100 physicians and druggists are systematically violating the provision of the Harrison act. It has been found that an endless chain system exists among certain physicians and druggists who are dispensing the "alleged cures." It is reported that the material being supplied by these men to the drug habitués is morphin. Several dispensers of this drug have been arrested.

New Division in Department of Health.—The new housing division of the Bureau of Health has been completely organized by Director Ziegler and all appointments of individuals to carry on this division of the health department have been made. In addition the director of the Health Department has already appointed eleven nurses to permanent positions in the division of child hygiene. Ten thousand dollars was appropriated by councils for this purpose at their last meeting. The eleven nurses who were appointed on August 24 have been in the employ of the health bureau during the summer as district nurses and have been aiding mothers in the care of their children during the hot season.

Bakeshops Warned.—Dr. Ziegler, director of the Department of Public Health and Charities, has issued a bulletin to restaurants and bakeshops pointing out that the public is strongly averse to patronizing unclean eating places and that to gain favor bakeshops should at once install sanitary systems in their places of business. Cleanliness, freedom of dust, dirt and flies in the case of all foodstuffs and like care of utensils, floors, tables and everything pertaining to the serving of food and milk is an absolute necessity. Floors of bakeries should be constructed of impervious material. Unnecessary handling of foodstuffs should be avoided. Only waxed paper should be used for wrapping bread, pastries, etc., and all boxes, baskets or other receptacles containing food products conveyed through the streets should be tightly covered.

WISCONSIN

Tuberculosis Camp Opened.—The tuberculosis camp at Tomahawk Lake is now open for patients. The applications of eight have already been passed on by the State Board of Control and there is at present, room for about thirty. Only incipient cases will be accepted at the camp.

Whooping Cough.—An epidemic of whooping cough exists in Milwaukee and Health Commissioner George C. Ruhland urges citizens to aid in stamping it out before the opening of the schools. In one district in the eighteenth ward it is said there are twenty-nine cases. Notices have been sent out to all moving-picture theaters and to Sunday schools that children suffering from whooping cough must be excluded and the names of parents reported to the health department. An effort will be made to stamp out whooping cough before the opening of the schools.

New Hospital.—Drs. Edmund W. Timm, Milwaukee, and William F. Hilger, Milwaukee, have filed articles of incorporation for the Washington General Hospital to be erected near Washington Park, Milwaukee. The institution is capitalized at $35,000. The building will be three stories in height and will provide accommodations for 64 patients.

Personal.—Dr. John M. Dodd, Ashland, has succeeded Dr. John M. Beffel, Milwaukee, as secretary of the State Board of Medical Examiners. Dr. Beffel still remains on the board.——Dr. Argo M. Foster, Racine, was seriously injured in a collision between his automobile and an interurban car at Wright Street, Racine, August 18. Dr. Foster is suffering from a fracture of the skull, a fracture of the shoulder and numerous cuts and bruises.

Tuberculosis Information Bureau Opened.—The Wisconsin Antituberculosis Association has established a central bureau of information through which physicians, nurses and patients may learn of vacancies in the various county sanatoriums of the state.——Brown County has recently increased the accommodations at its sanatorium by the addition of two porches.——Eau Claire County is building an addition which will increase the capacity of its sanatorium from thirty-two to fifty patients.——Muirdale, the new Milwaukee County Sanatorium when completed will accommodate about 300 patients.

WYOMING

Basin Physicians Organize.—Physicians and dentists of the Big Horn Basin met recently and organized the Northwest Medical Society and elected the following officers:

president, Dr. Walter O. Gray, Worland; vice president, Dr. Jesse D. Lewellen, and secretary-treasurer, Dr. Theodore B. Torjuson, Lovell.

CANADA

Motor Ambulance Donated.—Orillia, Ont., has contributed three motor ambulances for service in France. The ambulances will be built in Orillia and manned by Orillia men.

Edmonton Physicians Favor Prohibition.—The Academy of Medicine, Edmonton, has adopted the following temperance resolution: That the Academy of Medicine of the City of Edmonton, Alta., go on record as being in favor of prohibition in the Province of Alberta and endorse the proposed liquor act for the suppression of the liquor traffic in Alberta.

Hospitals for Wounded Soldiers.—The Academy of Medicine, Toronto, through its council, has adopted a resolution calling for the immediate establishment of hospitals for the wounded soldiers returning to the city. They recommend a clearing hospital in Toronto. As a result it is announced that convalescent homes are to be opened in Toronto next week. Arrangements have been made to provide for the care of the tuberculous at the Muskoka Sanitarium, Gravenhurst.

Sound Teeth for the Soldiers.—Canada has recognized the importance of sound teeth for the soldier. There are now with the oversea troops from Canada fifty-five to sixty dentists and about twenty-five more are at work in the camps in Canada. All these dentists are regular officers of the Canadian army. At the beginning of June Britain had about seventy dentists at the front but these have no permanent army status. There is no expense attached to the work to the soldier, the expense being borne by the militia department.

Hospital News.—The Canadian Red Cross Society has been obliged to decline an offer from Norway to take care of Canadian wounded when they have sufficiently recovered to spend their time in fishing.——Forty-eight patients were admitted to the Hazelwood Sanitarium for Tuberculosis at Halifax, N. S., between January, 1914, and May, 1915. All were suffering from tuberculosis in an advanced stage. Twenty-eight were discharged, six of whom died subsequently, and twenty deaths occurred at the institution. Improvement was shown in 12 cases and 9 are now at work. ——A new hospital is being erected at Newcastle, N. B., with accommodation for over forty patients.——Prince County Hospital, Prince Edward Island, admitted 303 patients from June 1, 1914, to May 31, 1915. The building is to be enlarged, as the accommodation is overtaxed.—— The Women's College Hospital and Dispensary was opened at Toronto July 17. Dr. Geraldine Oakley, Northampton, Mass., has been appointed superintendent. It has twenty-one beds.——A whooping cough clinic has been opened at the Sick Children's Hospital, Toronto. It is said to be the first of its kind in America.——Winnipeg General Hospital gave treatment to 4,784 patients during the first four months of the present year, a thousand more than in the same period in 1914.

Personal.—Dr. Ernest R. Myers, Saskatoon, has been appointed regimental surgeon of one of the Saskatchewan regiments of the Canadian expeditionary force.——Dr. Karl Hollis, Toronto, Ont., a student of Mount Allison University, N. B., six years ago and a graduate of medicine of the University of Pennsylvania, has been gazetted to the Canadian medical corps.——Dr. Howe A. Jones, Salisbury, N. B., has left for Halifax, N. S., for a two months' military course before joining the Canadian medical corps for overseas service.——Dr. Herbert B. Rogers, Victoria, Vancouver, is going to France and will be attached to a hospital corps for special work.——Lieut. H. Kendall Bates, M.D., Toronto, has left for the front with B section, No. 2 field ambulance.——Lieut. D. E. Wishart, son of Dr. D. J. Gibbs Wishart, Toronto, has been granted a commission in the Royal Army Medical Corps. ——Dr. Alfred K. Haywood, assistant superintendent, Toronto General Hospital, and medical officer third battalion, first brigade, and who has been operated on in London for appendicitis, sailed for Toronto on the *Missanabie,* August 20.—— Capt. James A. Henderson, M.D., Regina, Sask., has entered the Royal Army Medical Corps. Captain Henderson saw service in South Africa where he won two bars and three medals for bravery on the veldt.——Dr. John R. Irwin, Cobourg, Ont., has left to join the R. A. M. C. in England. Being a member of the town council of Cobourg, the doctors of the town presented him with a solid gold wrist watch, and the matron and nurses of the hospital gave him a signet ring.

GENERAL

Meeting of the American Social Hygiene Association.—The annual meeting of the American Social Hygiene Association will be held at Boston, Oct. 8, 1915.

Mayo Addresses Interstate Physicians.—Dr. Charles H. Mayo, Rochester, Minn., was the guest of honor at a dinner at the Hotel Blackhawk, Davenport, Ia., September 1. After the dinner he delivered an address on "Infection as a Cause of Local and General Disease," before the Iowa and Illinois Central District Medical Association.

Examiners for Civil Service Commission.—Physicians desiring to be designated as local medical examiners for the United States Civil Service Commission who are willing to execute medical certificates in connection with Civil Service Examination for a fee of $1.00, are requested so to advise the District Secretary, Fourth Civil Service District, Washington, D. C.

Washington Leper at Pittsburgh.—The leper, Emil R. Grable, who escaped from detention in Washington, D. C., was found at Pittsburgh and is now in custody there, living in a tent.——The leper found in Michigan is in charge of the authorities of the University of Michigan at Ann Arbor, where he is under treatment by Dr. Udo J. Wile of the Department of Dermatology.

Personal.—Surgeon Victor G. Heiser, U.S.P.H.S., formerly Commissioner of Health, Philippine Islands, arrived in New York from London August 11. Dr. Heiser has returned to the United States to make a report to the Rockefeller foundation of his investigations in the Philippines and India of hookworm and other diseases.——Drs. Jorge del Toro, Jose S. Belaval and Walter A. Glines, all of San Juan, announce the opening of the Porto Rico Sanatorium at Santurce, P. R.

Pellagra Conference.—The third triennial conference for the study of pellagra will meet again in Columbia, S. C., in October. The conferences of 1909 and 1912 were held in Columbia. Surgeon-General Blue of the United States Public Health Service has announced that experts from the Public Health Service will be detailed to attend the convention. There are about 175 members of the conference; Dr. J. W. Babcock of Columbia is secretary, and chairman of the committee on arrangements. Dr. C. H. Lavinder is president of the conference.

Bequests and Donations.—The following bequests and donations have recently been announced:

Harper Hospital, Detroit, $10,000, to pay expenses of Y. W. C. A. women unable to pay their own. Women's Hospital, $5,200 for a free dispensary and $1,000 for equipment of rooms in hospital; the University of Michigan, Ann Arbor, $6,000, to be known as the Florence Huson fund to defray the expenses of women students (preferably of medicine), by the will of Dr. Florence Huson, Detroit.

Riverside Infirmary, Charleston, S. C., from $60,000 to $70,000 for the erection of an annex to be known as the Joseph Thompson Annex, or enlarging or remodeling of the present building. It is then to be called the Joseph Thompson Infirmary. St. Margaret's Home for Incurables, $10,000, and Dr. William Henry Johnson, $10,000 by the will of Mrs. Rosa Thompson.

Mount Sinai Hospital, New York City, for the purpose of establishing a convalescent home to be known as the Valeria home, the residuary estate of Jacob Langecloth, valued at $3,414,552.

Cornell Educational Association—A Warning.—In spite of repeated warnings, some of our readers are still allowing themselves to be swindled. The latest scheme is one that appeals to those who are ever ready to help a fellow mortal. As one of the victims writes, "The scheme looked genuine to me and I concluded to assist the young man in obtaining a scholarship." This young man has a regular printed blank indicating that he is a "contestant" for a prize in the form of a scholarship in Cornell, to be awarded to the one who sends in the most business in a certain length of time. The doctor was "worked" for $10 for THE JOURNAL of the American Medical Association and $5 for the *Literary Digest.* The address given as the headquarters of the concern is 416 N. Clark Street, Chicago. This is a three-story brick building with a barber shop and restaurant on the first floor, a theatrical costuming establishment on the second, and the third is used for renting out cheap furnished rooms. There was no evidence of any Cornell Educational Association, or of any other organization.

Warning against Canning Compounds.—The U. S. Department of Agriculture has issued a warning against the use of salicylic and boric acids as preservatives in the canning of fruit. It is said that these drugs are sold under various trade names with instructions to put a teaspoonful in the top of the fruit jar just before closing it. While these drugs may prevent decay for a while, their use may be accom-

panied by disturbances of health, chiefly derangements of the digestion The use of such preservatives in fruit canned and sold in interstate commerce is prohibited by the Food and Drugs Act, and various states have regulations concerning their use. These laws do not cover the use of canning compounds in fruit for domestic use put up in the home. It is on this account that the warning is issued. It is pointed out that fruits and vegetables can be kept indefinitely if they are sterilized by heat and properly sealed. The department calls attention to the bulletins issued on the canning and preserving of fruits and vegetables, which may be procured on application to the department, Washington, D. C.

Examination for Bacteriologist.—The United States Civil Service Commission announces an open competitive examination for sanitary bacteriologist for both men and women September 22, to be held at points throughout the United States where such examinations are usually held. From the list of eligibles resulting from this examination certification will be made to fill several vacancies in this position in the Public Health Service for duty in the hygienic laboratory, Washington, D. C., or for field service. The salary is $1,500 per year and the duties of the position are to assist in the study of stream pollution, water supplies, sewage disposal and other public health problems. Applicants should be competent to make the usual bacteriologic examination of water and sewage. Graduation from a scientific course in a recognized college or university or the degree of doctor of medicine is a prerequisite for consideration. Applicants should be between 20 and 35 years of age. A knowledge of French and German is desirable. Persons who desire to take this examination should apply to the United States Civil Service Commission, Washington, D. C., for form 1312.

FOREIGN

Spanish King's Surgeon in America.—Dr. Florestan Aguilar, personal physician to the King of Spain, arrived in America recently on his way to San Francisco where he is to deliver an address on "Surgery of the Face," before a medical convention.

Production of Salvarsan Beyond Sway of Patent Laws.—The *Dermatologische Wochenschrift* of August 7 states that the production of salvarsan is now under way at Dairen, where the Southern Manchurian R. R. has a laboratory. The chemical research preliminary to its production is said to have been done in Japan. Manchuria is said to be a part of the world over which patent laws have no jurisdiction.

The Mineral Waters of Portugal.—Our Lisbon exchange, the *Medicina Contemporanea* arrives this week as a bulky double number entirely devoted to a compilation of the scientific data on the mineral waters of Portugal. The springs are classified according to their composition, actions and uses, with a number of practical suggestions to guide physicians in their advice to patients, a timely work now that the spas of Europe are rendered inaccessible to foreigners by the war.

WAR NOTES

Personal.—Dr. Alexis Carrel, New York City, of the Rockefeller Institute will, it is reported, receive the next promotion to the rank of Chevalier of the Legion of Honor.

Red Cross Units Return.—The National Red Cross has directed the return to the United States, not later than October 1, of all Red Cross units except those in Belgium and Serbia.

Cholera in Austria and Germany.—The Austrian Minister of the interior is reported to have announced that on August 19, there were 1,566 cases of cholera reported in Austria. The bathing places on the river near Berlin have been closed by the police on account of the prevalence of cholera among the shipworkers in the Brandenburg district.

Red Cross Day.—August 28 was celebrated at the Panama-Pacific International Exposition as "Red Cross Day," and a program was carried out which included an address by Miss Mabel Boardman, chairman of the National Relief Board, on "What the American Red Cross has done in War and Peace," and an address by Ex-President William H. Taft on "The Efficiency and Economy of our American Red Cross and its Neutrality."

Aid for Belgian Physicians.—The report of the treasurer of the committee of American Physicians for the Aid of the Belgian profession for the week ending August 28, 1915, lists the following contributions:

Warren County Medical Association, Vicksburg, Miss.	$ 10.00
Receipts for the week ending August 28	$ 10.00
Previously reported receipts	7,804.84
Total receipts	$7,814.84
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
353 standard boxes of food at 2.28	804.84
Total Disbursements	7,310.04
Balance	$ 504.80

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

BERLIN LETTER

BERLIN, July 20, 1915.

Epidemics in the Franco-Prussian War

In order to gain a correct idea of the progress made in the prophylaxis and treatment of diseases incident to war, it will be profitable to draw comparisons. Readers will be interested to receive some information with regard to the infectious diseases prevalent now which may be compared with those rampant at the time of the Franco-Prussian war of 1870-1871.

The German fighting strength in round numbers was 936,000 men, and the total number of persons participating in the conduct of the war was 33,100 officers, surgeons and officials and 1,113,250 soldiers. Of this number, 475,400 sick entered the hospital during the duration of the war; that is, 60.3 per cent. of the fighting strength and 42.7 per cent. of all those participating in the war. Comparing these figures with the years preceding the war, one is forced to the conclusion that the total number of sick during the war must have been higher than stated, and that persons only slightly ill did not, as in times of peace, apply for admission to the hospital, but remained ambulant.

A glance at the morbidity of each arm of the service shows that during times of peace it was lower among the infantry than among the members of the transportation corps, whereas, during the war these figures were reversed, 69.8 per cent. of the morbidity occurring among the infantry, and 69.5 per cent. among the members of the transportation corps. The artillery showed 55.8 per cent. morbidity, engineers 54.8 per cent. and cavalry 37.5 per cent. The higher morbidity among the infantry is easily accounted for by the fact that the infantry endures greater hardships, and is more exposed to the spread of infectious disease because of the closer contact of the men in camp.

The total mortality was 14,904, or 1.82 per thousand of the entire army. Infectious diseases were responsible for the greatest percentage of the morbidity, namely, 123,951 cases. Typhoid and dysentery headed the list, smallpox and malaria coming next. Infectious diseases caused 11,600 deaths, about three fourths of the total mortality, or 1.43 per thousand of the total army strength.

INTESTINAL DISEASES

Typhoid (usually the abdominal typhoid, only a few dubious cases of typhus fever occurring) attacked 74,205 persons, 73,396 of these being men in the field. Of this number, 8,904 died, 8,789 of these being soldiers. The greatest number of cases occurred during the months of September, October and November (42,845), in this regard not differing from the morbidity statistics in times of peace. On the whole, however, the morbidity rate was higher during the war. This is easily explained by the crowded conditions of the camp maintained for long periods of time during the sieges of Metz and Sedan. The besieging army in front of Paris suffered considerably less, whereas, the soldiers besieging Strassburg suffered very little. Among the soldiers besieging Metz, there occurred 12,607 cases of typhoid. Impure drinking water, severe and continuous rains, and inefficient sanitary regulations (due in part to the nature of the soil which hindered seepage of dejecta) favored the development of the epidemic. The mortality rate of 12 per cent. of the sick was comparable to the mortality rate in times of peace, but it is significant that 60 per cent. of all deaths in the entire German army was caused by typhoid. Dysentery also attacked large numbers, especially in the besieging armies of Metz and Sedan, although the troops at Saarlouis and Saarbrücken suffered almost as much, the infection probably coming from the French civilians as well as soldiers who had been encamped on the site later occupied by the German army.

SMALLPOX IN 1870-1871

With regard to smallpox, the statistics are also rather interesting. Very few cases occurred among the soldiers during their march out of Germany (seven cases in July, none of these occurring among the Prussian, Hessian or Baden troops). There was very little smallpox among the civilians in Germany, whereas, in France, even before the commencement of the war, smallpox was almost epidemic in some localities, notably in Bretagne. The mobilization of the troops favored the spread of the disease, not only among the soldiers but also throughout France. Many of the young soldiers had never been vaccinated; others had not been revaccinated for a long time. In 1869, only 71 per cent. of the birth rate was vaccinated, and in some departments (civil), the percentage was 30, 18 and even 17. Hence, many of the recruits were not only highly susceptible to the infection, but also were admirable agents for the spread of the disease. Many were infected when they joined the colors; others were quartered in infected houses in Paris, and carried the infection out into the field in all parts of France, resulting in many local epidemics. The official French statistics for those years are not very reliable on this point, but they show that smallpox was present in at least fifty-three departments, 40,000 cases occurring in forty-two departments alone. It is further stated that the total loss to the civilian population during the war was 90,000 cases. Under such conditions it is not very astounding that the German army likewise became infected with smallpox. There were 4,835 cases of smallpox with 278 deaths among the privates, and 45 cases with one death among the officers; fifteen cases with two deaths in the medical corps, and ninety-six cases with sixteen deaths among the officials. The spread of smallpox varied in the different army corps. The greatest number of cases (1,033) occurred in the troops before Paris. This may be explained in part by the fact that the vaccination was not carried out very thoroughly or carefully. In the besieging army were troops from Saxony, Hesse and Mecklenburg, and wherever these soldiers were stationed the same state of affairs existed. French troops and French civilians likewise were not vaccinated properly, and therefore easily fell prey to smallpox. Reliable statistics bearing on this point are not to be had, although it has been said and written that more than 23,000 persons died from smallpox. This may be an overstatement, but whatever the mortality was or may have been, it was greater among the French than among the German soldiers. Among the French soldiers in Paris there were 11,500 cases in six months, and only 1,600 cases in the same period of time among the German soldiers. The same figures obtained among the French prisoners in Germany, and the immobilized German troops. The latter, as well as the civilian population, were infected with smallpox by the French prisoners. Among these German soldiers, there were only 3,472 cases of smallpox; that is, 19 per cent. of all the hospital patients, whereas among the 372,918 French prisoners, there were 14,178 cases of smallpox, or 87 per cent. of all the French hospital patients. These statistics led the German military authorities to conclude that inasmuch as the occurrence of smallpox was dependent entirely on the efficiency of the vaccination of the individual, vaccinations made during the war proved to be preventive, modifying and restricting of epidemics. Most cases occurred among persons not revaccinated or in whom the revaccination was a failure. The degree and severity of the disease was modified by the degree of efficiency of the vaccination. The result of these observations was the order issued April 8, 1874, requiring vaccination throughout the German Empire. Another infectious disease to be mentioned is intermittent fever. There occurred 8,334 cases, mostly mild, of short duration and with no fatalities. There were 124 cases of epidemic meningitis with 84 deaths; 174 of diphtheria with twenty-four deaths; seventeen cases of cholera nostras with twelve deaths, and a few scattered cases of scarlet fever and measles with no deaths.

BERLIN, Aug. 10, 1915.

Personal

Professor Römer, who was called to Greifswald last year, has been appointed successor to Professor Fränken (Fränkel) at Halle.

Professor Haendel, director of the hygienic institute in Saarbrücken, has been appointed director of the imperial health bureau, succeeding Geheimrat Lentz.

Privat-Docent Rost has been appointed professor of dermatology in Freiburg, succeeding the late Professor Jacoby.

Professor Magnus of Utrecht has been made ordinary professor and director of the pharmacologic institute at Halle, succeeding the late Professor Harnack.

Recent Deaths in the Profession

Professor Proskauer, director of the Berlin bureau of food and trades inspection, died July 24 of apoplexy, aged 65. Proskauer was a chemist originally, but became actively identified with public health work through his association with Robert Koch in the imperial health bureau and later in the hygienic institute of the university. He also rendered valuable services in the institute for infectious diseases, and was considered an authority in the field of water supplies and sewage disposal. He did a great deal of work in research on disinfection. In 1907 he was appointed director of the Berlin bureau of inspection.

The well-known ophthalmologist, Geheimrat Adolf Weber, died in Darmstadt, July 17, aged 86. He was a pupil of Albrecht von Graefe.

Prof. C. Harms, privat-docent in ophthalmology at Tübingen, died on the field of battle.

Prof. C. Lauenstein, for many years surgeon at the Marine Hospital in Hamburg, died August 1, aged 65 years.

Prof. B. Fischer, director of the hygienic institute at Kiel, died August 5 in a hospital at Ypern, where he had been serving as a consulting sanitarian. He was 63 years of age. Originally a marine surgeon, he was ordered to the imperial health bureau in 1882, and in that capacity accompanied Koch on his expedition to Egypt and India for the purpose of investigating cholera. In 1887 he returned to Kiel. In 1889 he accompanied the German Plankton expedition to South America as surgeon. In 1899 he was appointed professor of hygiene. The result of his service on the Plankton expedition was a series of bacteriologic investigations of sea water and sea air and especially of the phosphorescing bacteria of the sea. Other publications dealt more specifically with the subject of disinfection.

The War

About 1,430 German dentists have been in the field. Of this number, 123 have been killed, seventy-eight wounded and eleven taken prisoners. These men are not members of the sanitary corps, but are used in their professional capacity only as occasion demands. There are 853 dentists in the ranks, and 320 are rendering dental service with the troops and in hospitals. At home there are 177 in service.

About 53,400 sophomore students, coming from the twenty-two German universities, have been enrolled for service. About 42,000 of these are in the field, are being trained for military service or are aiding in the care of the sick and wounded. There are 300 women students serving as nurses. The remaining 12,000 students are still pursuing their studies.

The exchange of severely wounded and imprisoned members of the sanitary corps is continuing with France, and has been begun with England and Russia. Varying reports of the treatment received by these prisoners at the hands of the enemy are being published in the newspapers. It is to be expected that the statements of these soldiers will be taken with a "grain of salt" because, naturally, personal grievances are apt to obscure sound judgment.

Opening of the Langenbeck-Virchow Building

The "Langenbeck-Virchow Haus," built by and for the Berlin Medical Society and the German Surgical Association, was opened August 1. The ceremonial opening was postponed until after the conclusion of the war. The auditorium, three stories high, has a seating capacity of 900. The galleries have a seating capacity of 335. The room is lighted by day through a skylight, and in the evening by eighteen electric arc lamps of 25,000 candle power. The auditorium is 13 meters high, 24 meters long and 17.5 meters wide. Artificial ventilation is provided for so that the air may be renewed every hour. On the first floor is a smaller hall with a seating capacity of 200. Both rooms are provided with epidiascopes and kinetoscopes and can rapidly be darkened. Small rooms, contiguous to the auditorium, are provided for waiting rooms for patients, and in one a small laboratory has been installed. The reading room and library, containing 200,000 volumes, is on the third floor. One small room contains the library bequeathed to the Berlin Medical Society by Virchow. The larger reading room is furnished with twenty-five tables at each of which two

may be seated. Other small rooms are provided for such readers as wish to work quietly and undisturbed. Refreshments may be had on the first floor. Stores occupy the first floor street front, and will be rented to concerns identified with medicine, such as instrument houses, book dealers, etc.

PARIS LETTER

PARIS, Aug. 12, 1915.

The War

THE MEDICAL SERVICE AND ITS DESIDERATA

M. André Maginot, deputy and former assistant secretary of war, has just published a very instructive article on the workings of the medical service. He recognizes, in the first place, that it is not easy, with insufficient numbers to draw on, to prepare from one day to another for the exigencies of an unprecedented situation and to assure the transportation, the lodging, the medical treatment and the care of several hundred thousand wounded men. Neither has it been easy to employ in the same organization civilian physicians, many of whom have had no military experience whatever or have had it only a long time ago, and military physicians, whose habits and point of view are necessarily quite different, so as to make use of the abilities of each for the best interests of the wounded. These difficulties, in addition to the material embarrassments which have to be faced, complicated the task of the medical service greatly at the outset. In order to be just, therefore, demands for improvement should be moderate, no matter what the defects may be.

The medical staff is at present numerically sufficient, thanks to liberal appointments of civilian physicians. The possibilities of increase, however, are naturally limited by the number of physicians to be drawn on. We ought to try, however, to make the best use possible of the staff that we have. Important progress has already been made. Special abilities are better utilized; but this is not enough. A much larger number of our physicians and surgeons ought to acquire experience at the front. This would give those who have been there for a long time a chance to recover somewhat in the less fatiguing service of the base hospitals, which would derive much benefit from the experience that they have acquired. Meanwhile the others would have the opportunity to learn how best to adapt themselves to the necessities of war. It is not fair that some should have a comparatively easy and comfortable time during the whole period of hostilities, while others are indefinitely kept in the hardest and most dangerous places.

As for the nursing staff, it must be admitted that the numbers are often insufficient, especially in the base hospitals, where too much reliance has been placed on volunteer assistance. The result is that the patients do not receive all the care that they should and that many hospitals are kept in bad order. The staff should be enlarged. This ought not to be difficult, for the possibilities of recruitment are not limited as they are in the case of physicians and surgeons. The men of the auxiliary service who have not yet been called to the ranks might be employed. Another method would be to give the sedentary positions, like those of doorkeepers or recording clerks in hospitals, to convalescent wounded men who under present regulations must be discharged. Such positions might very well be filled by men who have infirmities of the legs or feet or who have even lost one or more limbs. This would release the present holders of such positions for employment as orderlies, etc.

It is in respect to supplies of such things as means of transportation, hospital appliances, etc., that the present state of affairs leaves most to be desired. Transportation of the wounded is still too much subject to delay. Many of our hospitals are still without indispensable appliances and provisions. The wounded are too often placed in crowded and unsuitable quarters. Everyone recognizes that improvements are necessary.

M. Maginot draws attention especially to the fact that the lack of necessary supplies in certain of our hospitals and the bad working of the services because of this lack are often due to the fact that the heads of these hospitals are afraid to ask for what they need. Their previous requests have received no response or else have been met with reproof. They have been told over and over again to economize. Some hospital superintendents, therefore, being anxious to avoid getting into trouble and appearing poor administrators in the eyes of their superior officers, have formed the habit of turning a deaf ear to the most reasonable requests. Thus there are surgical services without the most elementary means of sterilization; and mechanotherapeutic installations, which might be most usefully employed, are unused for lack of the necessary equipment to complete them.

Such bad habits should be broken up as soon as possible, and peremptory instructions should be given against them. The wounded ought not to suffer from the parsimony of the one class or the timidity of the other. Moreover, from the financial side alone, this absurd conception of economy leads to waste of public resources. Every death, every loss or amputation of a limb which might have been avoided with better care, it must be remembered, will some day mean pensions to be paid. The bill for this will be heavy after the war, not to speak of the loss inflicted on the productive capacity of the country. With but a small portion of the cost of the pensions thus necessitated, it would be possible to equip our hospitals with all that they need and thus avoid putting such a heavy charge on the future.

Rice Bread

I have mentioned in a previous letter (THE JOURNAL, May 22, 1915, p. 1777) the use of rice flour in bread. The department of commerce has for some time been studying the question of rice bread or, to speak more exactly, of bread containing a proportion of rice. Samples of bread containing 15 per cent. of rice were presented two weeks ago to each of the administrative officers of the government, and recently samples of bread containing 10 per cent. of rice have been distributed to senators and deputies. This proportion ought not to be exceeded, for a higher percentage will result in a bread which is too difficult to digest. There is no lack of wheat in France, and, even if there were, there is no reason why it should not be imported as in ordinary times. The government, however, desires to reduce the purchases made from foreign countries to a minimum. The economy which would result from the adoption of rice bread is estimated at 500,000,000 francs ($100,000,000). The commerce department, however, intends to study the question from all sides before coming to any decision on it.

Vaccination Against Smallpox

The inhabitants of Paris and its vicinity are being advised by means of notices posted in the name of the Conseil d'hygiène publique et de salubrité du département de la Seine to be vaccinated against smallpox. In view of present circumstances, all the inhabitants, without distinction of age or sex, who have not been vaccinated within five years, are urged to be vaccinated. Information with regard to the dispensaries where vaccinations are performed free is given in the mayor's offices of the respective arrondissements and communes.

LONDON LETTER

LONDON, Aug. 13, 1915.

The War

THE TREATMENT OF WOUNDS

A controversy is being waged regarding the treatment of battle wounds. On one side Sir Watson Cheyne, president of the College of Surgeons and the exponent and once the assistant of Lister, is the protagonist. He advocates the application of strong antiseptics for the purpose of disinfecting wounds. On the other side Sir Almroth Wright, who appears to be followed by most of the surgeons with the British forces in France, declares that antiseptics are useless for this purpose and advocates "lymph lavage" (the application to the wound of a hypertonic solution of salt to promote the outflow of lymph). The idea is that this lymph is favorable to phagocytic activity and inimical to microbes. He considers that the best application is a 5 per cent. solution of common salt combined with 0.5 per cent. sodium citrate to render the lymph incoagulable. During this controversy, a discovery attributed to Dr. Alexis Carrel and Mr. H. Dakin has been announced by Professor Landouzy at the Academy of Sciences in Paris. He explained that a powerful antiseptic, known to science as chlorinated lime, had up till now been of no practical utility on account of the difficulty of preserving it and because of its acidity, which was injurious to human tissues. Dr. Carrel and Mr. Dakin surmounted these difficulties by adding boric acid as a preservative and calcium carbonate to counteract the acidity. The new preparation had been applied to the most frightful wounds with the result that within eight days their aspect had been modified in a way quite unknown under

the old antiseptic processes. Cases of gangrene had been radically prevented at the very outset. Indeed, if the new antiseptic was applied in time, it was not too much to say that the infection of wounds might henceforward be considered impossible. No sooner had this discovery been announced than a claim of priority had been brought forward for Dr. Lorrain Smith, professor of pathology in the University of Edinburgh. At the request of the National Health Insurance Research Committee, he undertook a research on antiseptics, and five months ago recommended what appears to be the same substance as Dr. Carrel suggests. It has been used with success in the British military hospitals in this country and in France.

AUSTRALIA AND THE WAR

The spontaneous manner in which the colonies have supported the mother country in the war is one of the striking features of the situation. Here, of course, only the medical aspect can be dealt with. According to the Australian minister of defense, no fewer than 500 physicians, which represents 20 per cent. of the whole profession, are serving at the front, and yet a still larger proportion is wanted. It is also proposed to supply eighteen hospital ships, each of which will be accompanied by four medical officers. To counteract the anticipated shortage of physicians for civil practice, the three Australian universities are accelerating the passage of medical students through their curriculum, though there will be no lowering in the standard of examination. The students will simply have to work at higher pressure. At Melbourne University, the students who would have presented themselves for examination in March, 1916, will be allowed to go up in November, 1915. Already a large proportion of the fifth-year students and practically all the fourth-year students have offered their services to the defense department. Physicians are required not only for work at the front, but also for military work at home. Five or six thousand soldiers are returning to Australia invalided from wounds or sickness; some of these will require special surgical or medical attention, which can best be given in hospitals.

An English Successor to a German Nostrum

In a previous letter (THE JOURNAL, Dec. 12, 1914, p. 2145), I described the attempt of a British company to capture the business of sanatogen, as trading in this German nostrum has been prohibited since the outbreak of war. In their latest circular, the company again endeavors to exploit the strong anti-German feeling prevailing in this country as follows: "We are surely right in endeavoring to secure the trade which has hitherto been done by a German, and it is not unfair to take all the advantage we can of the indignation which all Britishers, and indeed all humanity, are feeling against an enemy who does not scruple to use deathly asphyxiating gases to destroy our gallant soldiers and who looks callously on at our helpless drowning." The following claims are put forward:

1. Sanaphos is a milk product containing all the constituents of milk with a reduction of fat to suit plethoric patients. It is obtained by a physical process, not a chemical one, and at such a low temperature that the vitality of the original milk due to vitamins and enzymes is retained. 2. This is the best basis for administering organic phosphates so as to secure the highest efficiency of a food and nerve tonic. 3. The less foods in their natural state are interfered with by chemical processes, the better are they adapted for highly nutritive purposes, and this is especially the case with milk. 4. Attempts have been made to establish that casein is the most important constituent of milk; this is an obvious fallacy, because on this basis infants would do well on cheese. Casein is a chemically separated substance derived from milk, and it does not supply the body's complete needs. 5. Clinical evidence extending now for over six months abundantly supports the view that sanaphos is the most attractive and effective recuperator of nerve and energy. Its uniquely favorable effect in sleeplessness, cured without drugs, bears remarkable witness to this.

It is remarkable that the circular containing these absurd claims, quite on the old lines, is addressed not to the public, but to physicians. The motto of the nostrum man is evidently *toujours l'audace*.

The Fortune of a Nostrum Man

The estate of the late Mr. Eno, the proprietor of Eno's fruit salts, is valued at $8,000,000. This immense fortune has been made out of an aperient consisting of sodium bicarbonate, tartaric acid and citric acid which is extensively advertised, though not in a very flagrant manner. It claimed to be "health-giving, pleasant, cooling, refreshing, gentle and safe in its action"; "keeps the blood pure." Mr. Eno left large sums to hospitals and other benevolent institutions. His fortune is by far the largest left by a nostrum man and the largest left by any "patent medicine" proprietor (as distinct from those combining therewith the manufacture of patent foods). Among these may be mentioned the following sums: Senator the Hon. George Taylor Fulford, proprietor of Dr. Williams' pink pills (a Canadian), $6,500,000; Mr. Alfred B. Scott, of Scott's emulsion, $850,000; Mr. George Handyside, of Handyside's consumption cure, $700,000; Mr. Robert Dyer Commans, of Areca nut tooth paste, $550,000; Mr. Walter Tom Owbridge, of Owbridge's lung tonic, $550,000; Mr. Thomas Beecham, of Beecham's pills, $400,000.

Marriages

FOREST HENRY FREY, M. D., Warsaw, Wis., to Miss Gertrude Helen Moran of Kane, Pa., August 26.

HERMAN FRANK VICKERY, M.D., Boston, to Mrs. Anna Louisa Howe of Brookline, Mass., August 14.

WALTER G. SEXTON, M.D., Marshfield, Wis., to Miss Ethel H. Moran, of Baltimore, August 25.

ROBERT ERNEST KINLOCK, M.D., to Mrs. Florence Bullard Smith, both of Brooklyn, August 17.

PHILIP WORK, M.D., Pueblo, Colo., to Miss Helen Tuttle, of Denver, August 18.

Deaths

Green Vardiman Black, M.D. Northwestern University Medical School, Chicago, 1884; aged 79; of Chicago; dean of the Northwestern University Dental School and known as "the father of modern dentistry"; a member of the Illinois State Medical Society; died at his farm near Virginia, Ill., August 31, from pernicious anemia. He was born near Winchester, Ill., Aug. 3, 1836; received his degree of D.D.S. from the Missouri Dental College, St. Louis, in 1877; he was also given the degree of Sc.D. by Illinois College, Jacksonville, in 1892, and that of LL.D. by Northwestern University, Evanston, Ill., in 1898; he was appointed dean of the Northwestern University Dental School in 1895, and also filled the chairs of operative dentistry, pathology and bacteriology in the institution. He was the author of several standard textbooks on dentistry and was a frequent contributor to the periodical literature of the subject. Dr. Black is survived by his wife, two sons, Dr. Carl E. Black, Jacksonville, Ill., and Dr. Arthur D. Black, Chicago, and two daughters.

Joseph John Higgins, M.D. College of Physicians and Surgeons in the City of New York, 1892; aged 45; a Fellow of the American Medical Association and New York Academy of Medicine; clinical professor of surgery in Fordham University, New York City; attending surgeon to Fordham Hospital; visiting surgeon to St. Vincent's Hospital, New York City; and consulting surgeon to St. Mary's Hospital, Waterbury, Conn.; died at his home in New York City, August 22, from nephritis.

Louis Huber Schultz, M.D. Medical College of Ohio, Cincinnati, 1906; aged 31; a Fellow of the American Medical Association and a member of the Association of Military Surgeons of the United States; a prominent young practitioner of Denver; captain in the Medical Corps, Colorado National Guard; while returning from a professional call in Aurora, a suburb of Denver, August 14, was struck by lightning and was found dead in a shallow irrigating ditch.

Charles W. Norris, M.D. Hahnemann Medical College, Chicago, 1883; Louisville, Ky., Medical College, 1894; aged 54; a Fellow of the American Medical Association; a well-known eye, ear, nose and throat specialist of Lexington, Ky.; died in his apartments in that city, August 13. At a special meeting of the Fayette County Medical Society, resolutions of esteem and of regret were unanimously adopted.

Charles Otto Maisch, M.D. Bellevue Hospital Medical College, 1891; aged 47; a Fellow of the American Medical Association and of the New York Academy of Medicine, of Port Washington, L. I.; lecturer on intubation and tracheotomy in the New York Post-Graduate Medical School; attending physician to the New York Post-Graduate and the German hospitals; died in the latter institution, August 19.

Joseph Meyer, M.D. College of Physicians and Surgeons in the City of New York, 1877; aged 60; one of the organizers of the dispensary of St. Catherine's Hospital, Brooklyn, and for 37 years a member of the staff of that institution; also a member of the staff of the German, St. Patrick's, Blackwell's Island and the Post-Graduate hospitals, New York City; died in St. Catherine's Hospital, August 15.

Joseph Lawrence Hicks, M.D. College of Physicians and Surgeons in the City of New York, 1860; aged 81; one of the oldest practitioners of Long Island; surgeon of the First New York Infantry, U. S. V., during the Civil War; one of the organizers of the Flushing Hospital and a member of its staff until his retirement from practice in 1913; died at his home at Flushing, N. Y., August 19, from pleurisy.

Abraham Mayer, M.D. College of Physicians and Surgeons in the City of New York, 1876; aged 61; a Fellow of the American Medical Association and the New York Academy of Medicine; visiting physician to the Lebanon Hospital and consulting physician to the Jewish Maternity Hospital, New York City; died at his summer home, in Allenhurst, N. J., August 20, from heart disease.

Benjamin Edward Dolphin, M.D. College of Physicians and Surgeons in the City of New York, 1894; aged 37; a Fellow of the American Medical Association and the New York Academy of Medicine, and a member of the American Urological Association; a member of the staff of the New York Post-Graduate Hospital; died at his home in New York City, August 21.

George E. McNeil, M.D. Beaumont Medical College, St. Louis, 1890; aged 51; a Fellow of the American Medical Association; for twenty-five years house surgeon of the Missouri, Kansas and Texas Railway Hospital, Sedalia, Mo.; a member of the board of directors of the Sedalia Public Library; died at his home in Sedalia, August 13, from abscess of the lung.

Sylvester Bachman Weaver, M.D. Hahnemann Medical College, Philadelphia, 1872; aged 67; a practitioner of Littlestown, Pa., for forty-two years; president of the town council and borough school board and a director of the Littlestown Savings Institution; died at his home at Littlestown, August 20, from valvular heart disease.

Alexander Montgomery, M.D. Washington University, St. Louis, 1856; aged 81; for eighteen years a vaccine physician of the health department of St. Louis; surgeon of U. S. Volunteers throughout the Civil War; for three-quarters of a century a resident of Carondelet, St. Louis; died at his home August 12, from senile debility.

Segrid Helgesen, M.D. Minneapolis College of Physicians and Surgeons, 1894; aged 60, of Templeton, Calif.; a member of the Medical Society of the State of California; died at his home at Templeton, August 13, from the effects of an automobile accident on the Cuesta grade in San Luis Obispo County.

James Francis Harrison, M.D. University of Virginia, Charlottesville, 1873; aged 64; professor of chemistry and pharmacy in the Medical Department of the University of Alabama, Mobile, with which he had been connected for 42 years; died at his home August 18, from a general breakdown.

James L. Wheaton, M.D. Berkshire Medical College, Pittsfield, Mass., 1847; aged 92; a practitioner of Pawtucket for sixty-eight years, and representative from North Providence to the Rhode Island Legislature in 1857 and 1858; died at the home of his son in Pawtucket, R. I., August 12.

John Hayes Richardson (license, years of practice, Michigan); aged 89; for fifty-nine years a practitioner of Niles, Mich.; city recorder for several years and superintendent of the Barren Lake Water Company; died at his home in Niles, August 14, from senile debility.

Henry Evans Washburn, M.D. Indiana University, Indianapolis, 1910; aged 31; a member of the Indiana State Medical Association, of Clinton, Ind.; while visiting in Springfield, Ohio, was taken ill with pneumonia and died in the Springfield Hospital, August 17.

George Gillette Chittenden, M.D. Rush Medical College, 1879; aged 59; for many years a practitioner of Janesville, Wis.; but since 1914 a resident of Twisp, Wash.; while attempting to stop a runaway team August 6, died suddenly from heart disease.

Martin Bernard Roddy, M.D. Baltimore Medical College, 1909; aged 29; a Fellow of the American Medical Association and an esteemed practitioner of Lynn, Mass.; died in the Lynn Hospital, August 12, two days after an operation for appendicitis.

Patrick Henry Kelly, M.D. Rush Medical College, 1892; aged 52; a Fellow of the American Medical Association; a prominent practitioner of Chillicothe, Ill.; died in St. Francis Hospital, Peoria, August 14, from disease of the stomach.

Nathan Holmes (years of practice, Illinois, 1878); aged 73; of Delavan, Ill.; a member of the Illinois State Medical Society; formerly coroner of Tazewell county; died in the Peoria State Hospital August 13, from cerebral hemorrhage.

Henry D. Smith, M.D. Eclectic Medical Institute, Cincinnati, 1880; aged 61; a member of the Illinois State Medical Society; for thirty-five years a practitioner of Vandalia, Ill.; died at his home, August 7, from carcinoma.

James Edward Ivey, M.D. University of Nashville, Tenn., 1894; aged 61; a member of the Medical Association of Georgia; died suddenly August 13, at his home at East Rome, Ga., from heart disease.

Thomas Francis Aiken, Jr., M.D. University of Pennsylvania, Philadelphia, 1894; aged 45; for several years assistant surgeon of the Emergency Hospital, Boston; died at his home in that city, August 17.

William Alfred McCaslin, M.D. University of Michigan, Ann Arbor, 1874; aged 66; died at his home in Homestead, Pa., August 15, from cerebral hemorrhage, after an illness of twenty-three years.

Anthony B. Johns, M.D. Jefferson Medical College, 1857; at one time a member of the North Carolina Legislature from Rockingham County; died at his home in Leaksville, N. C., August 7.

John Lunsford McGill, M.D. Atlanta School of Medicine, 1910; aged 31; of Parrott, Ga.; a member of the Medical Association of Georgia; died at his home in Sylvester, Ga., August 11.

John Francis Conway, M.D. New York University, New York City, 1881; aged 60; for many years a practitioner of Brooklyn, died at the home of his daughter in that city, August 9.

George Asahel Barry, M.D. Eclectic Medical Institute, Cincinnati, 1905; aged 43; died at his home at Fort Wayne, Ind., August 8, from meningitis, following typhoid fever.

Howard George Bartlett, M.D. Long Island College Hospital, Brooklyn, N. Y., 1891; aged 45; died at his home at Maxwell, N. M., August 13, from cerebral hemorrhage.

Richard E. Bolling, M.D. University of the South, Sewanee, Tenn., 1900; aged 40; formerly of Redding, Calif.; died in Pasadena, Calif., July 16, from tuberculosis.

Benner Herbert Crosthwaite, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1879; aged 62; also a druggist; died at his home in Niles, Kan., August 5.

Charles Wesley Higgins, M.D. Bellevue Hospital Medical College, 1867; aged 74; died at his home in Salt Lake City, August 6, from cerebral hemorrhage.

Luella McKinley Derbyshire, M.D. Fort Wayne College of Medicine, Fort Wayne, Ind., 1888; aged 51; died at her home in Fort Wayne, August 18.

James Fred McBride, M.D. Jefferson Medical College, 1909; aged 30; of Sterling, Ill.; was killed in an automobile accident at Sterling, August 21.

Thomas S. Huffaker, M.D. Hahnemann Medical College, Chicago, 1884; aged 57; died at his home in Chicago, August 20, from cerebral hemorrhage.

Silas Jones, M.D. University of Maryland, Baltimore, 1875; aged 60; died at his home in Galion, Ohio, August 12, from valvular heart disease.

Kenneth McK. Clark, M.D. Baltimore, Maryland College, 1885; aged 53; of Kittrell, N. C.; died in a hospital in Richmond, Va., August 9.

Henry Beers Pinney, M.D. Miami Medical College, Cincinnati, 1874; aged 64; died at his home in San Francisco, August 12.

Ida Mae Wright, M.D. Hahnemann Medical College 1911; aged 43; died at her home at Evanston, Ill., August 5.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

GRANT'S EPILEPSY CURE*

Fred E. Grant sells a mail-order cure for epilepsy from Kansas City, Mo. According to the records, Grant was graduated by the Medical Department of the University of Michigan in 1877. Some years ago he seems to have practiced at Ottawa, Kan., moving to Kansas City, Mo., about 1900. THE JOURNAL has received inquiries regarding Grant's nostrum at various times during the last five or six years, some of them coming from physicians, others from laymen. A woman on the Pacific Coast wrote, in part:

> "Could you give me an analysis of the medicine used by Dr. Fred E. Grant for the cure of epilepsy? . . . I have been giving the medicine for some time to my daughter. Her general health has become very poor."

A Vermont physician writes that a patient had been taking Grant's nostrum for two years and says:

> "The family feel that she gets more relief from this than from any bromid mixture. However, it seems to me that it dulls her mind far more than a necessary dose of bromid should."

And this from a Providence, R. I., physician:

> "I saw this morning for the first time a girl of thirteen suffering from epilepsy. For two years she has taken medicine sent to her by Dr. Fred E. Grant, 520 to 538 Raymond Street, Kansas City, Missouri. The patient's mother tells me that two years ago, seeing Dr. Grant's advertisement in a magazine, she wrote to him, received a bottle of his medicine free of charge and a reference to a person in New Jersey. She wrote to New Jersey and received a letter saying that the doctor's medicine had cured the writer's little boy of epilepsy. Since this time, at $2 per bottle, the medicine has been procured from Dr. Grant.
>
> "The patient has been failing steadily mentally during this time and some weeks ago lay for three weeks in a stupor without moving a muscle, most of the time unconscious, and had to be fed artificially. The mother wrote to Dr. Grant telling him of this illness, and the Doctor wrote back that during this acute sickness it would be best to omit his medicine.
>
> "There was none of his preparation in the house this morning at the time of my visit, but I saw an empty bottle and the label on which it says that the preparation contains no opium or chloral. It also says that if the patient after taking the medicine some time becomes sleepy, has puffiness of the eyelids, eruption of the skin, and other strange symptoms to pay no attention to these signs, to continue the medicine and write to Dr. Grant.
>
> "Of course, the three weeks' stupor was the result of saturation with the quack's nostrum which is probably largely composed of bromids."

Grant's methods are common to those of advertising quacks. Advertisements in cheap magazines, especially those that circulate in rural districts, are the chief means whereby he gets in touch with his victims. An answer to the advertisement brings the usual circular letter, together with a batch of testimonials.

An original specimen of Grant's nostrum was submitted to the Association's laboratory, where it was subjected to analytical tests. The chemists reported:

CHEMISTS' REPORT

One original bottle of a remedy for epilepsy, manufactured by Dr. Fred E. Grant, Kansas City, Mo., was submitted to the Chemical Laboratory for examination. The bottle contained 460 c.c. (about 15½ fluidounces) of a brown liquid. The specific gravity of the liquid at 15.6 C. was 1.1149. Qualitative tests demonstrated the presence of alcohol, potassium, sodium, bromid and chlorid. Quantitative determinations yielded the following:

Alcohol (by volume)	1.50 per cent.
Potassium (K^+) (by weight)	4.57 per cent.
Sodium (Na^+) (by weight)	0.19 per cent.
Bromid (Br^-) (by weight)	9.76 per cent.
Chlorid (Cl^-) (by weight)	0.04 per cent.

The essential constituents of each 100 c.c. of the solution are approximately 15.8 gm. of potassium bromid and 0.9 gm. sodium bromid. Calculating from the bromid determinations, each teaspoonful (1 fluidram) contains the equivalent of 10.0 grs. potassium bromid, and each daily dose (7 teaspoonfuls) corresponds to 70.0 grs. potassium bromid.

The directions on the bottle call for Grant's cure to be given: "Two Teaspoonfuls after Breakfast and the Noon Meal. Three Teaspoonfuls On Retiring." This means that the victim is unknowingly taking the equivalent of seventy grains of potassium bromid daily and yet Grant has the impudent effrontery to say: "There is nothing injurious to the system in this medicine."

ARTICLES REFUSED RECOGNITION

Report of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's actions on articles refused recognition which were not deemed of sufficient importance to require lengthy reports.

Hydragogin

Hydragogin (C. Bischoff & Co., New York, selling agents) is advertised as "a most powerful diuretic and cardiac tonic." The composition given is:

> "Fifteen parts of the remedy contain 0.5 parts oxysaponin, 1.5 parts tincture of digitalis, 2.5 parts tincture of strophanthus, scillipicrin and scillitoxin, the active principles of scilla maritima, and alcohol."

It is not clear from this statement whether 15 parts of Hydragogin contain 2.5 parts of tincture of strophanthus, plus unspecified amounts of scillipicrin and scillitoxin, or 2.5 parts of a mixture, in unspecified proportions, of tincture of strophanthus, scillipicrin and scillitoxin. The activity of strophanthus, after it enters the blood stream, is about fifty times that of digitalis; hence, if the former proportion is the true one, in giving an amount of Hydragogin which ensures the full therapeutic effect of the digitalis, one would administer an almost certainly fatal amount of strophanthus. Whatever the proportion of strophanthus may be, however, the administration of a mixture of digitalis and strophanthus in fixed proportions is indefensible. At times it is advisable to follow one of these drugs with the other in the treatment of cardiac disease. The simultaneous administration of the two continuously in fixed proportions, however, is injudicious, because of the great difference between their rates of absorption and in their activity after they enter the blood stream. The action of digitalis, moreover, persists much longer than does that of strophanthus.

An advertising circular contains the following claim:

> "The well-known diuretic propertics of digitalis, strophanthus and squills are greatly enhanced by the addition of the oxysaponin."

This is not true. Saponins are not synergistic with digitalis therapeutically; on the contrary, they exert a purely deleterious action on the heart when they enter the circulation.

The symptoms of cardiac disease are often difficult to distinguish from the toxic actions of the digitalis bodies. Since these bodies must often be given to the point of beginning toxic action in order to induce the full therapeutic effects, it is obvious that the administration of a mixture of digitalis, strophanthus, saponin and active principles of squill is especially liable to induce serious toxic effects which cannot be distinguished from the symptoms of the disease

Hydragogin is a shotgun mixture of semisecret composition; it is marketed under a therapeutically suggestive name,

* This article is one of sixteen that appear in the pamphlet "Epilepsy Cure Frauds," price 10 cents.

and advertised by means of unwarranted therapeutic claims. It is therefore in conflict with Rules 1, 6, 8, and 10. The Council held Hydragogin ineligible for New and Nonofficial Remedies.

Williams' Syrup of Malt

Williams' Syrup of Malt (The American Malt Extract Co., San Francisco) is essentially a simple malt extract. It is evident, therefore, that the following claim, which appears on the trade package, is without warrant:

"As a tonic and tissue builder it is invaluable. Especially beneficial in cases of diabetes, consumption, kidney, liver and stomach troubles."

Also, the following claims, which appear in a circular:

"Williams' Syrup of Malt is a powerful agency for *Building Tissue.*"

"When indicated with Nursing Mothers it stimulates the Mammary Glands and not only increases the quantity of milk, but enriches the quality."

"We also emphasize its beneficial qualities in the incipient stages of tubercular diseases and for stomach disorders and Diabetic conditions."

The Council held Williams' Syrup of Malt ineligible for N. N. R. because it is essentially an official preparation sold under an unofficial title (see N. N. R., 1915, p. 14); because unwarranted therapeutic claims are made for it and because the claims made are apt to lead the public to depend on it as a curative agent in serious diseases.

Correspondence

Dermatology of the Ancients

AUGUSTA, GA., Aug. 20, 1915.

To the Editor:—The address of Dr. Howard Fox on this subject (THE JOURNAL, Aug. 7, 1915, p. 469) is fascinatingly interesting. Dr. Fox says:

The question to be settled is whether the disease described by[?] Leviticus as Zaraath and translated as leprosy in the authorized version really refers to the modern disease leprosy, with which we are all familiar."

For years the thirteenth chapter of Leviticus has worried me. I studied it in the original Hebrew and could not, in spite of the authorized versions, Latin, English and German, reconcile myself that Zara'ath (צרעת) is leprosy as it is known to us today.

To my mind it is a contagious skin lesion, a dermatitis; an *Ausschlag,* rather than *Aussatz,* and the "white spots" might as well indicate another species of skin eruption.

Moses, who was undoubtedly a great sanitarian and investigator, would have given a more detailed description of this dreaded malady had it been genuine leprosy, and would not have treated it so lightly. While isolation is one of the great preventives even today, that alone could not have cured leprosy in seven days as we read in the case of Miriam, the sister of Moses and Aaron. Neither could Naaman, the Syrian, be cured of leprosy by simply bathing in the river Jordan.

One of the greatest of Hebrew scholars and Bible critics, Eben Ezra of Spain, (twelfth century), believes the term Zara'ath to be synonymous with Zir'ah (צרעה), the wasp, supposedly resembling the bite and its consequent developments. Onkelos in his Aramaic translation of the Hebrew Scriptures (Targum), translates Zara'ath, *segirutho, detention,* or "lock-up-case." The translation of bahereth "bright spot" is erroneous; it is a macule, and may be white or reddish, as we find it qualified in the nineteenth verse of the same chapter. Neither is it so sure that sapachath (מפחת) is a "scab;" not if we consider the word etymologically.

There is one passage in the Bible which points more to leprosy than any other; it reads as follows: "The Lord shall smite thee with bad ulcers (sh'hin ra) in the knees and on the legs, that cannot be healed, from the sole of thy foot unto the top of thy head" (Deut., xxviii). This sh'hin ra is referred to in a previous verse in the same chapter, as *Sh'hin Mizray'im,* a peculiarly Egyptian skin disease which was considered incurable.

(שחין מצרים אשר לא תובל להרפא)

I believe with S. Pruner, (Tobler, Medic. Typog. von Jerusalem) that this malignant disease, "the Egyptian Sh'hin that could not be healed" which affects not only the knees but the whole body, is lepra tuberosa.

In that lengthy thirteenth chapter of Leviticus is also mentioned *Zara'ath nosheneth,* a chronic Zara'ath, but not a word of its symptoms, anesthesia and falling off of the phalanges of the fingers or toes; hence I doubt that Zara'ath was intended for leprosy as we know it.

LEO REICH, M.D.

Scope of Paper by Kleiner and Meltzer

To the Editor:—At the April meeting of the National Academy of Sciences, Dr. I. S. Kleiner and I presented a communication entitled "Retention in the Circulation of Dextrose in Normal and Depancreatized Animals, and the Effect of an Intravenous Injection of an Emulsion of Pancreas upon This Retention." This paper was published in the June issue of the *Proceedings of the National Academy of Sciences,* a publication which has only a small circulation. A few weeks ago we were surprised to find an article in the New York *American* stating that we have discovered the cause of diabetes and a cure for it. A day later a writer on foods published in an evening paper (in quotation marks) a statement, purporting to have been made by us: Glucose in its natural form may be detrimental, but when manufactured is often fatal. That article contains many other nonsensical remarks. I enclose a reprint of our paper in question. You will see that we make no claims whatsoever to having found the cause of diabetes or a cure for it. Nevertheless a statement to that effect was spread all over the United States, and we are now receiving numerous letters from physicians and laymen, begging to send them the cure or to tell them what the cause of diabetes is. Similar letters are received by the Rockefeller Institute and by the National Academy of Sciences.

We beg you, therefore, to publish in THE JOURNAL a statement that our paper *does not deal with the final cause of diabetes, nor does it even hint that we are on the way to find a cure for it.* We simply communicate there some scientific results which we have obtained in the course of a long series of experiments upon animals, without any reference to the practical applicability of these results.

S. J. MELTZER, M.D., New York.
The Rockefeller Institute for Medical Research.

Pilocarpin in Trifacial Neuralgia

To the Editor:—A man, aged 74, had had trifacial neuralgia for seven years. It was not very severe until about six months before I first saw the patient, at which time the acts of speaking and swallowing began to cause him great pain. The pain was supra-orbital. A tenacious mucus constantly collected in the mouth and fauces. Swallowing was impossible, and efforts at getting the mucus from the mouth were so painful as to give the patient scarcely any rest during the day time; at night, however, he could sleep. After a while I took a hint from the collection of mucus, and gave him pilocarpin, and soon after the full effects of the medicine were present the pain lessened, the tongue, which had been thickly coated, cleared up, and the mucus entirely disappeared. Notwithstanding that the parts were bathed in the mucus, the patient complained of a dry burning sensation in mouth and throat. I have wondered if it may not be that in this disease, for which no cause is known, some oral infection may be manifesting itself in supra-orbital pain. In this case all of the symptoms left the man. It was a symptomatic cure. He may have other attacks, but if pilocarpin will handle them as promptly as it seemed to handle this attack, the disease is rendered less formidable at least. Logically and pharmacologically it was sensible treatment, and it seems worth a trial in all such cases.

J. L. TRACY, M.D., Toledo, Ohio.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

COMPOSITION OF THE ROUX STAIN

To the Editor:—Please give the following data concerning the Roux stain: Composition, staining qualities, bacteria taking stain and technic of stain.

F. L. ROGERS, M.D., Long Beach, Calif.

ANSWER.—The Roux stain, described by Roux and Yersin (*Ann. de l'Inst. Pasteur,* 1890, iii, 385) is a special double stain for diphtheria bacilli, and is prepared according to the following formula:

Dahlia or gentian violet	0.5 gm.
Methyl green	1.5 gm.
Distilled water	200 c.c.

When staining cover glass preparations fix and dry in air, stain from five to ten seconds, wash in water, dry and mount in xylene balsam. Sections of tissue should remain in the stain for twelve hours. They are then washed thoroughly in water, dehydrated and mounted in the usual way.

This stain has no practical value except in the examination for diphtheria, and even then it has no advantages over the Gram stain.

ARTICLES ON PARATYPHOID FEVER

To the Editor:—Please give references to the literature on paratyphoid fever.

J. P. S., Ohio.

ANSWER.—

Freund, H.: Clinical Course of Paratyphoid B. Infections, *Deutsch. Arch. f. klin. Med.*, cvii, No. 4; abstr., THE JOURNAL, Oct. 12, 1912, p. 1412.

Unterberger, S.: Paratyphoid, *St. Petersb. med. Zeitschr.*, Oct. 14, 1912.

Guthrie, J. B.: Paratyphoid Cholecystitis with Report of Case, *New Orleans Med. and Surg. Jour.*, January, 1913.

Richards, E. T. F.: Bacteriology of Epidemic of Paratyphoid Fever, *Journal-Lancet,* Feb. 15, 1913; abstr., THE JOURNAL, March 8, 1913, p. 781.

Hay, J.: Paratyphoid Fever, *Med. Press and Circ.*, May 7, 1913.

Job, E.: Paratyphoid Infection, *Rev. de méd.*, March, 1913; abstr., THE JOURNAL, May 24, 1913, p. 1671.

Hunt, C. J.: Paratyphoid Fever; A Serologic Study in Relation to the Epidemiology, *Arch. Int. Med.*, July, 1913, p. 64; abstr., THE JOURNAL, Aug. 9, 1913, p. 432.

Crafton, W. M.: Two Cases of Paratyphoid Bacillus Infection Treated with Vaccine, *Brit. Med. Jour.*, Nov. 22, 1913.

Müller, R.: Paratyphoid Epidemic from Eel Meat, *München. med. Wchnschr.*, March 3, 1914.

Heigel, A.: Infections with Bacteria of Paratyphoid Group, *Wien. klin. Wchnschr.*, Jan. 21, 1915; abstr., THE JOURNAL, March 6, 1915, p. 865.

Lagane, L.: Diagnosis of Paratyphoid Fever, *Presse méd.*, March, 27, 1915.

Walker, E. W. A., and Gibson, A. G.: Typhoid and Paratyphoid Infection, *Lanect,* London, March 27, 1915; abstr., THE JOURNAL, April 24, 1915, p. 1454.

Bristol, L. D.: Paratyphoid Fever with Report Including Postmortem Examination of Fatal Case of "A" Type, THE JOURNAL, April 4, 1914, p. 1078.

Canavan, M. M.: Relation of Paratyphoid to Antityphoid Vaccination, *Boston Med. and Surg. Jour.*, Oct. 8, 1914.

Landouzy, L.: Typhoid and Paratyphoid Fever; Prophylaxis and Treatment, *Presse méd.*, Dec. 3, 1914; abstr., THE JOURNAL, Feb. 6, 1915, p. 546.

Ichikawa, S.: Abortive Treatment of Typhoid and Paratyphoid, *Sei-I-Kwai Med. Jour.*, December, 1914; abstr., THE JOURNAL, Feb. 6, 1915, p. 546.

Von Wilucki: Advantages of Bolus Alba in Treatment of Paratyphoid, *München. med. Wchnschr.*, Dec. 8, 1914.

Sawasaki, H.: Pathologic Anatomy of Paratyphoid B. Infection, *Mitt. a. d. Med. Fakultät der k. Univ. Tokyo,* 1915, xiii, No. 2.

FRENCH PROOF AGAR

To the Editor:—Can you furnish me with the formula for making "French proof agar?" This culture medium was mentioned in a paper on the vaccine treatment of tinea tonsurans which appeared in THE JOURNAL of July 17. As I have several cases of ringworm which have resisted all treatment, even the Roentgen ray, I am anxious to give the new method a thorough trial and add my confirmatory evidence if possible to its efficiency.

ROY A. T., M.D., New York.

ANSWER.—The formula for French proof agar is:

Maltose	20 gm.
Peptone	2.5 gm.
Agar	7.5 gm.
Water	500 c.c.

The reaction should be slightly acid, and the agar should be placed in flasks about 1 inch deep.

LITERATURE OF HELIOTHERAPY IN TUBERCULOSIS

To the Editor:—Please give references to Rollier's method of sunlight treatment of tuberculosis.

LAWRENCE JACOBIUS, M.D., New York.

ANSWER.—Following is a partial list of articles which may be consulted:

Dietrich, Henry: Heliotherapy, with Special Reference to the Work of Dr. Rollier at Leysin, THE JOURNAL, Dec. 20, 1913, p. 2229.

Rollier, A.: La cure de solcil, Paris, Baillière.

Redard, P.: Advantage of Orthopedic Appliances in Connection with Sunlight Treatment of Surgical Tuberculosis, *Ann. de méd. et chir. inf.*, May 1, 1914.

Hüssy, A.: Sunlight Plus Mountain Climate in Treatment of Tuberculosis of Hand, *Beitr. z. klin. Chir.*, May, 1914; abstr., THE JOURNAL, Sept. 12, 1914, p. 977.

Kisch, E., and Grätz, H.: Tuberculous Fistula Cured by Exposure to Direct Sunlight, *Arch. f. klin. Chir.*, 1914, civ, No. 2; abstr., THE JOURNAL, June 6, 1914, p. 1850.

Twichell, D. C.: Effect of Direct Rays of Sun on Experimental Tuberculosis, *New Mexico Med. Jour.*, January, 1915.

Johansson, S.: Heliotherapy of Surgical Tuberculosis, *Hygiea,* Stockholm, lxxvi, No. 24; abstr., THE JOURNAL, March 6, 1915, p. 868.

Kime, J. W.: Heliotherapy in Treatment of Tuberculosis, *Iowa State Med. Soc. Jour.*, April, 1915.

Hinsdale, G.: Surgical Tuberculosis and Its Treatment by Heliotherapy, *Brit. Jour. Tuberc.*, April, 1915.

Brinch, T.: Treatment of Internal Tuberculosis with Stored Light Rays, *Ugesk. f. Læger,* Nov. 27, 1913; abstr., THE JOURNAL, Jan. 10, 1914, p. 174.

THE MEDICAL RESERVE CORPS

To the Editor:—My attention has been invited to THE JOURNAL, Aug. 21, 1915, containing, on page 733, a reply to a letter of inquiry in which the following questions are asked: "Who and where is the official head of our Medical Reserve Corps? What are the requirements for appointment to the service, and how are appointments obtained? What military rank and what pay, if any, does such appointment carry with it?"

In your reply you have made no reference to the Medical Reserve Corps of the Navy. Believing that this was an oversight, I desire to invite your attention to the fact that there is a Medical Reserve Corps of the Navy, under the administration of the Navy Department, of which the Surgeon-General of the Navy is the official head, based on the same law which provides a Medical Reserve Corps of the Army, and that full information may be obtained by any person interested in this subject who will address the Surgeon-General of the Navy, Washington, D. C.

W. C. BRAISTED, Washington, D. C.
Surgeon-General, U. S. Navy.

LITERATURE ON MIGRAINE

To the Editor:—Please print a list of recent articles on migraine.

J. D.

ANSWER.—The following is a partial list of books and articles which may be consulted:

Flatau, Edward: Die Migräne, Berlin, Julius Springer, 1912, price 12 marks.

Auerbach, Sigmund: Headache, Its Varieties, Their Nature, Recognition and Treatment: A Theoretical and Practical Treatise for Students and Practitioners, translated by Ernest Playfair, London, Oxford University Press, 1913, price $1.50.

Caesar, G.: Migraine, *Med. Klin.*, Jan. 12, 1913; abstr., THE JOURNAL, Feb. 22, 1913, p. 635.

Charles, J. R.: Pathology of Migraine, *Practitioner,* London, September, 1913.

Alexander, E. W.: Case of Ophthalmic Migraine, *California State Jour. Med.*, November, 1913.

Trangott, R.: Periodical Recurrence of Migraine, *Med. Klin.*, April 12, 1914.

Campbell, G.: Treatment of Migraine, *Jour. Mississippi State Med. Assn.*, October, 1914; abstr., THE JOURNAL, Nov. 14, 1914, p. 1791.

COUNTRY PRACTITIONERS PLEASE NOTICE

To the Editor:—The undersigned, for the purposes of a paper on the midwife question in America, is very anxious to get information relative to the number of midwives in country (farming, lumber, mining) districts, in small villages and towns.

Would the doctors in such districts, villages and towns kindly jot down on a postal card answers to the following questions and mail to me?

1. How many midwives practice in your vicinity?
2. Do you consider the midwives a necessity in your neighborhood?

Any other information will be gratefully received.

JOSEPH B. DE LEE, M.D., 5028 Ellis Avenue, Chicago.

INFORMATION REGARDING PUBLIC HEALTH SERVICE

To the Editor:—To whom shall I write to obtain information in regard to obtaining a position in the U. S. Public Health Service?

R. M. C., M.D.

ANSWER.—Rupert Blue, Surgeon-General, U. S. Public Health Service, Washington, D. C.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, October 5-6. Sec., Dr. John Wix Thomas, 209 National Bank of Arizona Bldg., Phoenix.

COLORADO: Denver, October 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, October 12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

GEORGIA: Atlanta, October 12. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Wallace, October 5. Sec., Dr. C. A. Dettmen, Burke.

ILLINOIS: Chicago, October 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

KANSAS: Topeka, October 12-14. Sec., Dr. H. A. Dykes, Lebanon.

MASSACHUSETTS: Boston, September 14-16. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

MICHIGAN: Lansing, October 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, October 5-8. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSOURI: Kansas City, September 28-30. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

MONTANA: Helena, October 5. Sec., Dr. William C. Riddell, Helena.

NEW HAMPSHIRE: Concord, September 15-16. Sec., Dr. Walter T. Crosby, Pembroke Bldg., Manchester.

NEW YORK: Albany, Buffalo, New York, Syracuse, October 5-8. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, October 12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, October 4. Sec., Dr. Quevedo Baez, Allen St., San Juan.

RHODE ISLAND: Providence, October 7-8. Sec., Dr. Gardner T. Swarts, State House, Providence.

UTAH: Salt Lake City, October 4-5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WYOMING: Laramie, October 13-15. Sec., Dr. H. E. McCollum, Laramie.

Medical Education in Japan

A report from the Department of Education, Tokyo, Japan, states that there are altogether nineteen medical colleges. These institutions are:

GOVERNMENT MEDICAL COLLEGES

1. Tokyo Imperial University, Medical College*.....Tokyo
2. Kyoto Imperial University, Medical College*.....Kyoto
3. Kyushu Imperial University, Medical College*.....Fukuoka
   (Formerly a part of the Kyoto Imperial University)
4. Tohoku Imperial University, Medical College*.....Sendai
5. Tohoku Imperial University, Special Medical Department....Sendai
   (This is a reorganization of the old Sendai Special Medical School. Made a part of Tohoku Imperial University in March, 1912, under the present title.)
6. Chiba Special Medical School.....Chiba
7. Kanazawa Special Medical School.....Kanazawa
8. Nagasaki Special Medical School.....Nagasaki
9. Niigata Special Medical School.....Niigata
10. Okayama Special Medical School.....Okayama
11. Taiwan (Formosa) Medical School†.....Tansui, Taiwan

PUBLIC MEDICAL SCHOOLS

12. Aichi Prefecture, Special Medical School.....Nagoya
13. Kyoto Prefecture, Special Medical School.....Kyoto
14. Osaka Prefecture, Higher Medical School*.....Osaka

PRIVATE MEDICAL SCHOOLS

15. Tokyo Charity Hospital, Special Medical School .....Tokyo
16. Kumamoto Special Medical School.....Kumamoto
17. South Manchuria Medical School.....Mukden
18. Nippon Special Medical School‡.....Tokyo
19. Tokyo Woman's Special Medical School‡.....Tokyo

* For admission, require graduation from the "third department of the higher schools," which covers three years of premedical training following graduation from the middle schools.

† A medical school conducted by the Japanese government, primarily for the aborigines of Taiwan (Formosa). Only a common school education required for admission. Graduates licensed only to practice in Taiwan.

‡ Graduates not licensed by the Japanese government unless they pass a special examination.

As will be noted in the foregoing list, there are eleven government institutions, three public (prefecture) institutions and five private medical schools. The course in all these extends over four years. There is a decided difference, however, in the entrance requirements. The Taiwan (Formosa) Medical School requires only graduation from the Taiwan public schools, and is conducted for the aborigines. The medical colleges of the Imperial Universities (the first four in the list) and the Osaka Prefecture, Higher Medical School, require, in addition to graduation from the middle schools of Japan, three years of higher premedical training in, and graduation from, what is referred to as the "third department of the higher schools." All others require for admission only graduation from the middle school, which is equal to about the tenth or eleventh grade in the better high schools of this country. The medical colleges of the Imperial Universities at Tokyo, Kyoto, Fukuoka and Sendai, therefore, and the Osaka Prefecture, Higher Medical School, are the only ones which, so far as entrance standards are concerned, would equal the medical schools in the United States which require one or more years of collegiate work for admission. All are fully recognized by the government of Japan, except the Taiwan Medical School, the Nippon Special Medical School and the Tokyo Woman's Special Medical School. To obtain the government's permission to practice, graduates of these three colleges must first pass a rigid examination.

It is to be noted that educational requirements for the practice of medicine in Japan are not as high as in the twenty-eight states in this country, which require in addition to graduation from a four year high school, one or two years of collegiate education.

California Reciprocity Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports that thirty-nine candidates were licensed through reciprocity from January to April 16, 1915. The following colleges were represented:

College	Year Grad.		Reciprocity with
University of Colorado	(1911)	(1913)	(1914) Colorado
Chicago College of Medicine and Surgery	(1914, 2)		Illinois
College of Physicians and Surgeons, Chicago	(1886)	(1909)	Illinois
Northwestern University	(1911)		Illinois
Rush Medical College	(1884)	(1909)	(1912) Illinois
Keokuk Medical College	(1891)		Iowa
Kansas Medical College	(1913)		Kansas
Kentucky School of Medicine	(1896)		Indiana
University of Louisville	(1894)		Indiana
Tulane University of Louisiana	(1899)	(1911)	(1914) Louisiana
College of Physicians and Surgeons, Baltimore	(1883)		New Mexico
	(1896)		Minnesota
Harvard University	(1897)	(1905)	Mass.
Detroit College of Medicine	(1890)		Illinois
University of Michigan, Medical School	(1903)		N. Dakota
Minneapolis College of Physicians and Surgeons	(1902)		Minnesota
Kansas City Hahnemann Medical College	(1909)		Oklahoma
St. Louis University	(1913)		Missouri
John A. Creighton Medical College	(1896)		Nebraska
University and Bellevue Hospital Medical College	(1902)		New York
University of Buffalo	(1899)		New York
Cleveland College of Physicians and Surgeons	(1905)		Ohio
Ohio Medical University	(1904)		Nevada
Western Reserve University	(1899)		Ohio
Medico-Chirurgical College of Philadelphia	(1899)		Penna.
Temple University	(1913)		Penna.
University of Pennsylvania	(1911)		Penna.
University of Pittsburgh	(1910)		Penna.
Woman's Medical College of Pennsylvania	(1904)		Dist. Colum.
	(1913)		Maryland

Nebraska May Report

Dr. H. B. Cummins, secretary of the Nebraska State Board of Health, reports the written examination held at Lincoln, May 12-13, 1915. The total number of subjects examined in was 12; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 45, of whom 43 passed and 2 failed. Eight candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Grand Rapids Medical College	(1907)	80.2
Cotner University	(1915)	76.2, 76.4, 80.4, 82, 85.5
John A. Creighton Medical College	(1914)	79; (1915) 77.1, 77.5, 77.5, 79.2, 79.7, 79.7, 80.5, 80.6, 80.6, 80.9, 81, 81.1, 81.1, 81.1, 81.2, 81.5, 81.5, 81.6, 82, 82.1, 82.2, 82.2, 82.2, 82.5, 83, 83, 83.6, 83.6, 84.5, 84.5, 84.7, 84.9, 85.4, 85.5, 87.1.
University of Nebraska	(1915)	80

FAILED

Chicago College of Medicine and Surgery	(1914)	64.9
Cotner University	(1914)	73

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery	(1913)	Illinois
Northwestern University	(1904)	Iowa
Reliance Medical College	(1909)	Illinois
Rush Medical College	(1913, 2)	Illinois
University of Maryland	(1907)	Maryland
National University of Arts and Sciences	(1912)	Missouri
University Medical College, Kansas City	(1910)	Missouri

Book Notices

The Operative Treatment of Chronic Intestinal Stasis. By Sir W. Arbuthnot Lane, M.S., F.R.C.S., Senior Surgeon at Guy's Hospital. Third Edition. Cloth. Price, $4. Pp. 201, with 102 illustrations. Chicago: Chicago Medical Book Company, 1915.

There are six chapters to this work, but only one is devoted to the subject-matter as defined by the title. In this, the first chapter, the author attempts to show that the various peritoneal folds and bands found in the abdominal cavity, which in a sense are considered as abnormal, are "crystallized resistances," or "the crystallization of lines of force," whatever that means, the result of an attempt on the part of Nature to hold up the intestines, which have a tendency to fall on account of man's assuming the erect position. If this be the correct explanation of their origin, one would expect to find at this stage of evolution these bands quite universally present, rather than being the exception in normal healthy individuals; and if they have developed for the sole purpose of preventing the downfall of the intestine, they should be a benefit to the individual rather than a detriment. On this point the author says, "These bands illustrate the fact that while the earlier efforts of Nature to help are to some extent efficient and advantageous to the individual, they all finally act to the detriment of the function they were originally intended to benefit." This means that man, as a penalty for assuming the erect position, is doomed to extinction, for the structures necessary to hold up his bowel lead to his destruction, unless some enterprising surgeon remove his bowel first. It is interesting to learn that practically all the ills to which flesh is heir are due to chronic intestinal stasis because man presumed to stand erect. Some of the penalties for this presumption are loss of hair in one case, with too much hair on the face and body in another; all kinds of skin diseases; loss of fat, causing ptosis of all of the abdominal and pelvic organs; ulcer of the duodenum; ulcer of the stomach; carcinoma of the stomach; gallstones; carcinoma of the pancreas; diabetes; disease of the suprarenals; diseases of the thyroid; heart disease; wasting of the muscles; scoliosis; flatfoot; knock knee; nervous and mental diseases; melancholia and imbecility; adenoids; enlarged tonsils; glands of the neck; arthritis ("Rheumatoid arthritis, like tubercle, is never present except in association with autointoxication due to chronic intestinal stasis"), and other things too numerous to mention. Without intestinal stasis, no diseases of women: "If women were not imperfectly drained, the gynecologist would not have been evolved." There seems to be one ray of hope: the red-headed girl is immune, and her "resisting power varies directly with the distribution and with the intensity of the redness of the hair." And what a sad ending to it all, for "cancer is the last chapter in the three-volume story of chronic intestinal stasis." However, do not be downhearted: the gloom of this recital is quickly dispelled by the magic word Colectomy. "It will be well to remember that while the surgeon should not have recourse to operative measures till all simpler treatment has failed, the earlier colectomy is performed in the history of the disease, the better is the result. The youngest patients get by far the most out of the operation. . . . I prefer, if circumstances will permit, to remove the entire large bowel, except a sufficient proportion of the pelvic colon." There is one exception to the necessity for doing colectomy. Pregnancy sometimes cures. This seems to be the case particularly if the girl is unmarried. "It is in this manner that a toxic, thin, miserable girl may be converted into a plump, clean, happy one by a pregnancy. It would seem almost justifiable in an unmarried girl in certain circumstances to resort to a pregnancy rather than to operative interference. This course has, however, distinct and obvious objections in our present state of civilization." [Sic.] Let us hope that the present state of civilization will continue, so far as this point is concerned. The chapter closes with a brief partial report of three or four cases in which colectomy had been done.

Chapter II is on "The Investigation of Chronic Intestinal Stasis by the X-Rays," by Alfred C. Jordan, M.D. Chapter III is on "The Bacterio-Chemistry of the Small Intestine," by Dr. Nathan Mutch. This is very brief and covers less than five pages. Chapter IV is an extract from a work on diseases of the heart by James Mackenzie, entitled "X Disease," while Chapters V and VI, by the author, on "A Remarkable Example of the Manner in which Pressure Changes in the Skeleton May Reveal the Labor History of the Individual" and "The Anatomy and Physiology of the Shoemaker" are taken from the *Journal of Anatomy and Physiology* of 1886 and 1887, and have nothing to do with the subject-matter of the work; furthermore, much of the matter and all of the illustrations in these two chapters are used in the first chapter. The last three chapters could have been well dispensed with, and the space used to much better advantage to give in detail reports of the cases in which the author has done this operation, with the mortality and the end-results; all of which much needed information to carry conviction is entirely lacking.

Human Motives. By James Jackson Putnam, M.D., Professor Emeritus, Diseases of the Nervous System, Harvard University. Cloth. Price, $1. Pp. 179. Mind and Health Series. Boston: Little, Brown & Co., 1915.

The author, known for his recent freudian leanings and certainly the most philosophic of all English-speaking disciples of the new school of psychology, attempts an analysis of human motives through freudian eyes. He sees, "gleaming through our immediate and partial motives, a background of stronger tendencies from which these motives derive their main significance." He believes, first, "that men are more strongly bound than they usually recognize, by a sense of obligations definable as 'ideal.' Whatever name one may choose for these ties, they are virtually religious in their nature, and the recognition of them often gives rise to a feeling of new birth. The sense of these obligations, even though unacknowledged or denied, makes itself felt through the host of lesser motives." In the second place, according to Putnam, "men are handicapped by passions, longings, personal ambitions, cravings for success and mastery, to a degree of which they are never wholly conscious." Throughout this book the author utilizes two modes of approach to the study of human motives—the philosophic and the psychanalytic methods. The subject is discussed under the topics: main sources of motives, the rational basis of religion, the psychanalytic movement, the educational bearings of psychanalysis, instinct and ideals, and an attempt at synthesis. Without attempting a discussion of the views expressed in this little volume, we believe the reader will find in it much food for reflection. The subject itself has been treated from a high plane of thought; and opponents of Freud's doctrines will seek in vain for weak spots wherein to send their arrows of personal criticism. In all his utterances this author commands the highest respect, and any criticism must be limited to the principles which he advocates.

The Insanity of Youth and Other Essays. By Bayard Holmes, B.S., M.D. Boards. Price, $1. Pp. 222. Cincinnati: Lancet-Clinic Publishing Company, 1915.

This small volume contains a number of essays which have been published from time to time in the *Lancet-Clinic*. For the most part they are polemic in character and propagandist in nature. So imbued is the author with the idea that all disease has a physical basis that he has become impatient with psychology as explaining anything in medicine excepting the peculiar unproductiveness of mental medicine. The essays give one the impression that the author believes everything which emanates from certain German laboratories, while persistently denying the great value of psychologic observation in the domain of psychiatry.

Sleep and Sleeplessness. By H. Addington Bruce. Cloth. Price, $1. Pp. 219. Mind and Health Series. Boston: Little, Brown & Co., 1915.

The author has written quite a chatty little volume on sleep. We doubt not that its perusal will produce the desired somniferous effects.

Miscellany

"As to Medical Freedom"

The Lamar *Democrat* is published in Lamar, Mo., once a week. What follows is from an editorial that appeared in the issue of June 10, 1915. Those who read it will realize why it is unnecessary to make any comment:

Every week we read a journal that is devoted quite hotly to medical freedom. Judging from what this seven-day periodical of enlightenment has to say, we are in great danger of a vast medical trust, that will sit heavily and ruthlessly upon us, poisoning us with deadly serums and vaccines, gagging us with nauseous decoctions of mephitic herbs.

Is there really anything the matter with our present medical freedom in this country? Is there any damn fool "ism," any absurd claim, any sort of "Eny, Meny, Miney, Mo" business that we cannot try upon our diseased and tortured bodies if we are so minded?

Truth compels us to answer, None.

Consider for a minute what has been done by the regular school of medicine against which, in the name of freedom, we are so vociferously and so repeatedly warned. Then consider the achievements of the various schools cults, 'isms and creeds that would supplant this profession and consign it to forgetfulness.

The regular school of medicine is fallible. There are many things it cannot do. But it never ceases in its search for truth. The laboratory and the clinic room are its foundation and inspiration. Nothing is taken for granted. It bases its deductions upon scientific facts, that must overcome the combined force of prejudice, tradition and vested interest.

What has become of cholera? What has become of infant diarrhea? What has become of smallpox, once a terror equal to plague? What has become of diphtheria and membranous croup? Who is gradually conquering tuberculosis, the greatest of human plagues? Who has dissipated the dread specter of hydrophobia? Who achieved the marvels of modern surgery? Has it not been the school of regular medicine? One by one, hostile schools of healing have been reared to combat the ancient profession of Hippocrates. Where are they now? Only echo answers, Where?

Who is frantically and supplicatingly in demand upon those long battle lines in Europe? Is it chiropractics? Is it osteopaths? Is it Christian Science healers?

Those who seek to overthrow the regular practitioners found their assumptions upon a combination of superstition, and a wooden-faced denial of physical facts. They come and go like the passing seasons. They make no great scientific discoveries. They garner no tomes of physical knowledge. They are found in the end to be based upon pretence, gullibility, superstition and esoteric moonshine.

The regular school makes mistakes. It needs watching. It should never emerge to that haughty eminence where it will not receive its full quota of brain-clearing, humility-preserving kicks; but forget not, brethren, it is the salt of the earth, and suffering humanity's one dim and distant star of hope.

War Babies

Since the beginning of the European war, accounts, mostly of a sensational nature, have appeared regarding the excess of illegitimacy in the communities in England in or near which large bodies of enlisted men are encamped for war instruction purposes. The *British Medical Journal* says that many tales were told in most circumstantial detail which indicated that there would be thousands of illegitimate children born on account of lax conditions accompanying the mobilization of large bodies of men in military camps. For instance, it was reported that in one town of 18,000 inhabitants 2,000 girls were expecting war babies; another story was to the effect that in a certain maternity hospital fifteen new wards were to be provided. New stories appeared almost daily and the public was wrought up into a state of excitement and distress on account of this supposed condition of affairs. The confusion and excitement grew so that the Archbishop of Canterbury with a few representative persons formed a committee to investigate the alleged facts. The committee after inquiry reported that the sensational accounts as to the large number of "war babies" were without foundation. "The committee did not deny that there had been grave cause for anxiety on account of the prevalence of a low moral standard as well as on account of intemperance, which was often the result of thoughtless treating, nor did it deny that there had been much giddiness and foolish excitability among young girls which often led to undesirable conduct. The committee stated that everything it had learned pointed to the need of providing opportunities for wholesome recreation for the girls and also for the soldiers and sailors, but expressed the opinion that there was no reason to pass any harsh judgments on them or to distrust them in the future."

The Paramount Importance of Chemistry in Biologic and Medical Research

J. J. Abel, in an address delivered as the first Mellon Lecture at the Mellon Institute, Pittsburgh (Experimental and Chemical Studies of the Blood with an Appeal for More Extended Chemical Training for the Biological and Medical Investigator, *Science,* July 30 and Aug. 6, 1915, pp. 135 and 175), says:

"When I have the honor of being consulted by a young man who has not yet found himself intellectually but who is filled with the desire to devote his life to some branch of medicine, be it clinical medicine, pathology, hygiene, bacteriology, physiology or pharmacology, my advice always is, 'Study chemistry for at least three years. Try with all your power to master enough of this great science to start you in your career.' Why not make this attempt at a time of life when one still takes kindly to a rigid discipline such as this science exacts? To this preparation must be added the special medical training of another four or more years. A long road to travel? But I find that many young men have entered upon it with great enthusiasm."

Abel goes on to explain that he does not mean to recommend an extended course in mere sterile cramming. Under the influence of teachers who are themselves investigators and seekers for new truths, these ambitious young men are to be led to see the relation of what they learn to living questions, and are themselves to make occasional attempts at the solution of problems.

As illustrating the vast and virgin field awaiting the biologist with the chemist's training, Abel cites the many problems of the chemical properties and molecular structure (unknown except in the sole case of epinephrin) of the mysterious correlating substances stored and formed in the endocrine organs, and of numerous constituents of the circulating blood. The tremendous practical importance of decisive chemical advances in this field can be faintly adumbrated by recalling the vital consequences of one or two other chemicobiologic discoveries. The discovery of glycogen in the liver by Claude Bernard has illuminated the whole subject of carbohydrate metabolism, and has furnished the starting point for numberless researches which have been most fruitful in knowledge of such diseases as diabetes mellitus. Miescher's discovery of protamin nucleate in the spermatozoan heads of the Rhine salmon, and Kossel's discoveries in the field of nucleinic acids have entirely transformed our theories of the origin of uric acid in gout and of the purins in general.

Although he emphasizes our ignorance of the chemical properties and structure of the specific products of the endocrine organs and of numerous constituents of the blood, Abel does not mean to imply that we lack important chemical facts with regard to these tissues. We possess, on the contrary, a vast array of such facts; but knowledge fails us when it comes to their relation to each other and to an underlying cause. Abel admits that these problems are many-sided, and that important and fundamental discoveries, especially in the field of morphology, have been made

and will continue to be made independently of the science of chemistry. But to solve the complex problems involved in the flux and flow of life processes within plants and animals, such instruments as the microscope, the kymograph, the scalpel, are not enough; "the investigator must associate himself with those who have labored in fields where *molecules and atoms, rather than multicellular tissues or even unicellular organisms, are the units of study.*"

Yet even the solution of such important practical problems as these is not, in Abel's belief. the most important service that such training can render to the world. In striking and significant words he goes on:

"Greater even than the greatest discovery is it to keep open the way to future discoveries. This can only be done when the investigator freely dares, moved as by an inner propulsion, to attack problems not because they give promise of immediate value to the human race, but because they make an irresistible appeal by reason of an inner beauty. Some of the greatest investigators indeed have been fascinated by problems of immediate utility as well as by those that deal with abstract conceptions only. Helmholtz invented the ophthalmoscope and thus made modern ophthalmology possible, and at the same time did work of the highest order in theoretical physics and wrote on the nature of the mathematical axioms and the principles of psychology. Lord Kelvin took out patents on great improvements in the compass and on oversea telegraphy, and also made contributions to our knowledge of the ultimate constitution of the atom and the properties of the ether. From this point of view the investigator is a man whose inner life is *free* in the best sense of the word. In short, *there should be in research work a cultural character, an artistic quality, elements that give to painting, music and poetry their high place in the life of man.*"

Medicolegal

Surgeon Not Liable for Sponges Being Left in Patient

(Cassingham et al. vs. Berry (Okla.), 150 Pac. R. 139)

The Supreme Court of Oklahoma affirms a judgment in favor of the defendant, and denies a rehearing in this action against a surgeon for alleged negligently leaving gauze sponges in the body of the plaintiffs' mother, on whom he had operated for the removal of the ovaries, which alleged negligence, it was charged, resulted in her death. The court says that the defendant answered, among other things, that he had the assistance of two other physicians and a trained nurse, who was not employed by him, but was employed by the husband of the patient, or some one acting in his behalf; that the operation was a difficult one; that it was necessary that he should keep his mind concentrated on the surgical part thereof; that he repeatedly admonished the nurse to keep accurate count of the sponges inserted into the cavity; that that was her duty, and that he impressed on her the importance of seeing that they were all removed; that, after the operation, and before the cavity was closed, he asked her if she had counted the sponges, and if all had been taken out, and she assured him that she had counted them and that they had all been taken out. The jury was instructed that the defendant was not at any time required to exercise the highest degree of care or diligence in the performance of the operation, but the law imposed on him the duty to use reasonable care, and that, although the jury might believe from the evidence that the defendant in the performance of the operation left the sponges in the abdominal cavity of Mrs. Cassingham, and that her death was the natural, proximate result thereof, still, if the jury believed from the evidence that the defendant in the performance of the operation exercised ordinary care in keeping track of the sponges and seeing to it that they were all removed before the incision was closed, the verdict must be for the defendant. And in determining what was ordinary care in this instance, the jury must take into consideration the necessity for prompt and efficient action on the part of the defendant in stopping the hemorrhage referred to in the testimony and doing the other things necessary in the performance of the operation, the difficulty of the operation, and all other facts and circumstances in connection therewith as disclosed by the evidence. The plantiffs claimed that this instruction was erroneous in assuming and inferring as a matter of fact that the defendant could leave the sponges in the abdominal cavity in the exercise of ordinary care; that common sense dictated that leaving the sponges in the abdominal cavity was absolutely and totally inconsistent with the exercise of ordinary care. But the doctrine advanced, in this position of the plaintiffs, was too exacting for human affairs. It was equivalent to saying that, if ordinary care had been used, no mistake could have occurred. It assumed that the exercise of ordinary care would have rendered a human being infallible. It is a matter of common knowledge, based on everyday experience, that even in the exercise of the utmost care, all men do make mistakes. And it was not error, under the pleadings and evidence in this case, for the court to instruct the jury that, though they believed the defendant left the sponges in the body of the patient, and her death was the natural and proximate result thereof, yet if they also believed from the evidence that the defendant, in performing this operation, exercised ordinary care in keeping track of the sponges, and seeing to it that they were all removed before the incision was closed, he could not be held liable for negligence. The basis and gist of this action was not the result of the operation, but negligence in the performance of it. If there was no negligence in the performance of the operation, then there was no cause of action, and could be no recovery; if there was negligence in the performance of the operation, then a recovery could be had. Whether or not the defendant exercised that degree of care in performing the operation which the law imposed on him was the paramount question, and the test of the rights of the parties.

Another Court Holds Charitable Hospitals Liable for Negligence

(Tucker vs. Mobile Infirmary Association (Ala.), 68 So. R. 4)

The Supreme Court of Alabama reverses a judgment rendered for the defendant on the pleadings in this action for damages alleged to have been sustained by the plaintiff by being scalded with boiling water both internally and externally as a result of the negligence of one of the nurses employed by the defendant in the care of the plaintiff, and while she was engaged in the duties of said employment. The defense was, in effect, that, having exercised due care in the selection and retention of the nurse, the defendant was exempt from all liability to the plaintiff, because of the fact that it was an institution organized, not for profit, but for charitable purposes. The question presented is one of much interest, the court says, and a subject on which much appears to have been written in recent years. But the question, being an open one in Alabama, left the court free to act without any constraint of the rule of *stare decisis* or standing by decided cases, and in accordance with what it deems the law. It must be conceded at the outset that the great weight of authority in this country, certainly from a numerical standpoint, lies with the defendant, or is in favor of exemption to an institution engaged in charitable work from liability for the torts or wrongful acts of its servants or agents. Still there is some contrariety of opinion as to the principles on which this result is rested, and varied reasons are given, not at all consistent one with the other. Indeed, the different views are so divergent and so inconsistent that in the mind of this court the weight of authority has lost its force, and this court is rather impressed by a reading of the decisions that the courts holding to the majority view have been rather straining at legal principles in order to reach what they seem to think a desirable and just result. With the result the court cannot feel concerned. It is not for this court to creat exemptions or declare immunity from liability in a case of this character as shown by this record,

and, if considered to be so violently opposed to the public good, it is a matter that may be addressed to the legislative department. The court passes the question as to liability for injury to one who in fact accepts charity in an institution of this character as it had not that case before it, as the complaint alleged that the plaintiff agreed to pay a reasonable compensation; that is, such sum as was reasonable to be paid for the services rendered. There can be no valid reason why such a patient, dealing as she does at arm's length with the hospital, should not stand in as favorable position as the stranger, and yet many of the cases grant relief to the latter and deny it to the former. It is a principle of law, as well as morals, that men must be just before they are generous.

Society Proceedings

COMING MEETINGS

American Academy of Ophth. and Oto-Laryn., Chicago, Oct. 5-7.
Amer. Assn. of Obstetricians and Gynecologists, Pittsburgh, Sept. 14-16.
American Association of Railway Surgeons, Chicago, Oct. 13-15.
American Electro-Therapeutic Association, Atlantic City, Sept. 14-16.
American Public Health Association, Rochester, N. Y., Sept. 7-10.
American Roentgen Ray Society, Atlantic City, Sept. 22-25.
Association of Military Surgeons of the U. S., Washington, Sept. 13-15.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Indiana State Medical Association, Indianapolis, Sept. 23-24.
Kentucky State Medical Association, Louisville, Sept. 21-23.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
Missouri Valley Medical Society, Des Moines, Sept. 23-24.
New Mexico Medical Society, E. Las Vegas, Sept. 6-8.
Oregon State Medical Association, Portland, Sept. 9-10.
Pennsylvania State Medical Society, Philadelphia, Sept. 20-23.
Utah State Medical Association, Salt Lake City, Sept. 28-29.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

August, XXXVI, No. 8, pp. 375-424

1 Rugged Physiologic Treatment of Neurotic. G. M. Parker, New York.
2 Evidence of Immunity in Tuberculosis. Development of Phthisis. First Infection; Second Infection. A. H. Garvin, Ray Brook
3 Some Remote Effects of Bad Feeding. F. Van der Bogert, Schenectady.

American Journal of Medical Sciences, Philadelphia

August, CL, No. 2, pp. 157-312

4 *Raynaud's Syndrome: Raynaud's Disease. O. T. Osborne, New Haven, Conn.
5 *Case of Family Periodic Paralysis. D. L. Edsall and J. H. Means, Boston.
6 *Rôle of Syphilis in Hypertensive Cardiovascular Disease. H. F. Stoll, Hartford, Conn.
7 Latent Syphilitic Infection of Lungs. H. R. M. Landis and P. A. Lewis, Philadelphia.
8 *Certain Physical Signs Referable to Diaphragm and Their Importance in Diagnosis. R. Dexter, Cleveland.
9 Pleurisy. G. S. Gerhard, Bryn Mawr.
10 Recurrent Pneumothorax; Report of Case. C. L. Cummer, Cleveland.
11 *Classification and Analysis of Clinical Types of Splenomegaly Accompanied by Anemia. E. B. Krumbhaar, Philadelphia.
12 Unfavorable Vaccine Results in Case of Hodgkin's Disease. R. R. Mellon, Ann Arbor, Mich.
13 Diagnosis Between Primary and Secondary Acute Cardiac Pictures. R. N. Willson, Philadelphia.
14 *Causes of Backward Displacement of Uterus. P. F. Williams, Philadelphia.
15 Certain Unclassified Fevers: Typhaceae (Typhoid Group) and Entericoid or Para-Enteric Fever. R. Stein, New York.

4. **Raynaud's Syndrome: Raynaud's Disease.**—Eleven cases are analyzed by Osborne and on a study of these he bases the following conclusions: 1. Raynaud's disease is not a distinct entity; it is a syndrome caused by the disturbance of one or more internal secreting glands. 2. There is primarily no real disease of the blood vessels, but the vasomotor control is so abnormally disturbed that most profound contraction of certain blood vessels may occur in different parts of the body, perhaps more or less coincident with abnormal dilatation of other blood vessels. If the contracted blood vessels are peripheral the parts more or less lose their function and show various trophic disturbances. 3. This blood vessel spasm may occur in the internal organs of the body as well as peripherally, though much less frequently and it is more difficult of diagnosis. 4. The syndrome is probably due to disturbances of more than one of the ductless glands of the body that have internal secretion, but there is always apparently some disturbance of the thyroid gland, perhaps a diminution of the vasodilator stuff of this gland. 5. Judiciously applied, thyroid treatment improves in the majority of cases, perhaps all, and cures in some cases. Nitroglycerin is always of temporary benefit and local heat is always of immediate benefit.

5. **Family Periodic Paralysis.**—The authors are of the opinion that this disease is one of metabolism and not of nervous origin.

6. **Syphilis in Cardiovascular Disease.**—The results of Stoll's investigation of 109 cases are summarized as follows: Syphilis is the underlying or basic factor in a much higher percentage of hypertensive cases than has hitherto been realized. Of fifty individuals studied, 90 per cent. either gave a positive Wassermann or luetin test, or were known to have syphilis, or had children with hereditary syphilis. Nineteen were from cardiovascular families. In seventeen of them either one or both tests were positive. One of the two with negative reactions is surely specific. This strongly suggests the existence of what might be termed "familial cardiovascular syphilis." It would seem that hypertensive disease is one of the most common—possibly the most frequent—of the so-called "late" manifestations of hereditary syphilis. Apoplexy and sudden cardiac death occurring in middle life are almost always due to syphilis, and it cannot be considered a negligible factor even in the aged. The remaining parent and the children of persons dying a cardiovascular-renal death in middle life should be tested for syphilis, as in a high percentage of cases they are infected. Specific treatment has given very satisfactory results in a few cases, for the most part persons whose systolic pressure was under 200. The careful administration of mercury over a period of several months has not appeared to be injurious to the kidney even when there was considerable reduction of phenolsulphonephthalein output. In a few instances the kidney function was increased several months after treatment. The luetin test, especially if activated by a week of mixed treatment, is often of more value than the most sensitive Wassermann in detecting these late manifestations of syphilitic infection.

8. **Physical Signs Referable to Diaphragm.**—It is held by Dexter that inflammation or irritation of the pleural or peritoneal surface of the diaphragm does not give rise to local symptoms. The pain resulting from such processes is referred upward along the phrenic nerves to the third or fourth cervical segments or downward along the sixth to twelfth intercostals into the lower dorsal segments. The pain is usually accompanied by tenderness and hyperesthesia or hyperalgesia of the skin. The recognition and interpretation of these signs may be of considerable importance in differential diagnosis between intrathoracic or intraperitoneal disease, in the absence of any signs in the lungs. When the part or the whole of the diaphragm is forced downward the contraction of the diaphragm exerts a more powerful inward pull along the line of its attachments. This is especially marked when the anterior portion of the diaphragm is depressed. This will result in a lessening of the outward excursion of the subcostal angle, or an actual retraction along the line of diaphragmatic attachment. Conversely, any condition which lifts the diaphragm upward

lessens the strength of the inward pull of the contracting diaphragm, with the result that the normal outward movement of the costal margins will be increased. The presence of a retraction or of an abnormal outward flaring of the subcostal angle will often be of aid in the explanation of obscure diseases of the viscera which lie immediately above or immediately below the diaphragm, especially in pericardial effusion or in subphrenic abscess.

11. **Splenomegaly Accompanied by Anemia.**—Krumbhaar states that splenectomy should be considered in all those diseases in which there is evidence of increased blood destruction, and that in early Banti's disease and hemolytic jaundice, at least, the results of splenectomy have been excellent. All such procedures, however, should be entered on most conservatively so long as so much of the physiology of the spleen remains unknown. Though its removal is known to be compatible with life, it may yet prove to have such important detoxicating relations to infection or to digestion, that splenectomy should only be practiced after most careful study and to relieve the most serious conditions.

14. **Causes of Backward Displacement of Uterus.**—In order to ascertain to what extent a history of trauma in one form or another occurs in the average case of displaced uterus Williams has examined the histories of 529 cases of this condition. A number of these cases, referred for pelvic examination as an aid in explanation of some obscure medical condition, represent accidentally discovered cases of symptomless retroposition. Childbirth at term, whether or not associated with miscarriage, explains clearly the etiology in a group of 304 cases. In a similar way a previous miscarriage or miscarriages caused the condition in a second group of thirty-three cases. The diagnosis of pregnancy or the abnormal symptoms resulting from pregnancy in a retrodisplaced uterus explains the discovery of the displacement in a group of sixteen women. There remains two groups, one of eighty-one sterile married women, and a final one of eighty-eight single women. In but few of these cases of single or sterile married women was there simple mobile retroplaced uterus. Some additional pelvic pathology, inflammatory disease of the adnexa, recent or old, and with adhesions, evidences of previous pelvic peritonitis, cystitis, appendicitis, and so on, was usually present. In thirteen cases, slightly over 2 per cent. of the whole number of cases, a history of accident or trauma was found.

Annals of Ophthalmology, St. Louis

July, XXIV, No. 3, pp. 443-610

16 Retinal Angiosclerosis and Associated Lesions. E. Jackson, Denver.
17 Strabismus. F. Valk, New York.
18 Operation for Glaucoma — Filtration Secured by Leech-Bite Incision. F. C. Todd, Minneapolis.
19 Hereditary Deficiency of Light Sense in Otherwise Healthy Eyes. Report of Case. H. M. Langdon, Philadelphia.
20 Abscess on Optic Nerve. H. S. Gradle, Chicago.
21 Significance of Transparency of Retinal Blood Column. W. L. Phillips, Buffalo.
22 Toti's Operation for Dacrocystitis; Report of Twelve Cases. V. L. Raia, Providence, R. I.
23 Face Powder Conjunctivitis. N. M. Black, Milwaukee.
24 Detachment of Retina Cured by Galvano-Puncture of Sclera, Combined with Subconjunctival Injection of Mercury Cyanid. E. L. Jones, Cumberland, Md.
25 Successful Method for Removal of Fully Dislocated (Lost) Lens, Heretofore Considered and Referred to by Authorities as "Impossible of Extraction;" Together with Five Other Cases. H. S. Paine, Glens Falls, N. Y.
26 Surgery and War. G. E. Armstrong, Montreal.
27 *Incidence of Heredity as Factor in Causation of Goiter. J. E. Summers, Omaha.

27. **Heredity in Causation of Goiter.**—Summers operated on a mother and her three daughters for goiter, and there are more members of the family who have goiter—there being, likewise, an ancestral history of goiter. In another family there was no familial history except that the father and mother had goiter; three children dying in infancy, all had goiter; another infant 8 days old, with a goiter threatening asphyxiation, was successfully operated on; the four older living children each had a goiter.

Annals of Surgery, Philadelphia

August, LXII, No. 2, pp. 129-256

28 Laparotomy in Typhoid. S. J. Mixter, Boston.
29 *Acute Appendicitis Occurring in Course of Typhoid. H. Gage, Worcester, Mass.
30 Acute Cholecystitis Complicating Typhoid. H. A. Lothrop, Boston.
31 *Pathology of Spleens Removed for Certain Abnormal Conditions of Blood. L. B. Wilson, Rochester, Minn.
32 *Clinical Notes on Splenectomy. H. Z. Giffin, Rochester, Minn.
33 *Surgical Considerations of Splenectomy. W. J. Mayo, Rochester, Minn.
34 Cavernous Angioma of Spleen; Report of Case. C. N. Dowd, New York.
35 Abscess of Spleen; Report of Case. A. W. Elting, Albany, N. Y.
36 Papillomas of Gallbladder. C. H. Mayo, Rochester, Minn.
37 Report of Cases of Gallstone Disease Operated on During Year 1914. J. B. Deaver, Philadelphia.
38 *Fistulous Communication Between Stomach and Colon, Following Gastro-Enterostomy. C. A. Hamann, Cleveland.
39 Paget's Disease of Nipple and Allied Conditions; Report of Cases. J. H. Jopson and J. Speese, Philadelphia.
40 *Excision of Tongue. A. P. C. Ashhurst, Philadelphia.
41 *Conservative Operations in Cysts of Breast. F. E. Bunts, Cleveland.
42 *Amputation of Breast by Transverse Incision. F. T. Stewart, Philadelphia.
43 Non-Calculous Obstruction of Upper Ureter. C. H. Peck, New York.

29. **Appendicitis in Typhoid.**—An instance of an acute gangrenous appendicitis, occurring at the beginning of a convalescence from an attack of typhoid, is reported by Gage. He believes that its presence in the exudate and in the walls of the appendix would seem to indicate that the bacillus of typhoid was taking at least an active part in the process, confirmed by the presence of a typical typhoid ulcer. Twice within eight days the leukocyte count had been 7,000 and 8,000, and within a few hours after the onset of the pain it rose to 14,000, and then to 15,000, and, in eight hours, to 18,000.

31. **Pathology of Spleens Removed.**—The average age of fifteen patients with a blood picture of splenic anemia at the time of operation was 36 years. The average duration of symptoms was thirty-two months. The average weight of the spleen was 1,130 grams. Histologically, the most constant features were the marked reduction of the pulp and lymphoid tissue with the great increase of reticulum and the almost constant presence of amyloid degeneration and arteriosclerosis. The average age of seven patients with pernicious anemia was 44 years at the time of operation. The average duration of symptoms was twenty-seven months. The average weight of the spleens removed was 463 grams. Cytologically the increase was mostly in the lymphoid tissue, though in one case there was a well-marked fibrosis, this spleen weighing almost twice the average weight of the glands in the series. The almost entire absence of pigment in these relatively early stage cases is again in contradiction to the usually accepted statement that in cases of pernicious anemia the spleen is pigmented. Five cases of hemolytic anemia, syphilis and hemolytic jaundice resembled pathologically the cases of splenic anemia. Four cases of secondary infection, lymphosarcoma, acute febrile nonseptic splenomegaly, and splenomegaly with eosinophilia had little pathologic relationship to either splenic anemia or pernicious anemia. The one lymphosarcoma case was typical lymphoma whose malignancy was shown clinically. The other three cases give the general picture of intense acute or subacute infection, causing hypertrophy and hyperplasia of all the parenchymal elements of the spleen without material increase in the reticulum.

32. **Splenectomy.**—The series of 58 cases reported by Giffin includes 27 of splenic anemia, 3 of the Gaucher type of splenic anemia, 7 of pernicious anemia, 2 of hemolytic jaundice, 5 of secondary infectious or septic splenomegaly, 2 of an unclassified type of hemolytic anemia with marked splenomegaly, 2 of syphilis, 3 of sarcoma or lymphoma, 2 wandering spleens and 1 each of myelocytic leukemia, cirrhosis of the liver and tuberculosis of the spleen. In addition, it includes one case of acute febrile nonseptic splenomegaly which is analogous in its clinical course to Egyptian splenomegaly, and one case in which splenome-

galy was associated with an extremely high eosinophilic count. Splenic anemia is, in the Mayo's experience, most favorable for surgical treatment. The operative risk is relatively low and the prospect for a return to normal health excellent. Three of the seven patients with pernicious anemia have shown temporary improvement up to nine months after splenectomy. Removal of the spleen in nongummatous splenomegaly associated with syphilis has been attended with excellent results in two instances.

33. **Surgical Considerations of Splenectomy.**—In fourteen of Mayo's patients edema of the lower extremities was marked. Seventeen had ascites with coincident myocardial and renal changes, seven were jaundiced, and five were suffering from high temperature at the time of the operation. There were many combinations of these conditions, all in connection with high grades of anemia, yet there were but five deaths in the hospital from all causes, in the fifty-eight cases operated on. As shown by the postmortem, two of the five deaths were from preventable causes (hemorrhage and sepsis).

38. **Stomach-Colon Fistula.**—The main facts in connection with Hamann's case were as follows: Posterior gastro-enterostomy, for duodenal ulcer, followed in five months by partial resection of the stomach and duodenum, necessitated by recurring hemorrhage; a period of good health for two and one-half years; then, after a severe strain, another hemorrhage, which was followed by a period of several months of ill-health, characterized by loss of weight and strength, diarrhea, and by eructations from the stomach which had a fecal odor. At a third operation at which there was found a gastrocolic fistula, separation of stomach, jejunum and colon from one another was done, with closure of the openings in stomach and jejunum, resection of part of transverse colon and the making of a new (anterior) gastro-enterostomy. Recovery resulted with restoration to health.

40. **Excision of Tongue.**—The slight modification of Crespi and Bastianelli's operation, to which Ashhurst calls attention, was worked out on the cadaver. The operation includes removal of the upper cervical and submaxillary lymphatics on the side affected, and of the tongue, at the same sitting. Thus it is designed for cases in which the disease is undoubtedly still in the operable stage. The technic of the operation is described in detail and well illustrated.

41. **Operations in Cysts of Breast.**—Among a series of 648 operations on the breast for every kind of disease, done by Bunts, Crile and Lower, there were sixty-eight cases of cysts of the breast, nearly 10 per cent. These sixty-eight represent all types of breast cysts without further classification. Many of them occurred among ward charity patients difficult or impossible to trace, so that they succeeded in getting but fifty-five replies to letters sent both to patients and attending physicians, and yet the significant fact was, that in not one of the fifty-five replies was there the history of subsequent development of cancer. In five cases amputation of both breasts was performed and in fifteen, amputation of one breast, leaving only forty-eight in which only a partial amputation or excision simply of the cyst was performed. In thirteen of the amputations, the pathologic diagnosis of cystadenoma was reported, in three multiple cysts, and in three simple cysts, without any further explanation, and in one cystic papilloma. The same diagnoses were made in many of the cases in which only partial amputation or resection of the cysts was performed, so that there does not appear on the face of the records any special reason for the complete removal as contrasted with the partial removal.

42. **Amputation of Breast.**—The operation described by Stewart embodies the principles laid down by Halstead, with the following: The axilla is attacked first, in order to determine the extent of the lymphatic involvement and the feasibility of radical treatment; in order to secure, once for all, at their origin, the blood vessels supplying the breast, thus minimizing hemorrhage, economizing time, and preventing shock; in order to suppress lymphatic drainage as early as possible and prevent neoplastic dissemination; and in order to leave the breast as a warm covering for the thorax until the final stage of the operation. The incision permits free exposure, including the subscapular space, which is sometimes neglected; does not run on to the arm or through the axilla, in which situations a contracting scar may interfere with the functions of the arm or press on the blood vessels and the nerves; and with extensive undermining, can almost always be closed. An incision, skirting the upper margin of the breast, is made from a point on the edge of the sternum farthest from the growth and on a level with the nipple to a point on the same level at the posterior axillary fold. The ends of this incision are joined by a cut which skirts the inferior margin of the breast. When primary closure cannot be obtained the raw surface is covered with pedunculated flaps from the abdomen and back.

Archives of Pediatrics, New York

July, XXXII, No. 7, pp. 481-560

44 *Transmission of Tuberculosis in Childhood. W. H. Park, New York.
45 Care of Tuberculous Child. I. O. Woodruff, New York.
46 *Immunization Against Measles. C. Herrman, New York.
47 Permanganate Test for Spinal Fluid. Case of Tuberculous Meningitis in Which All Other Tests Were Negative. E. Lackner and A. Levinson, Chicago.
48 *Case of Erysipelas Treated with Whole Blood From Convalescent Patient. A. D. Kaiser, Rochester, N. Y.
49 Wassermann Test in Congenital Syphilis. J. A. Roddy, Philadelphia.
50 Case of Infectious Purpura. P. S. Potter, Syracuse, N. Y.

44. **Transmission of Tuberculosis in Childhood.**—Park states that it is fairly certain that when tubercle bacilli contained in milk are actually heated to 140 F. and held at that temperature for twenty minutes, they are destroyed. If any escape, they are too few to infect animals. Butter is known to contain tubercle bacilli when made from milk containing the same. In different samples of butter the bacilli remain for varying lengths of time. In one case they have been detected for as long as five months, but usually die out within a few weeks. The evidence that butter actually transmits tuberculosis is less direct than in the case of milk. This is partly because the bacilli are less in number and partly because the butter is not usually taken at the age when tuberculosis of the bovine type is most apt to be transmitted. Whether meat from tuberculous animals has ever transmitted tuberculosis to human beings, Park believes, is a question of some doubt. When the meat is thoroughly cooked, all tubercle bacilli are certainly killed. When the meat is rare some may escape. As a matter of fact, the muscle of meat seldom contains appreciable numbers of bacilli. Although recent investigations have definitely proved that bovine bacilli infect infants and to some extent older children, yet the evidence is equally clear that the majority of infections come from one human being to another. While bovine infection is most prevalent in early childhood, the human infection increases in amount up to 15 years of age. As in the case of many other diseases, infants, as a rule, possess a considerable insusceptibility to tuberculosis.

In the case of infants and young children, the greatest danger lies in being attended by a tuberculous mother or nurse. The infant or child may receive tubercle bacilli from the hands, the lips or other portions of the person of the nurse and swallow them and so cause an infection of the tissues of the throat and intestines. The neighboring glands become enlarged and the processes in the small infant remain local or become generalized. In other cases, the fine spray from sneezing, coughing or loud speaking of the tuberculous attendant is inhaled by the infant. Some of these bacilli are caught on the nasal or pharyngeal mucous membrane and later swallowed. Others pass through the larynx and enter the bronchi and cause direct infection of the lung tissues. Tubercle bacilli, when the infected attendants are not careful, may be carried in the air on account of the breaking up of dried sputum carelessly expectorated or freed from handkerchiefs. The avoidance of this direct human contamination can probably only be thoroughly maintained by the

entire removal of the infant or child from contact with tuberculous persons. In some investigations carried out by Park and his associates they found, to a striking degree, that the children of tuberculous parents were more infected with clinical tuberculosis than those living in families in which no tuberculosis existed. In regions in which tuberculosis is abundant, a large percentage of infants and young children become infected. It is also true that in localities in which tuberculosis does not exist, adults as well as children become directly infected.

46. **Immunization Against Measles.**—Infants under 5 months who have been in intimate contact with a case of measles and have not been infected, frequently do not contract the disease when exposed later. Four such cases have come under Herrman's observation. He once had under observation a family whose history is most instructive in this connection. There are seven children, aged 14, 12, 10, 8, 6¼, 4½ years, and the youngest 10 months. The oldest child had measles eleven and three-quarters years ago; the second child was 3½ months old at the time and did not contract the disease. The third and the fourth child had measles six years ago; the second, though exposed, did not contract it; neither did the fifth child, who was then 3 months of age. The sixth child had measles two years ago, and again the second and fifth child were not infected. The seventh and youngest child was recently observed in an attack of measles, and again the second and fifth child remained free. Having convinced himself from a very large number of personal observations that infants under 5 months of age were relatively immune, Herrman obtained the consent of the mother to inoculate her infant, then 4 months old, explaining that the object was to render it immune against measles in the same way that vaccination protected against smallpox. The child was carefully observed and at no time did it present any evidence of injury.

Herrman proceeded to immunize others and in no case was any unfavorable symptom noted. The material for inoculation was obtained from otherwise healthy children, taken twenty-four hours before the measles eruption appeared. For obvious reasons the mucus from the nose was taken. This was collected on small swabs of cotton and kept in glass vials. A moist chamber was improvised by placing a moistened piece of blotting paper at the bottom. Only perfectly healthy infants under 5 months were inoculated; they were first tested with the cutaneous tuberculin test, but when it was found that in ten consecutive cases there was a negative reaction the test was deemed unnecessary. The inoculations were made by applying the swab gently to the nasal mucous membrane. Up to the present time forty infants have been inoculated at the following ages: one at 2½ months; four at 3 months; three at 3½ months; six at 4 months; fifteen at 4½ months, and eleven at 5 months. The inoculations were made by preference between the fourth and fifth months because as the immunity was not absolute at that time it seemed more likely that the organism would react with the formation of antibodies. The majority of the infants showed no distinct reaction; fifteen had a slight rise in temperature, from 100 to 101, varying in its appearance in different cases from the eighth to the fourteenth day. In a few instances a small number of spots were noted on the face or body varying in the time and number of their appearance from the fourteenth to the eighteenth day; but these were so few and indistinct that they would ordinarily have escaped detection. Of the forty infants inoculated, four over 1 year of age have since come in intimate contact with cases of measles and have not contracted the disease. In addition, having satisfied himself that those who were inoculated were really immune, 2 of the 40 infants were reinoculated at the age of 21 and 23 months respectively. In both the results were negative.

48. **Erysipelas Treated with Whole Blood.**—The well-known remedies for this infection were tried by Kaiser in this case but were unsuccessful. Whole blood taken from a patient who must of necessity have had protective bodies against the streptococcus, was used with apparently good success. Kaiser urges that in severe cases in which the outcome looks dubious this method be used if a suitable donor can be obtained.

Boston Medical and Surgical Journal

August 19, CLXXIII, No. 8, pp. 263-300

51 Tuberculosis Problem in New Hampshire. R. B. Kerr, Concord N. H.
52 Practical Treatment of Inebriety in State Institution. I. H. Neff, Norfolk.
53 Electromotor Bone Outfit and Technic of Its Usage. F. H. Albee, New York.
54 Management of Breast Feeding; Case Reports. C. K. Johnson, Burlington, Vt.
55 Presence of B. Dysenteriae, B. Proteus Vulgaris, Bact. Welchii, and Morgan's Bacillus No. 1, in Stools of Cases of Infectious Diarrhea. C. Ten Broeck and F. G. Norbury, Boston.
56 *Invasion of Bodies of Infants by B. Dysenteriae. C. Ten Broeck, Boston.

56. **Invasion of Bodies of Infants by B. Dysenteriae.**—*B. dysenteriae* of the mannit fermenting group has been demonstrated by Ten Broeck in the circulating blood of an infant suffering from infectious diarrhea. Eleven blood cultures made from patients in other cases of diarrhea and cultures made from the organs of fourteen patients were all negative for dysentery bacilli, and the one positive finding is probably an accidental invasion rather than a usual feature of the disease.

Colorado Medicine, Denver

August, VII, No. 8, pp. 213-246

57 Roentgen Ray Diagnosis of Pathologic Lesions of Intestinal Tract, Which Produce Symptoms That Simulate Organic Disease of Stomach. S. B. Childs, Denver.
58 Diseases of Female Urinary Tract Produced by Diseases of Genital Tract. A. C. Stokes, Omaha.
59 *Use of Amniotic Membrane in Prevention of Peritoneal Adhesions. C. B. Lyman, Denver.
60 Emergency Surgery, with Special Reference to Treatment of Compound Fractures. B. O. Adams, Pueblo.
61 Cycloplegia and Skiascopy in Refraction. C. A. Ringle, Greeley.

59. **Amniotic Membrane in Prevention of Peritoneal Adhesions.**—Lyman has operated in twenty-one cases in which the membrane was employed. Most of these cases were those in which adhesions had developed after abdominal operations and in which the symptoms were very distressing. In all of the twenty cases symptoms have been completely relieved which had been in existence prior to operation. Clinically the results have been perfect in all cases. In no case has there been a return of the symptoms. Several of the patients had been operated on before for the same purpose and other methods used were failures.

Florida Medical Association Journal, Jacksonville

August, II, No. 2, pp. 33-64

62 Local Anesthesia in Infant and Aged. H. B. Cole, Mobile, Ala.
63 Unpublished Circumcision Operation. J. H. Pierpont, Pensacola.
64 Eclampsia and Its Treatment. F. J. Waas, Jacksonville.
65 Uterus Duplex; Report of Case. J. S. McEwan, Orlando.

Journal-Lancet, Minneapolis

August 1, XXXV, No. 15, pp. 399-428

66 Some Practical Considerations in Diagnosis of Abdominal Conditions. D. L. Rundlett, Sioux Falls, S. D.
67 Morphin Habit and Its Treatment. A. J. Paulson, Flaxton, N. D.
68 Few Facts Relating to Minnesota State Board of Health. H. M. Bracken, St. Paul.
69 Practical Value of Autogenous Vaccine Therapy; Report of Cases. C. H. Pierce, Wadena.

Journal of Outdoor Life, New York

August, XII, No. 8, pp. 245-275

70 Optimism and Backbone in Tuberculosis. J. S. Ford, Wallingford, Conn.
71 Problems of Clinic Organization. M. Taschman, New York.
72 Advantages of Organization of Nurses' Work in Tuberculosis Clinics. E. Gregg, New York.
73 Medical Work of Tuberculosis Clinics. J. M. Class, New York.
74 Allied Social Activities of Chelsea Tuberculosis Clinic of New York City Department of Health. H. M. Biggs, New York.
75 Standards of Medical Care and Treatment in Local Tuberculosis Hospitals. O. R. Eichel, New York.

Lancet-Clinic, Cincinnati

August 7, CXIV, No. 6, pp. 113-140

76 Aids to Diagnosis of Abdominal Disease. W. M. Harsha, Chicago.
77 Some Phases in Gallbladder Surgery. M. A. Tate, Cincinnati.
78 Relation of Mouth Infection to Systemic Disease. M. H. Fischer, Cincinnati.

August 14, No. 7, pp. 141-160

79 Hypernephroma of Kidney; Report of Case and Exhibition of Specimen. O. H. Kelsall, Louisville, Ky.
80 Report on Use of Ethylhydrocupreine Hydrochloride (Optochin) in Four Cases of Gonorrhea in Male Urethra. H. A. Brown, Cincinnati.
81 Organization of Medical Department. H. W. Cook, Minneapolis.
82 Intestinal Stasis. Bacterial Activity in Alimentary Tract. N. Mutch, London.

Medical Record, New York

August 21, LXXXVIII, No. 8, pp. 299-340

83 Clearing House for Mental Defectives. M. G. Schlapp, New York.
84 Individualism or Institutionalism. C. N. B. Camac, New York.
85 Medical and Sociological Problems of Department Stores and Their Relation to Tuberculosis. M. H. Kahn, New York.
86 *Case of Combined Extracranial Paralysis of Cerebral Nerves. J. C. Beck and G. B. Hassin, Chicago.
87 Study of Occurrence of Diphtheria Bacilli in Normal Throats. R. A. Keilty, Philadelphia.
88 Etiology of Pellagra. D. Meredith, Wichita Falls, Texas.
89 Frequently Unrecognized Symptom-Complex. W. H. Best, Brooklyn.
90 Trichocephalus Dispar Infection; Report of Case. R. R. Mellon, Ann Arbor, Mich.
91 Breaking Glass Tubes Containing Suture Material. E. H. Pool, New York.

86. **Combined Extracranial Paralysis of Cerebral Nerves.**—The prominent symptoms in this case, that of a young woman aged 18 were: 1. Pain in the neck, occiput and forehead. 2. Marked hemiatrophy of the tongue. 3. A combination of the tongue atrophy with paralysis of the ninth, tenth and eleventh cerebral nerves. 4. Nystagmus. The patient suffered from tuberculosis of the cervical glands with secondary involvement of the ninth, tenth, eleventh and twelfth nerves in their extracranial course. Such a diagnosis was not only verified by the Roentgen-ray examination, a successful operation, but also by the subsequent progressive improvement. An incision was made from the mastoid tip to the level of the cricoid cartilage along the sternocleidomastoid. The hypoglossal vagus, spinal accessory and superficial cervical nerves were dissected, particularly upward to the base of the skull, with exposure of large vessels. A calcareous gland with a number of smaller infiltrated glands were dissected from the nerves and jugular vein, each nerve being surrounded with cargile membrane, and the wound, closing by primary intention. The patient showed marked and progressive improvement. Sixteen months after the operation the general and local symptoms were found to be considerably better than before the operation and the improvement of so long a duration must be attributed to the release of the ninth, tenth, eleventh and twelfth nerves from pressure in the vicinity of the left jugular foramen by enlarged and infiltrated cervical glands.

Military Surgeon, Chicago

August. XXXVII, No. 2, pp. 107-206

92 Sparta Encampment. S. C. Stanton, Chicago.
93 Tobyhanna Camp. J. C. Bloodgood, U. S. Army.
94 German Sanitary Organization. G. M. Blech, Ill. N. G.
95 Banquet of New York State Division of Medical Reserve Corps Held in Honor of General Gorgas, February 6th. G. H. Fox, U. S. Army.

New York Medical Journal

August 21, CII, No. 8, pp. 381-432

96 Adolescent Insanity and National Health. C. W. Burr, Philadelphia.
97 Protein Absorption as Factor in Causation of Cancer. J. W. Beveridge, New York.
98 Some Implications of Psychanalysis. M. K. Isham, New York.
99 *Sodium Bicarbonate in Hay Fever. K. E. Kellogg, New Britain, Conn.
100 Health Program for New York City. H. Emerson, New York.
101 Use of Alkalies and Salts in Certain Clinical Conditions of Apparently Obscure Origin. A. D. Dunn, Omaha.
102 Appendicular Liver. R. N. Duffy, New Bern, N. C.
103 Short Cuts in Medicine. M. Schulman, New York.
104 Medical Education and Municipal Hospitals. A. Schachner, Louisville, Ky.
105 Acute Infectious Inflammations of Throat. I. M. Heller, New York.
106 Recumbent Position in Scoliosis. M. Strunsky, New York.
107 Acute Intestinal Obstruction Complicating Uterine Fibromyomata. J. L. Amster, New York.

99. **Sodium Bicarbonate in Hay Fever.**—Kellogg's case records show a series of fifty cases of hay fever, covering a period of three years. The first patient presented a general acidosis with a mild and transient glycosuria; the second high specific gravity of urine with a marked acidity. Acting on the theory that the general condition served as a primary cause by reason of certain irritating qualities of the blood, making the mucous membranes hypersensitive, Kellogg gave both patients sodium bicarbonate in dram doses three times a day. Such a marked relief from the rhinitis symptoms followed that he felt justified in administering the same treatment to the remaining forty-eight. Ninety per cent. of the patients enjoyed a marked amelioration of symptoms, and 70 per cent. complete relief after a few days' treatment; the remaining 10 per cent. were not as markedly benefited, although they all seemed to show some improvement. In three cases it was found necessary to supplement the treatment by the administration of a nasal spray of sodium bicarbonate solution.

Northwest Medicine, Seattle

August, VII, No. 8, pp. 239-272

108 Disturbances of Cecum and Appendix. C. S. Leede, Seattle.
109 Case of Gallstone Ileus. E. O. Jones, Seattle.
110 *Syphilitic Origin of Various Gastro-Intestinal Affections. A. P. Lensman, Seattle.
111 Epigastric Hernia; Report of Case. J. Besson, Portland, Ore.
112 Herniae of Abdominal Wall in Fat Women; Report of Cases. W. B. Palamountain, Colfax.
113 Nitrous Oxid and Oxygen, Anesthetic of Choice in Obstetrics; Report of Case. L. H. Maxson, Seattle.

110. **Gastro-Intestinal Affections.**—In the etiology of gastric ulcer, tumor, stenosis of pylorus or ulceration and obstruction of intestines (large or small), Lensman says, syphilis must be borne in mind. Like specific disease elsewhere, the tendency is to ulceration, adhesions, scars, deformity of organs. In every single important symptom in gastro-intestinal pathology (hematemesis, gastralgia, achylia, hyperacidity, constipation, enteralgia, vomiting, fever, etc.), a specific taint should be searched for. In certain cases nearly all the technic of the newer finds, if accessible, should be used. The Wassermann and Noguchi reactions, the luetin test, a provocative salvarsan test, all these are valuable when accessible. In certain cases, in which all tests fail and there is still some reason to believe that syphilis is the cause (indefinite history, some patent medicine taken which masks the true state of affairs), Lensman does not hesitate to give antisyphilitic remedies as a therapeutic test. The Wassermann and other reactions, when positive, signify that the individual is syphilitic and not necessarily the particular organ which gives the chief symptoms. If the specifics fail in their effect, the patient may need more than one kind of treatment to secure relief or cure.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

July, XXI, No. 1, pp. 1-51

114 What Every Physician Should Preach About Cancer. H. A. Royster, Raleigh, N. C.
115 Hypernephroma. J. G. Rennie, Petersburg.
116 Acute Appendicitis, End Results of One Hundred and Fifty Cases Operated on. G. P. LaRoque, Richmond.
117 Study of Uterine Hemorrhage. T. A. Ashby, Baltimore.

Ophthalmic Record, Chicago

August, XXIV, No. 8, pp. 385-438

118 Acute Axial Optic Neuritis, as Early Symptom in Disseminated Sclerosis. E. A. Shumway, Philadelphia.
119 Shrapnel Wound of Occipital Region with Involvement of Visual Centers. C. A. Wood, Chicago.
120 Birth Injuries of Eye. C. P. Small, Chicago.

121 Cataract Incision Leaving an Undetached Conjunctival Flap with Bridge of Conjunctiva on Temporal Side. F. C. Todd, Minneapolis.
122 Annular Opacity of Lens, Following Penetrating Wound into Vitreous Chamber. T. B. Holloway, Philadelphia.
123 Case of Acute Retrobulbar Neuritis. C. Williams.
124 Spontaneous Dislocation of Sclerosed Lens into Anterior Chamber. F. Krauss, Philadelphia.
125 Operation for Direct Drainage of Lachrymal Sac into Middle Meatus from Standpoint of Ophthalmologist. A. E. Prince, Springfield.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

August, XXIII, No. 8, pp. 229-256

126 Purin Metabolism Disturbances as Related to Insomnia. C. L. Bennett, Los Angeles.
127 Orbital Tumors. J. G. Dorsey, Wichita, Kas.
128 Case of Typhoid Complicated by Abortion, Intestinal Hemorrhage and Perforation of Ileum. B. F. Smith, Hillsboro, Tex.
129 Research in Mechanical Pathology of Foot with Theoretical Suggestions of More Rational Treatment. B. Belove, Kansas City.

West Virginia Medical Journal, Wheeling

August, X, No. 2, pp. 35-72.

130 Diabetes With Special Reference to Treatment. L. D. Wilson, Wheeling.
131 Consideration of Rectal and Colonic Reflexes and Neuroses. W. M. Beach, Pittsburgh.
132 Trachoma in West Virginia. H. F. Stiltner, Pineville.
133 Fallacy of State Paternalism. C. O. Henry, Fairmont.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

August 7, II, No. 2849, pp. 205-244

1 Sidelights on Practice of Medicine in Past from Early English Literature. M. Greenwood.
2 Principle of Anoci-Association Applied to Medical Practice. F. M. Rowland.
3 Treatment of Pulmonary Tuberculosis by Nitrogen Compression. G. Lucas.
4 *Pathology and Treatment of Gunshot Wounds of Small Intestine. O. Richards.
5 *"Trench Back" Treated by Sodium Salicylate Ionization. J. D. Sandes.
6 Stomoxys, Stable Fly. A. E. Shipley.

4. **Gunshot Wounds of Small Intestine.**—Simple suture of wounds of the duodenum and colon, Richards says, is both necessary and sufficient. If this is efficiently done the contents will be driven along their proper course; if it is not done, they will be continually forced either into the peritoneum or into the extraperitoneal tissue. In neither case will there be stasis. The essential thing is to close the leak—there is no danger of obstruction. In the jejunum and ileum, on the other hand, simple closure of the wound would be both unnecessary and inefficient. As regards the escape of the contents, it would merely effect, with a certain amount of shock, disturbance, and fouling of the peritoneum, what Nature had already done. As regards paralytic obstruction, it would do much to increase it. The proper course in such a case would be to resect not only the injured portion, but also as much of the bowel above it as is likely to remain out of action and constitute a functional obstruction. The amount to be removed depends first, on the number and relative position of the wounds; apart from this, it increases with delay, since the condition which makes resection necessary is one which progresses gradually and regularly upward. Richards condemns the common practice of withholding water from such patients because it causes much suffering. In case of internal hemorrhage and during transport it is probably necessary.

Once in hospital, if a man is definitely in a dying condition, Richards says, no good purpose is served by adding thirst to his sufferings, while if he has an injury which requires operation, the worst that water in reasonable quantities is likely to do is to hasten the time at which he develops symptoms and is radically dealt with. Water does not produce flatus; it probably never reaches the wounded area, and if it does it is unlikely, for reasons already given, to cause any escape of the contents. Of five patients operated on by Richards, two died outright, two recovered completely, and one recovered from the operation but died a week later from another cause. The two who recovered completely happen to be those in which the largest amounts of bowel were removed (2½ feet and 4½ feet respectively).

5. **Trench Back.**—"Trench back" is the term applied to a variety of conditions arising from injury to the back in the lumbar or sacral regions. The injury is usually caused by the impact of large and heavy masses of matter, such as a quantity of earth or sandbags. As the condition is of great importance on account of its frequency and the prolonged disability it usually entails, Sandes brings forward the following method of treatment: All cases of this condition should be examined by Roentgen rays before being treated in the manner suggested, and all cases of injury to the spine and pelvis excluded. Patients with anesthesia of the lumbar and sacral regions are unsuitable for ionization as they are very liable to be badly blistered during treatment. The majority have no spinal lesion, the symptoms being due to contusion or sprain of the muscles or fasciae alone.

It is for cases of this class that Sandes advocates ionization. It is applied as follows: A 1 per cent. solution of sodium salicylate is prepared. A large pad sufficient to stretch right across the back, and 8 or 10 inches broad, is saturated with the solution. The pad must be composed of at least six layers of lint. The patient is placed face downward on a couch, and the pad is laid over the painful area. A mail chain electrode is placed on top of the pad, and the whole firmly bound with a bandage. The mail chain electrode is connected with the negative pole of a battery or electric machine. An indifferent electrode is then placed on some other region, say the upper dorsal, moistened with sodium chlorid solution, and connected with the positive pole. The current is gradually turned on and treatment continued for about fifteen minutes. Applications are carried out twice weekly, and improvement often occurs after the first. Cure results in some cases in two or three applications.

Dublin Journal of Medical Science

August, III, No. 524, pp. 81-160

7 Antityphoid Inoculation. W. E. Hopkins.
8 *Constipation in Relation to Pseudodysentery and Continued Fever in Tropics. C. G. S. Baronsfeather.
9 Clinical Report of Rotunda Hospital, for One Year, November 1, 1913, to October 31, 1914. R. E. Tottenham and E. C. Crichton.
10 Pathologic Report of Rotunda Hospital for One Year, November 1, 1913, to October 31, 1914. R. J. Rowlette.
11 Vaccines in Treatment of Respiratory Diseases. R. J. Rowlette.

8. **Constipation in Relation to Pseudodysentery.**—In the tropics Baronsfeather has met with three conditions all due to irregularities in the intestinal tract, which, so far as his experience goes, he says, are too often wrongly treated and at times with fatal results, and yet these conditions are of everyday occurrence. 1. Continued fever, with yellow-furred tongue, offensive breath and loss of appetite; temperature 99 to 103 F. in different cases. Constipation is usually present; in such cases quinin is useless. The treatment is, in mild cases,

	gm. or c.c.	
℞ Iridin.		
Ext. euonymi, ... āā	06	gr. i
Ext. colocynth comp.	1	gr. iss
Ext. hyoscyami	03	gr. ss

M. et fac pilulas.
Sig.: One at noon and one at bedtime.

A saline mixture with oranges and mineral waters is given, together with the withdrawal of all solid food for a day or so. In more severe cases, 1 grain of calomel is given every two or three hours, with pil. coloc. et hyoscyami and an enema, if necessary, in addition to the former treatment. 2. Pseudodysentery, which occasionally may cause mucus in the stools—the foul tongue, lack of appetite, and generally healthy appearance of the patient being the grounds for the diagnosis—this being, to a certain extent, a second

stage of the continued fever, has a similar treatment. A smart purgative—calomel, 2 to 5 grains repeated, followed by a saline draught, liquid diet, partial starvation, and mineral waters, etc., with later on, if required, compound bismuth powders—easily cures. 3. Diarrhea, often green in children from 1 month upward, due to irregularities in diet, too often called dysentery, the treatment for which is: 1. Under 4 months of age—

	gm. or c.c.	
℞ Hydrarg. cum cretae	.06	gr. i
Sodii bicarb.	.13	gr. ii
Pulv. rhei. comp.	2	gr. iii

M. et fac pulverem.
Sig.: From 3 to 6 grains, as directed.

To be given when the child is at the breast. 2. Over 4 months, half a grain of calomel, and after, if required, 1 dram of castor oil, the child to be watched for a few days. The treatment should be repeated in serious cases.

Edinburgh Medical Journal

August, XV, No. 2, pp. 81-160

12 *Treatment of Tuberculosis by Tuberculin. Denys.
13 Use of Scopolamin-Morphin in Labor. J. H. Croom.
14 Treatment of Exophthalmic Goiter, Especially in Relation to Control of Protein Metabolism. F. D. Boyd.
15 Ocular Troubles of Neurasthenia. T. A. Ross.
16 Second Report on Work of Clinical Medicine Research Laboratory, Royal Infirmary, Edinburgh. H. Rainy.
17 Maternity and Child Welfare. A. D. Fordyce.

12. **Treatment of Tuberculosis by Tuberculin.**—Out of 442 cases treated by Denys with his B. F. (*bouillon filtré*) tuberculin, 193, that is, 43 per cent., are classed as cured. Fifty-six patients, that is, 20 per cent., are classed as quasi-cured, 36 patients were greatly improved; 29 were improved. Among these 442 patients only 5 took their cure of B. F. in a sanatorium; of the others a certain number passed some time in the country; the rest continued to live in their own homes. Some gave themselves complete or comparative rest; others continued their occupations.

Indian Medical Gazette, Calcutta

July 15, L, No. 7, pp. 241-280

18 Treatment of Ankylostomiasis. C. Lane.
19 Shrapnel Wounds of Knee-Joint. C. Newton-Davis.
20 Small Outbreak of Cerebrospinal Fever. F. P. Mackie.
21 *Salvarsan in Malaria. H. Stott.
22 Report and Statistics of Cholera Epidemic in Ahmednagar District for Years 1912 and 1913. C. Maddock.
23 Useful Splint for Compound Fractures of Leg. C. A. Barber.
24 Case of Chronic Intestinal Obstruction Due to Tuberculous Cicatricial Constrictions of Jejunum. S. H. Pugh.
25 Foreign Body in Trachea. G. Pandalai.

21. **Salvarsan in Malaria.**—While Stott found that salvarsan has some undoubted specific action on the asexual forms of malarial parasites, it apparently has no influence in the prevention of the evolution of the sexual cycle, nor does it show that immediate and progressive beneficial effect in malarial disease which so often follows its administration in certain cases of syphilis. Stott is convinced that in general use salvarsan will never replace quinin, in particular use it might possibly be thought desirable to administer salvarsan in a case of persistent malaria resisting quinin by mouth and syringe. Here there is no apparent indication for the employment of salvarsan in malaria. The fact that salvarsan (an organic arsenic compound) has some definite specific influence on the asexual cycle of the malarial parasite, Stott says, might be regarded as a possible plea for the more extended prescription of oral arsenic as long employed by the savants of old, combined with quinin in the treatment of present-day acute malarial disease.

Bulletin de l'Académie de Médecine, Paris

July 20, LXXIV, No. 29, pp. 73-93

26 Vaccination Against Typhoid. (600 injections antityphoidiques.) L. Landouzy.
27 Serotherapy of Typhoid. (Traitement de la fièvre typhoide par l'homosérothérapie dans l'armée serbe.) Pétrovitch.
28 Cancer of the Liver Simulating Gallbladder Disease; Two Cases. (Le cancer du foie à type sus-vésiculaire.) A. Gouget.
29 Tetanus. (16 cas de tétanos observés à Vitré.) Castueil and O. Ferrier.
30 Treatment of Syphilis in the Active Army. (Traitement des accidents syphilitiques chez les combattants, par les cures arséno-mercurielles surintensives et brèves.) Dalimier and Débat. See Paris Letter, p. 813.

Presse Médicale, Paris

July 26, XXIII, No. 34, pp. 269-280

31 *What France Has Accomplished in the Medical Sciences in the Last Fifty Years: Internal Pathology. IV. J. Castaigne.
32 *Predetermination of Sex. (L'origine des sexes.) H. Coupin.

July 29, No. 35, pp. 281-288

33 Macroscopic and Microscopic Study of Wounds of the Nerves in War. E. Jourdan and J. A. Sicard.
34 Bridge Plaster Dressings. (L'immobilisation des fractures des membres inférieurs dans les ambulances.) Fieux and Leremboure.
35 Mosquitoes and Flies. (Notes de parasitologie pratique en campagne.) J. Legendre.

31. **Necessity for Synthesis as well as Analysis at the Bedside.**—At the conclusion of Castaigne's long review of the achievements in the medical sciences in France in the last fifty years, he expatiates on the importance of correlating the symptoms. It is not enough to collect all the clinical data in a given case, they must be classified, the important ones recognized and correlated, and to do this properly requires a broad and thorough general medical education. He insists that every patient should be examined throughout, whatever local affection may have brought him to the doctor. A good general study of the case will often clear up the diagnosis and permit effectual treatment when otherwise the specialist would have worked in vain. Castaigne extols the advantages of the French system of bedside instruction. The least among the medical students are thus given a chance to examine for themselves hundreds and hundreds of patients, which is a great help in developing good clinicians.

32. **Predetermination of Sex.**—In the course of this review of the various theories that have been presented on this subject, Coupin describes experimental research by different scientists and urges that they be continued or controlled. Among those to which particular attention is called are Robinson's injections of epinephrin in guinea-pigs, in the hope to influence the development as to sex, and in fact there were more males than females in the litters afterward. He sought to make the injection during the hypothetic interval between the spermatozoon entering the ovum and determination of the sex. Another line of research which seems promising is based on Russo's finding that, in rabbits, some ova contain a large proportion of lecithin while others have very little. On the assumption that the lecithin-rich ova produce females, he injected lecithin into female guinea-pigs. The following litters contained twenty-six males to forty females while control litters numbered thirty-six males to twenty-nine females. Still another line of research that seems promising is based on the assumption that the young ovum develops a female while, if not fecundated until late, a male results. Those who have followed Thury in research work on this assumption have had conflicting results, some positive and some negative. The old tradition that more boys than girls are born after a war seems to be substantiated, Coupin remarks in conclusion, by some recent figures from Austria. They state that among 559 children born to refugees from Galicia and Bukovina, there were 314 boys to 245 girls. He also cites a Vienna notice that since last October there have been 140 boys born to each 100 girls, but Coupin does not vouch for the accuracy of these figures.

Revue Médicale de la Suisse Romande, Geneva

July, XXXIV, No. 7, pp. 361-412

36 The Descending Branch of the Hypoglossal Nerve. E. Kummer.
37 Five Months of Military Surgery. C. Perrier.
38 *Preoperative Measures in Gynecology. O. J. Rapin.
39 *Motility Test for Typhoid Bacilli in Stools. (Nouveau procédé de recherche du bacille typhique dans les selles.) P. Gautier.

38. **Preparing a Woman for a Gynecologic Operation.**—Rapin enumerates a number of minor points for the preoperative period which may turn the scale for or against success. A complete examination may prevent some dangerous surprise later. He believes in a purge several days

before the operation, giving the bowels time to get steady again afterward. The aim should be to have them working physiologically at the time of the operation, and this cannot be depended on when the purge is given too close to the operation, as the purge entails paresis of the bowels for several days. After he has thus cleared out the intestines, he permits only food of easy digestion, not toxic, and nothing but fluids the night before the operation. To avoid the necessity for catheterization afterward, he has the women trained to urinate reclining during the days preceding the operation.

The hemoglobin percentage should always be determined, but even a very low proportion need not contraindicate the operation. He successfully removed a myomatous uterus in one case although it showed only 25 per cent. of hemoglobin, and resected a cancerous cervix in another case showing only 20 per cent. of hemoglobin. As the first patient seemed predisposed to hemorrhage, he gave as a preventive an injection of an extract of blood platelets. Under other conditions he relies merely on clamps and ligatures.

Spinal anesthesia and scopolamin-morphin he has discarded or reserves for maternity cases. Regional anesthesia from paravertebral injections can be counted on in gynecology only for operations on the vagina, perineum and abdominal wall. Inhalation anesthesia is still the preferable technic for gynecologic operations. Other requirements are one aid and one nurse; self-holding retractors, applied over gauze to prevent injury of tissues; rubber gloves for the operator, over which he draws cotton gloves to render them less slippery; painting the region with 10 per cent. iodin; and a sheet thrown over the patient, with a hole cut out over the field of operation.

39. **Rapid Bacteriologic Differentiation of Typhoid.**—Gautier has been testing the sand technic devised by Carnot and Hallé (described in The Journal, Feb. 20, 1915, p. 677). A pipet tube 33 cm. long by .5 or .6 mm. in diameter is softened in the center and the ends brought up parallel, to form a U. One of the arms is filled to a height of 10 cm. with very fine sand, (passed through a No. 40 sieve). The other arm is then filled with hot bouillon tinted with neutral red, which works up through the sand until the fluid is at the same level in each arm. The arm in which there is no sand is inoculated with a few drops of fluid with which the intestine has been rinsed out after a preliminary enema, and the tube is incubated for eighteen hours. The bacteria that are most motile will penetrate the sand and develop in this arm of the tube. Gautier's experience with the sand test in thirty cases confirms the assertions of Carnot and Hallé, but he found that, occasionally, colon bacilli were sufficiently motile to pass through the sand. Consequently it may be necessary to apply the agglutination test afterward to determine finally the presence of typhoid bacilli. He found that the sand barrier infallibly excluded all but extremely motile bacteria, and thus much facilitated and accelerated differentiation.

Berliner klinische Wochenschrift

July 26, LII, No. 30, pp. 781-804

40 *Atypical Features of Typhoid in the Active Army. (Atypische Verlaufsformen des Typhus im Felde.) C. Hirsch.
41 Bullet in Spinal Cord. (Ein typischer Steckschuss des Rückenmarks.) Coenen.
42 Walking Plaster Cast with Extension for Fractured Leg. E. Hadra.
43 Prothesis to Correct Paralysis of the Peroneus. K. Fleischhauer.
44 *Mastic Test for Pathologic Cerebrospinal Fluid. (Eine neue Reaktion zur Untersuchung des Liquor cerebrospinalis.) G. Emanuel.
45 Further Research on Fowl Leukemia. (Uebertragbare Hühnerleukose.) V. Ellermann.
46 *Tar in Treatment of Chronic Moist Eczema. Thedering.
47 Simplification of Test for Acetone. (Die Anwendbarkeit der Frommer-Engfeldt'schen Acetonprobe für klinische Zwecke.) N. O. Engfeldt.

40. **War Typhoid.**—Hirsch comments on the difference between typhoid fever under ordinary conditions and under conditions of war. The mortality is especially high among the young men in the active service while in peace this group generally escape with a mild form of the disease. The necessity for transportation tends to aggravate the disease, but the evils of this can be minimized by recognition of the disease in its incipiency, removing the patient in the morning, and giving him stimulants before the start or on the way, with special care for his suitable nourishment. At all times the heart and vasomotors must be supervised and kept in tone. Before antityphoid inoculations were enforced, the mortality was 7 per cent.; the inclusive mortality has been 6.3 per cent.

It is his experience that the number of cases of typhoid has not been materially reduced by prophylactic vaccination, but there is no doubt that it attenuates the disease, rendering it of the abortive type or like typhoid in children, but relapses are more common than usual, although they run their course as a rule without complications. When the men were vaccinated during the incubation or initial phase of typhoid, the course of the disease proved exceptionally severe. Suspects should have their temperature taken several times a day, especially after exercise, and if the temperature shows marked fluctuations, even within the so-called normal range, typhoid is rendered probable, especially when the pulse is accelerated and the man begins to lose weight. A rise in agglutinating power on repeated tests at brief intervals is also suggestive, particularly when various strains are used in the tests.

It is possible, Hirsch adds, that the mild course of typhoid in the vaccinated may leave the man susceptible to new typhoid infection. Diphtheria patients treated with antitoxin seem to be more liable to contract diphtheria again later than those who have passed through a severe unmodified diphtheria. A severe attack of typhoid, we know, renders the patient less liable to have the disease again than a walking case of typhoid.

44. **Mastic Test of Cerebrospinal Fluid.**—Emanuel explains the theoretic and chemical bases for the colloidal gold test of the cerebrospinal fluid, and proceeds to say that an emulsion of mastic answers the same purpose as the colloidal gold and gives equally reliable findings, while mastic is inexpensive and easily obtained. He dissolves 10 gm. mastic in 100 c.c. alcohol and filters; 1 c.c. of this mother solution is mixed with 9 c.c. alcohol and insufflated rapidly into 40 c.c. distilled water. The mastic is precipitated with 1.25 per cent. salt solution; 1 c.c. of this flakes out 1 c.c. of the mastic solution. Five test tubes are used for the test. In the first is placed 1.5 c.c. of the salt solution and 1 c.c. in all the others. To the first tube is now added 0.5 c.c. of the spinal fluid. After thoroughly mixing 1 c.c. is transferred to the second tube; from this 1 c.c. to the third tube, and so on. None of the spinal fluid mixture is put in the fifth tube. The row of tubes thus contain respectively 0.25 c.c., 0.125 c.c., 0.062 c.c., 0.031 c.c., and 0 c.c. of the spinal fluid. Then 1 c.c. of the mastic solution is added to each tube and the reaction at the end of twelve hours is recorded. With normal spinal fluid there is no precipitation in the first four tubes. This testifies to the presence of some protective colloid in normal spinal fluid. With spinal fluid from persons with general paralysis or other syphilitic affections of the brain, precipitation occurs promptly in all the five tubes. He lists the findings in thirty-two cases showing the constant and marked positive reaction in the fourteen cases with a history of syphilis and the constantly negative response in various forms of dementia praecox or insanity, epilepsy, neurasthenia, etc. The only exceptions were one case each of traumatic neurosis, dementia praecox and hemorrhage, in all of which there was a faintly positive reaction, but nothing to be compared with the pronounced response in progressive paralysis, etc.

46. **Tar in Chronic Weeping Eczema.**—Thedering agrees that tar is the worst of poisons for acute moist eczema, but he maintains that in nearly every case of the chronic oozing form it will transform it within twenty-four hours into the dry form. He uses, exclusively, coal tar in solution. No water or soap can be used with it, and no dressings are required. He merely paints the oozing patch with the tar solution. In three or four days a dry scab forms over the

surface and a 2 per cent. salicylic acid salve is rubbed into this, morning and evening, until the scab has softened. Then, about the seventh day, a single soap bath is given the region, using a mild soap, to wash off the scab. Further treatment can be with tar or Roentgen exposures. He has found this tar treatment useful for chronic oozing eczema in children, but the possibility of poisoning from the tar on extensive areas must be borne in mind when treating children.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 17, XLV, No. 29, pp. 897-928

48 *Appendicostomy. G. Patry.

July 24, No. 30, pp. 929-960

49 Care of the Wounded and Other Features of Winter Campaigns. (Gefechtssanitätsdienst im Winter.) G. Miescher.
50 *Albuminuria in Healthy Soldiers. M. Reber and P. Lauener.
51 Health Insurance of the Soldiers. (Die Militärversicherung.) F. Gehrig.

48. **Appendicostomy.**—Patry has utilized the appendix, sutured to the skin, as a means to flush out the bowels and also as a drain, and has been much impressed with the benefit therefrom. He remarks that Keetley's overenthusiasm on the subject tended to discredit it on the continent, so that the operation has not found many adherents outside of America; those interested, he adds, will find the bibliography in the *Journal de Chirurgie*, 1913, X, 273. He relieved the pain and materially improved the general condition, in a case of mercuric chlorid poisoning, by rinsing out the colon and rectum through the appendix sutured to the skin, repeating the rinsing every two hours at first. Another patient was a robust man of 60 who developed ulcerative colitis rebellious to all kinds of treatment. The large intestine was finally examined throughout for cancer at a laparotomy, but no tumor was found. The appendix and cecum were sutured to the skin and the colon and rectum were systematically rinsed out through it, the patient doing this himself, sending the salt solution through under sufficient force so that it emerged from the anus at once. The condition began to improve immediately; the man regained the 60 pounds he had lost, the ulcerations in the rectum healed, and the man has been in complete health during the fifteen months to date since the operation to close the fistula. In another case Patry sutured the ileocecal valve to the skin, Gibson's cecostomy, as the appendix had been removed long before. The fistula closed spontaneously when the catheter was no longer used, but he could not discover any advantages from this technic over simple appendicostomy.

In the cases on record of operative treatment of intestinal stasis, a series of operations have generally been necessary; five have already been done in one case he knows of and the patient is still not cured. He is convinced that a simple appendicostomy might have cured the patient at the start, and in any event, it would have done no harm. The bowel flushing through the appendix fistula acts mechanically rather than by chemical influences. He advises oil, boiled water and saline; the bowel is cleansed out, soothed and finally stimulated. The colon contracts to its natural size and physiologic conditions are gradually restored. Irrigation by way of the rectum is against the waves of peristalsis and is thus antiphysiologic. Even admitting that there may be occasional retrograde peristalsis, exaggeration of them is certainly pathologic.

He reports the case of a young woman whose serious condition from chronic constipation was only temporarily improved by partial resection of the colon and coliopexy. A laparotomy showed that there were no disturbing adhesions but the transverse colon swung down into the small pelvis. The appendix was fastened to the skin and decapitated and a Nélaton catheter was introduced into the cecum. At first merely 200 gm. of oil and then saline were injected, increasing the amounts as soon as there was a daily passage. The amounts injected were then reduced and the intervals lengthened. Finally only two a week were given, but this was kept up for four months, and clinically normal conditions were restored, the patient gaining 44 pounds. The bowel functioning is still normal two years later.

With peritonitis, he has been impressed with the rapid resumption of normal bowel functioning after appendicostomy, even if nothing is done but to inject water under pressure and let it run out again. The alternation of filling and emptying the bowel seems to stimulate peristalsis.

50. **Albuminuria in Healthy Soldiers.**—Reber examined the urine of 528 soldiers of a battalion stationed at the boundary of Switzerland. The men were all supposedly healthy, but 10.6 per cent. had albumin in their urine. In 11.5 per cent. of 347 tested, the albuminuria occurred only after the day's labor, but in 7.9 per cent. of 177 examined, it was found in the morning after the night's rest. The erect position during drill acts on the unaccustomed to induce albuminuria. Jehle has called attention to the albuminuria of soldiers as an occupational affection, the result of their military erect attitude. The albuminuria in Reber's battalion appeared and disappeared in the men and fluctuated in amount. Even when it was quite pronounced one day, the urine might be entirely free from albumin the next day. A large proportion of cases was sometimes evident on Monday. The younger men formed the majority of those with albuminuria. Long marches did not induce the albuminuria as much as long drilling.

Deutsche medizinische Wochenschrift, Berlin

July 22, XLI, No. 30, pp. 877-904

52 *The Heart in War Typhoid. (Wirkung der Typhusinfektion auf das Herz bei unseren Feldtruppen.) Rohmer.
53 Papilloma in Fourth Ventricle with Attempted Operation and Necropsy Findings. Gierlich.
54 *Spiral Incision in Treatment of Varices. M. Krabbel.
55 Improved Tubes for Roentgen Work. (Die neuen Röntgenröhren von Lilienfeld, Coolidge and Zehnder.) M. Levy-Dorn.
56 Inhalation of Ammonium Chlorid in Catarrhal Affections. (Der Salmiator.) A. Hartmann.
57 *Attempt at Suicide with Tuberculin. T. Janssen.
58 Construction and Effect of English Bullet. Marx.
59 Para-Dichlorbenzol for Extermination of Lice. F. Curschmann.
60 Military Service and Health Insurance. (Kriegsdienst und Versicherung.) Ebermayer and O. Salomon.

52. **The Heart in War Typhoid.**—Rohmer has encountered 22 cases of typhoid in men whose hearts were already suffering from the stress of the campaign. In a previous series of fifteen fatal cases all but three of the men died from heart weakness, but in this later series heart stimulants were given freely, especially intravenous injections of strophanthin, and all the patients recovered except one who succumbed to intestinal hemorrhage when apparently convalescing. The heart findings are even yet not entirely normal.

54. **Spiral Incision in Treatment of Varices.**—Krabbel has applied the Rindfleisch spiral incision method in the treatment of extensive varices five times on four patients, and reports "surprisingly good" results. Even old rebellious leg ulcers healed completely and there has been no sign of recurrence to date. He modified the original technic by healing by primary intention, with a linear scar. He also ligates and resects the saphenous vein in the thigh before starting the spiral incision on the leg. Expelling the blood from the limb with an Esmarch band is an important aid in the operation. All the visible veins were ligated twice, the entire procedure seldom requiring more than an hour, and the healing was complete in a month and the men returned to work in from six to ten weeks after the operation. One of the patients was a man of 43 with varices for sixteen years and a leg ulcer incapacitating him for twelve of the last twenty-four months.

57. **Attempted Suicide with Tuberculin.**—Janssen relates that a woman with mild pulmonary tuberculosis, who had frequent periods of fever up to 38.5 C and exacerbation of symptoms temporarily incapacitating her, tried to commit suicide by injecting a fluid which had been given her for inunctions. This proved to be tuberculin and she injected 2 c.c. at the one time. She became very sick, with high fever and very rapid heart action. The foci in the lungs had not changed enough to explain this aggravation of the condition, and the attending physician was puzzled indeed until the young woman confessed the injection she had made. The heart was kept up with stimulants and the storm gradually

subsided, leaving the patient remarkably improved over her previous condition, with her earning capacity restored.

Medizinische Klinik, Berlin

July 25, XI, No. 30, pp. 823-848

61 *Operative Treatment of Abdominal Wounds in War. (Darmschüsse im Kriege.) Enderlen and Sauerbruch.
62 *Gynecologic Affections in Connection with Insanity. (Aetiologie und Therapie von Frauenkrankheiten bei Irren.) L. Fraenkel.
63 *Xanthoma. Linser.
64 *Urochromogen Reaction in Diagnosis of Typhoid. (Bedeutung der Weiss'schen Urochromogenprobe.) K. Halbey.
65 Sterilization of Clothes and Rooms with Steam from Portable Engines. (Ueber Massenentlausung und Desinfektion von Gefangenenlagern durch Lokomobilen.) Blumberg.
66 Tablets to Stimulate Secretion in the Throat. Collischonn.

61. **Operative Treatment of Abdominal Wounds.**—Enderlen and Sauerbruch are ardent advocates of prompt operative treatment whenever the gastrointestinal tract is wounded. This was the case in 211 of the 227 soldiers brought in with abdominal wounds. The intestines were found intact when the abdomen was opened in 11 cases, and in the other 5 the liver had been injured beyond repair and 3 died. Of the 211 others with the intestines wounded at one or more points, 44.4 per cent. recovered under operative treatment. The proportion of cures increased from month to month as the symptoms were recognized and the operation performed earlier. Lately the soldiers have been reaching the field hospitals in from two to four hours after receiving wounds of the abdomen. Infusion by the drop method has given better results than by other technics. Direct transfusion of blood is no longer done. While Enderlen thinks that a half sitting position aids in recovery, Sauerbruch lays his patients flat on the back, and no difference in the outcome could be detected. Heat to the abdomen proved a powerful adjuvant. One great advantage of operative treatment is that the patient can be given nourishment soon afterward. Repose is an important factor in the outcome. The great difficulty is to decide whether or not the intestines have been injured; this is the more difficult the earlier the patient is seen. The abdominal walls may be rigid and there may be eructations and vomiting, and yet only comparatively slight injury of the liver, mesentery, etc., the bowel being intact. In other cases the abdomen may be soft, there is no vomiting and the pulse is good at first, and yet the intestines may be extensively wounded. Costal respiration is an almost infallible sign of intraperitoneal injury. Much intraperitoneal bleeding calls for operative treatment just as much as injury of the bowels. In conclusion they cite the authors who repudiate immediate operative treatment for abdominal wounds in war and those who advocate it.

62. **Connection Between Gynecologic Affections and Insanity.**—The first part of this article was reviewed in these columns, p. 833. Fraenkel here comments on the surprising discovery that in 31 of his 37 cases of juvenile mental disease or feeblemindedness, the genital organs showed pronounced infantile conditions. There can be no question, he thinks, that both the genital and the mental abnormality are the consequences of one trouble, and this, he is convinced, is defective functioning on the part of the ovaries. Dementia praecox, imbecility, and epileptic insanity generally affect young persons during the stage of development, and there is much to sustain the assumption that lack of the normal ovarian secretion is what is wrong, keeping the girl from developing normally in body and mind. The logical consequence is that treatment should aim to supply the lacking ovarian stimulus. This can be done by grafting a fully developed and functioning ovary from another person, or by administering ovarian tissue extract. The hormone thus provided by organotherapy is far from being the equivalent of the natural hormone, but still it may have an unmistakable curative action. The genitals develop under it and assume a maturer aspect, and there is reason to hope that the brain may feel an impulse to further development. Abderhalden and Fauser have shown the close connection between the genital organs and the brain as evidenced by digestion of ovary and testicle tissue by the serum from persons with mental disease. The psychiatrists have long been giving ovarian preparations in catatonic conditions. Many of the features of catatonia closely resemble the "negativism" of dementia praecox, and the benefit from ovarian treatment is likewise due to the stimulus to further development imparted to the infantile genital organs and infantile brain. Attempts in this line are being made by Fraenkel and the results already are encouraging. Striking success cannot be anticipated with the present technic for ovarian treatment, he remarks, as the extract is obtained by a more or less destructive process; it is given by the wrong way, by the stomach instead of into the blood; it is not identical with the natural hormone; the doses are certainly too small and the exact amount not known, and the administration occurs unsystematically, not at the time and the place when and where it is most needed. Complete success cannot be realized until organotherapy conforms more to the natural processes, but theoretically it is rational.

63. **Xanthoma.**—Linser describes the clinical and histologic findings with xanthoma and remarks that correct differentiation is often of vital importance as the affection is so liable to be mistaken for syphilitic gumma, the erroneous treatment applied, and the patient depressed by the assumed presence of syphilis. Treatment apart from that of possibly coexistent diabetes can be only surgical. Recurrence in the cicatrix is rare. He never witnessed any benefit from sodium bicarbonate, even long continued.

64. **Chromogen Test in Diagnosis of Typhoid.**—Halbey was impressed with the fact that the response was positive in 9 cases of typhoid at each application of the test so long as the fever kept up. It was positive also in all cases of measles, scarlet fever, erysipelas and malaria. It was constantly negative, on the other hand, in 17 cases of pulmonary disease, even in advanced forms, and negative likewise with miliary tuberculosis. A positive reaction was thus obtained in 33 per cent. of the 52 patients tested. The technic is simple, merely the addition of 3 drops of a 1 per thousand solution of potassium permanganate to the beaker of urine diluted threefold with ordinary water. In case of the presence of urochromogen, the fluid turns a very bright yellow, the tint proportional to the chromogen content. The chromogen arises during destruction of tissue albumin, and is a sign of toxic disturbance of metabolism.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

July, XLII, No. 1, pp. 1-94

67 *Prophylaxis of Puerperal Fever by Lactic Acid Vaginal Douches. (Zur Prophylaxe endogener Wochenbettfieber mittels 5 proz. Milchsäurespülungen während der Schwangerschaft.) H. Thaler and H. Zuckermann.
68 Case of Ruptured Ovarian Pregnancy. M. Seedorff.
69 Behavior of the Uterus with Hemorrhage in the Ovaries. G. Lauth.

67. **Lactic Acid Douches in Prophylaxis of Puerperal Fever.**—Thaler and Zuckermann extol the advantages of transforming pathologic vaginal secretions to the normal type by systematic vaginal douches with 5 per thousand lactic acid solution toward the close of a pregnancy. This permits the woman to enter labor with the normal defensive processes in the vagina intact. They give the tabulated details of forty-six cases, with the microscopic findings before and after in six cases, showing the complete transformation of the pathologic type into the normal type in 95.6 per cent. of the cases. They emphasize in particular the transformation of the flora from the pathologic to the physiologic vaginal flora under the influence of the lactic acid. The aim of the treatment is not to sterilize the vagina but to promote the proliferation of the normal flora until the pathologic is crowded out. In 73 of 153 pregnant women examined the vaginal secretion was more or less abnormal, and in 46 in this group the lactic acid douches were given regularly for two or three weeks to an average of 18 douches. Delivery followed in from eight to fifty-six days. In all but 5 the puerperium was afebrile, and in these 5 the temperature ran up a little once or twice but without objective findings. In 3 of the 5 the interval between the last douche and delivery had been twenty-nine, forty, and fifty-six days. The protection conferred by the douches cannot always be counted on after the second or third week.

Münchener medizinische Wochenschrift, Munich

July 20, LXII, No. 29, pp. 973-1004

70 *Cryptogenous Fevers. A. Knoblauch and H. Quincke.
71 The Ninhydrin Reaction in Tuberculous Spinal Fluid. E. Nobel.
72 Improved Technic for Diathermy. (Diathermieschädigungen und ihre Vermeidung durch den Pulsator unter gleichzeitiger Erhöhung der therapeutischen Wirkung.) Bucky.
73 Elements in Diet that Enhance Susceptibility to Heat Stroke and Sun Stroke. (Sonnenstich — Hitzschlag.) F. Schanz.
74 Salvarsan in Tetanus. Rothfuchs.
75 Treatment and Prognosis of Wounds of the Skull in War. (Schädelschüsse.) Guleke.
76 Necessity for Prompt Operative Treatment of Abdominal Wounds. (Einige chirurgische Hauptgesichtspunkte.) Koerber.
77 Surgical Impressions at the Front. R. Fibich and A. E. Zimprich.
78 *Hypertonus of Muscles of Feet. (Der atavistische Spannungsfuss als Ursache von Fussbeschwerden und Felddienstuntüchtigkeit.) K. Hasebroek.
79 Typhoid in Prisoners' Camp. Wolff.
80 Treatment of Ankylosis of Shoulder. (Schultergelenkversteifung nach Schussverletzungen.) A. E. Stein.
81 Bicycle for the One-Legged. (Zweirad für Invalide.) J. Lewy.
82 Improvised Devices for Immobilization and Extension. (Zur Improvisationstechnik.) W. Rindfleisch.
83 *Sugar for Dressing Suppurating Wounds. Fackenheim.
84 *Alcohol-Hydrogen Dioxid for Dressing Suppurating Wounds. O. Hahn.
85 Stretcher Suspended from Pole Carried on Shoulders of Two Men. (Behelfstrage für den Schützengraben.) S. Markiewicz.

70. **Acute Brief Fevers.**—Knoblauch and Quincke report eleven cases of sudden fever affecting almost simultaneously a number of the nurses or attendants at a Frankfurt hospital. Pain in the right lower ribs was a constant symptom and kept up for six or seven days. The pain was sharp and radiated to the shoulder. There was high remittent fever, but no cause for it could be discovered and recovery was complete in a week. Conditions suggested that possibly the sting of some winged insect might have been responsible for this febrile affection, but no one was aware of having been bitten. In conclusion they discuss other types of ephemeral fevers, declaring that many cases of assumed "influenza" are more probably instances of cryptogenous fevers.

78. **Hypertonicity of Muscles as Cause of Pain in the Feet.**—Hasebroek refers to a congenital predisposition to excessive tonus in certain muscles as a comparatively frequent cause of severe pains in the feet of soldiers. Massage of the muscles involved, and an insole to support the foot, generally remedy the disturbance which he regards as an atavistic phenomenon.

83. **Sugar for Dressing Wounds.**—Fackenheim is enthusiastic over the rapid clearing of extensive suppurating wounds under the application of sugar, the way in which the granulations develop, and the manifest stimulation to regeneration of the epithelium. He powdered the wound with the sugar (Kristallzucker), tamponed loosely with gauze above and changed the dressings every second day. No contraindications or by-effects were observed in the 800 cases thus treated during the last four months.

84. **Alcohol-Dioxid Dressing for Wounds.**—Hahn tampons the wound loosely with gauze dipped in a mixture of 1 part alcohol and 2 parts hydrogen dioxid; then above this a layer of moist gauze and a perforated impermeable cover. The deepest layer of gauze is not changed for several days but is kept regularly moistened with the alcohol-dioxid mixture, and the results have been superior to those of all other methods in his experience.

Therapeutische Monatshefte, Berlin

June, XXIX, No. 6, pp. 293-356

86 *Influence of Diet on the Blood. (Einfluss der Ernährung auf das Blut.) C. von Noorden.
87 Extermination of Lice. (Kleiderlaus tötende Mittel.) S. Fränkel.
88 Vaccine Therapy of Typhoid. (Therapeutischer Brief aus Ungarn.) N. Roth.
89 *Treatment of High Blood Pressure Must Aim to Remove the Cause. (Die Blutdrucksteigerung als Objekt der Therapie.) H. Strauss.
90 Radium Treatment of Hemorrhoids. C. von Noorden and A. Caan.
91 Breadmaking in Times of Peace. (Frage der Beibehaltung der hohen Ausmahlung von Getreide in Friedenszeiten und ihren Einfluss auf die Volksernährung.) V. Klopfer.
92 Thorium Treatment of Lymphatic Leukemia. M. Kaufmann.
93 Treatment of Convalescents from Dysentery. Roubitschek and Laufberger.

86. **Influence of Food on the Blood.**—Von Noorden remarks that science has but little accurate knowledge as to how the composition of the blood, its production and the prevention and cure of diseases of the blood are modified by the food, its amount and the form in which it is taken. The cautious reserve in the statements on these subjects by the highest authorities on the pathology of the blood is in striking contrast to the positive announcements as to the "blood-making properties," etc., of this or that form of food, advanced by the pseudo-scientific, the "popular science" articles and commercial interests. Science can make but few positive statements in this field. The effect of total deprivation of food or water is known. The fact also seems to be established that lack of albumin, with general undernourishment, favors the development of anemia. His own experience has convinced him that an albumin-poor and generally inadequate diet predisposes to anemia, particularly when there is a tendency to kidney disease. The latter alone tends to induce anemia. He has found anemia accompanying obesity so constantly that an over-rich, fat-forming diet cannot be regarded as a factor to count on in warding off or curing anemia. The blood seems to be subject—like the muscles and gland tissues—to laws of growth which stand under constitutional influences, and may work counter to impulses coming from the food. When there is no inhibition of this kind, abundant nourishment seems to promote production of blood. Albumin in particular may prove useful for persons with a tendency to anemia. He has encountered 58 cases in which corpulence was accompanied by a red count and hemoglobin percentage 5 to 8 per cent. above normal. These persons were all great meat-eaters, and he thinks there can be no doubt that the blood production had been stimulated by the large albumin proportion in the diet. This was demonstrated further by the hemoglobin percentage of 50 other persons, all great meat eaters: 4 had 90 to 95; 9, 96 to 100; 23, 101 to 105, and 4, 106 to 107 per cent. hemoglobin. Particular attention is called to these facts to warn against vegetarian principles being applied to the anemic as some physiologists are beginning to advocate. It has been his experience that forced feeding with nitrogen-free materials does not improve the blood, but often aggravates its condition. On the other hand, an ample supply of albumin, without overfeeding as to calories, favors concentration of the blood.

By estimating the total mass of the blood and comparing this with its concentration, important clinical information may be derived. The possibility of anemia from lack of iron has been established by Tartakowsky's research on animals. Chronic anemia was induced regularly in them by repeated venesection and feeding them with food containing little if any iron. Infants are liable likewise to develop anemia from lack of iron. Bunge has apparently established that iron accumulates in the fetus during the last months of intra-uterine existence so that the child is born with a reserve of iron to make up for the lack of iron in the breast milk. If the pregnant woman did not get iron enough in her food or for other reasons the fetus did not get its supply, the child is threatened with anemia. In later life it is exposed to the same danger when the food contains too little iron, as for instance when it gets only milk, fine flours and fruits. As a one-sided diet like this is often ordered with kidney disease, it is possible that the anemia with nephritis has merely been induced, or at least has been magnified, by the diet. In all the above the hemoglobin is reduced more than the number of reds, in proportion, just as in chlorosis, but there is also a certain degree of hydremia, which is not a feature of chlorotic blood. In short, iron-poor food may generate anemia in many conditions. It is generally an easy matter for the physician to determine whether a one-sided and iron-poor diet is responsible for the anemia. During the destruction of hemoglobin in infectious diseases, much of the iron is cast off by the bowels but some may be retained as a reserve to draw on later. In all protracted illnesses, the iron content of the food should be considered as well as the protein and calories. Milk, cream, rice, sugar and fruit juices may be an ideal diet for convalescents, but

it does not supply iron enough. Iron is also needed after severe hemorrhages. Chlorosis cannot be explained by an iron-poor diet, as it develops often on an abundant mixed diet.

Calcium and gelatin have won an established place for themselves in dietetic treatment of a primary tendency to hemorrhages, whatever the theoretic explanation may be. In the secondary hemorrhagic diathesis, as in chronic leukemia, sepsis, typhoid or cancer cachexia; a much varied diet of fresh vegetables and fruits is certainly worth a trial on the basis of what we now know of deficiency diseases. Von Noorden has had some cases of a hemorrhagic diathesis developing during convalescence from typhoid. After addition of fresh vegetables and fruit to the diet, the tendency to hemorrhage soon subsided.

89. **Treatment of High Blood Pressure.**—Strauss discusses the numerous causes for high blood pressure, saying that the forms of nervous origin are generally transient, except with exophthalmic goiter, in which a variably high pressure may keep up a long time. Obesity in itself does not raise the blood pressure, nor does diabetes. In these and with gout and other metabolism diseases, the high pressure is the result of arteriosclerosis. In general, however, high living predisposes to abnormally high blood pressure as it favors arteriosclerosis. From the clinical standpoint it is useful to distinguish between simple and complicated hyperpressure, that is, hypertonicity causing subjective symptoms. With sclerosis of the kidney, the high blood pressure seems to be a compensating phenomenon. The polyuria and hypertension in these cases, with the hypertrophy of the heart, aid in keeping the work of the kidneys on an approximately normal plane. The physician has only to guard against useless overtasking of the heart and ward off cerebral hemorrhage. In other words, keep a close rein over the kidney trouble, spare the heart as much as possible, and avoid everything that will unnecessarily send up the blood pressure. The entire mode of life should be regulated to exclude excitement, dietetic excesses and severe physical exertion, while ensuring opportunities for temporary relaxation, an hour's rest at noon, and avoidance of stimulants, extractives of meat, coffee and alcohol. Constipation should be kept under control by fruits and vegetables, avoiding those that induce flatulency. Straining at stool may send up the blood pressure by 10 or 20 mm. and cerebral hemorrhage may occur in consequence. Bed rest alone may reduce the blood pressure at least enough to put an end to the subjective symptoms from it.

Small doses of digitalis, not over 0.1 gm. per day, prove almost invariably useful and harmless in arteriosclerosis with high blood pressure and beginning cardiac insufficiency. Some of his patients have kept this up for years, alternating two weeks of these small doses of digitalis with two weeks of iodin. Spa treatment and physical measures benefit mainly by their favorable influence on the underlying trouble. The combination of a number of curative measures is particularly advantageous, and hence more can usually be accomplished in a sanatorium than in the home. As results of treatment are so much better in the earlier stages, he makes a point of examining the blood pressure in every patient and recording the findings. In this way the tendency is discovered and combated in its early stages. He has numbers of patients still living whose blood pressure was up to 180 mm. twelve to fifteen years ago. One patient with a pressure of 260 or 270 mm. was under his charge for five years before a brain vessel ruptured. A continuously high blood pressure without subjective symptoms—hypertonia simplex—may have a comparatively favorable prognosis.

Zentralblatt für Chirurgie, Leipzig

July 24, XLII, No. 30, pp. 529-544

94 Support on the Pelvis for Artificial Leg. (Ueber den Stützpunkt des künstlichen Beines am Becken.) B. Riedel.

Zentralblatt für Gynäkologie, Leipzig

July 24, XXXIX, No. 30, pp. 523-538

95 *Normal Pregnancy After Conservative Ovariotomy. H. Freund.

July 31, No. 31, pp. 539-554

96 *Extraperitoneal Cesarean Section for Impacted Trunk Presentation. (Extraperitonealer Kaiserschnitt wegen verschleppter Querlage.) O. Küstner.

95. **Normal Pregnancy After Conservative Ovariotomy.**—Freund slits the ovarian tumor its entire length by a median incision, and thus is able to inspect the ovary completely and detect any portion that is still sound. His method was described in these columns August 8, 1914, p. 579, but at that time there had been no consecutive pregnancy in any of the cases although he has been applying this method for four years to date. He now reports a normal pregnancy and delivery of a healthy child in one of the above cases. The patient had passed through one normal delivery and four years later a large hydatidiform mole was removed. Each ovary was found transformed into a large polycystoma, the tubes apparently normal. Eleven days after the mole operation, the left ovary was removed, and the right ovary was slit down to the hilum and opened wide. A patch about 1.5 by 2 cm. in size in which the follicles seemed to be normal was found near the pedicle of the ovary, and this was left while all the rest of the ovary was excised. The stump was sutured to close in this apparently normal patch, and ten months later the woman became pregnant, showing that by this means it is possible, even with a large cystoma, to detect and save enough functionally capable ovarian tissue for conception to occur later.

96. **Cesarean Section for Shoulder Presentation.**—Küstner comments on the grave danger to the fetus when the shoulder becomes impacted in the contracted uterus and version is thus rendered impossible. The fetus is usually dead before the malpresentation can be corrected, and this is inevitable when version is impossible unless the child can be extracted at once by a laparotomy. The chances for the mother are much better when the incision in the uterus can be made outside of the peritoneum, and for these reasons he delivered a woman by extraperitoneal cesarean section about twenty-four hours after the onset of labor and rupture of the bag of waters. The lower segment of the uterus was contracted so rigidly that version was out of the question. The fetus was in the dorso-posterior position and the incision in the uterus was made on the left side, the foot end of the child. The stretching of the cervix in this form of dystocia facilitates extraperitoneal cesarean section, but he was disagreeably surprised by the difficulty of version after the uterus had been opened. He did version with the (right) lower foot. During the extraction the left (upper) foot hit against the child's back and impeded extraction. If he had grasped both feet, the version would not have been impeded by the other foot. The modern low extraperitoneal cesarean section thus permits the extraction of the child whole, even with impacted shoulder presentation, but the incision is in the cervix, the child in the body of the uterus, and version is necessary and facilitated by grasping both feet. This is imperative with the dorso-posterior position and can do no harm with the dorso-anterior.

Zentralblatt für innere Medizin, Leipzig

July 24, XXXVI, No. 30, pp. 469-484

97 Symptomatology of Aneurysm of Cerebral Artery. J. Löwy.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 4, XXXVI, No. 53, pp. 817-832

98 Micrococci in the Blood in Malta Fever. (Valore diagnostico dell'emocoltura nella febbre di Malta.) G. De Angelis.

99 Incarceration of Portion of One Wall of Intestine in Hernia. (Forma rara d' incarceramento erniario intestinale a pizzico.) N. Federici.

Pediatria, Naples

July, XXIII, No. 7, pp. 481-560

100 *Malignant Lymphogranuloma a Special Form of Tuberculosis. (Contributo alla conoscenza etiologica del linfogranuloma maligno.) G. Caronia.

101 Achondroplasia. (Caso di acondroplasia a tipo iperplastico.) R. Vaglio.

102 *Elimination of Hexamethylenamin in Disease of the Urinary Passages in Children. (L'eliminazione dell'urotropina.) A. Corica.

100. **Malignant Lymphogranuloma.**—Caronia reports two cases in which the clinical history and pathologic anatomic

findings were typical of malignant lymphogranuloma, and Much's granula form of the human tubercle bacillus was cultivated from the lesions. The torpid course and debility explained the negative response to the skin tuberculin test and to the deviation of complement test in both his cases.

102. **Elimination of Hexamethylenamin in Diseases of the Urinary Passages.**—Corica has been studying the elimination of hexamethylenamin in healthy children and in those with nephritis, as well as the action of the drug in the diseased kidney. In 11 healthy children the drug was found in the urine within half an hour, and the elimination kept up for from twenty to thirty-three hours. In 5 children with nephritis the drug appeared in the urine in half an hour but the elimination kept up for forty-six, fifty or eighty-five hours, the longest duration being in a child of 3 with postscarlatinal nephritis. In 5 other cases of postscarlatinal or acute nephritis, comparative tests were made with this drug and with lactose and with iodin. The lactose did not appear in the urine until after two hours and the elimination dragged along for seventy hours in one case; in the others only for fifteen up to twenty-four. The iodin did not appear in the urine until after two hours; the elimination continued for from twenty-eight to sixty hours. In health, lactose is completely eliminated in nine hours and iodin in forty or fifty hours. His research has convinced him that hexamethylenamin is eliminated through the glomeruli. Also that its action on the kidneys depends on the nature of the kidney disease. If it is of toxic origin, the drug has less effect, its action being practically restricted to the warding off of possible ascending invasion by bacteria from the bladder. Invasion of this kind is favored by the scanty production of urine in the toxic cases. With infectious nephritis, the drug has an antiseptic action. In addition to this, as it transforms the alkaline to an acid reaction, it tends to ward off ulterior development of microorganisms along the urinary passages below.

Policlinico, Rome

August 1, XXII, No. 31, pp. 1021-1056

103 Welfare Work for the Maimed in War. (Per l'assistenza ai reduci storpi e mutilati.) R. Dalla Vedova.
104 Method for Localization of Metal Foreign Bodies. V. Maragliano.
105 Portable Roentgen Apparatus. M. Serena.
106 Benefit for the Health from Active Campaign Service. (I benefizi della vita di guerra sulle condizioni di salute dei soldati.) P. Sabella.
107 Blood Clots in Stool Simulating Helminths. (Grumi sanguigni simulanti parassiti intestinali.) M. C. Francaviglia.
108 *Reflex Epilepsy from Intestinal Helminthiasis. M. C. Francaviglia.

July, Medical Section, No. 7, pp. 293-340

109 Tests for Antitetanus Serum. (Intorno ai criteri scientifici per giudicare in modo rapido e sicuro sulla reale efficacia del siero antitetanico.) G. Tizzoni and P. Perrucci.
110 Acute Yellow Atrophy of the Liver a Manifestation of General Toxi-Infection. (Etiologia dell'atrofia gialla acuta del fegato.) T. Pontano.
111 Differential Diagnosis Between Exudates and Effusions. B. Maiolo. Continued.

108. **Reflex Epilepsy from Helminths.**—In Francaviglia's case inherited syphilis, alcoholism and malaria could be positively excluded, the patient, a young man of 19 having always been in robust health except for the ordinary "children's diseases," and with no bad habits, not even smoking. He was a good student but not a burner of the midnight oil. While in a class one morning he was suddenly seized with dizziness and had convulsions resembling an epileptic seizure. After ten minutes of tonic and clonic spasms, he fell into profound coma, the pupils dilated and rigid, and did not regain consciousness for an hour and memory not until later. This attack was followed by three others at intervals of an hour or hour and a half—an actual status epilepticus. Milder attacks followed in the next few days. By excluding other causes the attending physician made the presumptive diagnosis of helminth intoxication, and after expulsion of two ascarides under santonin there was no further trouble and there has been no return of symptoms since. Francaviglia says that the ascaris acts both by its endogenous toxins and by mechanical irritation as it burrows its head in the mucosa and thus exposes and irritates nerve terminals.

Tumori, Cagliari

May-June IV, No. 6, pp. 633-748

112 *Mammary Secretion with Uterine Myomas. S. Scaglione.
113 Serum of the Pregnant and of Parturients Has No Action on Implants of Embryonal Tissue in Rats. (Azione del siero della donna gravida ed in stato puerperale sugli innesti tessuti embrionarii.) S. Scaglione.
114 Histogenesis of Primary Cancer of the Lung. A. Businco and G. Trogu.
115 Cancer of the Skull in Boy of Fifteen. (Mixo-encondro-sarcoma della volta cranica a sviluppo contemporaneo endocranico ed esocranico.) G. Bolognesi.
116 *Hemorrhagic Discharge from the Breast an Indication for Excision. (Sul valore sintomatico e prognostico dello scolo emorrhagico della mammella.) A. Cimoroni.
117 Tabulated Data of Myomas of the Stomach; 140 Cases. (Tabella casistica dei tumori a fibre muscolari liscie dello stomaco.) F. Nassetti. Commenced in No. 5.

112. **Mammary Secretion with Myoma of Uterus.**—Two women of 44, several years after their last pregnancy, began to have hemorrhages from the uterus and a milk-like secretion could be squeezed from the breasts. Several myomas were found in the uterus. Extracts of scraps of the uterus tissue and of the myoma were injected into rabbits. After injection of the myoma extract into virgin rabbits a mammary secretion was inaugurated. The uterus extract was inert. In both the women the mammary secretion ceased completely after hysterectomy.

116. **Hemorrhagic Secretion from the Mamma.**—Cimoroni reports two cases in which a yellowish, reddish or blackish secretion from one breast attracted attention. The droplets stained the linen, but there were no signs of anything else wrong for two or three months but then there were occasional pains in the breast. Palpation was negative but the breast was resected in each case and the microscope revealed multiple incipient papillomas in one case and incipient cystic disease in the other.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 10, II, No. 2, pp. 469-556

118 *Production of Bilirubin Outside the Liver. (Studien over anhepatische galkleurstofvorming. IV-V.) A. A. H. Van den Bergh and I. Snapper.
119 Diagnosis of Epidemic Cerebrospinal Meningitis. B. P. Sormani.
120 *Case of Anilin Poisoning. (Anilinevergiftiging.) J. de Hartogh, Jr.

July 17, No. 3, pp. 557-636

121 *Gritting the Teeth a Sign Usually of Adenoid Vegetations. C. E. Benjamins.
122 *Mercuric Chlorid Poisoning, Anuria and Uremia. A. F. Soer.
123 New Lines for Cancer Research. (Nieuwe banen voor het kankeronderzoek.) T. J. Stomps.
124 Revival of Asphyxiated New-Born by Inflation of Air. (Behandeling van asphyxie van den pasgeborene door rechtstreeksche luchtinblazing.) C. A. J. Quant.

118. **Production of Bile Pigment in Spleen.**—Van den Bergh and Snapper have previously reported some cases of progressive anemia in which there was evident destruction of red corpuscles in the spleen with consequent formation of bilirubin without the participation of the liver in its production. In a case reported here the spleen was removed in treatment of progressive anemia. Marked improvement followed but still, nearly a year later, there is considerable destruction of blood corpuscles with pronounced bilirubinemia, showing that the spleen was not the only organ involved in the destruction of the blood. Some experiments on dogs confirmed this production of bilirubin in the spleen. Dogs given toxic doses of diamino-toluene developed bilirubinemia but it was not the consequence of abnormal destruction of blood, and the spleen did not enlarge. On the other hand, dogs treated with phenylhydrazin developed actual progressive pernicious anemia; the spleen enlarged, and much more bilirubin was found in the splenic vein than in the splenic artery.

120. **Anilin Poisoning.**—A young man in robust health left home to take part in an athletic contest, but before it began he became extremely cyanotic, his lips, hands and nails very blue and his skin bluish, with headache, and he vomited. The pulse was 90, and the respiration accelerated, and there was some delirium. No cause for this sudden illness could be discovered until Hartogh suspected anilin poisoning, and examined the young man's shoes. They were new gymnasium slippers and had been white but the day before he had had them colored black. He had been wear-

ing the dyed shoes about an hour and a half when the symptoms developed. Under stimulants, fresh air and cold water to the head, recovery gradually followed.

Gritting the Teeth a Sign of Adenoid Vegetations.—Benjamins states that in 500 cases of adenoid vegetations he has encountered, gritting of the teeth at night was noted in 34.4 per cent.; catarrh of the upper air passages in 46.4 per cent.; disturbance in hearing in 41 per cent., and enlarged tonsils in 25.2 per cent.; 31.6 per cent. had enuresis. The gritting of the teeth was recorded for 45 children under 5, for 78 from 5 to 10, for 42 between 10 and 15, and for 6 between 15 and 20, and for one person over 20. Other causes may be responsible for teeth gritting in the neuropathic, but it always suggests possible adenoids.

122. **Mercuric Chlorid Poisoning.**—Soer's two cases confirm anew that when complete anuria appears in mercuric chlorid poisoning there is practically no hope for the patient. Death follows almost inevitably within one or at most two weeks, whether or not there are any signs of uremia.

Svenska Läkaresällskapets Handlingar, Stockholm

XLI, No. 2, pp. 319-410. Last indexed July 24, p. 372

125 *Occupational Diseases of the Skin. (Om hudens yrkessjukdomar.) J. Strandberg.
126 *Sarcoma of the Breast. A. Rubenson.

125. **Industrial Diseases and Injuries of the Skin.**—Strandberg emphasizes the importance of occupational affections of the skin and the necessity for better knowledge of them by physicians in general. About 50 pages are devoted to an epitome of the leading literature on the subject, and he then describes the details of 55 cases from his own service, including 35 of industrial eczema, 14 of toxic dermatitis, and 2 each of injury from a caustic, changes in the nails or chilblains. One man of 56, a painter, has had recurring eczema of the hands in such a severe form that hospital treatment was required, and in the course of less than twelve years he had taken twenty-five courses of hospital treatment, to a total of 1,488 days, over four years in all. The man has cost the state many hundreds of dollars in the hospital treatment, besides the medicines doled out to him in the dispensaries. Strandberg cites this case as an illustration of the economic necessity for enforcing prophylactic measures or at least instructing the workmen in regard to the special dangers to be avoided. Ample opportunity for washing and bathing with warm water should be given those working with toxic substances, and rubber gloves or other protecting devices should be provided. Prophylactic measures have done away with many industrial diseases, such as glassblowers' syphilis (from use of common tube), but there is still room for improvement in many industries. It may prove possible to denature alcohol in some way that would be less injurious to the hands than the present methods.

126. **Sarcoma of the Breast.**—Rubenson quotes five surgeons, who have reported or compiled each from 150 to 800 cases of tumors of the breast, to the effect that sarcomas formed only from 5.26 to 9.3 per cent. of the total. Nearly seven pages are devoted to tabulation of the details of fifteen cases that have been published in full in the literature, and he adds six new cases to the list, discussing the general characteristics of this form of cancer of the breast. The course is liable to be more variable with sarcoma than with carcinoma, and the general health is sometimes less affected. Some of the patients look well, notwithstanding recurring sarcoma and metastases. In a few instances both breasts were affected. There is usually less pain with sarcoma than with carcinoma, probably because it spreads more on the surface with less infiltration than with carcinoma. The regional glands are not involved so often as with carcinoma; they were apparently intact in all his cases.

Ugeskrift for Læger, Copenhagen

July 22, LXXVII, No. 29, pp. 1169-1224

127 *Ascites and Its Surgical Treatment. A. Blad. Commenced in No. 28.
128 Case of Chronic Intermittent Partial Heart Block. C. Lundsgaard and M. Fenger.
129 Danish Physicians in the Middle Ages. (Danske Læger i Middelalderen.) J. W. S. Johnsson.

127. **Ascites and Its Surgical Treatment.**—Blad discusses the best means to relieve and cure ascites, based on its etiology and course. According to the literature, about 40 per cent. have been cured of those to whom the Talma operation has been applied. The reason why it is not universally successful is because the outcome depends on the functional capacity of the liver. We have no means for ascertaining this exactly beforehand, and hence there will always be an undependable factor in the outcome. It seems rational and on a sound anatomic and physiologic basis, with ascites from stasis in the portal system. There is no justification for it, however, with ascites of other origin, and yet the records show that it has been applied in numbers of such cases, and this has kept down its ratio of cures. It has helped in many cases of ascites of other origin, the benefit probably being due to the eliminating of some secondary portal stasis. Another factor of moment for the outcome is whether or not the heart is strong enough to keep the blood circulating. In some of the unsuccessful cases the heart was evidently too weak to overcome the obstacles. If the omentum is small and shriveled, it does not respond properly to the operation and if there are already adhesions to the abdominal wall it is useless to do omentopexy. As to contraindications, the patient's general condition is the best guide.

The subject of continuous autodrainage of ascites is still in its infancy. No general conclusions are possible as yet; but the results already obtained are certainly promising, especially as it requires such an insignificant operation in contrast to the laparotomy for the Talma operation. It is applicable for all forms of ascites, and the effect becomes evident at once. The drain-tube technic seems to have given the best results, but the best material for it is still a question. Fish-bladder tubes were entirely absorbed in five months in the experiments on animals; hernial sac tissue in four months. Autoplastic fascia tissue gave the best results in the experiments on animals; it heals smoothly in place, takes nourishment from the tissues and lasts a long time.

On the basis of the above considerations, when called on to treat a case of ascites of obscure origin, he took a square fascia flap from the thigh, rolled it into a tube and inserted this tube in an incision in the right lumbar region, through the muscles, into the peritoneum. It was sutured with silk to the peritoneum opening, into which it projected a little. The muscles were not sutured over it, but merely the superficial fascia, with aluminum bronze wire. The tube was then fastened with a few stitches to a pocket made in the superficial fascia. The tube was about 3 cm. long by 1.5 cm. in diameter, and the ascites fluid poured out through it as the patient, a man of 60, lay on his side. The skin was then sutured above it and the man speedily recovered. The skin in the region of the tube became edematous showing that the ascitic fluid was draining into it. The man succumbed to the progress of a cancer in the stomach, and necropsy showed that the drain operation had been a complete success; the fascia had healed in place without reaction; the tube was freely permeable and the crevices in the muscles were full of ascitic fluid that had drained into them. The edges of the rolled up flap did not quite meet on top as no attempt was made to have the tube absolutely cylindrical. By having it debouche in the lumbar region there was less danger of hernia than at other points, and less chance of the tube becoming obstructed. Ascitic fluid is a colloidal fluid to a certain extent, as it contains albuminous substances, and hence the blood vessels do not absorb it. This is the reason, as he explains, why diverting the ascitic fluid away from the peritoneal cavity into muscle tissue provides better conditions for its absorption. The muscles may be regarded as the water reservoirs of the body, and it is logical to drain surplus fluid into muscle tissue. With ascites, the lumbar region has several advantages. In case the ascites is the result of portal stasis, the drainage operation might be supplemented by a Talma operation. Blad did the two operations on a man of 55 with ascites and atrophic cirrhosis of the liver, but the two operations at one sitting proved too much for the patient and he failed to rally, dying the next day in collapse.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 11 CHICAGO, ILLINOIS SEPTEMBER 11, 1915

THE SURGICAL ANATOMY OF CLEFT PALATE*

JOSEPH RILUS EASTMAN, M.D.
Professor of Surgery, Indiana University School of Medicine
INDIANAPOLIS

Favorable results in operations for the repair of cleft palate depend much less on the operator's skill and experience than on a clear understanding of certain essential facts of surgical anatomy. Of paramount importance is the conservation of the blood supply to the sutured palate. It is a comparatively easy matter to insure an adequate blood supply to the united margins if the dissection made in the preparation of the flaps is so carried out as to avoid injury to the large palatal vessels.

The blood supply of the hard palate is derived chiefly from the arteriae palatinae major and minor, which are the two divisions of the descending or posterior palatine artery, a branch of the internal maxillary. The larger vessel passes down the posterior palatine canal and emerges from the posterior palatine foramen which is internal to and behind the last molar tooth in the adult and the last premolar in the infant. It runs forward in a groove on the inner side of the alveolar border of the hard palate to the anterior palatine canal, situated near the midline just behind the incisor teeth, where the terminal branch of the artery passes upward to anastomose with the nasopalatine artery. It sends branches to the mucous membrane of the hard palate and the palatine glands. The smaller division of the descending palatine goes to the soft palate.

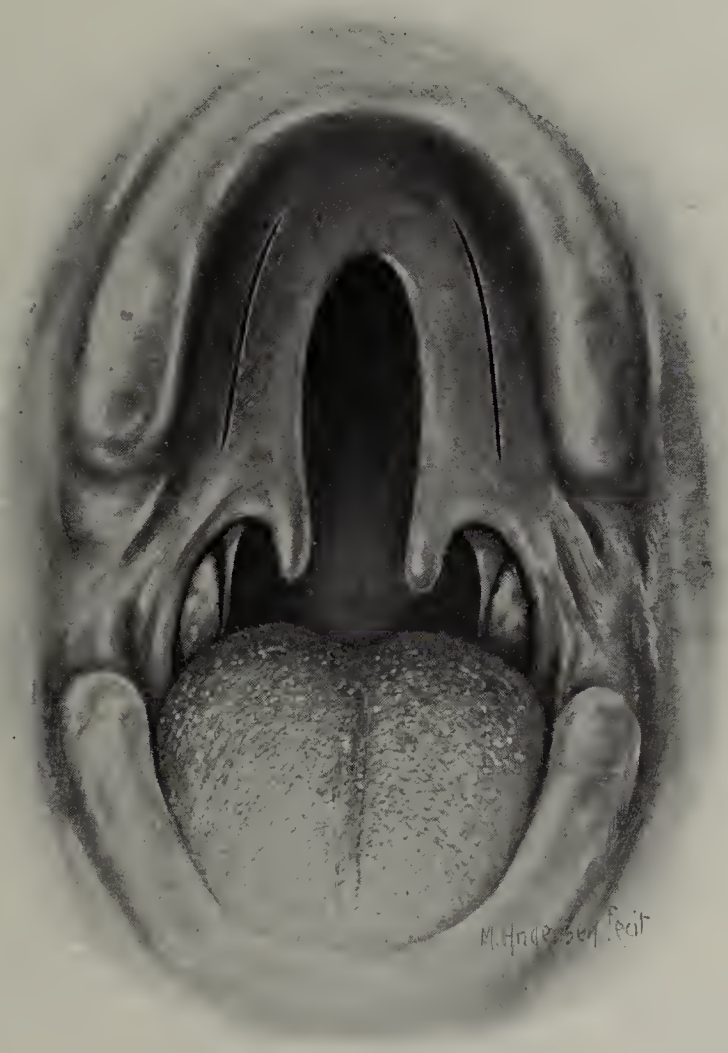


Fig. 1.—Lateral incisions erroneously placed mediad to the arteria palatina descendens.

The blood of the soft palate comes largely from the smaller division of the posterior or descending palatine and also from the inferior or ascending palatine of the facial artery and ramifications of one division of the ascending pharyngeal, the smallest branch of the external carotid. The former divides near the levator palati and supplies the soft palate and the palatine glands. It anastomoses with the posterior palatine branch of the internal maxillary previously mentioned as the main arterial trunk to the palate. It is in the making of lateral incisions that this large trunk passing between the posterior and anterior palatine foramina, sending its largest branches medialward under the palatine mucosa, is extremely likely to be divided or even split for a considerable distance, for it is in the groove followed by the vessel that the knife blade fits and runs most easily.

After smart hemorrhage due to such an accident the flap on the corresponding side will usually be observed to be quite blanched and ischemic, a state which is clearly a precursor of nonunion.

Blakeway[1] calls attention to two important osculations of the most important palatal blood vessel, the descending posterior palatine. At its anterior extremity the terminal branch of the posterior or descending palatine turns upward into the anterior palatine canal and on the nasal septum anastomoses with the nasopalatine branch of the sphenopalatine artery. Should the descending palatine artery be divided, this anastomosis would not, as a rule, bring any large amount of blood to the hard palate owing to the small size of the nasopalatine artery. In the posterior canal, the posterior palatine artery gives off accessory palatine branches, which turn backward to anastomose

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Blakeway: Jour. Anat. and Physiol., July, 1914.

with the branches of the ascending palatine from the facial. These posterior anastomosing branches are likewise small. Much confidence, therefore, should not be placed in the ability of these anastomoses to nourish flaps. They are of some value, however, and should be spared, for example, the terminal branch of the descending palatine, at the anterior palatine foramen where it anastomoses with the nasopalatine, should not be carelessly torn in raising flaps from the hard palate.

It is obvious that in making lateral incisions for the elevation of flaps great care should be exercised, as stated by G. V. I. Brown, that such incisions be made as far lateralward as possible in order to avoid injury to the posterior palatine artery. Blakeway advises that the incision be directed outward against the alveolar process rather than upward against the palate, as otherwise the artery may suffer injury or its branches be divided. Likewise in making lateral incisions near the posterior border of the soft palate, for division of the levator palati muscle, it should be remembered that such an incision is quite likely to divide the ascending palatine artery, a vessel of considerable importance in the blood supply of the soft palate.

It may truthfully be said that much less depends on the method of suturing the flaps than on an adequate blood supply. It is most encouraging to observe after the completion of a cleft palate operation that the wound margins are red and not blanched. The free hemorrhage which accompanies the division of the large palatine arteries is nearly always easily controlled by sponge pressure in children, but this may not be the case in adults. In rare cases of severe hemorrhage from the palatine arteries it has been necessary to plug the palatine foramina with wooden pegs. I know of only one reported case of this kind. Doubtless, there have been many in which severe hemorrhage contributed in some measure to a fatality.

Avoidance of injury to the palatine vessels and the consequent hemostasis are obviously of value in keeping the field clear for accurate work. The swallowing of blood during a cleft palate operation often causes fever in an infant, this being either due to the direct absorption of the pyrogenous constituents of the blood or to the fermentation of other intestinal contents owing to the presence of blood.

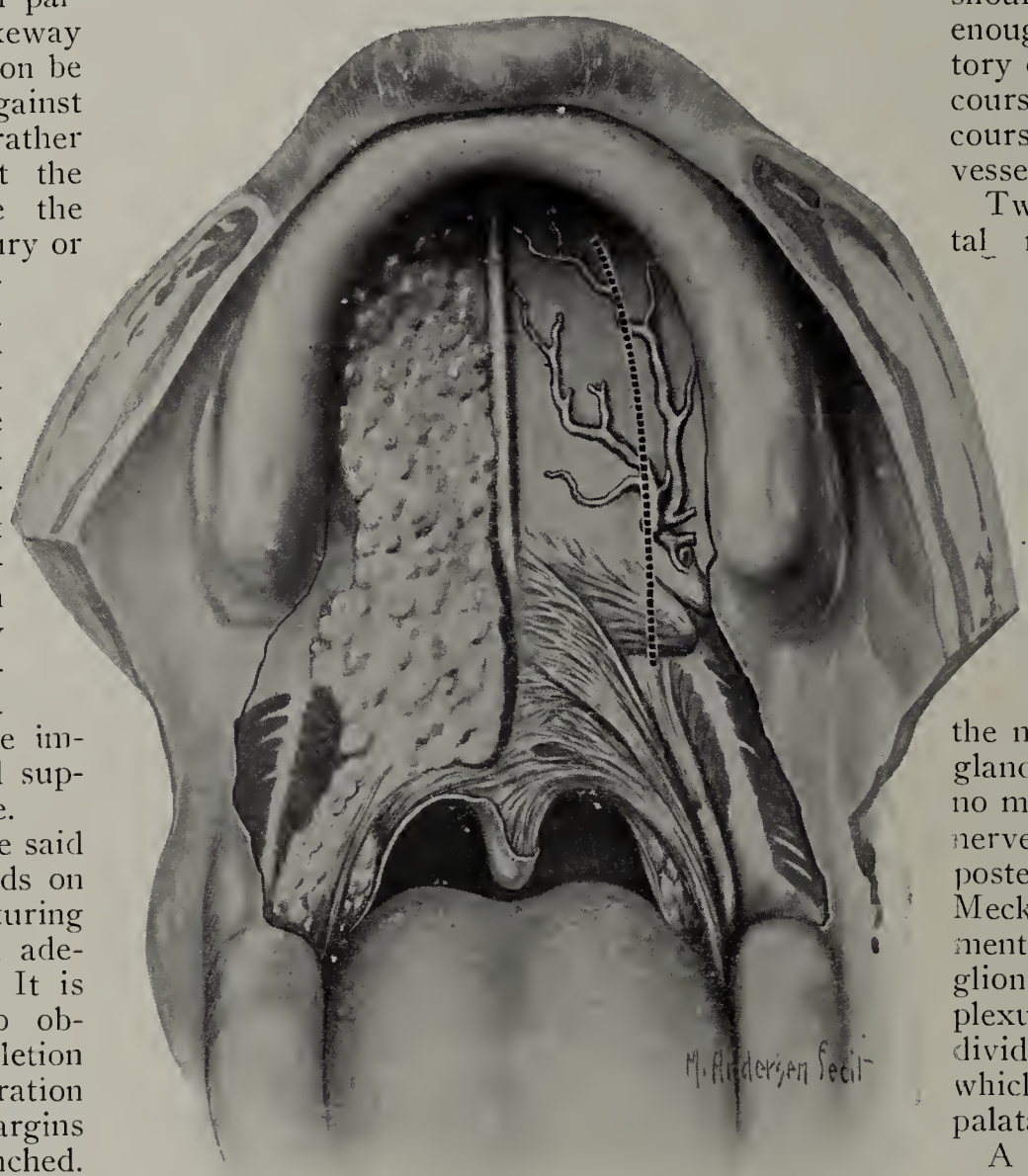


Fig. 2.—Severing of both divisions of arteria palatina descendens by lateral incisions too far mediad from the alveolar process.

All of the well-known evil effects of hemorrhage may be circumvented with considerable certainty, as Brophy says, by the simple expedient of avoiding lateral incisions, or if such incisions are absolutely necessary, making them after the flaps have been elevated and the lines of tension determined, so that only small incisions properly placed are required. It is then usually comparatively easy to relieve tension by placing the tiny incisions either lateralward or medialward to the descending palatine or at a safe distance in front of the ascending palatine. If in a case of very high arch of the hard palate with narrow cleft it should seem advisable to elevate the hard palatal flaps through a lateral incision, such a lateral incision should be just large enough to admit the raspatory or knife blade, and of course, in making it the course of the principal vessels cannot be ignored.

Two of the larger palatal nerves, the anterior palatine and the middle palatine nerve from Meckel's ganglion, correspond in their course and distribution to the two divisions of the descending palatine artery and would be endangered by any incision which would divide the vessels. These nerves supply the mucous membrane and glands of the palate but no muscles. The muscular nerve branches, that is, the posterior palatine from Meckel's ganglion and filaments from the otic ganglion and the pharyngeal plexus would of course be divided by a lateral incision which would divide the palatal muscles.

A further objection to the use of lateral incisions is found in the circumstance that if a flap attached only by its anterior and posterior extremities becomes strangulated as by encircling tape, or sloughs for any reason, a large amount of palatal tissue is irrevocably lost, and repair by a second operation is difficult or impossible. If lateral incisions are not used in the Langenbeck operation and there be failure of union, the second operation is beset with no unusual difficulties.

To elevate flaps by beginning at the borders of the cleft is, as a rule, not so difficult as to raise the flaps through a lateral incision. A convenient practice is to grasp the divided half of the uvula with tenaculum forceps and split the border of the cleft in the soft palate lengthwise but slightly on the nasal side of the margin. This split should be extended at once up to the posterior border of the hard palate. With

scissors-spreading dissection, keeping in the gland tissue between the oral mucosa and the palatal muscles, all of the soft palatal tissue may be rendered movable except the aponeurotic attachment of the tensor palati at the border of the hard palate. The aponeurosis and the attached nasal mucosa must be divided with the curved scissors close to the border of the hard palate, the division extending outward and backward if necessary, almost to the posterior palatine foramen.

The anterior part of the soft palate next to the hard palate for a distance backward of 8 or 10 mm. contains practically no muscular fibers, being composed almost entirely of palatine aponeurosis, therefore this portion of the palate is quite fixed and must be detached in order that the corresponding side of the soft palate may be moved toward the median line. It is remarkable how this simple step enables one to close without lateral incisions and without tension, even the very widest defects. Tillmanns[2] emphasized the importance of this detachment of the soft palate from the edge of the palate bones, and James Berry considers this step one of the most important in the whole operation.

In thus dividing the palatine aponeurosis close to the hard palate margin, no muscle fibers are divided, no blood vessels and no nerves of importance are severed and it becomes possible to draw medialward the soft palate in almost its entire thickness. The oral mucous membrane of the soft palate is of course continuous with the soft tissues covering the hard palate. Therefore, after detachment of the aponeurotic layer at the posterior border of the palate bones, it is comparatively easy to continue the separation of the oral mucous membrane of the soft palate forward over the hard palate by the use of an appropriate raspatory or periosteal elevator. One may begin by first elevating the mucoperiosteum from the hard palate and then dividing the aponeurotic attachment of the hard and soft palates by passing one scissors blade under the mucoperiosteum and the other in the nasopharynx, and by closing the scissors, cut the aponeurosis and the nasal mucosa. But since the raising of the mucoperiosteum from the hard palate is rather difficult in some cases, it seems to me that this may be facilitated by first splitting the edge of the soft palate near the edge of the palate bones, then dividing the aponeurosis and then continuing the loosening of the flap through the split soft palate over on the hard palate following a continuous plane of cleavage. I have never observed a case in which it was necessary to divide the tensor palati at the hamular process; however, if in any case it should be deemed necessary to make such tenotomy of the tensor palati at the hamular process, it would, I believe, be prudent to begin the tenotomy on the posterior border of the tendon just internal to the process, which may easily be felt behind and internal to the last molar tooth, cutting forward cautiously in order to avoid injury to the descending palatine artery at the posterior palatine foramen which is just in front of the hamular process.

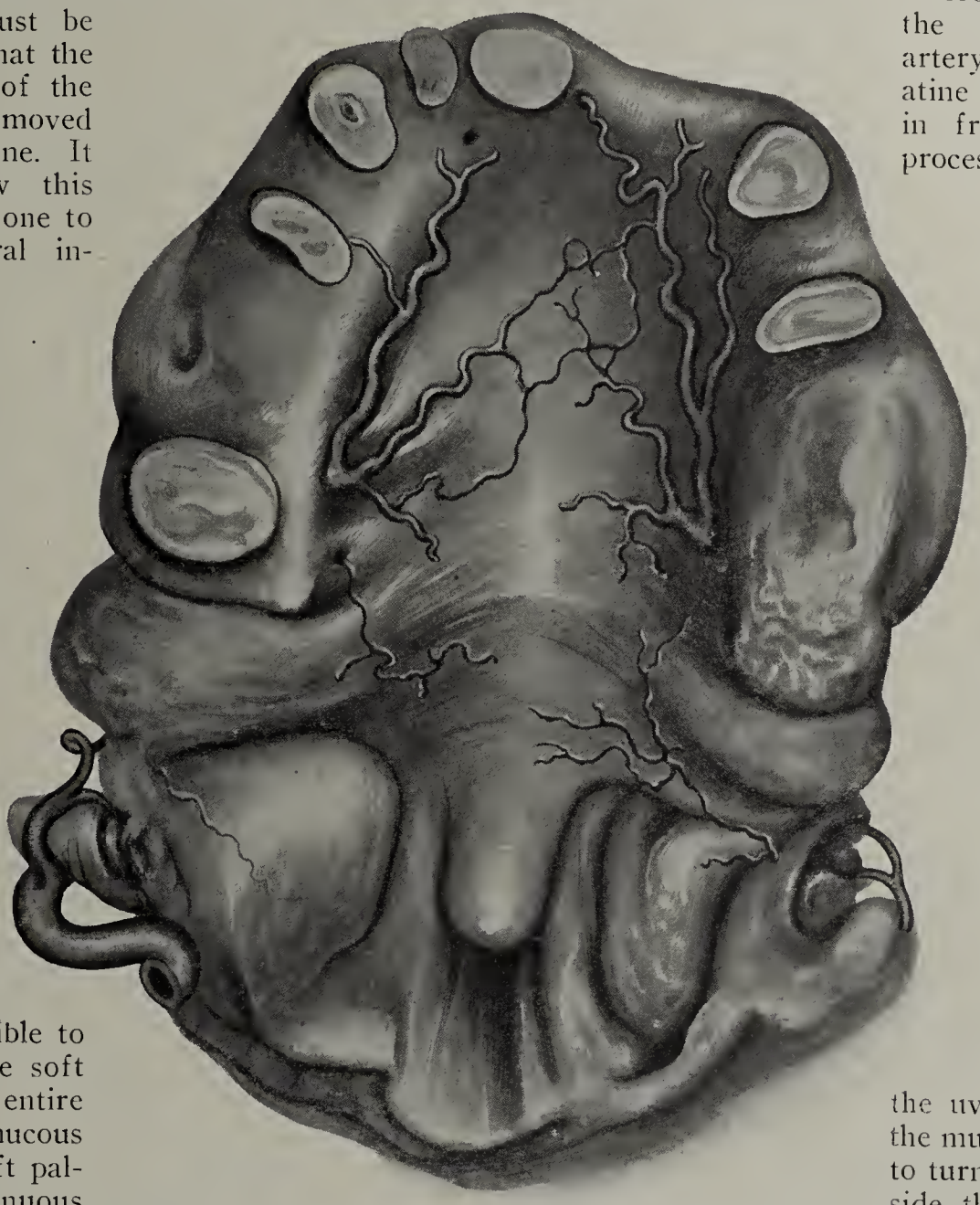


Fig. 3.—Palatal blood supply of full term fetus (after Blakeway).

The paring of the edges of the cleft after division of the palatal aponeurosis and the relaxation of the soft palatal tissues at each side may be accomplished by traction on one half of the divided uvula and cutting off with curved scissors the rounded border of mucous membrane which might interfere with union. Drawing the half uvula taut with tenaculum forceps and rolling the relaxed border of the cleft toward the oral side, one may readily inspect its entire length, and with curved scissors cutting forward from the uvular end so freshen the mucosa which may tend to turn around to the nasal side, that no mucous membrane can interpose between the united margins.

The posterior part of the soft palate contains muscle fibers in abundance and is freely movable, being the portion on which most of the palatine muscles act. These include the palatoglossus, the palatopharyngeus, and the levator palati. The last muscle, according to Blakeway, must have nearly if not quite as much action as a tensor as a levator of the palate. Owing to the presence of these muscles, sutures at the posterior part of the soft palate must be secure enough to protect against the traction incident to swallowing. Here the coaptation sutures may with some advantage be reinforced by a relaxation suture along the free edge of the anterior palatine arch, that is, the posterior border of the soft palate. Such tension or immobilizing suture is introduced by passing a small curved

2. Tillmanns: Lehrbuch der Chirurgie, Georg Thieme, Leipzig, 1897.

needle bearing a long linen or hemp thread through the edge of the anterior palatine arch on one side near its base, that is, near the side of the tongue. The thread is drawn through to its middle and secured with a reef knot, leaving the tail of the suture long. At a distance of 3 or 4 mm. from the first or outermost knot, the needle is again passed through the edge of the arch; the tail of the suture is taken up and another reef knot is tied. This process is continued around the anterior palatine arch to its base on its opposite side, the suture crossing in front of the base of the uvula.

In closing narrow clefts of the soft palate, additional security is provided by uniting the two split margins of the cleft as suggested by Ochsner. The sutures approximating the nasal mucosa will probably include in their grasp more of muscle tissue than those on the oral side and are of value as tension sutures. If, in simple median suture, when the edges of the cleft of the soft palate are split the splitting is done slightly on the nasal side, one can gain a few millimeters of additional width for the flaps, and this is especially appreciated by those who use mattress sutures for the closure. The mattress sutures as suggested by Sherman of San Francisco for this purpose, bring together a broad surface for coaptation and prevent any inrolling or interposition of the mucous membrane. It is probably an error to use too many sutures of any kind. If the flaps are not under tension, no more than four or five are needed and the introduction of more may lacerate and strangulate the wound edges in a harmful way.

331 North Delaware Street.

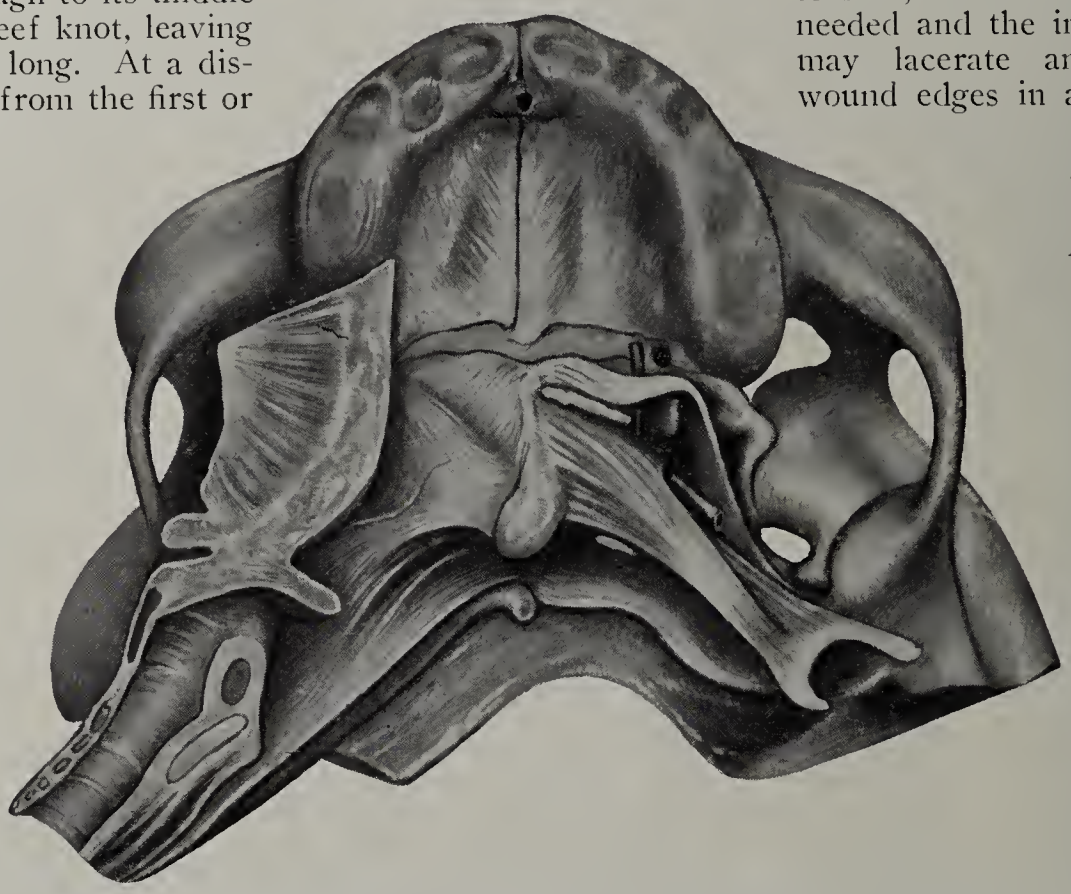


Fig. 4.—Proximity of tendon of musculus tensor palati (passing over rod at the right) to posterior palatine foramen immediately ventrad to it (after Blakeway). Cutting the tendon of the tensor palati at the hamular process endangers the arteria palatina descendens at the foramen.

ABSTRACT OF DISCUSSION

DR. HARRY M. SHERMAN, San Francisco: We grant at once the value of an adequate blood supply to insure satisfactory healing. Dr. Eastman's demonstration of the blood supply in the palate, and the method of preserving it is admirable, but the thing which puzzles me is how I have succeeded in not having any sloughing after the operations which I have done, for I have never had sloughing of any kind due to interference with the circulation, and I have cut off the descending palatine artery in not a few cases on both sides. To be sure I try to keep outside of the artery in making the lateral incisions, but I lift up that whole flap well forward and back, and frequently then injure the vessel, and yet the ascending palatine coming up from the



Fig. 5.—Division of aponeurosis and nasal mucosa at posterior border of hard palate injures no muscles. Arrow point indicates space between muscles of soft palate and palate bone.

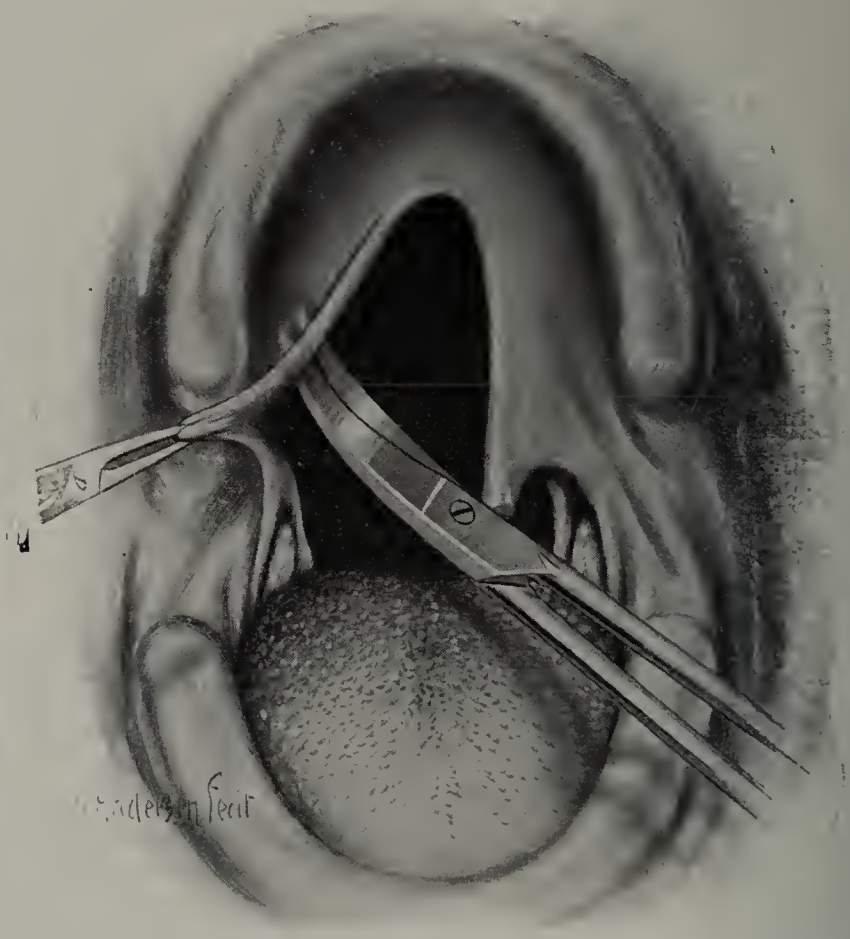


Fig. 6.—Splitting the edge of the soft palate on the oral side of the aponeurosis near the posterior border of the hard palate.

pharynx and anastomosing with the palatine branch in front has been ample for the nourishing of the flap. The interference with healing which I have encountered comes from infection of the wound or from tension. I can usually get primary healing in the mouth if there are no teeth. Therefore I try to do this operation on children so young that not even any of the deciduous teeth have appeared on the surface. The next thing is muscular action and the

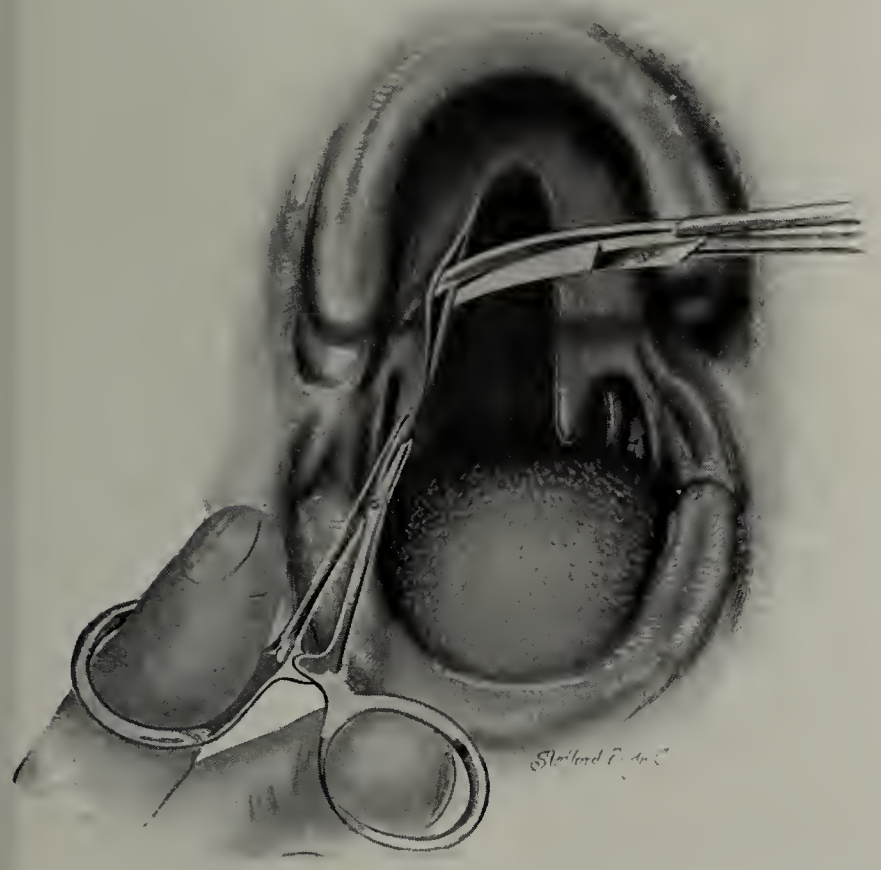


Fig. 7.—Division of aponeurosis and mucous membrane of nasal surface of soft palate at posterior border of palate bones—the most important step in mobilizing flaps.

resultant tension on the sutures by the tensor palati muscles. It is impossible so to place the sutures as to paralyze those muscles during the healing of the part. Brophy's lead palates have never succeeded in doing this in my patients; but by preventing these children from doing any more swallowing than is necessary, I have minimized the work done by the palate and tongue. These children are fed by catheter through the nose, and if possible taught to submit to that before operation; but even in those instances in which there is no time for the training of the children before operation, it takes a very short time while the sutures are fresh and hold well to teach the children the method afterward. To further fortify the suture line, I like to put in releasing sutures running all the way across and taking up a little tension on either side well over toward the releasing incision, and in any case in which there are teeth and when I am certain there is infection, so that my stitches will become infected even if it does not lead to suppuration, I put around both of these flaps a broad piece of tape saturated with paraffin or bone wax, which will prevent the tape from sucking up the juices of the mouth. This I stitch at the back and in front, so it cannot slip, and I hold the parts together in spite of muscular action, and never have these infants had any catastrophe because of the interference with the blood supply.

DR. CHARLES D. LOCKWOOD, Pasadena, Calif.: I have had a great deal of experience in operations for cleft palate and agree with Dr. Sherman. I have experienced but one case out of fifty in which I have had sloughing. I believe the reason is because I use the blunt dissector—any dissector that will not lacerate or injure the vessels. I believe these vessels are lifted up. I dissect off a whole flap of mucoperiosteum from in front clear back by making a short incision and introducing a blunt dissector, lifting up the flap, and I do not injure the vessels. I wish to say that the pictures of Dr. Eastman are the best, and more nearly correspond with the actual conditions presented in these cases, than any I have heretofore seen. One important factor in the success of cleft palate operations is the time of operation. If you let these children go to 1 year or 14 or 16 months the flaps will drop down and approximate, and I believe the two things that cause sloughing are tension and improper approximation. I have had the best possible results with the lead plates advocated by Dr. Brophy, and, combined with horse hair and silver wire sutures, they are most important factors in good results. I have reoperated in a number of cases in which I have taken the smallest strip of mucoperiosteum, made flaps and obtained beautiful results. Where the blood supply comes from I do not know; either from the small blood supply that is attached to the undivided portion of the flap, or in the blood supply of the opposite side; but perfectly beautiful results in healthy children may be obtained by the use of flaps as recommended by Lane.

DR. CHARLES H. PECK, New York: One or two points impressed me: Dr. Eastman mentioned the separation of the aponeurosis of the tensor palati from the hard palate and said that unless this is done it is impossible to get approximation. Division of the lateral pharyngeal plates of mucous membrane, or that which comes down from the eustachian tube can be snipped without dividing the muscle and teased apart so that after dividing the aponeurosis it will allow the drop of the flaps and approximation without tension. This is an extremely important point in these cases. I have always used a short lateral incision. Using blunt dissector work together with the short lateral incision,

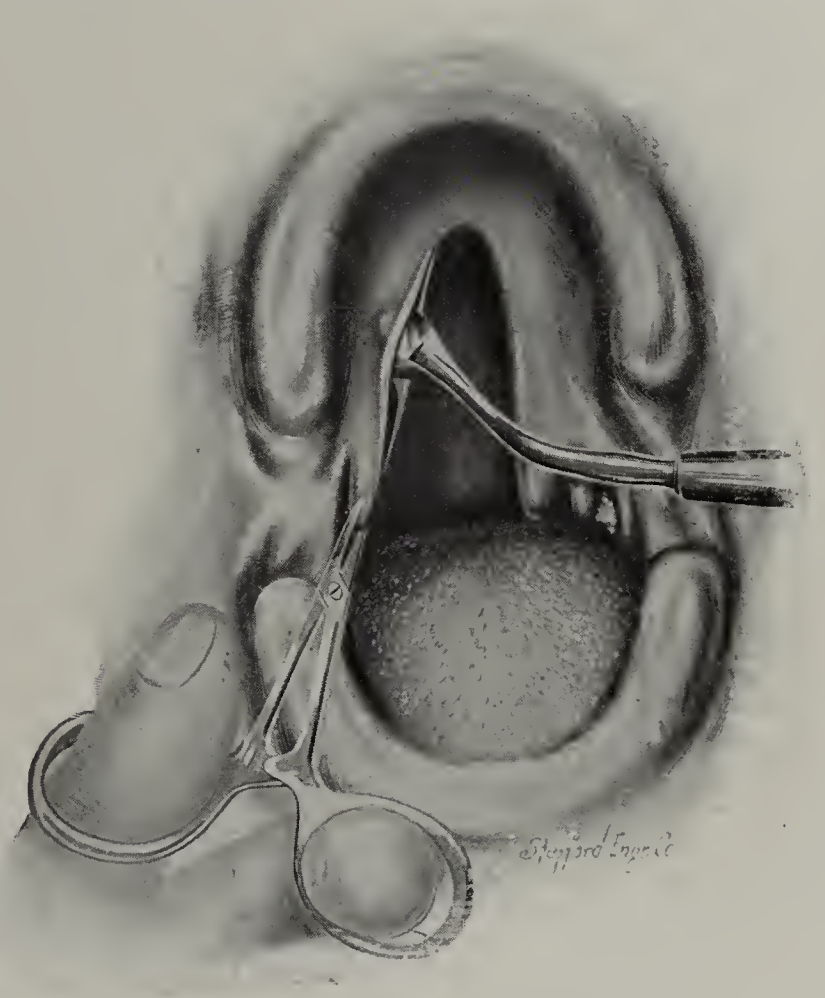


Fig. 8.—Elevating flap from hard palate by extending forward the split in soft palate.

placing it far out against the alveolar border and trying to avoid the ascending palatine artery, in my experience never results in sloughing. It might, however, if such prolonged lateral incisions were used as Dr. Eastman used in the last illustration.

DR. GEORGE V. I. BROWN, Milwaukee, Wis.: Dr. Eastman has given us the right foundation for discussion of the subject of cleft palate. With his illustrations before us, the anatomic conditions met with in dealing with cleft palate are readily understood. But it must be remembered that his

drawings represent practically normal circulatory conditions, whereas in complete cleft palate cases the fissures extend through both hard and soft palates and, if single, are usually deflected to the right or left of the median line and pass through the alveolar structures. In the so-called double cleft palates the premaxilla projects forward and is separated from the lateral segments of the upper jaw as the fissure bifurcates anteriorly. Therefore direct anastomosis of the vessels from the anterior and posterior palatine foramina is exceedingly doubtful. Fortunately for us, nature in her effort to support these parts appears to give an unusual supplementary blood supply; at least I like to think so when operating. The question as to the advisability of lateral incisions in palatal flap operations is after all a simple surgical problem. If there be sufficient tissue to permit accurate approximation when periosteal flaps are formed, then there will be no need of lateral incisions. When this cannot be accomplished without tension, lateral incisions

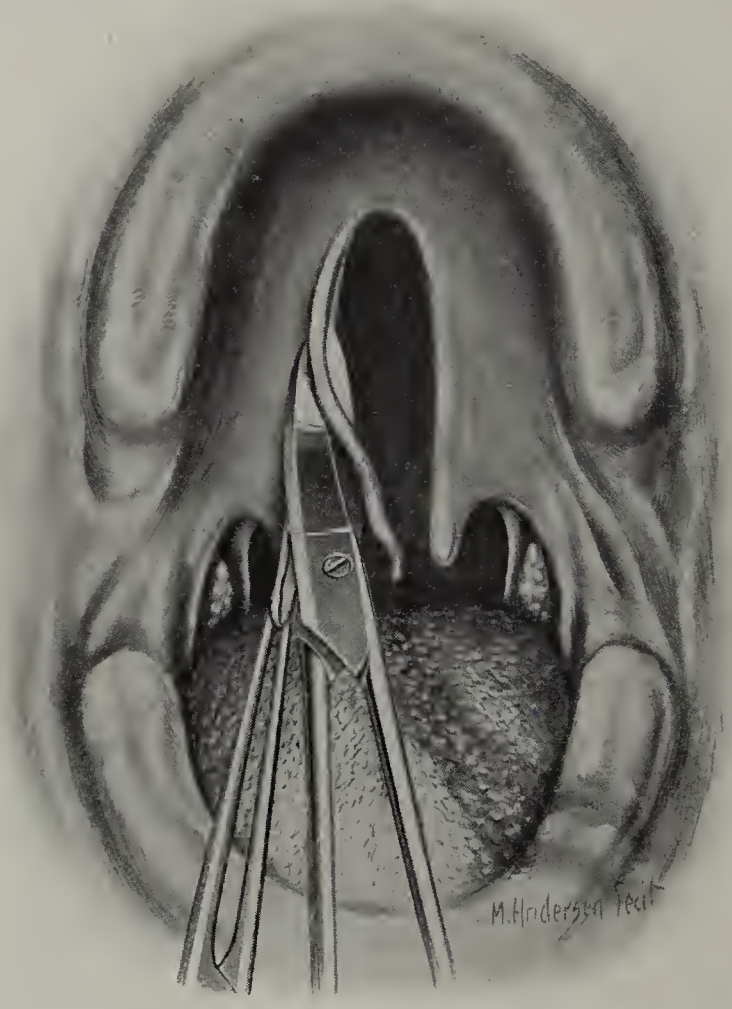


Fig. 9.—Paring edge of cleft with curved scissors. Grasping forceps at uvular half, render margin taut and roll it toward oral side.

must be made to give the necessary relief; otherwise the parts will slough or pull apart.

From my experience with many hundreds of these cases I have learned that the real test of the operative result usually comes some days after operation. These parts are wonderful in their ability to resist infection if treated with reasonable surgical care, but when the mucoperiosteal tissues have been lowered from the sloping sides of the palate walls and brought together in the central line there is necessarily a space between the bone and periosteal surfaces. If the flap borders unite promptly with sufficient strength and blood supply so that when the parts draw back again to be reunited to the denuded bone surfaces the tissue granulation through the central line can keep pace with it, then the result will be complete union; otherwise a partial or complete failure will result.

DR. JOSEPH RILUS EASTMAN, Indianapolis: We would benefit greatly if all operators would give us complete, truthful reports about cleft palate end-results. It is amazing how difficult it is to get reliable statistics as to the final results, relating especially to phonation. It has leaked out here that several gentlemen have done the Langenbeck operation in the same case several times. It may be stated as a fact that the most skilful palate surgeons in the world not infrequently do more than one operation on a single cleft palate. Many surgeons do them over and over again without satisfactory results. Technic in this field may, I think, still be studied with profit.

The difference between omitting lateral incisions and making them is the difference between pleasure and pain. If you make them liberally and cut muscles and blood vessels it will be your painful experience to see, in not a few instances, failure of union because of inadequate blood supply. There may be no infection, still the ischemic wound margins fall apart. If you omit the lateral incision it will be your pleasure as a rule to observe after you have finished the operation a mucosa red and viable. However, because it was said that lateral incisions are to be avoided when possible or to be made as small as possible, that does not imply that they are to be entirely abandoned. One does not often need to make a big incision. A small incision made in a line of tension is often of great service; then, too, a large lateral flap may be raised through an incision only big enough to admit the narrow knife blade, the separation being accomplished by moving the blade pendulum-like, the point traversing a wide arc. As to the possibility of bringing the lateral flaps together, Mr. James Berry has said he would be grateful to any one who would bring him a case of cleft palate that could not be so corrected. It is well to recall our elementary principles of histology and physiology. Do not we want all the blood available in any plastic flap anywhere? Before I began to avoid long lateral incisions and injury to arteries I felt very much discouraged about my cleft palate surgery, but since I have learned to conserve the blood supply, my results are improved to such a degree that I can undertake such work with pleasure and confidence.

INTESTINAL ADHESIONS

BOWEL PROTECTION *

W. B. BRINSMADE, M.D.
BROOKLYN

It seems to be an accepted fact that intestinal adhesions may occur after any abdominal operation. We recognize bacterial invasion, trauma, blood clot and irritation of the peritoneum as the causes of intestinal adhesions. We are unable to control bacterial invasion due to disease. Modern operative technic is able to prevent the contact invasion of bacteria from stumps and diseased areas to a certain extent. Trauma to the intestines may be minimized by following the best possible technic. We have left, then, irritation to the peritoneal coats of the intestine, which so often accompanies operation, as the element of danger which should be eliminated. The prevention of injury to normal organs lying adjacent to the field of operation is the phase of the subject which I desire to bring before you.

EFFECTS

Intestinal adhesions may or may not cause serious symptoms. It is not always possible to draw positive conclusions from a fluoroscopic examination or from a roentgenogram of the intestines loaded with bismuth. What appears in the pictures as a mass of dense adhesions may not have caused very definite symptoms. The gallbladder and stomach may be adherent

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

and give practically no distress in one case, while a similar condition may bring about chronic invalidism in another case. In many instances the small intestines have been found to be bound together and still functioning fairly well. So, too, we have incidentally recognized some cases of angulation of the sigmoid which have caused no symptoms. Therefore, as a general statement, we may say that intestinal adhesions are not of themselves necessarily productive of harm, at the same time acknowledging that very slight adhesions may lead to a condition of marked invalidism and danger. Certain individuals seem to create adhesions in the abdomen more readily than others.

PREVENTION

Admitting the frequency of intestinal adhesions after laparotomy, and recognizing that adhesions between the omentum and abdominal peritoneum follow many incisions through the abdominal wall, and that operations on all hollow viscera are followed by localized peritonitis, I was led to the consideration of methods of prevention and the question of protection to the intestines not in immediate contact with the site of operation.

It is interesting to note the diversity of methods employed by various operators. During a trip in Germany in the summer of 1912 I remarked that no moist pads or gauze were used. Everything was dry. Several surgeons were seen to use ten strips of gauze a yard wide. One surgeon would have the bowel packed off. Another, while he had one pack in the abdomen, left the bowel uncovered, not shielded from touch. In one instance the bowels were unprotected in a case of hysterectomy for cancer. In general, however, the incline of the table was so great that less packing off of the bowels was needed than is the custom with us. One operator I remember seeing, this time not a German, who became so enamored of the packing process that he used 25 yards of gauze before he finished his operation.

I have been convinced for a long time that pads of gauze left in contact with the omentum or peritoneum for any period of time might lead to adhesions, and such a theory was strengthened by the following observations. Four years ago I operated on a young woman suffering from acute appendicitis. The intestines were greatly distended and she took the anesthetic badly. Two moist gauze sponges were placed about the ileum and coils of the small intestine to hold them within the abdomen. The convalescence was normal, but was followed by increasing constipation with pain over the site of operation, which terminated a year later in an acute obstruction, with gangrene of the ileum necessitating resection. The patient finally recovered. About the same time I saw in consultation a young man who had been operated on five days previously for appendicitis. He had had several attacks and the operation was performed in the interval, a sound appendix being removed. Several gauze pads had been placed in the abdomen to facilitate operation. The lad was suffering from acute obstruction. The second operation disclosed the ileum firmly attached to the caput and colon for a distance of 3 inches corresponding to the area which had been in contact with the gauze pads. The third patient traced her illness to a period following an abdominal operation for retroversion. Pain and gastric symptoms developed one month after the operation and she had been invalided for a year. The roentgenogram showed an hour-glass stomach which at operation was found to be fixed and drawn down with the transverse colon by a tense omentum. Freeing the omentum from its broad attachments, well down, relieved the deformity in the stomach and the patient was cured of her symptoms. Inquiry developed that the first operation was performed with the patient flat on her back. The omentum had been pulled down around and covering the intestines and then wrapped around with several gauze pads which were in contact with the intestines and omentum about twenty-five minutes. It seems fair to hold the gauze pads responsible for the complications in these three illustrative cases, even admitting the possibility of local infection and biochemical changes.



Fig. 1.—Intestinal anastomosis showing adhesions due to gauze sponges. This and the following illustrations show dog suspended by hind legs.

With these cases in mind we have eliminated the use of laparotomy sponges as much as possible, never placing them in actual contact with the bowel. One or two large sheets of gum rubber are used next the intestine and the gauze pads placed on the rubber. The rubber slips out of place easily and is a nuisance to the operator but the protection afforded overbalances the disadvantages. To determine the value of this procedure several dogs were operated on, under ether anesthesia, with the same technic that was used on our patients. Moist gauze sponges or sheets of gum rubber were used. All the dogs recovered promptly. They received water the first day and were fed regu-

larly thereafter. A thick covering of collodion protected the external wounds, all of which healed kindly.

Dog 1: Splenectomy and enterotomy. The abdomen was open for one hour and five minutes. Three sponges were in the abdomen at one time. The spleen was removed, the mesentery being ligated in two sections. A wound was made in the intestine near the junction at the ileocecal valve, and repaired with linen Lembert sutures. The laparotomy sponges were in the abdomen thirty-five minutes. The omentum was brought down and spread around the abdomen and the wound closed in layers. Necropsy was performed on the ninth day. The abdominal wound had healed and no sign of peritonitis was present. The omentum was adherent to the parietal peritoneum and to the intestines over the entire abdomen. The site of splenectomy was marked by a mass the size of a hazelnut; no adhesions were around the mass. The coils of intestines which had been packed off were adherent to the adjacent coils. The site of the enterotomy was covered by dense adhesions plastering the neighboring intestine.

Dog 2: Splenectomy and enterotomy. The abdomen was open forty minutes. No laparotomy sponges were used, a sheet of pure rubber gum being substituted. The operation on the first dog was repeated as nearly as possible in the second dog. The necropsy, performed on the ninth day, revealed the abdominal wound healed; no sign of peritonitis; the omentum free. The site of splenectomy appeared as in Dog 1. There were no adhesions along the coils of intestine. The site of the enterotomy was marked by adhesions to one adjacent coil or intestine which was also attached to the omentum. Both of these dogs had been well and active following the operation.



Fig. 2.—Double ovariotomy and hysterectomy done with rubber dam in place of gauze sponges. No adhesions. Intestines have fallen against diaphragm.

Dog 3: Intestinal anastomosis. Three inches of the small intestine were resected; the ends of the intestine were inverted and covered with continuous linen sutures. A lateral anastomosis was then made. The coils or intestine not concerned in the operation were packed away with gauze pads. The abdomen was open for thirty minutes. Necropsy, performed on the ninth day, showed the abdominal wound healed and no peritonitis. The omentum was firmly adherent to the parietal peritoneum not only at the site of incision but throughout the belly. The coils of small and large intestine were found matted together. Figure 1 shows the animal suspended by the hind legs. The intestines are adherent and do not drop up against the diaphragm, being held in place by adhesions. The omentum is seen adherent to the peritoneal wall. Parts of three ribs have been excised in order to show the liver. In spite of the dense adhesions this dog showed no symptoms after operation. He was running around just like any happy well-fed dog and without interference with his appetite. The bowels had moved regularly.

Dog 4: Hysterectomy; double ovariotomy. The intestines and omentum were packed off from the pelvis with gauze sponges for twenty minutes, isolating the parts to be operated on. Both tubes and ovaries were removed, and supravaginal hysterectomy was performed, care being taken to cover the raw surface with peritoneum. Necropsy on the tenth day showed the wound healed; no peritonitis; omentum adherent to the parietal peritoneum throughout the abdomen; strong adhesions between sigmoid and stump of uterus. Two coils of intestine in the neighborhood of the cecum were found bound together by adhesions covering an area of three-fourths inch Fig. 2). There were no other adhesions.

Dog 5: Hysterectomy; double ovariotomy. The operation on Dog 4 was repeated on Dog 5 except that a sheet of gum rubber was used to isolate the intestine instead of gauze pads. The time of operation was the same, twenty minutes. Necropsy on the tenth day found the wound healed; no peritonitis, omentum adherent to the parietal peritoneum only at the suture line; no other adhesions except at one point where a catgut suture remained unabsorbed in the stump of the uterus. This dog was suspended by the hind legs when photographed and the intestines fell into the upper abdomen, being perfectly free to move into the position governed by gravity (Fig. 3).

Dog 6: Gastrotomy. Incision 2 inches along the anterior wall of the stomach. Gauze sponges were placed to isolate the field of operation. The wound in the stomach was closed with catgut suture. Necropsy on the seventh day revealed adhesions of the omentum to the line of abdominal incision and a spread of omentum plastered to the wound in the stomach. A mass of strong adhesions was also present at the junction of the ileum and the caput. The entire colon and sigmoid flexure were loaded with feces, and there was a general injection of the peritoneal coats of the intestine.

Dog 7: The same operation and the same procedure were followed in Dog 7 as in Dog 6 except that a sheet of gum rubber replaced the sponges. Necropsy on the seventh day showed the wound healed; no peritonitis; omentum adherent to line of incision with a small area of wound infection around one of the catgut sutures. The omentum was plastered over the wound in the stomach exactly as in the dog previously operated on. This dog showed at necropsy a decidedly more normal looking abdomen than did the previous one.

At my request the department of surgery of the New York University made experiments on six dogs. All the dogs were eviscerated. In three cases the intestines were protected by gauze sponges and in three cases by rubber dam. The abdomens were open about fifteen minutes. At necropsy adhesions were found in all the dogs, but the report is decidedly in favor of the rubber dam. Evisceration is about as severe a test for this method as one can find.

It would seem fair to conclude from these experiments that, in these dogs at least, sheets of gum rubber did less harm than gauze pads, and to conclude further that if the human peritoneum resembles that of the dog, sheets of gum rubber will do less damage to it than gauze pads. There is nothing original in the use of this material. I first saw it used in the late Dr. Charles Jewett's clinic twelve years ago.

In many instances we have found it possible to avoid putting anything in the way of either gauze or rubber into the abdomen during operation and this I believe to be the best technic of all.

To operate in all cases in which the diagnosis of intestinal adhesions has been made and in which the history points to that graphic picture of intestinal stasis, so well known to us all, will lead to many disappointments. I have seldom been successful in curing the symptoms of patients on whom I have operated for intestinal stasis due to adhesions. There is a class of adhesions, however, which demands operative relief. The adhesions occurring after appendectomy and which give the symptoms of intestinal obstruction, of course demand immediate operation. Whether active peristalsis after operation tends to prevent adhesions or whether stasis of the intestinal tract accomplishes this purpose better, I have not been able to decide. Much has been written on this subject on both sides of the question, ably and forcibly asserted and maintained.



Fig. 3.—Double ovariotomy and hysterectomy showing adhesions due to gauze sponges.

Our greatest success in dealing with adhesions has been with those occurring in the upper abdomen. We have had a number of cases in which the gallbladder and pyloric area were found glued together with adhesions. In three instances this probably was due to cholecystitis occurring at the time of typhoid fever; in other instances it was due to duodenal ulcer. We have followed the plan of separating the organs which were attached and not making a dissection of the rest of the adhesions. In my most successful cases a piece of omentum or omental fat has been grafted between the organs. The cases in which extraneous substances were used as protection to the traumatized intestines were in general not successful. Aristol powder, because of its sticking quality, appeals to me more than any other substance.

Since writing this paper Dr. W. H. Barber has, at my request, carried on further operations at the New York University. He has experimented on six dogs in pairs, doing the operations of splenectomy, gastro-enterostomy and nephrectomy and reports as follows:

The results of intra-abdominal operations and using gauze or rubber dam have not in our hands been as conclusive as in the first series. Indeed it is surprising that no adhesions were found any where in any dog excepting at the posterior abdominal wound or at the site of intra-abdominal operation.

In conclusion, then, I would say that dry sponges do more harm than moist sponges, and that the rubber dam does less harm than moist sponges, and that least damage of all is done to the intestines if packing can be avoided entirely.

117 Montague Street.

ABSTRACT OF DISCUSSION

DR. A. S. LOBINGIER, Los Angeles: The speaker has told us intestinal adhesions may exist for a long time without the patient having any serious embarrassment. A certain number of adhesions will result after nearly every operation. These usually disappear in the course of two or three years. There are important points in the refinement of technic and in the method and system by which we proceed with an abdominal operation which seem to me should always be kept in mind. Intensifying the anesthesia as we open the abdomen and decreasing it after we have everything settled and the field exposed are of prime importance in abdominal operations. We must allow the anesthetist to help us in reducing the trauma. The surgeon should plan his operation with such system and method as to know what he is going to do and do it quickly and deftly and avoid unnecessary handling

of viscera. There are some cases in which the omentum is more involved and a larger serous surface is exposed than in others. Where we have to expose extensive surfaces of endothelium and it becomes necessary to put back large coils of intestine as in hysterectomy, it becomes a very much greater problem than in a simple appendicitis how we shall protect the endothelium and prevent adhesions. Since there has been a great reduction in neisserian infections, since we know how better to manage all pelvic, gastric and colonic infections, we may expect a decidedly decreasing number of adhesions in the abdomen. A number of months ago I wrote a letter to some twenty prominent American surgeons who had large clinics, as to what their experience had been in the use of iodin in the preparation of the skin and its effect in producing adhesions in the abdomen, brain and large joints. Practically all of them answered. A New York surgeon of large experience had abandoned its use because he thought three deaths in their clinic could be directly traced to adhesions resulting from its use. A representative surgeon in the West considered it a very effective and searching germicide which probably became a neutral iodid in its reaction with the blood. A majority of the surgeons favored its use, but all urged careful towelling off of the skin surface from the endothelial field. Several years ago in a visit including the principal clinics in Canada and the Eastern United States, I was astounded to see iodin used in almost every clinic I visited. It was used freely, with apparently little thought of the danger to the endothelium of the joints and intestines. I should like to emphasize the point Dr. Brinsmade has made that we should avoid needless trauma and antiseptics of any kind; but where we cannot avoid a certain amount of handling, in so far as possible we should minimize the trauma by handling viscera with fragile endothelial covering just as delicately and as little as is consistent with honest and thorough work.

Dr. A. F. Jonas, Omaha: Peritoneal surfaces, visceral and parietal become adhered to one another with surprising rapidity and in varying degrees of firmness. The adhesions may be limited to single points or be universal, involving apparently all intestinal surfaces. They may be of a most disabling character, threatening life in the face of apparently moderate adhesions, and again they may be universal and yet intestinal functions may appear to be retarded to a very limited degree. We may be no more amazed at the most extensive and rapid intestinal and visceral agglutinations than at the rapid disappearance of the same. In the one case, very extensive adhesions may be beneficent, and in the other they may be fatal. The clinical manifestations bear no relation to the extent and degree of the adhesions. We have learned that they might be life saving or life destroying according to the mechanical obstacles.

The most common irritants as they concern us are chemicobacterial and mechanical. The first is usually preoperative and has to do with the primary pathologic process and the second usually depends on the surgical manipulations and is postoperative. Considering postoperative adhesions, assuming that we have aseptic, nonadherent surfaces to deal with, we must plan every abdominal operation so as to insure a minimum amount of handling and pulling on the organ or organs that may be the object of operation. The incision should, as nearly as possible, be immediately over it. It should be ample and, when indicated, the gentlest manual exploratory search for other pathology than the one of our primary attack should be quickly carried out. The surgeon must know his landmarks in order to insure unnecessary meddling and that he may quickly bring to the surface without undue traction the structures that he seeks. He must avoid evisceration. The prolonged exposure to the air of the intestines makes them soggy and soon dulls the peritoneal surfaces, producing one of the factors that we wish to avoid. Too many intra-abdominal pads compress and may contuse the intestinal walls, threatening endothelial injury. The repeated introduction and withdrawal of gauze packs during the intra-abdominal operation traumatizes peritoneal surfaces and visceral walls.

The method of protecting the intra-abdominal pads with large sheets of rubber is undoubtedly of value, and they no doubt produce less irritation than free gauze pads. If they can be so adjusted that they will hold all intestines out of the field of operation they certainly fulfil an important function. The smooth rubber surfaces will undoubtedly cause less peritoneal friction than other sponges. They certainly deserve an extended trial.

Dr. L. S. Pilcher, Brooklyn: How often have we seen apparently an absolute forgetfulness on the part of an operator that it was possible to insult the peritoneum? It has been manipulated and pulled on and subjected to friction as if it was nothing more than a piece of smooth glass. Let us not forget, however, that it is one of the most sensitive of surfaces and that the amount of surface that is presented to us is such that our manipulations may do it most extensive damage. One of the cardinal principles in all surgical work is that to obtain an end the least amount of violence required to attain that end should be used. On the other hand, is it not true that to obtain an important end no amount of violence that is essential to accomplish this end shall be spared? These two principles, therefore, every surgeon must always have in mind. It may be best to use abdominal packs or do without them, but whether we shall do without or use many of them or a moderate amount must depend on the judgment of the individual operator and the particular case in hand. Are adhesions to be avoided? Not always. Often adhesions are that for which we seek and for which we are operating. Adhesions may be temporary and vanishing, due to small superficial endothelial abrasions, or they may be permanent, due to loss of the endothelial layer and exposure of the deeper strata. Added to this are the permanent adhesions due to bacterial invasion, which are the source of many extensive adhesions often encountered. As to the particular suggestion of Dr. Brinsmade to lessen the amount of irritation to which the peritoneum should be subjected when opened, such particular suggestions are not new to us. We have seen the peritoneal surface smeared with unguents and baptized with oils and various membranes spread on, and even powders scattered over the peritoneal surface to prevent adhesions, but as we know now, most certainly to produce adhesions. The use of the rubber sheet suggested by him certainly has the advantage of simplicity but it may add difficulty to the technic. The laboratory experiments which have been presented to us do not seem to be absolutely convincing.

Dr. W. I. Terry, San Francisco: For over two years we have been using Pope's solution of sodium citrate and sodium chlorid and we have been much pleased with the effect of it. We use a hypertonic solution in large quantities which appears to minimize adhesions, with most excellent results, as several relaparotomies have shown.

Dr. John William Draper, New York: I assisted Dr. Barber in doing the work on the last series of dogs mentioned by Dr. Brinsmade, and wish to say that it served to emphasize in our minds very strongly the necessity for using the utmost gentleness, and the protective method described by him was particularly efficacious. We should not lose sight of the fact that there is an important biochemical element in this matter of adhesion formation, and it seems to us, and this Dr. Brinsmade has already said, that the ratio between the fibrolytic element and fibrogenetic element in the individual being operated on is the real, fundamental factor, and this, as yet, we have no means of measuring. This does not detract from the importance of handling the tissues with the greatest gentleness, but rather adds to it.

Prevention.—The prolongation of life by the suppression of preventable disease is of much greater value to the state than the cost of the means employed. To ward off the calamity of disease and to prevent the spread of a pestilence is to increase the sum of human happiness and to elevate the race.—*Illinois State Board of Health.*

ACANTHOSIS NIGRICANS AS AN INDICATION OF INTERNAL MALIGNANCY *

A. J. MARKLEY, M.D.

DENVER

There is probably no clinical picture of cutaneous disease more striking and impressive than that presented by the typical case of acanthosis nigricans. Because of its rarity, however, and the dominant character of its skin symptoms, interest in and knowledge of this disease are practically limited to dermatologists. Yet it possesses certain features which render some acquaintance with it of importance to the general profession, and it is toward these particular features, rather than toward detailed consideration, that attention is here directed.

The disease is characterized by the definitely regional and symmetrical development of varying degrees of pigmentation and of multiple hard and soft papillary growths, the sites of predilection for these changes being the sides and back of the neck, the face, the axillae, the genitocrural region, the backs of the hands, the palms, the mucous membranes of the mouth and the vulva, and at times the orifices of the ears, nose and eyes.

More important, however, than the interest attached to it as a rare and striking disease of the skin, is its very frequent association with some form of internal malignancy. So well established is this association that acanthosis nigricans occurring in an adult is regarded by dermatologists as definitely indicating the presence of an internal malignant process even though it cannot be clinically demonstrated.

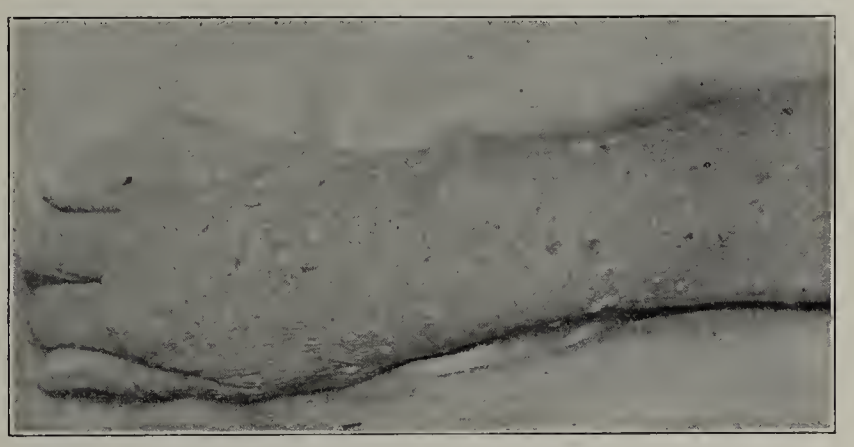


Fig. 1. — Papillary excrescences on backs of hands and extensor surfaces of arms in a case of acanthosis nigricans.

Pollitzer, who, coincidently with Janovsky, originally described it, gave a most comprehensive review of the subject before this section six years ago,[1] explaining in detail its significance and the importance of its early recognition. The desirability, however, of keeping before the profession facts of any kind, even those rarely elicited, which will assist in the earlier recognition of malignant disease, seems sufficient justification for again directing attention to the characteristic features of acanthosis nigricans, emphasizing its relation to internal malignancy and recording a typical case.

CLINICAL FEATURES

Two distinct forms of the disease are recognized: the adult or malignant, characterized by some serious internal disorder, particularly malignancy, short duration, intensity, and wide spread of the skin symptoms, which are at times marked by exacerbation and remissions, even to complete disappearance; and the juvenile or benign, characterized by little or no disturbance of the general health, less marked development and spread of the skin symptoms, which after a short time became stationary and persistent.

The mode of onset varies, in some cases intense itching and pigmentation about the neck and face being the first symptom; more commonly the first evidence has been an eruption of common warts over the backs of the hands and the forearms. Further development is usually rapid, involving symmetrically the regions above mentioned. The papillary growths vary within the widest limits, from small hard warts, the size of a split pea, on the back of the hands, to large soft condylomatous masses in the axillae or groins and long filiform projections on the tongue. The palms and soles may be involved in a diffuse horny thickening, causing much limitation of movement and giving the hands a claw-like appearance; the nails show nutritional disturbances and the hair may be similarly affected.

Quite as important as the papillary changes is the pigmentation, which is a most conspicuous feature of the disease, varying from a dirty grayish discoloration through shades of brown to black. It may precede the appearance of papillary overgrowth and affect areas in which the skin is only thickened and presents the appearance known as lichenification. The distribution of the two processes is, however, ultimately the same, except that the mucous membranes are never involved in the hyperpigmentation.

The development of warty and condylomatous masses on the lips, within the cavity of the mouth and along the ciliary borders causes the patient great discomfort and distress and constitutes a most striking feature of the disease; but with the exception of itching, there are no subjective sensations complained of.

The time occupied in the development of such symptoms as above outlined is from a few months to two years, the course usually being terminated by the associated malignant process. The juvenile form, however, as previously stated, may persist indefinitely without untoward results.

In 1909 Pollitzer was able to collect from the literature 52 cases and since that time, about 20 additional cases have been reported, but this certainly does not represent the entire incidence of the disease. Of Pollitzer's list of 52 cases, 35 were of the adult type, the patients being over 20 years of age; in 28 cases, or 80 per cent., the presence of malignant disease could be definitely shown or was highly probable; and the proportion of malignant cases among those reported since that time would tend to make the percentage higher rather than lower. The organs affected have been in their order of frequency, the alimentary tract, the uterus, the breasts and in one instance, recently reported, the lung.[2]

A majority of the cases have occurred in women at that period of life in which malignancy is most prone to develop; that is, between 35 and 50. A typical malignant case, however, has been observed, associated with a malignant uterine neoplasm (deciduoma malignum), in a girl of 19.[3] The appearance

1. Pollitzer, S.: Acanthosis Nigricans a Symptom of a Disorder of the Abdominal Sympathetic, THE JOURNAL A. M. A., Oct. 23, 1909, p. 1369.

2. Petrini de Galatz: Ann. de dermat. et de syph., 1914, No. 6, p. 331.
3. Spietschka: Arch. f. Dermat. u. Syph., 1898, xliv, 247.

of the characteristic features of the disease may precede by some months, or even longer, the development of symptoms referable to the associated internal disorder. Klotz' case[4] is an example in which a sarcoma in the pelvis was not discovered for almost two years after onset of the skin disorder. To this list of the adult malignant form, I wish to add the following.

REPORT OF CASE

Patient.—Mrs. T., aged 54, referred by Dr. J. N. Hall, Jan. 21, 1915. Previous history unimportant, except for indigestion during many years; two years ago sudden pain in stomach and sharp hemorrhage necessitated operation and excision of an ulcer, since that time no digestive disturbance aside from constipation. Has three children, never any pelvic trouble.

Present Illness.—This began eight months ago; first noticed an intense itching over abdomen, next sudden appearance of numerous warts over backs of hands and forearms, soon followed by discoloration about neck and face. Four months ago growths began to appear on tongue and palate; since that time progress has been very rapid.

Examination.—General condition good. Heart, lungs and kidneys apparently normal. Blood pressure 120. The backs of the hands and the extensor surfaces of the arms (Fig. 1) are occupied by innumerable hard papillary excrescences of all sizes up to that of a pea; about the wrists the skin is thickened and fissured and the affected parts are here a dark grayish color. The palms are greatly thickened and almost horny, giving to them a translucent yellowish hue. The axillae are deeply pigmented and there are many soft filiform warts. The sides and back of the neck and the shoulders show pigment changes, ranging from gray to a sooty black, and there are numerous papillary growths over the whole of this region (Fig. 2). The face shows pigmentary changes and few warty growths on the forehead; there is also a growth of coarse white hair. The ciliary borders are granular and there are many large soft papillomas. The auditory canals and the nasal orifices also are surrounded by a rim of small filiform growths. The mucous membrane of the mouth, however, is the site of the most extensive changes. The vermilion borders of the lips are wholly occupied by small and large papillary excrescences; the dorsal surface of the tongue is covered by long filiform projections; the hard palate is completely filled in by a dense condylomatous mass until it is level with the superior teeth, the outer surfaces of the gums above and below are involved and a condylomatous growth protrudes from each interdental space. The inner surfaces of the lips and cheeks are but slightly affected and the fauces and pharynx are entirely spared.



Fig. 2.—Pigment changes and papillary growths over the back of the neck and shoulders.

The genitocrural region is not involved in the papillary overgrowth, but is deeply pigmented. The scalp is dry and scaly and the hair falling rapidly.

With such a clinical picture, a diagnosis of acanthosis nigricans was made, and in view of the history of ulcer of the stomach, a cancer of that region was predicted. A most careful examination by Dr. Hall, however, failed to reveal evidence of any intra-abdominal growth; nevertheless we felt justified in having the abdomen opened, and this was done by Dr. Freeman on January 27. Much to our chagrin, after a most careful search, absolutely nothing was found in the abdomen, except a single gallstone of very unusual shape. For a few weeks following the operation, the patient seemed much better, and hope was entertained that removal of the gallstone would be of benefit, but soon the lymphatic glands below the clavicle on each side began to enlarge, indicating, in our belief, the existence of a malignant process somewhere within the cavity of the chest. A careful roentgenographic examination failed to reveal anything in the chest, but the further progress of the case seems, notwithstanding, to point in that direction. Since glandular involvement has increased, the patient has become more cachectic, and no evidence has developed of difficulty with the stomach, which would certainly have occurred had that organ been the seat of a progressive malignant disease.

4. Klotz: Jour. Cutan. Dis., 1913, xxxi, 306.

THEORIES AS TO ETIOLOGY

A satisfactory explanation of the pathogenesis of acanthosis nigricans cannot be given, although it is generally assumed that it is in some manner dependent on disturbance of the abdominal sympathetic, the "mechaniconervous theory" of Darier. This theory assumes the production in the abdominal cavity of pressure from primary or metastatic malignant neoplasms, and a consequent functional disturbance of the nerve structures in that region. It is difficult to reconcile this theory with the juvenile and other benign cases in which no neoplasm is present; moreover, the great frequency of intra-abdominal neoplasms, accompanied by localized pressure, should more often lead to the development of acanthosis nigricans if such pressure were really the cause of that disease. It is also evident that acanthosis nigricans may be associated with malignant growths elsewhere than in the abdominal cavity, as shown by the case of pulmonary cancer previously referred to and my own case.

Porias, in a recent article,[5] develops the theory that the skin dystrophy is brought about by a derangement of certain internal secretions on the action of which the normal condition of the skin is dependent, the active factor in this derangement being some debilitating condition, the most common of which is cancer. Such a theory is not inconsistent with rapidly accumulating evidence of the relation of disordered internal secretions to the production of various dystrophies, and particularly to pigmentary changes; and would more nearly explain the juvenile and other benign cases. In this connection may be cited the case reported by Juan de Azua[6] of an adult in whom no evidence of malignancy could be discovered but who was much benefited by administration of salvarsan, suggesting that syphilis may therefore be the disturbing factor in some cases.

5. Porias: Wien. klin. Rundschau, 1913, No. 38, p. 671.
6. Azua, Juan de: Abstr., Jour. Cutan. Dis., 1913, xxxi, 966.

Whatever may be the direct cause of the disease, however, there is no doubt of the clinical fact that in a large majority of acquired cases of acanthosis nigricans in adults, there is present, earlier or later, some form of internal malignancy. Most commonly, the growth is within the abdominal cavity and may be amenable to modern methods of treatment, the possibilities of which have been greatly increased by recent advances in Roentgen-ray technic for both diagnostic and therapeutic purposes.

CONCLUSIONS

1. The development of acanthosis nigricans in the adult is an indication of some serious internal disorder, the most frequent of which is cancer.

2. The frequency of this association justifies the assumption of a diagnostic relation between the two conditions.

3. Notwithstanding its rarity, acanthosis nigricans should be promptly recognized, and an effort made to locate and if possible, to remove an associated malignant growth, even though no other evidence of its presence exists.

Metropolitan Building.

ABSTRACT OF DISCUSSION

DR. OLIVER S. ORMSBY, Chicago: In the report of cases which Dr. Markley spoke of, prepared by Dr. Pollitzer, was one of the juvenile type in which I was interested. I saw that patient eight or nine years ago, and this case was classical of the juvenile type. The patient consumed an amount of spirits which was entirely out of proportion to anything I had ever seen in a young person. After a single examination he disappeared. Last year I sent for him to appear at the annual meeting of the American Dermatological Association, and although he preferred not to come he reported himself as well. It is an interesting fact that the type occurring in children is benign, while the adult form is malignant.



Fig. 3.—Extensive changes in mucous membrane of mouth.

Mixed Races.—The words "hybrid" or "mongrel," terms of reproach as usually applied to the human race, relate commonly to the union of widely different peoples. But the question of "race or mongrel" can not be settled by *a priori* assertions as to superiority of pure over mixed races. There is no general law that mongrels are sterile, inert and nonresistant. It is to be determined by a study of the results. Experiments have no pertinency unless best is mated with best, and even then they might prove conclusive only if many times repeated. And no result shown in individuals need be valid as a general law of crossing. It would apply only to the particular types in question. No important information could be expected from the study of the first generation. One would need to know the nature of the recessive characters involved as well as of the dominant ones. The final mendelian disposition of mixed race characters must determine the final answer.—D. S. Jordan in *Pop. Sc. Month.*

ILLUSTRATIONS OF THE HISTORY OF LEPROSY *

DOUGLASS W. MONTGOMERY, M.D.
SAN FRANCISCO

The term "leprosy" is now restricted to a chronic infectious disease caused by Hansen's bacillus, which has a special tendency to involve the skin and the peripheral nerves. This special involvement of the skin and the peripheral nerves produces external symptoms of a coarsely repulsive character, in the main easy of recognition. This is one of the peculiarities that renders leprosy so interesting historically, as even imperfect descriptions by men untrained in clinical observation enable it to be traced back through the ages.

Leprosy, as we now know it, is a well-defined disease with definite and marked symptoms, and a precisely determined cause. This precision, however, is an acquisition of recent years. Previous to the work of Danielssen and the elder Boeck in 1842, the symptomatology of leprosy was not at all fully known. The hazy ideas of the middle ages, and in fact of all previous ages, still persisted. This late clinical study of the disease was a natural historical sequence. Almost all disease, especially that running a chronic course, constituted, up to the end of the eighteenth century, an inextricable jumble. Then began the segregation into groups.

Bichat (1771-1802), by his investigations in pathologic anatomy and in physiology, may be considered the founder of modern medicine. Quickly following him came Laënnec (1781-1826) with his studies in the auscultation of the chest. Ever since, there have not been wanting brilliant men throughout the centers of Western civilization who, by clinical observation, by necropsies and by the shrewd application of the natural sciences, have gone on deepening and broadening our knowledge of life both in health and in disease. At first these observers did not study leprosy, because other material, under their hand, requiring investigation, was abundant, and no leprosy was then present in those cities in which the study of medicine was most active. Students, however, were being continually drilled in the habit of clinical observation and pathologic investigation, and when Danielssen and Boeck, so disciplined, undertook the delineation of a group of lepers in Norway which constituted the chief focus remaining in civilized Europe from the great epidemic of the middle ages, they, in 1842, were enabled to give the disease a well-rounded, satisfactory, scientific standing, as an independent morbid entity.

Shortly after Koch's discovery of the tubercle bacillus (1882), Armauer Hansen discovered the presence of an acid-fast bacillus in the lesions of the abovementioned group of cases in Norway. This bacillus has been demonstrated as present so constantly and so abundantly in most of the lesions of leprosy that it now constitutes one of the best examples of this kind of parasitism in the tissues.

It is clear that the conceptions of this disease by a well-educated physician of the present day, having at his hand all the correlated knowledge represented by the work of Danielssen and Boeck and their successors, is very different from the hazy ideas previously exist-

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

ing. Hazy and indefinite as the ideas of the older physicians and laity were, they are none the less interesting both in regard to what was true and what was false or faulty.

THE GREEK AND ARAB CONCEPTION OF THE WORD "ELEPHANTIASIS"

In history, each age has its own way of regarding every question, and leprosy is no exception to this rule. The Greeks had a fine plastic imagination, and the human form and its grace either at rest or in motion interested them mightily, as they there saw the highest expression of beauty. Beauty and ugliness, however, are two aspects of the same subject, and naturally, therefore, the Greeks were interested in leprosy, the most deforming of diseases, and it was quite characteristic of them, as we shall see later, to give it the name "elephantiasis."

ELEPHANTIASIS

The word "elephantiasis" with us at the present day means an overgrowth of the skin and the subjacent connective tissues, principally affecting the lower extremities, and due to inflammatory engorgement and blocking of the lymphatic system. Its dominating clinical idea is pillowlike, gigantic enlargement, usually of one lower limb, making it resemble that of an elephant. This kind of enlargement may be due to a number of different causes. In this country it usually occurs as a consequence of chronic streptococcic infection, that gives rise to repeated attacks of erysipelas. This is generally associated with ulcus cruris but not necessarily so. In some tropical countries, an endemic disease, filaria, causes enormous enlargements of the legs or of the scrotum. Elephantiasic enlargement may also be due to direct blocking of the lymphatic circulation, as by tumors, or by cicatricial bands. For instance, immense enlargement of the pudenda may be occasioned by ulcers and cicatricial contractions, usually syphilitic, in the rectum.[1]



Fig. 1.—Tubercular leprosy in a Chinaman. The disease has caused blindness, and the eyebrows and eyelashes have fallen out. Quite characteristically the hair of the scalp has not been affected.

ELEPHANTIASIS OF THE ARABS

As a consequence of the conquests of Mohammed and his followers, the Arabs grew to be a wealthy and highly cultivated people, and as one of the expressions of this cultivation, became interested in medicine. As they lived in a country in which filaria was prevalent, they saw much of the enormous enlargement of the lower extremities and scrotum due to this infection. These enlargements, together with any others that might occur, they assembled under one name, *da al-fil*, elephant foot. Their conception of elephantiasis included about what we accept under the same term, the only difference being, and it is a great one, that the Arabs grouped all the cases together under their gross external appearances, whereas we classify them as far as possible, under their etiologic heads.

ELEPHANTIASIS OF THE GREEKS

The Greek conception of the term "elephantiasis" as applied to leprosy was quite different from that of the Arabs and of ourselves, and took up a phase of leprosy little regarded in modern medicine.

As mentioned before, the infection in leprosy is a peripheral one, and attacks the skin and creeps along the nerves. As it invades the nerves it causes paralyses, sensory disturbances and atrophies in the regions supplied by those nerves. For instance, ulcers, principally of the foot, are a frequent accompaniment of leprosy. Some of these are perforating ulcers due to interference with the trophic nerve supply. Others are from burns or other injuries. Those from burns are particularly frequent, because of the loss of temperature sense, that occurs so early in leprous neuritis. These ulcers often become the seat of streptococcic infection, and consequently there supervene more or less severe attacks of erysipelas, with integumentary thickening and deformity of the foot. In addition to the foregoing, the trophic disturbances of leprosy often involve the deeper structures, and cause shortening of the toes and of the foot owing to absorption of the bones.[2] As the leprous neuritis advances upward, it causes paralysis and shrinking of the great muscles of the calf that move the foot. There consequently is often produced a clumped stumplike foot and a thin leg. The loss of flexibility of the foot and leg causes a rolling heel and toe walk, and the paralyses occasion a loose fling at the knee and hip, which in a measure resembles the trailing gait of an elephant.

The Greeks and Arabs, dwelling in warm countries, and wearing scanty clothing, saw these deformities much more frequently than we of the temperate and colder climates would. In fact, the lepers themselves would attend to the exposure of their own limbs, as almost all lepers are poor, and a poor lame leper would naturally be a beggar, who would expose his deformities in order to excite pity.

It can therefore be readily seen that two conceptions of the word "elephantiasis" arose in neighboring peoples. The one conception, prevalent among the Greeks, referred principally to the deportment, and included leprosy and doubtless many other affections having a clump foot and trailing, awkward gait. It was just such a metaphor as the Greeks with their fine plastic imagination would appreciate. The other conception

1. Tomasczewski: Elephantiasis, Lehrbuch der Haut- und Geschlechtskrankheiten, E. Riecke, 1914, p. 425. Verlag von Gustav Fischer, Jena, Germany.

2. W. Dubreuilh and A. Bargues say that the Greeks gave this disease the name "elephantiasis" because of the stump foot that is so frequently present (La Lepra de la Bible, Lepra, Nov. 1914, p. 14). A German author, whose name just now escapes me, speaks in the same connection of "Der schleppende Gang." Undoubtedly both considerations entered into the conception.

of the term "elephantiasis," prevalent among the Arabs, referred principally to gigantic and deformed overgrowth, and included, among other diseases, the affection that we now know to be occasioned by the *Filaria sanguinis hominis*. It referred to the gross enlargement of the leg, and was appropriate. It had none of the fine perspicacity of the Greeks, but it was just such a metaphor as a people who forbade all plastic art would make. Neither term was precisely defined, but precise definition was not a characteristic of those times.

THE ERA OF THE CRUSADES

At the time of the crusades (1095-1270), and under the influence of religious fervor, any evident bodily affliction, such as lameness, was considered conducive to the soul's salvation; and as spiritual elevation, as contrasted with carnal corruption, was then the serious business of life, one can see what a treasure such a deforming ailment as leprosy became. St. Giles, after whom so many leper houses in England were named, was crippled.[3] His infirmity was due to a wound, not to leprosy, but he did not wish to be cured because of the virtue accruing from the maceration of the flesh, and this illustrates the attitude of the age in regard to such afflictions. The Knights Templar was the most powerful monastic military organization that arose under the influence of the crusades. It became so rich and powerful as to constitute a threat to more than one throne in Europe. It has been said that in order to become a candidate for the Grand Mastership of this organization, it, at one time, was necessary to be a leper.

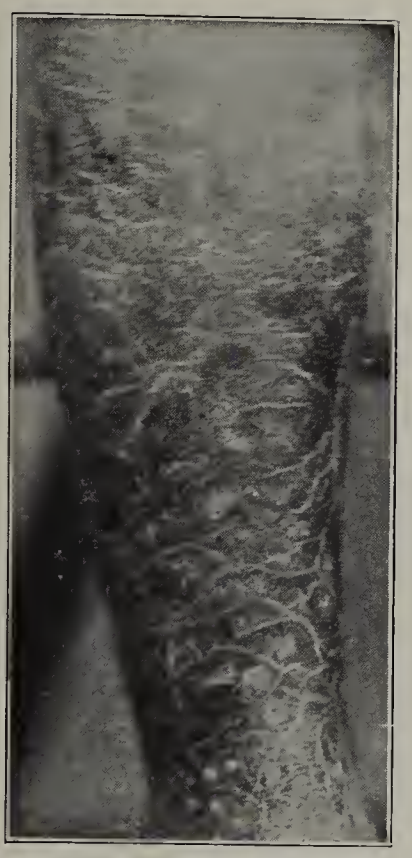


Fig. 2. — Alligator-leather appearance of the posterior surface of the leg in a leprous Chinaman. Below are seen some white epithelial disks covering lepra tubercles.

If it is desired to obtain an idea of how people thought in the middle ages, apply to Rabelais, the Great Mocker, who lived and wrote when the spirit that animated that period was declining, and the brilliant Renaissance was dawning. He describes a renowned disputation between an Englishman, Thaumaste, and Panurge. This disputation was carried on wholly without words and entirely in the sign language. During its course Panurge drew from a pocket a piece of white ox rib and two sticks, the one black, the other red, which he struck together, making a sound like the lepers of Brittany, but clearer and more harmonious. The physicians and surgeons in the audience thought this sign to indicate that Panurge considered Thaumaste a leper, while the councilors, legists and decretalists interpreted the action to mean that leprosy, as the Lord had formerly held, was a kind of human felicity.[4] This shows that when Rabelais wrote this chapter, forty-six years after the discovery of America, this way of regarding disease as a distinct moral and spiritual advantage still persisted, but was old fashioned, and was a subject for mocking laughter. Under such a favoring attitude of mind as existed at the time of the Crusades, assisted by the general lack of hygiene of a low form of civilization, it is no wonder that leprosy increased mightily in Europe.

ERA OF THE REFORMATION AND OF THE RENAISSANCE

This era is most attractive in regard to leprosy. It was a time when the Bible excited universal interest, and when vast numbers of people accepted what was written in it with unquestioning faith. By a curious combination of circumstances, it became the principal political document in one of the bitterest political fights ever experienced, which culminated in the Thirty Years' War. During all this time and for long afterward, the Bible was studied with a fanatical bias that we can hardly appreciate. Because of the mistake in the translation of a word in it, and a further mistake in applying Biblical precepts to the chronic infectious disease of which we are speaking, leprosy came to be regarded as a highly infectious malady. In order to understand just what happened, it is necessary to hark back to a time when the Jews lived under a theocratic government, and so to ascertain the true meaning of the Hebrew word *Zaarath*, that was translated by the Alexandrian Jews as the Greek word lepra.

THE HEBREW WORD "ZAARATH"

Under Moses and his followers, the Hebrew theocracy ruled the people as only a theocracy can. Under this curious government, a tribesman could be arbitrarily called before a priestly tribunal to undergo an examination as to whether he was Zaarath, or as McEwen has translated it, "taboo."[5] This tribunal was uncontrolled, it passed on the evidence and issued the sentence, and if the defendant was declared taboo, he had no recourse but to submit. Under such circumstances, the evidence was sought in minute trivial appearances on the skin, the presence of which was largely a matter for the observers to decide, and had no relationship whatever to any definite disease process. As Unna has pointed out,[6] Zaarath had a theological, not a medical meaning, and it is time wasted to try to define the word as appertaining to any one disease or group of diseases. Zaarath remained, as it was intended it should, a vague, indefinite something, usually connected with an assumed external bodily defect, the possession of which entailed the banishment of the afflicted person from the community. An appreciation of the utter hopelessness and abandonment of such exile can only be acquired on realizing that in uncivilized life everything outside of the community is strange and inimical.

This word, Zaarath, naturally was embodied in the Jewish religious writings.

On the founding of Alexandria, many Jews settled in that city, and they took with them their religious writings. As time passed, Greek became their everyday language, and the religious writings were translated into that tongue, forming the Septuagint

3. Fletcher, W. G. D.: The Lepers of Shrewesbury, Without the Camp, January, 1912; abstr., Lepra, June, 1912, p. 222.
4. Pantagruel, Bk. ii, Ch. xviii.
5. McEwen, E. L.: The Leprosy of the Bible; Its Religious Aspect, Biblical World, October, 1911.
6. Unna, P. G.: Ein typisher Fall von Papierwissenschaft, Lepra, February, 1913.

translation of the Old Testament.[7] In this the Hebrew word Zaarath was rendered into the Greek word lepra, meaning literally a scale, and no doubt having a signification as wide and loose as the English expression "dry tetter." It principally included psoriasis, and indeed into the last quarter of the eighteenth century lepra was one of the synonyms of psoriasis. Later the writings called the Septuagint, together with others of Jewish origin, formed the collection called the Bible, that still later assumed a world importance as the principal book appertaining to Christianity, and incidentally, as before mentioned, these writings had a great influence on the European attitude toward leprosy. It was the Septuagint that formed the basis of part of the Latin Vulgate, just as the latter formed the medium for the rendering of the Scriptures into the various European languages. In all of these, the word lepra was carried along.

During the first centuries of the Christian era the influence of these writings must not have been nearly so great as they afterwards became, because only the learned, and they were few, could read them. The spiritual life of the Church was carried on by tradition, and by those few who could read, so that the translation of the Israelitish word Zaarath, taboo, into the Greek word lepra, dry tetter, must not then have done much harm. Its day was approaching, but it was not yet.

The Arab civilization has been already mentioned, and the attention paid in it to the study of medicine. The Arabs, however, were not investigators, they were translators and imitators, and they translated the works of the ancient Greek and Latin authors into their own tongue. Constantin of Carthage, who died in 1087, retranslated these works from Arabic into Latin, and instead of employing the word elephantiasis for the Arabic word *djudsam,* which signified the disease we now call leprosy, he chose the word lepra, the very word the translators of the Septuagint had used to translate the Hebrew word Zaarath or taboo. This is, indeed, the first appearance of the word lepra as indicating the disease we now know as leprosy. These translations of Constantin had a great vogue in the middle ages. In fact, the smashup of the Roman Empire had been so thorough that it was through the Arabs alone and largely through this Constantin that the people of Western Europe became acquainted with the Ancient Greek and Latin authors.



Fig. 3.—Ulceration of the sole in leprosy. From a photograph received through the courtesy of Dr. J. S. B. Pratt, President Territorial Board of Health, Honolulu, H. I.

The year of the discovery of America by Columbus, 1492, is now accepted as the year when syphilis was imported into Europe by Columbus' sailors. This date is also accepted as the close of the middle ages. For years previous to this, leprosy had been gradually disappearing from Europe, and its diminution and gradual extinction may be ascribed, at any rate in part, to the erroneous views of the disease drawn from the Bible.

For years before the actual Reformation, the Bible was becoming more and more read, and by a people uncritical in medical matters. It was perfectly natural, therefore, for them to infer that what was said of Zaarath, or as the translation ran, lepra, was said of the hideously ostentatious disease so prevalent in their midst. And besides this, as we have seen, Constantin, in his translations, had designated true leprosy as lepra. The most rigorous segregation, facilitated by the existence of numerous leper houses, and backed by unquestioned scriptural authority, was instituted against what they considered this very contagious disease. This segregation, together with the increased cleanliness incident to an advancing civilization, was so successful that by the time usually set by historians as the beginning of the Reformation (1517), leprosy was well on the way to extinction in central Europe.

THE ATTITUDE TOWARD LEPROSY IN MODERN LIFE

Much of the kindliness and welcome we receive in this world is due to the pleasantness we radiate from our own person. A benevolent or genial face is an asset, and frequently gives a just reflection of the mind within. Two of the most selfish, ruthless persons I have ever met were, however, provided with benevolent features. In the same way a scowling, hard visage may hide a heart of gold. One of the most sad features of leprosy is the distortion and disfigurement of the features. In tubercular leprosy the eyebrows are changed into two irregular, prominent, hairless rolls, the nose is disfigured with nubs, and in the glabella there form nodules separated by deep furrows, the lips are thickened and deformed, and the cheeks are irregularly indurated and discolored. All this gives a threatening, scowling aspect to the deeply sunken eyes. In leprosy of the nerves of the face, the features are twisted out of shape as a result of paralysis and muscular atrophy. Under no circumstances is such a visage pleasant to look upon, and in superstitious communities, imbued with mysticism, such as were the European countries of the middle ages, it is no wonder that the victims of leprosy were regarded with the greatest horror.

The poor lepers have still another unamiable characteristic. They are particularly thankless for any attention shown them, and they are stupidly indifferent to the horror they excite. When a person is disagreeable and unaware of the fact, it impels many of his neighbors to active aggression. I have often thought that this stupid indifference is possibly the result of a toxin, the same one that possibly causes loss of sensibility of the peripheral nerves. These are only a few of the repulsive features of this repulsive disease, and yet, in my experience, suicide is infrequent among them.

Just the attitude the public of today assumes toward leprosy is difficult to determine. Individual tendencies are so varied that it is hard for one in the midst of a movement to get the general drift. It seems, however, to partake of the general altruism toward the unfortunate. On the part of those scientifically

7. This translation was made under Ptolemy Philadelphus, 284-246 B. C., and later, down to 150 B. C.

trained, the disease has excited a lively curiosity as to its nature, and especially as to its mode of transmission. Among the general public there still remains a great fear of the contagiousness of leprosy, evidently issuing from the erroneous interpretation of certain passages of the Old Testament, and the natural repulsion toward the disease. There is an evident desire to get them quickly gone to a remote place with a wish that they may not be overhasty in their return. As a matter of fact, leprosy is very reluctantly contagious, and must require very special favoring circumstances in order for it "to take." A very modest degree of cleanliness hinders its transmission. As soon as a country becomes well to do and adopts the daily tidiness incident to modern civilized life, leprosy dies out. Although, therefore, the Biblical view of the highly contagious nature of leprosy undoubtedly aided in stamping out the epidemic of the middle ages, in modern life it works an unnecessary hardship on the afflicted, and should give place to a more reasonable attitude, agreeing with the real facts in the case.

323 Geary Street.

SYMPTOMS AND DIAGNOSIS OF LEPROSY

WITH REPORT OF CASES *

HOWARD MORROW, M.D.
AND
A. W. LEE, M.D.
SAN FRANCISCO

The compilation of notes in this paper is the result of study of the lepers in the Isolation Hospital of San Francisco, of private cases and of observation of patients in the University of California Hospital. The thirteen cases of leprosy in the Isolation Hospital are all chronic, and most of them show evidences of all stages of the disease.

Leprosy is a chronic infectious disease that is produced by a semiacid-fast micro-organism which, morphologically, somewhat resembles the tubercle bacillus. After invasion into the human body this bacillus effects changes in it which are of apparent diagnostic significance.

Leprosy must be regarded as a systemic disease, and may, at some period of its case history, implicate any or all of the units of the human body. This statement can be verified by a direct or indirect manifestation of the malady. By an indirect manifestation of leprosy we mean that, in consequence of the long-continued loss of bodily resistance, an intercurrent infection is very likely to occur. By a direct manifestation we refer to those instances in which either subjective or objective variations from the normal condition of the body have resulted from the presence of the lepra bacillus in the various organs, as has been proved by laboratory methods of investigation.

As has been stated, while any part of the body may be involved at some epoch in the course of an average leprosy infection, we feel that it is proper to devote most of the detailed division of this paper to those pathologic changes in the integument which may result from it, and particularly are we of this opinion since the great percentage of lepers is recognized by skin lesions. These cutaneous evidences of leprosy can be grouped under more or less definite clinical types, but it is quite possible for one variety to merge into another, or to be simultaneously accompanied by every form of integumentary lepra. Evidences of leprosy that appear in the skin may assume the form of a macular eruption, trophic changes following nerve involvement, areas of pigment increase or decrease, and hypertrophic process located in the corium and superimposed structures.

In macular leprosy the lesions may be few or numerous, the affected areas may be large or small, their periphery is usually round or ovoid, their margins as a rule are sharply defined and sometimes elevated. In the beginning these macules are bright red, soon changing to reddish brown. With chronicity they tend to pale in the center, and, by coalescence of their outlines, to form gyrating figures. The margins of such lesions may have a purplish tinge, suggesting a certain form of erythema multiforme of the skin, and at times deep pigmentation occurs in their outermost limits. When central clearing does take place in the macular eruptions of leprosy it assumes a fawn-like color or that of the infected persons' normal integument. Where leprous macules have appeared there is a local decrease of perspiration, a crapelike irregularity of the skin surface and the presence of scales. So far as changes in sensation are concerned, macular leprosy may be entirely free of them during the first few months of its development, or the affected areas may be hyperesthetic. In the later stages, however, these macules are usually anesthetic. When a long-standing macular eruption of leprosy acutely exacerbates, its color flames into a bright red as in its earliest form.

Pigmentary macules are occasionally observed which have not been preceded by any other leprous eruption. And again, areas of depigmentation appear, which, likewise, develop independently of the foregoing manifestations of the disease.

The macular and pigmented varieties of leprosy cause a very inconsiderable interference with the normal functions of the body, and yet in another phase of the infection the pitiable sufferer becomes totally incapacitated for even the simplest employments, and passes into a condition which is as repugnant as that of the most distorted mummy of Egypt or Peru. At this time the nervous system has been directly attacked, and since the ulnar and peroneal nerves are most frequently involved, the greatest deformity results in the hands and feet. Now and then these nerves are so enlarged that they are easily palpable, and in some cases the small cutaneous nerves are so tumefied that they can not only be felt but actually seen. As these pathologic nerve changes go on, contractions occur in the flexor muscles of the hands until the fingers have become so folded on themselves that the condition is commonly termed "the leper claw." The bones of the fingers and toes may be absorbed, in this stage of leprosy, without ulceration, being the result of a rarefying osteitis. This leads to the formation of the so-called "stump" and produces the clinical condition of lepra mutilans. In this variety of nerve leprosy ulcers may be numerous and large, the eyes may be destroyed, the nasal bones absorbed, and the nostrils closed. Fingers and toes are occasionally amputated in a spontaneous manner at this period of the infection. One of the

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

rarer manifestations of leprosy associated with the nerve type is the appearance of bullae. These may be seen on any part of the body, but they are generally found on the hands and feet.

Leprosy may announce its presence in other ways from those previously outlined, such as nodular eruptions on the face, limbs and trunk, and clinically this is spoken of as "nodular leprosy." Hoarseness is an early manifestation of the nodular type, due to the presence of lesions in the larynx and pharynx. These submucous nodules have a tendency to ulcerate, but they usually heal during remissions of exacerbations. The lesions can be either large or small, and the face is the part of the body which is as a rule most extensively affected. When the face does show the greater amount of involvement, the nodules are commonly of the large variety; when the body is the site of nodular formations, the smaller type is the usual finding. Every now and then a case will be observed in which the nodules are not located in the skin proper but occupy a subcutaneous position; in such instances it might be almost impossible to catch the lesions between the examining fingers, as they have formed attachments to the underlying tissues. The nodules of the usual type are frequently elastic to the touch, corresponding to that palpable sensation experienced on manual examination of miliary gummas. It is not unusual to see large comedones in nodular leprosy of the face and trunk. Aside from the distinct lesions in nodular leprosy of the face there is a deep wrinkling of the forehead, a broadening of the nose, a thickening of the lips, a tumefaction of the skin of the outer part of the eyebrows, all of which go to contribute to the well-known "leonine expression" of chronic leprosy. The hair of the eyebrows usually falls out, and that of the scalp becomes dry and tends to a premature graying. In cases of well-marked nodular leprosy the lesions are usually grouped, they are reddish brown, but they assume a brighter hue during exacerbations. They become anesthetic quite early. The nodules might disappear in a few months or persist for years, with or without ulceration. When ulceration does occur healing is followed by cicatrization. When absorption of the nodules takes place without ulceration, areas of cicatricial atrophy or deep pigmentation mark the location of the vanished lesions.

With or without the presence of active leprosy, particularly in the later stages, a marked desquamation of the skin may occur and usually on the lower limbs; this might be so excessive as to resemble a case of severe ichthyosis.

The subjective disturbances of leprosy are malaise, migratory neuralgic pains, anorexia and depression of both the mental and physical faculties. General hyperhidrosis occurs at times as well as fever, the latter resembling various forms of malaria. All of these symptoms are exaggerated during an exacerbation. Paresthesia and neuralgic pains are associated with the nerve form.

Leprosy of the eyes is such an important subject that a short description should be given of the usual clinical manifestations. In all types of leprosy the eye is frequently involved and occasionally quite early in the disease.

In the nerve type of leprosy we frequently get excessive lacrimation. This is followed by a marked xerosis causing atrophic shrinking of the mucous membrane and various distortions of the lids. Through paralysis of the lid muscles and inability to close the lids drying of the cornea follows, with exfoliation of the epithelium, deep infiltrates in the parenchyma and involvement of the interior of the globe. Surgical intervention is frequently necessary. In the nodular type of leprosy we find nodules developing in the conjunctiva, in the cornea and in the iris. Iritis is common in the later stages. The deeper nodules in the cornea have a tendency to ulcerate and frequently we find involvement of the entire uveal tract. This ends in shrunken, painful globes which requires enucleation.

DIAGNOSIS

Well-advanced cases of nodular leprosy are easily diagnosed. The characteristic leonine expression can seldom be confused with anything else. On the other hand, however, early stages of nodular leprosy may somewhat resemble syphilis or lupus. Both the large and small forms of nodular leprosy occasionally simulate multiple benign cystic epithelioma and xanthoma tuberosum multiplex.

When only erythematous or pigmentary changes are present a positive diagnosis must be made by the course of the disease and the observation of sensory changes. This is particularly exemplified in the generalized evanescent type which very closely resembles certain manifestations of erythema multiforme. Only careful investigation of the sensory disturbances will be of value in differentiating ringed leprous lesions from other ringlike cutaneous eruptions; this also applies to the hyperpigmentary and depigmentary forms.

The condition known as lepra mutilans must be distinguished from syringomyelia. In the latter disease there is a dissociation of sensation, and other evidences of leprosy are wanting. In doubtful cases, a portion of the involved nerve may be removed for the purpose of demonstrating the presence of the bacilli; this diagnostic measure has frequently proved to be quite unsatisfactory.

In obtaining material in cases of nodular leprosy to serve the demands of laboratory measures of investigation, a nodule may be excised or a portion of it removed with a biopsy punch. The method which has given us the best service is as follows: The nodule is first incised with a cataract knife and through the opening a small curet is passed deep into the affected area. The material thus removed is smeared over the usual glass slide and stained by the customary acid-fast method. Should the bacilli be present in large numbers, further work is unnecessary; but in those instances in which only a few organisms can be found, cultural procedures and animal inoculation may be resorted to in order to distinguish them from the tubercle bacillus.

In the nodular and mixed type of leprosy, even when syphilis is excluded, the Wassermann reaction is frequently positive. It is positive in almost all cases with leprous antigen. In the anesthetic type it is usually negative, and in those cases in which the reaction is positive it is much weaker than in the other forms. In all types of the disease the luetin reaction is negative unless the condition is complicated by syphilis.

REPORT OF CASES

CASE 1.—Jim, aged 34, born in Honolulu, has been in the Isolation Hospital for seven years. He is married, his wife is in good health. His three children all died in infancy. His

wife's uncle had leprosy. He came to California from the Hawaiian Islands nine years ago, and at that time had one perforating ulcer on the sole. Nodules developed soon after. He now has an unusually severe type of nodular lepra of the face, body and limbs. No hair appears on the face; the hair on his scalp is thick, dry and prematurely gray. Leprous nodules are on the hard palate. On the body the eruption consists of grouped lenticular papules, a few tuberous growths and some ulcers. The ulcers are most numerous on the hands, where they are the result of burns. There is atrophy of the testes. Atrophy of the limbs is beginning and anesthesia of the limbs is progressing. There are distinct leprous nodules in the left palm and many pigmented spots. Many perforating ulcers are on the feet. The right eye shows infiltration and edema of the temporal side of the ocular conjunctiva with a small patch of whitish infiltration of the contiguous portion of the cornea. There is no involvement of the pupillary area of cornea and the sight is good. The left eye shows similar involvement of the ocular conjunctiva, most marked at the lower temporal border of the limbus. The cornea is clear and sight is good. Wassermann negative with syphilitic antigen and positive with leprous antigen.

CASE 2.—James, a colored man, aged 63, was born in Maryland. He went as cook with the Army to the Philippines and returned to California in 1899. The eruption appeared in 1908 as miliary nodules over his face. Later nodules developed in the eyes. There is still hair on brows and lids. The nodules on the face have been absorbed. His body is clear. The skin on the backs of his hands is shiny, thickened and there is much of the usual tumefaction with some scattered nodules. There is some muscular atrophy, but sensation is still good. The skin of the legs is dry, shiny, scaly and darker than the rest of the body. His right eye was enucleated three years ago to relieve the pain which resulted from the presence of leprous nodules in the cornea. His left eye shows nodular thickening on the center of the upper lid. There is a grayish white ring of opacity surrounding the cornea which is broadest at the superior aspect and is similar to an arcus senilis. Punctate gray opaque spots appear through the center of the cornea. The sclera shows the irregular pigment of the African races. Wassermann negative with syphilitic antigen; positive with leprous antigen.

CASE 3.—Fong Gong, a Chinese, aged 47, shows the nodular type. On the face the nodules are very large and are most numerous on chin, cheeks and brows. He has the saddle nose and leonine expression. The hair on his scalp is normal, but has disappeared from his brows and lids. His ears are enlarged and anesthetic. Many large comedones are in the nodules on the nose and cheeks. His hands show much tumefaction, with the characteristic dark brown skin with a bluish tinge. His palms show the characteristic dryness. There is partial anesthesia of the hands, but muscular atrophy is not marked. The skin of his trunk, particularly of the back, shows a diffuse thickening, with exaggeration of the normal markings and a diffuse confluent macular fawn-colored eruption. Scattered nodules of a deeper brown hue can be seen over the affected area. This condition was much more marked a few years ago and is an excellent example of elephant skin. Anesthetic areas are scattered over the body and some of the nodules are anesthetic. There is a diffuse thickening of the skin of the legs, with dark brownish discoloration and wrinkling, and a nodular eruption on the sole. Complete anesthesia of the feet exists. A perforating ulcer is on the ball of the right big toe. Nodules on the right eyelids are so large as to mechanically hinder their opening. The right eye shows quadrilateral atrophy of the globe. There is applantation of the cornea with numerous grayish cicatrices. Even light perception is gone. The left eye shows grayish white infiltrates of the cornea in various stages of activity. There is photophobia. Partial sight remains.

CASE 4.—Bill, aged 34, a sailor, born in Honolulu of English parents, has been in the Isolation Hospital for three years. The trouble started four years ago as a thickening of the nose and ears. The skin on his face is crapelike and yellowish gray. The normal markings are exaggerated. There is xanthelasma and right facial palsy, with a constant rhythmical contraction of the muscles about the right eye. The lids are normal except for the right palsy. The conjunctiva of the globes is injected. The hair in the brows is greatly diminished. The ears are enlarged and the skin over them is shriveled. Sensation on the face is delayed and decreased. There is also decreased sensation on the forearms and hands, mostly in distribution of the ulnar nerves. Thenar and hypothenar eminences are atrophied. The palms are dry and the normal markings accentuated. The fingers are thickened and clubbed and the skin is shiny. The color here is browner than that of the rest of the body. The skin of the feet is brown and shiny and the soles are deeply pigmented in places. There are no sensory changes. On the forearms and legs are a dozen subcutaneous nodules, rather poorly defined, the skin over them being a bit elevated, and over some there is slight redness. These last a few weeks, disappear, and are then followed by others. These are anesthetic, and leprous bacilli are present in them.

CASE 5.—Dan, aged 30, born in Greece, came to America thirteen years ago and has been in the Isolation Hospital for four years. Symptoms were first noticed in 1910 as lesions in the eyes. Later he had papules on cheeks and thighs, and excision of one of these papules showed numerous acid-fast bacilli. Later he developed muscular atrophy of the hands. He now has lepra nodules sparingly distributed over his face. The hair has fallen from the cheeks and entirely from the brows. Nodules appear on the soft and hard palate. There are a few nodules on the backs of his hands on a skin which is reddish brown, dry, shiny and crapelike. His palms are dry. Atrophy of the thenar and hypothenar eminences exists, but there is still much muscular power and sensation in the hands is still good. The center of the cornea in the right eye is the site of an ectatic scar with many long blood vessels from the surrounding sclera. The anterior chamber is deep. The pupil is irregular from an old iritis. The left eye is similar to the right. He counts fingers with the right eye and light perception with the left. Wassermann was negative with syphilitic antigen and positive with leprous antigen.

CASE 6.—Ah Fong, aged 33, born in Canton, has been at the Isolation Hospital for four years. Dull reddish-brown macules appear on face. These are fading. Areas of dark brown pigmentation are on the thighs; the skin of thighs, legs and feet is scaly and dark brown. Sensation is diminished, especially on the lower limbs.

CASE 7.—Yee Foo, aged 57, has been in the Isolation Hospital for twelve years. For five years before his entrance the patient had an eruption on his face of the nodular type of leprosy. The nodules have been large and numerous on the face, but nearly all have resoluted, leaving a dark brown pigmentation, especially on the cheeks. The hair is still in brows and lids; the ears are normal. No marked change in sensation exists on the face. It is many years since these nodules have shown active signs. The skin on the body is dry, wrinkled, shiny and with little change in color. The palms are dry. There is some contraction of the little fingers and some muscular atrophy. There is also delayed and decreased sensation. These changes in the hands are recent, showing the condition to be active in the nerves and thus producing a mixed type of leprosy. The right eye is negative except for a few old scars. The left eye shows injection of sclera, most marked above and below. A grayish-white infiltrate of the cornea extends 4 mm. from the upper limbus. The lower portion of the cornea shows a few whitish spots of infiltrate. The iris is thickened and discolored; sight is diminished.

CASE 8.—Frank, a Chinese, born in Canton, aged 32, has been in the Isolation Hospital for one and one-half years. The trouble began three years ago with loss of feeling in the hands; then macules appeared on the face. Since that time these have cleared. Some areas of anesthesia are on his face and remains of an indistinct macular eruption appear

on the lower part of his back. These areas are hyperesthetic. A fading erythema is on the thighs and legs. These lesions are indistinct, browner than the normal skin, a bit crapelike and very dry. There is decreased and delayed sensation. The ulnar nerves are enlarged. The fingers are contracted and clubbed; the palms are dry and the thenar eminences are atrophied. The interossei are markedly atrophied. The hands are anesthetic, eyes negative. No lesions appear in his mouth.

Case 9.—Pedro, aged 40, born in Alcapulco, Mexico, has been in the Isolation Hospital for twenty-five years. Both ocular globes were enucleated three years ago. The right lower lid shows marked ectropion; the upper lid is normal. The conjunctiva of the lids is smooth, dark red and without nodules; the left lids are similar. There is short, sharp, nonrhythmical contraction of the muscles about the mouth, and shriveling of the skin over both cheeks, about the angles of the mouth and of the chin. The patient has claw hands and the muscles are markedly atrophied, but there is very little change in the nails. The legs are atrophied. The skin is scaly and dark reddish brown. The patient has foot-drop from paralysis of the peroneal and tibialis anticus. The toenails are somewhat atrophied.

Case 10.—Lem Him, aged 50, born near Canton, has been in the Isolation Hospital for eight years. The disease is of the nerve type. His face looks normal, but the skin is almost completely anesthetic. The brows are normal. There are pigmented spots over the trunk. His hands show marked muscular atrophy and the skin is completely anesthetic. Many digits have been absorbed. Three contractured fingers remain on the right hand. All phalanges on the left hand are more or less absorbed. The skin is wrinkled on the back of the hands and somewhat reddened. The ulnar nerves are enlarged. The legs are atrophied and the skin in places is pigmented. The right foot is clubbed. The feet and legs are anesthetic. The testes are atrophied. The right eye shows an arcus senilis and a small pterygium from the nasal side.

Case 11.—How King, aged 54, born in Canton, has lepra mutilans. As an example of the mummifying type of the lepra, the following case serves as an example. Both eyes are blind from atrophy of globes. The nose is flat from destruction of the cartilaginous and bony structures and partial closure of the nostrils. The skin of the body is brown and wrinkled. The thighs and legs are very dark and scales are large, the condition simulating a severe type of ichthyosis. The hands are badly deformed, the fingers contracted into the palms and wrists flexed. There is very little absorption of the phalanges. The fingernails are atrophied. The toes are contracted and feet are clubbed. Some of the toenails are hypertrophied, some are atrophied and some are absent. This man is helpless, has been confined to his room for many months, and yet seems no nearer death than a year ago.

Case 12.—P. P., an old railroad employee, aged 40, born in Greece, has been in America for thirteen years and in the Isolation Hospital for seven years. This is an example of mixed leprosy. Large flat pale nodules are scattered over the face, particularly on the forehead. This man is blind. The palpebral apertures on the right side are smaller than on the left. The skin of the lids is thickened and pale and cilia are missing in places. No hair is in the brows. There is a quick, jerky, horizontal nystagmus. The globes show quadrilateral atrophy with applantation of the corneas, which are opaque, and the anterior chambers are abolished. Light perception is present. The skin of the entire body is dry and a bit scaly. There are nodules and resoluted nodules on the forearms as well as scars from old ulcers. The hands show the nerve type of the disease, with atrophy of muscles and contractured little fingers. The hands and forearms are anesthetic and tactile sensation is gone. The nodules on the face are not anesthetic.

Case 13.—Mike, aged 34, born in Greece, has been in America for six years and in the Isolation Hospital for two and one-half years. He gives a history of fever for a year. Then he noticed an eruption of the nodular type on his forehead. Large, bright red nodules are on the face, especially on the forehead and cheeks. No lesions appear on the nose and some hair is still present in the brows. There is no change in sensation of skin of face. This man has had several exacerbations, and during the attacks the nodules are much larger and the color is much brighter. Dark reddish-brown nodules appear on the forearms, wrists and backs of the hands; also atrophic scars and stains from absorbed nodules. There is no muscular atrophy in the hands, but there is delayed sensation. The ulnar nerves feel quite large. On the body nodules are scattered over the back. On the anterior surfaces of the thighs there are scattered pigmented and atrophic areas. Over the buttocks and posterior surfaces of the thighs are grouped nodules and deep stains. On the legs, particularly the lower third, are large and small nodules and a few small nodules appear on the soles. The larger nodules are anesthetic. The right eye shows at the temporal side of the cornea a few injected blood vessels. The left eye shows edema of the cornea, pericorneal injection and a pinguecula at the nasal side. There is some pain in the eyes and photophobia. The edema of the cornea is an early symptom of subsequent ulceration.

135 Stockton Street—1107 Stanyan Street.

THE ETIOLOGY AND TREATMENT OF LEPROSY*

ERNEST DWIGHT CHIPMAN, M.D.
SAN FRANCISCO

It may be granted to be axiomatic that the more complete our knowledge of the cause of a disease the more perfect our prophylaxis and the more rational our treatment. The more we have to deal with conjecture concerning etiology the more uncertain our efforts at control and the more empiric our treatment.

A review of recent progress in the treatment of leprosy necessarily goes hand in hand with a recapitulation of advances made in the search for data relating to its propagation and transmission.

While the lepra bacillus of Hansen is generally conceded to be the specific cause of the disease, its route of entry is unknown, and many important questions concerning contagion remain unsettled.

The theory of direct hereditary transmission is practically disproved.

The precise manner in which leprosy is acquired is as yet unsettled. The theory that the disease is caused by the eating of decayed fish apparently has fewer and fewer adherents, although prior to the successful cultivation of the bacillus it was argued that the bacillus could not lead a saprophytic existence because no medium could be found on which it would grow.

That the disease is spread by direct inoculation would seem improbable from the uniformly negative results in numerous human and animal experiments.

The part played by insects in the dissemination of leprosy has received much attention of late.

Currie, working in the Hawaiian Islands, concluded that mosquitoes feeding under natural conditions on patients with nodular leprosy so rarely, if ever, imbibe the lepra bacillus that we can exclude them as one of the ordinary means of transference of this bacillus from lepers to the skin of healthy persons. The reason for this is that the mosquito in biting goes directly

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

to blood vessels and hence gets blood unmixed with lymph.

The same observer, in a study of flies in relation to the transmission of the disease, found that certain varieties of flies when given an opportunity to feed on leprous fluids will contain the bacilli in their intestinal tracts for several days, and concludes that while the present state of our knowledge does not permit us to determine whether such insect-borne bacilli are or are not capable of infecting persons whose skin and mucosa are thus contaminated, we are, until we have more accurate knowledge, justified in regarding these insects with grave suspicion.

At various times the gnat, the bedbug, the flea and other insects have been under suspicion. A significant circumstance in this connection is that 55 per cent. of the cases in Heiser's series (to be referred to later) had previously been infected with scabies. .

While our judgment as to the rôle of insects in the transmission of the disease may be held in abeyance pending more conclusive results, it is fair to state that the experimental evidence to date squares perfectly with logical reasoning. If, for example, the mosquito were responsible for the spread of leprosy we should look for a much higher incidence. On the other hand, the disease has been associated from time immemorial with defective hygiene, bad surroundings, filth, crowding, etc., and this idea fits in more nearly with the suggestion that the fly, the bedbug, and possibly other agents, as the acarus of scabies, are the real carriers.

A striking fact in relation to contagion is that so often among individuals living in close proximity the disease is not communicated from one to another as from husband to wife or from hospital patients to attendants, nurses and physicians. According to Manson,

> Probably intimate personal contact, and certain concurrences in the phases of the disease with special conditions which are as yet unknown, and which, for all we know, may concur only at long intervals in the intercourse of any two individuals, are necessary for the successful communication and acquisition of leprosy. The simple implantation of the bacillus does not suffice.

A point of major importance in connection with contagion is the determination of the period at which the disease is most readily transmitted. Campana contends strongly that contagiousness disappears with full development of the disease. Dyer corroborates this view to the extent of admitting that the virulence lessens with the duration of the disease and interprets the trophic type as evidence that the disease is more or less effete. In any scheme of national control and segregation of lepers it would seem only just that this fact be considered and segregation made more or less complete according to the degree of infectiousness manifested. Certainly many cases of nerve leprosy in which no organisms are demonstrable in the nasal secretion are not comparable with active nodular cases in infectivity.

We may summarize our etiologic findings as follows:

1. Leprosy is caused by the lepra bacillus though it does not fulfil the postulates of Koch.
2. The disease is not hereditary.
3. The ability of the leper to transmit the disease differs according to the various phases of the disease.
4. The receptivity of an exposed subject varies with diverse physiologic circumstances.
5. The rôle of insects as intermediaries is as yet unproved though certain of them must be regarded with suspicion.
6. The disease is most readily propagated where dirt prevails.

TREATMENT

There are two distinct aims in treatment; the first has to do with prophylaxis, the second with the relief of symptoms. Prophylaxis should be considered both in relation to the individual and the community. From the individual standpoint personal cleanliness and a condition of such good health that resistance in general is high would seem the best safeguards. From the community point of view, in addition to the maintenance of proper standards of sanitation, there at once arises the question of segregation. In those countries in which segregation has been enforced the number of lepers has steadily decreased.

Undoubtedly the greatest precautions should be observed in keeping lepers' quarters well screened as well as in adopting any measure designed to keep them free from contact with any of the insects under suspicion of acting as carriers.

The symptomatic treatment is naturally considered under such separate heads as general and local.

General Treatment: A review of the substances employed in the many century old search for a specific is not at all necessary. The efforts of recent years have had much to commend them in many cases from the standpoint of analogy. Curiously enough, however, the more plausible the analogy the less fruitful the results.

Reasoning by analogy, serums would seem promising although an immunizing serum has not yet been found. Carasquilla of Bogota prepared a serum by withdrawing blood from a leper's veins at the height of the febrile period when the blood was at its maximum toxicity. From this a leprous serum was separated and injected a few hours later into a horse, three injections being given at intervals of ten days. After another ten-day period a serum was obtained which was injected into the patients. Although he claimed good results, other workers were unable to obtain anything more than transitory improvement and even this was ascribed to the reaction which can be obtained from normal serum. According to Crocker there has been, in some cases, a diminution of the infiltration after the use of leprous serum, but it has been transitory and the injections are not free from danger.

Of the vaccines employed those of Clegg and Duval are the best known. In spite of the fact that reaction followed their use the results of neither have been really curative.

Tuberculin also gives rise to a reaction in lepers and this fact was thought to be an indication for its use. It was found, however, that instead of destroying bacilli it liberated them. Coley's fluid has also been a disappointment.

Leprolin, a substance made from a bacillus which proved to be not the bacillus of leprosy, was speedily found wanting.

Nastin, to which Dyer aptly applies the term "near vaccin," was prepared by Deycke, who cultivated a streptothrix from cases of nodular leprosy. He did not consider this the lepra bacillus, but from it he extracted a well-defined neutral fat to which he gave the name nastin. This, when combined with benzoyl

chlorid and injected into a leper, caused a bacteriolysis. Various results, some good and some negative, were obtained. In general, nothing conclusive came from it.

Salvarsan has had extensive trials, the results of which have apparently brought the unanimous conviction that it is of exactly the same service as arsenic.

Snake venom and antivenomous serum have both been used, but the basis of their employment was superstition and the results were what might have been expected.

Radiotherapy has influenced individual nodules favorably, but while doing this it has apparently aided in the dissemination of the process, and its use is now deprecated by most writers in this field.

Of the purely medicinal remedies many have been proclaimed efficacious if not curative. A few may be mentioned, as mercuric chlorid, ichthyol, europhen, arsenic, strychnin, the salicylic group, creosote, sodium cacodylate, potassium chlorate, red mangrove bark, iodin salts, gurjun oil and tuatua, a Brazilian plant cultivated by the United States Department of Agriculture because of its repute in leprosy. These are but a few of the many remedies which have been tried, and while in many cases much amelioration of symptoms has been observed, none of these remedies has approached the position of a specific. It is moreover to be noted that they are not for the most part symptomatic remedies, in that a special indication exists for the use of any one. They are simply "good for leprosy." Potassium iodid apparently aggravates the disease.

From this list one remedy has been purposely omitted or rather set apart for consideration by itself. Chaulmoogra oil is the one substance which, while not perhaps specific, has best stood the test of time. The great difficulty has been that, to secure effects, large doses are required and few persons can tolerate the drug in sufficient quantity for an extended period. The stomach ultimately refuses to tolerate it in most cases in which it is administered in adequate dosage. To obviate this feature it has been tried hypodermically but it has been absorbed with difficulty and fat emboli have sometimes resulted.

Recently the injection of a mixture of chaulmoogra oil with camphorated oil and resorcin has been employed by Heiser in the Philippine Islands. The mixture consists of

Chaulmoogra oil	60 c.c.
Camphorated oil	60 c.c.
Resorcin	4 gm.

The camphorated oil was added to make a more readily absorbable substance and the resorcin was added because of the fact that Unna had reported excellent results from the chaulmoogra oil-resorcin combination.

In a series of twelve cases only nine patients took the treatment throughout the prescribed period. The net results in the series were as follows:

Apparent cures	11.44 per cent.
Apparent clinical recoveries	44.44 per cent.
Showing marked improvement	33.33 per cent.

The details of treatment, to quote from Heiser, are the following:

> The injections are usually made at weekly intervals in ascending doses. The initial dose is 1 c.c. and this is increased to the point of tolerance. Much difference exists among the cases as to the amount of the mixture which they are able to take. In some cases a few cubic centimeters produce marked reactions in the lesions, accompanied by fever and cardiac distress. Sometimes it is better to reduce the amount of the dose and inject at more frequent intervals. The object sought is so to regulate the dose as to prevent reactions of too violent a character. Quicker results are also apparently obtained when it is possible to inject the mixture into large leprous deposits or to divide the dose by injecting it into a number of smaller infiltrations. Attention is drawn to the fact that no strychnin was used. Many writers have regarded strychnin as an essential part of the chaulmoogra oil treatment. Saline purgatives are freely employed. Two per cent. hot sodium bicarbonate tub baths are prescribed every other day. Those who take prolonged baths regularly seem to improve more rapidly than those who do not.

Local Treatment: The importance of active local treatment must not be minimized. This is especially true in the early stages, in which, according to some authorities, the disease can be arrested by radical surgical treatment followed by cauterization.

Viñeta-Bellaserra affirms that the infiltration of lesions often coincides with febrile exacerbations, digestive disturbances, etc., and has found that the destruction of the lesions with thermocautery or galvanocautery causes an immediate improvement in the adjacent lymphangitis as well as in the constitutional symptoms.

Combined general and local treatment: Unna claims several cures from a combination of local and constitutional measures. His treatment consists of the internal administration of ichthyol in ascending doses, while an ointment of 10 per cent. pyrogallic acid in lanolin is employed for inunction into arms and legs twice daily. At the same time a 10 per cent. chrysophanic acid ointment is rubbed into the cheeks and the trunk, while a plaster consisting of chrysophanic acid, salicylic acid and creosote is applied daily to the forehead and chin. This treatment is continued for one month and is followed by a course of warm baths before it is resumed.

Certainly the prompt, free excision of a single macule or tubercle of leprosy in the absence of any constitutional signs would seem to be definitely indicated, on the ground that it may be a primary focus from which the virus has not yet been disseminated.

The Treatment of Special Symptoms: For the restoration of sensibility and muscular power in the anesthetic forms, nerve stretching and nerve splitting has been practiced with success in some instances.

Perforating ulcers are treated on ordinary surgical lines. Treves has recommended a preliminary softening with a paring down of the thickened epidermis followed by a filling of the sinus with a cream of salicylic acid and glycerin to which 2 per cent. phenol (carbolic acid) is added. The dressing consists of a device rather like a corn plaster, which is designed to remove the pressure from the part.

Some cases of perforating ulcer have been healed by stretching the plantar nerves.

The question whether the existence of leprosy does or does not interfere with the success of surgical operations must be answered in the negative. As a matter of fact not only in perforating ulcer but in various conditions, as laryngeal stenosis, tracheotomy, iridectomy and the removal of necrosed bone, surgical intervention has often been resorted to with no untoward results.

To recapitulate: Individual prophylaxis includes correct hygiene and close surveillance of possible insect carriers. Community prophylaxis demands segregation.

Medicinal treatment is altogether empiric though the future possibly holds some specific in store. At times cure is spontaneous.

At present the chaulmoogra oil-resorcin combination given subcutaneously promises best results. Climate, food and good hygienic conditions influence all cases favorably. The importance of hot baths must not be forgotten. Several baths daily are undoubtedly of value. An Old Testament writer records the cure of Naaman of his leprosy after seven dips in the Jordan. Whether we view this literally or as a bit of symbolism it nearly epitomizes our modern treatment.

240 Stockton Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MONTGOMERY, MORROW AND LEE, CHIPMAN AND O'NEILL

DR. A. A. O'NEILL, San Francisco: [Dr. O'Neill had no written paper. In part, he said:] In 1878 it became necessary to establish a place for lepers in this country, and there were eighty-two lepers in the institution over which I now have control. This number has been diminishing gradually, until we now have fifteen. The patients admitted to the institution have been brought to San Francisco from other places. Two factors are to be taken into consideration in this connection, and one of them is from the economical standpoint. It is said that if the British government took care of all the lepers in its possessions it would probably bankrupt the government. Then we have to combat medical superstition. The old idea is that diseases such as this were exhaled from the body of the patient, and only yesterday I heard of an instance in San Bernardino in which after a leper died and was removed they destroyed the house by fire. Such a sentiment as that in a community is very hard to meet and combat.

There are 238 known lepers in the United States, and I for one would strongly advocate placing these persons on one of the islands off the coast of California, and put that island under the control of the Public Health Service. There was an effort made to establish a leprosarium in the state of Washington, but local feeling was so strong they had to abandon the project. As I said before, it is a matter of education. Of ninety-five human beings who were inoculated with leprosy, or leprous material, one developed it. That means that we are unable to inoculate the ordinary laboratory animals with these diseases; and that would show there is little or no danger from the ordinary nerve type of leprosy. Where the leper has no open lesions, and no open organism is found, and no discharge from the nose, I think he should be allowed to pass around in the community. At the same time, in Norway, the humane method of segregating them in their own homes, does not result in the separation of the members of a family, and the patient is more content to be with his own family. The number of cases described as arising from contact are so few they can be neglected. In other words, a leper with no open lesions might be permitted to remain with his family, and those having open lesions should be segregated.

DR. JOSEPH ZEISLER, Chicago: Ever since our country acquired the Hawaiian Islands and the Philippines, I have felt that our interest in the subject of leprosy has increased. In this respect I have even felt that in the curriculum of the medical schools some instruction should be given in the subject of leprosy. I have omitted during no course I have given in the Northwestern University, the presentation of this subject in one or two full lectures, but, unfortunately, merely in a didactic way.

Our great predecessor, Jonathan Hutchinson, tried to base a genealogical study of this subject among people living on the seashore. The famous fish theory started with Jonathan Hutchinson—and perhaps it has remained with him.

As long as our treatment of leprosy is the same as it is today, we shall have to continue to hammer at the general hygienic treatment of each case, and await the day when a specific treatment of leprosy may come. In the meantime, as long as our therapeutic efforts are so feeble, we must look to prophylactic measures, and I am in favor of isolation and colonization of lepers. Our laxness in handling leprosy is lulling the public at large into a false feeling of security. It is not in the same category as scarlet fever and smallpox. The incubation of leprosy is so long that we cannot tell when the disease may develop. It has been eliminated in certain lands by segregation. We have no means of stamping out leprosy by vaccination, as in smallpox. Then, too, it is a national affair, and our national government has not been asleep in this matter by any means. I believe we should also have state action; and there should be a leprosarium in every state where such cases could be collected and segregated.

We have in Chicago, I think, at all times at least a dozen cases; and when we meet with such cases we are absolutely helpless as regards the management. The health board does not know how to take care of them. Recently we had a sensational case in Chicago where a leper was discovered and imprisoned; he escaped from confinement and later was recaptured. I believe our present attitude on the subject of leprosy must be of interest, of necessity, to our national and our state governments, namely, that we advise isolation and care of every case in proper hospitals and sanatoriums.

DR. GEORGE W. MCCOY, Honolulu: In relation to the public control of leprosy through segregation, it may be largely a matter of geography. In certain communities leprosy does not spread. Judging by the reports of New York dermatological societies, there are from forty to fifty cases at all times in the city of New York; and unless I am mistaken, no case has been of local origin. They are all imported. Obviously measures different from those required in, for example, Hawaii, would suffice. Then we must consider the type of leprosy. In Hawaii, where we have considerable experience in segregation, in a general way we segregate the nodular type and the ulcerating nerve cases. Abroad that is the distinction made by law in some countries. The pure nerve type cases are not usually segregated; we have a system of paroling those patients. The paroled leper is required to report to a government physician once every three months. He is at once recommitted to the leper hospital if he becomes a menace to the public health.

Dr. Morrow made no mention, in discussing the diagnosis of the disease, of the examination of smears from the nasal cavities. Ordinarily we do not find the bacilli early in the course of the disease in the nasal cavities; but occasionally you can find them when they cannot be detected elsewhere. Recently we had two cases of what appeared to be pure nerve leprosy in which a large number of bacilli were found in the nasal scrapings without difficulty.

Our method of making smears may be of interest. We grasp the nodule between thumb and index finger, squeeze the blood out of it, take a safety-razor blade, make a short incision in the bloodless nodule, and scrape out some of the nodule juice, in which the bacilli can be demonstrated if present. If that fails, we excise a piece of skin. Of course we throw away the blade after using once.

In connection with the treatment of leprosy I would like to emphasize the great help that may be given to lepers by surgical means. This refers to the work of Dr. Goodhue, medical superintendent of the Molokai Settlement, and Dr. Hollmann, in immediate charge of the patients at the Honolulu station. Amputation of hopelessly ulcerated fingers and toes is advisable in many instances.

Then there is the great frequency with which tracheotomy is required. I suppose I help Dr. Goodhue with at least twelve or fifteen tracheotomies in a year among a leper population of six hundred.

Dr. Zeisler spoke of incision. We had in Hawaii recently the youngest case of leprosy of which we could find any record. The patient was a child 19 months old, born of leper parents. A nodule appeared on the forearm and was excised by Dr. Goodhue; we are going to watch that case with much interest. We do not believe there is any good reason for believing that the child will be materially benefited by the removal of the lesion. I do not believe that there is any such thing as a recognizable "initial lesion" of leprosy.

Dr. A. Ravogli, Cincinnati: I agree with the views of Dr. McCoy on the possibility of initial lesion in leprosy, and I find this is validated by some findings, especially in Sardinia. Frequently it begins with an ulcerated wound of the foot. That the mucus of the nose is loaded with bacilli, lepra bacilli in the most of the cases, there is no doubt; and it is now claimed that a patient spitting in the streets or elsewhere, someone walking there without shoes (as many children do), with a lesion of the skin, is liable to be inoculated with lepra.

There is a custom in the Philippines of having a very large cigar hanging from the ceiling; and every member of the family takes a few puffs at it in passing. Very likely this custom has been indicted as one of the methods of spreading leprosy.

Leprosy is very slightly contagious, yet is growing by contagium. Colombini in his work, "Leprosy in Sardinia," refers to a woman who had been suffering from leprosy for twenty-two or twenty-three years, living and working all the time in the same house with two brothers. She was taken to the leprosarium and so far her brothers had not shown signs of leprosy. On the other hand, there is no doubt that leprosy shows its contagious nature. In New York at a meeting of the American Dermatological Association we were shown a case of an Italian with tubercular lepra. I asked him where he had taken leprosy. He said that four or five years previously he had come to New York perfectly well. In New York he had got the disease, and his brother living with him was infected in the same way. This shows beyond doubt that leprosy is contagious; and for this reason the patient must be isolated.

Lama contends that the *pulex penetrans* (a flea) is the insect that carries leprosy. He claims to have found the first lesions of lepra as diffuse red patches in the limbs, or a tubercle, or ulcerated nodule.

In my opinion lepers must be segregated and left together, and not be in contact with others, because of the dangers obviously present for the propagation of this disease.

Dr. Richard L. Sutton, Kansas City, Mo.: I should like to ask Dr. McCoy and Dr. Schmidt a question regarding the status of the bacilli which give rise to the nerve and cutaneous lesions. Charles J. White's statistics, and the results of Nichol's investigations would indicate that some particular strain of the *Spirochaeta pallida* is responsible for syphilis of the nervous system. Is it probable that some certain strain of the bacillus of leprosy also exhibits a predilection for nervous tissues?

Dr. Schmidt: I might say in answer to the question of Dr. Sutton that the serologic examination of leprosy is not of great value. It is quantitative rather than diagnostic. Some years ago some work was done in our university in relation to rat leprosy and human leprosy; and it was found that serologically they were the same. Bacteriologically they were the same.

Dr. Everett S. Lain, Oklahoma City: In my examination several years ago of several thousand Indians in Oklahoma, and also in recent years for different skin diseases, I made particular search for leprosy, and have not found any; at least, I have not made such a diagnosis, although the Indians have many of the other common diseases. Therefore, I have concluded that this is an imported disease which has not reached the American Indians, who are inland.

Dr. Howard Fox, New York: In regard to biblical leprosy, I feel convinced, as stated in my chairman's address, that there is no reference in the Old Testament to any disease which can positively be recognized as the leprosy of the present day. If it is impossible to recognize a description of leprosy in the 59 verses of the 13th Chapter of Leviticus, how much less possible is it from some of the miraculous accounts of the disease, as when Moses put his hand into his bosom at the command of the Lord and on drawing it out we read "behold his hand was leprous as snow." Similar to this is the leprosy of Miriam and of Gehazi, the servant of Namaan, the Assyrian general who on account of disobedience was told by Elisha that "the leprosy therefore of Namaan shall cleave unto thee and thy seed forever; and he went forth from his presence a leper as white as snow." Furthermore, the leprosy cured by our Savior after the sermon on the mount cannot be considered as examples of modern leprosy, but might well have been psoriasis.

Regarding the control of leprosy, a great many dermatologists at the present time feel that the disease can only be properly controlled by the federal government and not by the individual states. In New York state we do not have the stringent laws concerning leprosy that are enforced in Pennsylvania and Massachusetts. In consequence there are practically no cases at large in either of these states, while there are probably always forty or fifty cases in New York City, and some would double this estimate. In a paper read before the New York Academy of Medicine in 1911 I made the statement that I had personally examined thirty cases within a period of one year in New York City, though it must be said that a special search was made at this time. It would be wise, it appears to me, in making laws for the isolation or control of lepers, to distinguish between the harmless, anesthetic cases, and the nodular cases in the ulcerating stage.

Dr. Douglass W. Montgomery, San Francisco: As regards the initial lesion in leprosy, I think it is frequently an erythematous leprid. I have seen such a lesion on the forearm in its early stages and have watched the disease creep up the nerves from it. Of course the erythematous leprid may not be the sole initial lesion in leprosy. That leprosy may also enter through an ulcer of the leg or foot, or by causing an ulcer in this situation, would be also a probable eventuality.

I do not think there is any doubt of the desirability of establishing a national leprosarium. The important question then arises, What place should be chosen for the establishment of such an institution? Should it be Hawaii, Louisiana, San Francisco or some other place? I think it should be in some place where leprosy is not endemic. We do not know the mode of transmission of leprosy. We know it enters a region, increases with fair rapidity, and then dies out. We know it died out in Central Europe, and we surmise that it did so because of segregation. The same thing took place in Norway, where we think its decrease was due to the segregation of the afflicted, and to the increasing well being of the people owing to the influx of wealth brought by tourists. But there may be climatic conditions which influence the disease, and this is the important point. The leprosarium should be located in a locality where leprosy does not thrive, where it is not endemic, and where the disease runs little chance of increasing, and the afflicted individual runs the best chance of recovering.

As to the miraculous cure of Naaman, I would say that there are naphtha and sulphur deposits on the Jordan, which I think are now being exploited. Naaman was told to go and bathe seven times in the River Jordan, and he probably went into the sphere of influence of the naphtha or sulphur and was cured of the itch.

Dr. Howard Morrow, San Francisco: There is no state law which provides for the segregation of lepers in California. There is a city ordinance in San Francisco which compels us to notify the health department, and they are compelled to keep them in the Isolation Hospital. But if we kept at the Isolation Hospital all the lepers we see from time to time, we would have an institution there to rival Molokai. In the last three weeks I have seen three subjects in various stages of leprosy. One came from Honolulu, with a nodule on her eye and typical leper hands; nothing

else. That woman was advised to return to Honolulu and go to Molokai. Yesterday a woman was sent to me from Mexico; she arrived at 10 o'clock, and I saw her at noon; I told her husband what the trouble was, and at 5 o'clock she was on the way back to Mexico. The other was a Spanish boy, and I advised him to return to the Philippines. If he does not, we will put him in the segregation colony. I have kept him here longer than I intended in order to have his appear before the society.

DR. A. W. LEE, San Francisco: I am entirely unfamiliar with the laws dealing with lepers in different parts of the United States, but, no doubt, every one who has seen a great number of cases of leprosy has had his humane side strongly appealed to. It is difficult for one to force himself to the opinion that isolation is absolutely necessary in all cases. The first patient presented here is of a very high type of mentality, extremely sensitive and readily amenable to reason. If it is possible to give semi-isolation for this young man, it would be a very advisable thing to do.

DR. A. A. O'NEILL, San Francisco: When I read the work by Duval and Harris of how they had taken the serum and passed it through Japanese mice, and then increased it so that laboratory animals could be inoculated, I concluded that we might be able to settle how it is transmitted. But since this meeting has started I have learned that Duval has repudiated much of that work.

I have been struck by the fact that leprosy is a disease of the semicivilized. You find it along the coast of other countries to be sure; but it does not thrive in an uncongenial soil. Where leprosy was introduced by a Chinaman into Hawaii, it became ripe. Such is the history of other diseases introduced among such people. It was the same with leprosy in Australia, where the leper made his appearance among the aborigines.

In Hong Kong, in 1894 (speaking of the danger of transmission), I was shown the latrine where the coolies went; it was explained to me that bubo was taken up by those coolies who went barefooted.

I am convinced that more thorough study of the transmission of this disease, such as by the bedbug, and like means, will bring us finally to a solution of the question. I have yet to see a case which had its origin in California. I saw one reputed case in a woman, but there is a question in my mind as to whether she was telling the truth in saying she had not been outside of the state.

To give you an idea of how they try to make their ideas conform to your wishes or views, the man here said he was a native Indian and had not been out of the state; but I recognized that he was a Hawaiian. I was to be shown a native Californian who had not been out of the state.

I would suggest more humane treatment of these persons. One of my patients absconded and went to Denver, where he was placed in the pest house. They had a large number of patients. Every patient with smallpox wanted to flee from the hospital. This man recalls the fact that the number of soldiers returning from the Philippines afflicted with leprosy must not be overlooked by us. We must remember that, visiting such foci, it is not unusual to become infected; and we must remember that leprous husbands have lived with wives, and vice versa; and there are children born to them, notably among the leprous parents at Molokai. The danger of contracting the disease is a very remote one to my mind, when we have this direct evidence of ninety-five people being inoculated without results.

DR. ERNEST DWIGHT CHIPMAN, San Francisco: I am glad Dr. O'Neill spoke about the transmission of leprosy by parasites. I believes the more we study the surroundings of leprous patients the more we will be convinced of the possibility of various insects being an important etiologic factor.

Polypharmacy

Eye of newt and toe of frog,
Wool of bat and tongue of dog,
Adder's fork and blindworm's sting,
Lizard's leg and howlet's wing.

—*Macbeth.*

TRANSVERSE INCISION IN OPERATION FOR APPENDICITIS

A. E. ROCKEY, M.D.
PORTLAND, ORE.

It is now more than eleven years since I devised and began to use the transverse incision in operations for appendicitis. My first publication was in the *Medical Record* of New York in November, 1905, in an article entitled "Transverse Incision in Abdominal Operations." Since that time I have published another paper on the method in *Northwest Medicine,* February, 1910.

Gwyllam Davis of Philadelphia, working independently, published a paper in the *Annals of Surgery* for January, 1906, describing a transverse incision operation. In the article on "Appendicitis" by J. B. Murphy in Volume Six of Keen's Surgery my operation is described in a comprehensive paragraph.

Notwithstanding these publications the method has attracted but little attention, and the vertical right rectus incision is the one in general use. I believe that the transverse incision is greatly superior to the vertical as a routine procedure. Eleven years' experience has confirmed me in this, and it is endorsed by a few who have adopted the method.

The world over it is probable that operations for appendicitis outnumber those for any other one intra-abdominal disorder. It would then seem important that a method with points of advantage, in an operation of such frequency, should have a sufficient publicity to bring it to general attention. It is for that reason that I am presenting it to this association; and also for the reason that previous descriptions have not been adequately explicit.

Simple and easy in execution, it is not quite so easily understood as the right rectus incision. For that reason a few moments' attention to the anatomy of the abdominal wall will be necessary. In the region of McBurney's point, the fibers of the internal oblique and the transversalis run directly transverse, and the external oblique is only an aponeurosis. The aponeuroses of these muscles are united at their insertion at the border of the sheath of the rectus, the fibers of the broad tendons becoming a part of the sheath. This junction is the key to the situation in this operation.

The skin incision at the place of election is made directly transverse with its center on McBurney's point, though it may be lower if conditions require. While the favorite anatomic situation permits easy access through a short incision, which may be desirable in children, or small persons with thin abdominal walls, the incision in ordinary cases should be 2 or 2½ inches in length, and may be longer as the case requires. Continuing deeper, it passes through the outer part of the sheath of the rectus, severing the tendinous border and the aponeurosis of the muscles on a directly transverse line. When this is done, the handle of the scalpel may be inserted below, and the finger above, and the wound spread wide open by a single pull. Not a muscle fiber is cut. The fibers of the internal oblique and transversalis separate in a transverse direction. The aponeurosis of the external oblique is broader than that of the other

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

muscles, thus permitting the incision through this to be carried further to the outer side. When the muscular part is reached, the spreading pull separates the fibers obliquely upward. The muscle is, however, as elastic as rubber, and the retractor, which is at once inserted, drawing outward, readily brings it into the transverse line. The rectus is now drawn back into its sheath at the inner side by another retractor. The peritoneum is divided on the transverse line. The splendid exposure which this incision gives and the ease with which it is made will surprise the surgeon who tries it for the first time.

Definite preoperative diagnosis is important. The transverse incision across McBurney's point is not adapted to pelvic operations. If doubt exists as to the differential diagnosis between the appendix and the tube, or the appendix and the gallbladder, as the site of trouble, the vertical incision is preferable. In the occasional case, when the appendix is adherent in the pelvis, a preoperative diagnosis can usually be made.

Recently I had two such cases in one day, both with acute abscess, and both correctly diagnosed before operation. One of the patients was a boy 9 years of age; the other was a man of 22. Both were operated through low right rectus incisions, treated with drainage in Fowler's position, and both made good recoveries.

In emergency the transverse incision may be readily lengthened to permit general abdominal exploration, and the performance of extensive operations. A case, which I have reported elsewhere,[1] is of sufficient interest in this connection to bear repetition. A young surgeon, who had learned and adopted my operation during his internship, had a man with a considerable mass on the right side of his abdomen, which the surgeon had diagnosed as an appendiceal abscess. He opened the abdomen by transverse incision across McBurney's point only to find that he had an extensive malignant disease of the cecum, and the adjoining descending portion of the transverse colon, with which to deal. In this emergency he covered the part with towels, continued the anesthetic lightly, and telephoned to me. I came to his assistance, and, by extending the incision on the same line, readily succeeded in resecting a part of the ileum, the cecum, and half of the transverse colon, making the anastomosis of the severed ileum with the stump of the colon. Primary union and a smooth convalescence followed, and the patient was not aware that anything more than an ordinary appendectomy had been done until he was ready to leave the hospital.

In interval cases or in the acute form before rupture this incision is ideal in the facility of operation and firm union with a minimum scar. Its great point of advantage, however, is in the ordinary pus case requiring drainage. The pus appendix is retrocecal or at the outer side of the cecum, in a very considerably greater proportion of cases than is realized by the operator, whose approach is from the front. In these the appendix lies directly under the line of incision. In such cases, instead of pushing the small intestine out of the way and protecting it with gauze pads it is not seen, and consequently not exposed to handling in an infected field. The advantage of such a direct approach in cases of this sort is greatly in favor of the transverse incision. Exposure of the general cavity is avoided, and drainage greatly facilitated.

When the appendix is in the iliac fossa, the finger readily separates its adhesions, and it is delivered with the cecum outside the incision. In any other situation the cecum, which presents first, is the direct guide. A few trials in pus cases will convince the surgeon of the life-saving advantage afforded by this approach, the favorable location for drainage, and the comfortable position in which the patient may be placed. Safety and comfort are favored by such a direct approach. Postoperative ileus, with its vomiting and disquieting gas pains, is minimized. The drainage track is short and direct. A single cigaret drain is placed in the outer angle of the wound posteriorly at the outer side of the cecum.

After the operation in drainage cases the patient is placed in bed lying on the right side with the knees drawn up, and the shoulders and head gently elevated on two or three pillows. This brings the drain to the lowest point in the abdominal cavity and sufficiently elevates the diaphragm to bring it above the line of sepsis. There can be no gravity accumulation of a septic pool in the pelvis depending only on an inefficient capillary drain to take it out, as must certainly be the case in Fowler's position. The comparative comfort of the positions is all in favor of the lateral. It is the position that is most naturally sought in restful sleep. It permits considerable shifting, both of the limbs and trunk, without impairing its efficiency. Most important of all, it is a direct gravity drainage. It is a hole in the bottom of the septic pool, rather than a wick in the top. In the outward location of the drain it passes through the muscular part of the incision, permitting closure of the aponeurotic portion. This diminishes the liability to hernia in drainage cases.

Hernia will, of course, occur in a few cases when the infection is exceptionally virulent. In such cases a tissue necrosis precedes healing, and the gap thus formed may produce a hernia. The liability to hernia is less than with other incisions for the additional reason that nerve fibers are not cut and there is no muscular pull across the line of incision.

In the closure of the wound in clean cases, it will be seen that a single suture, passed deeply through the conjoined aponeurosis at the border of the rectus which I have called the "key" to the incision, will approximate the entire wound. The rectus slips back into its normal position and the transverse muscles are brought together. As a matter of safety I usually introduce two chromic sutures here and leave them untied until the remaining tissues are carefully approximated with fine continuous suture. The "key" sutures are then tied and give great strength to the closure. For this reason the morbidity of the operation is short, and a patient of any type may be sooner out of bed with safety than with any other method of operation.

1. Rockey, A. E.: Surgery of the Colon, Northwest Med., July, 1912.

ABSTRACT OF DISCUSSION

Dr. Robert Emmett Farr, Minneapolis: I can't say that I understand exactly Dr. Rockey's incision, as I have not seen his pictures. The incision which I have used, and in which I am much interested, involves the cutting of the external oblique aponeurosis if low down, or muscle if high up. The incision is made transversely and therefore

cuts the external oblique fibers obliquely. This incision was described by Elliott of Boston some ten years before Dr. Rockey described it. It seems to me that it is greatly superior to the incisions of Lennander, Battle, Jalaguier and Kammerer, which divide the abdominal nerves which enter the rectus transversely. The closure of the incision is very simple, because these cut fibers of the external oblique will in all instances, in my experience, at least, submit to imbrication. Boeckman has used this incision for over ten years, and at his solicitation I began using it. I make the incision high up or low down, depending on the pathology I expect to find. The incision avoids important nerves and as Dr. Rockey has said, will drop together almost without a suture of any kind. It is closed in the same manner as the McBurney incision, excepting that the cut fibers of the external oblique may overlap. With this incision one may secure an opening reaching from the anterior superior spine to the midline. As I have been removing the appendix, at least in all of the simple cases, under local anesthesia, I feel that I have given the incision a severe trial.

DR. A. V. MOSCHOWITZ, New York: The remarks I am about to make may not be germane to the subject, because thus far at least I have had no chance to use the transverse incision in appendix operations. I have been perfectly satisfied with the McBurney or the Kammerer incision. I have used the transverse incision, however, in the upper abdomen for a number of years, and have become so satisfied with this, that I now consider it part of my normal incisions for all operations above the umbilicus. There is a principle involved in the transverse incision. One of the points I wish particularly to mention is that in gallbladder operations and in all operations on the stomach it gives perfect exposure and is very easily sutured, and the patients have little postoperative discomfort and distress from distention, no hernia and a minimum amount of scar; the wound heals kindly. In my experience the operation is exceedingly simple; the entrance through the abdomen is a trifle more difficult because of hemorrhage, but this is counterbalanced by the ease we have with the final suture. It can be made any length. The ease of closure in particular, in spite of the drawbacks, surely warrants a more extended trial of it.

DR. J. CHRIS O'DAY, Portland, Ore.: Dr. Rockey saw me do a McBurney incision and asked me if I had tried his transverse incision. I said no. Dr. Rockey cannot tell you just how, but try it and when you do you will stumble into the easiest abdominal incision you have ever seen.

DR. O. O. WITHERBEE, Los Angeles: To further corroborate what Dr. Rockey has given us, I wish to say that in simple cases of appendicitis it is one of the most satisfying procedures I have had the pleasure to employ. I would even like to simplify, if I could, the description he has given of the method of entering the abdomen. After the skin incision is made you need no more cutting. On reaching the muscles one little clip with the Mayo scissors in the external oblique, and then opening the scissors enlarges the incision to a sufficient extent. The same procedure is effective in the next layer and very quickly you expose the peritoneum. With forceps this is lifted up and an opening is made into the peritoneal cavity. Previous injection with novocain blocks the nerves and avoids the deep anesthesia that would otherwise be required. In the majority of cases it is not necessary to pass more than one finger into the abdominal cavity to hook up the appendix, and in a few moments your operation is completed. A single stitch is sufficient in closing the muscles. With this method one can hardly realize that he has been into and out of the abdominal cavity.

DR. A. E. ROCKEY, Portland, Ore.: Dr. Farr called my attention to Dr. Elliott's having already previously used the transverse incision, but it is not mentioned in the textbooks. A French author published a description of a similar transverse incision the same year of my publication. It is evident that the natural advantages of the incision made it apparent to others. The surprising point is that there is no other incision made for the radical case. I prefer to make the incision high. There is not much advantage in making the incision down where Davis has described it, for the reason that the mesenteries of the cecum are high and not low, and when the cecum falls down lower it is not attached below except by accidental processes, so that in the great majority the cecum can be turned out, and in the best cases the drainage point is in a better location with a high incision. At this point of the aponeurosis of the external oblique it is not necessary to cut the muscle fibers at all, as when you get to the outer part in this spreading motion which I have described, with one movement the fibers of the external oblique spread forward widely.

RIGHT-SIDED HYPERTENSION WITH OCCASIONAL CARDIAC DILATATION AS POSTOPERATIVE COMPLICATION *

F. F. SIMPSON, M.D.
PITTSBURGH

The literature and individual experiences abound with instances of acute dilatation of the heart in the course of and following such acute infectious diseases as pneumonia, diphtheria, etc.

Athletes are required to train for events entailing unusually severe exertion. That acute cardiac dilatation often occurs among those who enter Marathon races has been abundantly demonstrated by roentgenograms of the heart. Persons with weakened myocardium caused by the stress of excessive business or social cares, by marked anemia, or by the prolonged absorption of bacterial toxins, biliary poisons, etc., are warned to avoid sudden, excessive exertion. Transitory or fatal dilatation of the heart may readily occur when these very ordinary precautions are disregarded.

To perform surgical operations in the presence of such depressing agencies is to take serious risks which must be minimized in every way if even a reasonably safe outcome is to be expected.

To impose on such hearts the burden of a general anesthetic throughout a prolonged operation done with the patient in the extreme Trendelenburg position, and later to give unnecessarily large intravenous injections of normal salt solution, would be to multiply these dangers instead of minimizing them.

Wertheim[1] has reviewed 500 consecutive hysterectomies for uterine carcinoma. Of that series ninety-three patients died. All who died were subjected to necropsy. Even at necropsy, acute dilatation of the heart was found as the sole cause of death in twenty-two instances.

When one series of hysterectomies for cancer done at a world-famous clinic shows a death rate of 4.4 per cent. from this one cause, I need present no further evidence to prove that it is a factor in postoperative mortality.

While I was visiting the Lakeside Hospital at Cleveland about five years ago, Crile was doing a direct transfusion of blood from husband to wife preparatory to a serious operation on the anemic woman. Crile called attention to the fact that it was very easy to dilate the heart if blood went across too quickly.

---

* This article embodies the essential features of the Chairman's Address, read before the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association, June, 1913. The complete paper, with charts, tracings, drawings and roentgenograms, appeared in the transactions for that year.

1. Wertheim: Die Erweiterte Abdominale Operation bei Carcinoma Colli Uteri, Vienna, Urban and Schwarzenberg.

Indeed, as he spoke, it occurred before our eyes. The face of the patient was slightly suffused, breathing became shallow and more frequent, the pulse quickly became accelerated, and the area of the right heart was increased as shown by percussion. The transfusion was temporarily stopped, the woman's head was elevated and her circulatory equilibrium was quickly restored. After a few minutes she was given more blood, and then a successful operation was done.

The ease with which dilatation of the heart was produced, the absence of precordial distress, the slight change in the patient's condition, and the readiness with which it was controlled, when recognized at its very inception, were a revelation. I had expected to see a picture of extreme gravity when cardiac dilatation was imminent. But here it had occurred, had presented no picture of extreme gravity, was promptly recognized and was promptly controlled.

This incident recalled to my mind a number of patients observed in my experience as an assistant and in my earlier individual work. The patients fell into two groups. In one group were those who were weakened by disease and had failed to rally after desperate operations. The pulse when they reached their beds was probably 130 and small; the patients were restless and seemed to have lost their courage. Instead of returning promptly to normal, the pulse rate and quality grew progressively worse, until a fatal termination was reached, from twelve to thirty-six hours later.

In the other group this clinical picture developed suddenly, from eighteen to forty-eight hours after operation. It was thought at that time that the weakened circulation was probably due to a small volume of blood and to cerebral anemia. Following the practice of the times, the foot of the bed was elevated and a liter or more of normal salt solution (with or without epinephrin) was given into a vein. We were puzzled and dismayed by a rapidly fatal termination in spite of what we were pleased to consider our beneficent efforts. Nor do I believe our experience was in any way unique.

In the light of Crile's work on transfusion, it then seemed to me that our cases may have been instances of acute cardiac dilatation, and that it would be worth while to apply his principles to our work. Each time the syndome appeared thereafter, the patient's head was slightly elevated, fairly vigorous stimulation was begun, and a competent internist was asked to examine the heart.

Our records in the period during which we have been looking for this affection show fourteen cases in which grave circulatory disturbances and probably acute dilatation of the heart were then thought to have occurred. All the patients recovered.

A fairly extensive review of the literature shows a considerable number of excellent papers on acute cardiac dilatation during chloroform narcosis, in the course of and as a sequel to acute infectious diseases, after sudden overexertion, etc. Except the recent article by Gatch, Gann and Mann,[2] very little indeed has been said of this affection as a postoperative complication when ether is used.

Our conception of the clinical picture was therefore gradually formed; indeed, it is not perfectly clear as yet. We have, however, formed the definite plan of looking with suspicion on patients whose myocardium may be presumed to have been weakened by hyperthyroidism, prolonged or very recent absorption of bacterial toxins (such as those of pneumococcus, streptococcus, diphtheria bacillus, etc.), of biliary poisons, of toxins from malignant neoplasms, by marked or prolonged anemia, etc. When after operation, particularly in these cases, we observe a rapid pulse that does not come promptly to normal, we look to the central circulatory system for the cause until other adequate explanation is found.

When the pulse, having fallen toward 100 after operation, shows an abrupt rise of twenty or more beats at any time during the succeeding two or three days, we expect to find one of the following causes for that disturbance: hemorrhage, atropin, right-sided hypertension, dilatation of the stomach or the rapid absorption of toxins surrounding a pelvic drain. This is usually precipitated by increased intrapelvic pressure following an enema.

If to the rapid pulse is added a slight cyanosis, sudden decided weakness, decided apprehension, etc., with increased area of the right heart, the clinical picture is probably that of increased venous tension and should be treated as such.

With this picture in mind we have made a review of our last 2,100 consecutive abdominal sections, which shows that there were forty-nine deaths — a mortality of 2.33 per cent.

Analysis of the last 2,000 abdominal operations shows that the syndrome of circulatory embarrassment due to right-sided hypertension or to cardiac dilatation was observed only forty-two times, or in 2 per cent. of our abdominal operations.

As conclusions arrived at previous to Feb. 15, 1913, were based largely on clinical observations, it was determined to make parallel observations along the following lines:

1. A series of physiologic experiments on dogs, directed by Dr. Clyde Brooks of Pittsburgh.
2. A systematic study, by Dr. H. G. Schleiter, of the circulation with cardiac measurements before and after operations in a series of patients subjected to abdominal operations.
3. Systematic Roentgen-ray studies, by Drs. Russell H. Boggs and Joseph Foster, of the same series of patients based on pictures taken under like conditions before and after operation.
4. A continuation of the clinical work with an analysis of findings in the series of patients studied by Dr. Schleiter and by roentgenograms.

PHYSIOLOGIC MAMMALIAN EXPERIMENTS

The plan of these experiments was to study, on the one hand, the circulation of normal dogs, and on the other hand, that of dogs with weakened circulation caused by hyperthyroidism, or by long subjection to methods commonly employed in operating rooms, or in the postoperative treatment of patients. Dogs were completely anesthetized with ether. Both venous and arterial manometric blood-pressure tracings were recorded on the drum, while the dogs were kept in Trendelenburg, Fowler's and in horizontal positions, and also during the intravenous injection of salt solution.

In some instances the thorax was opened so that the heart and great vessels could be directly observed.

2. Gatch, W. D.; Gann, Dewell, and Mann, F. C.: The Danger and Prevention of Severe Cardiac Strain During Anesthesia, THE JOURNAL A. M. A., April 26, 1913, p. 1273.

The results of these experiments may be briefly summarized as follows:

1. On a vigorous dog with normal circulatory apparatus:

In all instances, change of position caused a very slight and transitory change in arterial and in venous pressure.

When the animal was placed in a marked Trendelenburg position there was a momentary slight decrease in arterial pressure and later a slight fall in venous pressure. When 0.9 per cent. sodium chlorid solution was rapidly injected through the external jugular vein, there was a sudden great increase in venous pressure followed by a rise in arterial pressure with a synchronous increase in amplitude of heart beat recorded on the tracing. In other words, the normal vigorous heart responds to the stimulus of increased burden by efficiently performing the added work, and in connection with the normal vasomotor mechanism by quickly reestablishing and maintaining circulatory equilibrium.

These observations are in accord with those of Crile, which directed our attention to this subject.

2. On the dog with weakened circulatory apparatus:

Conversely, we here observed that when the circulatory mechanism of the dog is weakened by any of the causes mentioned before, instead of responding to the stimulus of increased work, it is overwhelmed and shows evidence of embarrassment.

This series of experiments includes those dogs with circulatory apparatus weakened by hyperthyroidism, by prolonged ether anesthesia, by the extreme Trendelenburg position, and by intravenous injections of 0.9 per cent. sodium chlorid solution.

Our experiments on all of these dogs weakened by the foregoing conditions yielded essentially the same results.

Having taken the normal tracings for the dog in the horizontal position, we then raised it to the extreme Trendelenburg position. There followed a decided increase in arterial and venous pressure. The pressure did not return completely or quickly to the normal level for the horizontal position. The weaker the dogs were, the slower and less complete was the return.

Having been kept in the extreme Trendelenburg position for a time, they were then replaced in the horizontal position, whereupon the venous and arterial pressure returned and remained normal. Next the caudal extremity of the dog was lowered (Fowler's position). There followed a corresponding diminution in arterial and venous pressure.

In some experiments, the thorax and pericardium were opened for the purpose of examining the heart by direct inspection and palpation. It was found that when the dogs were in the extreme Trendelenburg position there was a decided increase in the venous tension, with a corresponding slight dilatation of the right auricle and great veins. Next the dog was lowered to the horizontal position, and later the caudal extremity was lowered to the Fowler position. There resulted a reduction in venous tension and tension of the right auricle corresponding to the tracings in the same positions previously obtained.

The next step was to embarrass the heart further by rapid intravenous injections of large quantity of normal salt solution into the external jugular vein. It was found that there was a marked increase in tension in the great veins and right auricle, with some dilatation of the veins and auricle, followed by increased dilatation of the right auricle, dilatation of the right ventricle and still later by dilatation of the left auricle and ventricle. After the saline injection was discontinued, if the heart was in fair condition, this added volume of salt solution was quickly distributed into the vascular tree, and the circulation returned to its normal equilibrium. On the other hand, if the heart was in poor condition, there followed arrhythmia, lowered arterial pressure and other evidences of a failing circulation. In one instance, that of a vigorous dog with normal heart which was kept for a long time in the Trendelenburg position without causing any embarrassment of the circulation, the thorax and pericardium were opened, the heart was exposed, and the ventricles were thrown into fibrillation by induced electric current. Immediately the auricle and great veins became dilated and the circulation promptly failed.

It was observed that the dogs having large thyroids and suffering from hyperthyroidism yielded more quickly and more profoundly than normal dogs to the depressive influences of posture, ether and intravenous injections of normal salt solution, etc.

TABLE 1.—COMPARATIVE MEASUREMENTS OF PREOPERATIVE AND PROSTOPERATIVE ROENTGENOGRAMS

Area	Result	Times Observed
Vascular	Increased	58
Cardiac	Increased	32
Vascular	Normal	22
Cardiac	Normal	23
Vascular	Diminished	10
Cardiac	Diminished	35

It appears to be reasonable to consider the weakened circulatory apparatus of the dog, comparable to that of the weakened circulatory apparatus of the patient suffering from the following conditions: prolonged profound anemia, hyperthyroidism, absorption of bacterial or biliary poisons, etc.

OBSERVATIONS ON THE CARDIOVASCULAR SYSTEM OF 115 PATIENTS SUBJECTED TO ABDOMINAL OPERATION

In view of the small percentage of instances in which serious central circulatory embarrassment occurred in the series of 2,100 abdominal operations, it seemed quite possible that our present series of 100 might fail to show a single instance. On the other hand, it was thought that at any rate some suggestive observations might be made. As a matter of fact, with one possible exception, there was no instance of cardiac dilatation to report in this series of observations.

One hundred and fifteen cases were studied to observe the change undergone by the cardiovascular system as a result of major abdominal operations under ether, cocain, novocain or a combination of these anesthetics.

The uniform method applied in all cases was to obtain the following data:

1. A brief history as to the occurrence of scarlet fever, diphtheria, throat infections, pneumonia, typhoid and rheumatic fever.

2. A history as to any previous cardiac condition. This save for occasional palpitation was negative in every case.

3. An examination of the blood-vessel walls.

4. Record of the rate, rhythm and quality and character of the radial pulse before and after operation.

5. The blood pressure, systolic and diastolic, pulse pressure and venous pressure before and after operation (in sixty-four of the series).

6. The dimensions of the heart to the right and left of the midline at the base of the third interspace before and after operation, determined by percussion and auscultatory percussion. It was not attempted to locate the apex, as this is too uncertain in female patients.

7. The character of the heart sounds.

TABLE 2.—INCREASE AND DECREASE IN VASCULAR AND CARDIAC DISEASES

Increased				Decreased			
Vascular Area		Cardiac Area		Vascular Area		Cardiac Area	
mm.	No. Cases	mm.	No. Cases	mm.	No. Cases	nm.	No. Cases
1	1	1	1	1	1	1	2
2	5	2	4	2	1	2	2
3	10	3	3	3	1	3	1
4	10	4	5	4	2	4	4
5	11	5	4	5	0	5	6
6	7	6	4	6	3	6	1
7	2	7	1	7	1	7	1
8	3	8	2	..	..	8	7
9	0	9	1	..	..	9	0
10	1	10	2	..	..	10	2
11	2	16	1	..	..	12	1
12	1	22	1	..	..	14	3
..	..	..	..	..	..	15	2
..	..	..	..	..	..	16	1
..	..	..	..	..	..	17	1

The study of the cardiovascular system in 115 consecutive abdominal operations failed to show any case of marked right-sided hypertension. In two instances, however, the circulation showed embarrassment consistent with an increase in venous tension, or the early stages of the condition under consideration.

One patient who showed considerable cyanosis with rapid pulse and sudden weakness on the table, though showing nothing noteworthy in her percussion outlines, gave evidence in roentgenograms of a slight diminution in the heart's transverse diameter, coincident with an increase in diameter of the great veins at their point of entry into the right auricle. There was noted also a systolic murmur at the left of the sternum lasting not more than twenty-four hours. The cause of this murmur was not determined, though it seems possible that it might have been due to a temporary change in the tricuspid ring caused by venous and right auricular dilatation.

The case with a rapid pulse twenty-four hours after operation, from 140 to 100, though giving no evidence of change in the heart's outline, showed at this period an increase of venous pressure as shown by the sluggish emptying of the vein at the hand, which had to be lifted 12 inches above the level of the heart before the vein flattened. The roentgenogram of this patient showed the transverse vascular measurement to be increased 4 mm., while the heart measurements were unchanged. Here the picture seems typical of a slight transitory increase in pressure in the right auricle and venae cavae, without, however, going to the stage of dilatation.

ROENTGENOGRAPHIC FINDINGS

From the series of 115 consecutive abdominal sections, one roentgenogram was made before operation and one or two after operation in seventy-five instances. The other forty were dropped from the list for some definite reason, as two exposures on the same plate, failure to obtain the preoperative picture, such postoperative change of position as would prevent securing pictures that could be compared with those obtained before operation, etc.

These pictures were not studied until the entire series was completed. The series of pictures of each patient was illuminated and careful measurements were made with calipers and ruler, first in the vascular area between the arch of the aorta and the heart, and secondly, the broadest part of the heart.

The preoperative measurements were considered as normal for each patient. Some of the postoperative measurements were normal, others showed a fractional increase and others a fractional decrease. In strict conformity with the clinical course and clinical measurements, none showed a marked increase in the size of the cardiac or vascular areas. Among others, the two cases mentioned before showed a moderate increase in vascular measurements. A careful analysis of roentgenographic measurements, however, is very suggestive (Table 1).

These measurements are consistent with the view that the dilatation begins in the great vein.

In this comparative table there are five duplicates in the vascular measurements and fifteen in the cardiac measurements. The duplicates occur because of a variation in measurements made on pictures taken the day of operation and those taken the next day or the second day after operation.

Maximum cardiac measurements were more often observed on pictures taken the second or third day after operation. Thus, of the thirty-two times in which the heart measurements were increased after operation, two postoperative pictures were taken twenty-six times. Of these, the second picture (that is, the one taken from forty-five to seventy-five hours after operation) showed maximum measurements seventeen times, whereas in the first picture, taken the day of operation, maximum measurements were found only five times. In four instances the measurements were unchanged.

TABLE 3.—CASES WITH NORMAL CIRCULATION IN RIGHT-SIDED HYPERTENSION WITH VASCULAR MEASUREMENTS NOT RELATIVELY GREATER THAN CARDIAC

Area		No. Cases
Vascular	Cardiac	
Increased	Increased	22
Normal	Normal	8
Normal	Increased	7
Decreased	Increased	1

When the postoperative cardiac measurements were smaller than normal, the maximum reduction was noted the day of the operation nineteen times, the day after operation seven times, and in two instances the measurements were unchanged. In seven instances only one postoperative picture was taken, making the total of thirty-five in which a cardiac reduction was noted.

An analysis of measurements shows that with few exceptions, variations were slight. Thus in the fifty-eight instances in which there was an increase of vascular measurements, the increase was 6 mm. or less in forty-four cases, and 7 mm. or over in nine. In

only four instances were the measurements increased 1 mm. or more. None of the decreased vascular measurements exceeded 7 mm.

Of the increased cardiac measurements eighteen were 6 mm. or less, while four were as follows: two, 10 mm.; one, 12 mm.; three, 14 mm.; two, 15 mm.; one, 16 mm., and one, 17 mm.

CLINICAL OBSERVATIONS ON 115 CONSECUTIVE ABDOMINAL OPERATIONS

A review of the clinical records shows that the postoperative course was perfectly smooth in seventy-six out of 115 cases, notwithstanding the fact that many who were considered poor operative risks had serious operations. The pulse in sixty-nine cases scarcely varied ten beats during the forty-eight hours. In the seven other cases, the pulse fell about forty beats, from 120 or more within the first two hours, and remained normal thereafter.

Twenty-six patients, all but one or two of whom were rather poor operative risks and yet required very serious operations, showed a rise of pulse rate to 100 or less in four instances, 112 or less in twelve instances, 120 or less in six instances and 130 four times. In all instances the pulse promptly fell to the normal (within eight or ten hours) and remained so, the further convalescence being normal.

TABLE 4.—CIRCULATORY DISTURBANCES WHEN VASCULAR MEASUREMENTS WERE RELATIVELY GREATER THAN CARDIAC

Area		No. Cases	Normal	Abnormal
Vascular	Cardiac			
Increased	Normal	16	14	2 seriously ill.
Increased	Decreased	16	15	2 seriously ill; 1 had a drop of 40 beats or more on leaving table.
Decreased	Decreased	9	4	3 seriously ill; 2 had a drop of 40 beats or more on leaving table.
Normal	Decreased	7	5	2 had a drop of 40 beats or more on leaving table.

It is thus seen that 102 of the 115 patients ran a practically normal and perfectly safe course. In the remaining thirteen instances the pathologic condition was more grave, circulatory disturbances were more marked and the postoperative condition more serious. Three of these patients died. One of these patients, a woman aged 66, with gallstones and large pancreatic abscess, died of pneumonia the eleventh day; the others died of peritonitis.

In no instance was the clinical picture of acute cardiac dilatation observed, though in one case there was decided cardiac embarrassment on the table as evidenced by cyanosis, weakness and marked acceleration of the pulse. In this case, roentgenograms immediately after operation showed increased vascular measurements but decreased cardiac measurements. The patient developed a systolic murmur which lasted one day. May she not have had a transitory tricuspid insufficiency?

A comparison of the postoperative condition of these patients and their clinical records with the Roentgen-ray findings is of some interest.

Though the typical clinical picture of marked increase in venous tension or acute cardiac dilatation was not observed in this series of 115 patients, minor changes were observed. They would seem to warrant the following conclusions as regards right-sided hypertension.

1. When the vascular measurements were not relatively greater in proportion to the cardiac measurements, there was no circulatory embarrassment. In thirty-eight cases no embarrassment was observed.

2. When the vascular measurements were relatively greater than the cardiac measurements, circulatory disturbance did occur in 24 per cent. of the cases. In fifty cases embarrassment was observed twelve times.

It is our belief that these twelve cases represent the early stages of increased venous pressure or right-sided hypertension, and that if their circulatory apparatus had been somewhat further depressed, marked hypertension and then acute dilatation would have occurred in the following sequence: right auricular and ventricular and then left auricular and ventricular dilatation. Agencies which might readily have dilated these hearts are more ether, prolonged operation, prolonged extreme Trendelenburg position, or the rapid intravenous injection of large amounts of salt solution at the time the circulatory embarrassment existed.

SUMMARY

Right-sided hypertension does occur as a postoperative complication. It is usually slight and causes no alarming symptoms. It occasionally causes circulatory disturbance, always with a rapid pulse. In rare instances it goes on to right auricular dilatation or even to dilatation of the whole heart.

It is more likely to occur when the myocardium is weakened by disease. It may readily be precipitated or intensified by excessive ether, prolonged extreme Trendelenburg position or by the rapid intravenous injection of large quantities of salt solution while the heart is already embarrassed.

It should be promptly recognized and treated by slight elevation of the head of the bed, a little morphin and cardiac stimulants.

Jenkins Arcade Building.

RESULTS OF APPLYING A QUANTITATIVE METHOD TO THE ABDERHALDEN SERUM TEST FOR CANCER *

ISAAC LEVIN, M.D.
AND
DONALD D. VAN SLYKE, PH.D.
NEW YORK

In a previous publication, one of the writers[1] reported a study of the value of the Abderhalden test for cancer, a comparative investigation with the dialysis method in cases of carcinoma, sarcoma and tuberculosis. As a substrate, carcinoma tissue was used for all the cases. Of thirteen carcinoma cases, twelve were positive and one negative; the sarcoma cases were all positive. Of twenty tuberculosis cases, nine were positive and eleven negative. The analysis of the results showed that the Abderhalden dialysis method cannot be considered as yet of real diagnostic

* From the Department of Cancer Research of the Montefiore Home and the Hospital of the Rockefeller Institute for Medical Research.
1. Levin, Isaac: Proc. New York Path. Soc., 1914, xiv, 115.

value, since it is positive in nearly 50 per cent. of non-cancerous patients.

Before further investigations could be attempted in regard to the question of the specificity of the reaction and the correctness of Abderhalden's theoretical conceptions, it seemed imperative to find a more accurate test for the detection of the ferment actions of the blood serum. Van Slyke and Vinograd[2] reported a year ago on a quantitative application of the Abderhalden serum test.

Their technic was the following: Two c.c. of serum are digested with 0.1 gm. of dried substrate (tissue prepared according to Abderhalden's directions and dried at 0.5 mm.). After the digestion is complete, 3 c.c. of water are added. The solution is then centrifuged, and 2 c.c. used for aminonitrogen determination in the apparatus of Van Slyke. Control analyses are run under the same conditions with serum that has been digested with normal tissue and without any tissue. The occurrence of proteolysis is shown and its extent measured by the increase in aminonitrogen. As the aminonitrogen is transformed into elementary nitrogen gas, which is measured in a buret, the results are both quantitative and free from subjective influence.

This method undoubtedly obviates a great many of the possible errors inherent in the dialysis method, and it was therefore decided to employ it for the purpose of further investigation of the value of the Abderhalden test for the diagnosis of cancer.

In the first series (Table 1), the test was used in eight normal cases and on fifteen carcinoma patients. In all twenty-three cases the same carcinoma substrate was used. The tissue was taken from a patient with adenocarcinoma of the breast. It was prepared in accordance with the rules laid down by Abderhalden and then dried. Table 1 shows the increase in nitrogen gas from 1 c.c. of blood serum. An analysis of the table shows that, with the exception of Case 21, the increase varies over nearly the same range in the normal as in the carcinoma cases, though the average increase is somewhat greater in the carcinoma cases. In every carcinoma case a parallel test was also made by the aid of the dialysis method. The same table shows the result. The sign + means a faint color reaction, ++ a stronger and +++ a very strong reaction; 0 means a negative reaction. The dialysis results do not seem to coincide with the amount of increase in the aminonitrogen. Case 12, for example, showed no increase in the aminonitrogen, but was positive by the dialysis method.

TABLE 1.—FIRST SERIES

No. of Case	Condition	Increase in Nitrogen Gas from 1 c.c. Serum c.c.	Dialysis Test. Ninhydrin Reaction
1	Normal	.07	.....
2	Normal	.11	.....
3	Pregnant	.24	.....
4	Pregnant	.16	.....
5	Normal	.10	.....
6	Normal	.00	.....
7	Normal	.00	.....
8	Normal	.18	.....
9	Carcinoma	.22	+
10	Carcinoma	.20	+
11	Carcinoma	.28	+
12	Carcinoma	.00	++
13	Carcinoma	.29	+++
14	Carcinoma	.22	+++
15	Carcinoma	.29	+++
16	Carcinoma	.06	.....
17	Carcinoma	.08	+++
18	Carcinoma	.04	+
19	Carcinoma	.01	+++
20	Carcinoma	.25	+++
21	Carcinoma	.44	+++
22	Carcinoma	.24	++
23	Carcinoma	.14	+++

After these results had been obtained, it was found that the accuracy of the aminonitrogen determination could be increased by removing the proteins of the serum with colloidal iron before the aminonitrogen determination was performed.

The method thus improved was employed in another series of cases. The blood serum of eight normal individuals and nine carcinoma cases was tested, using for substrate the same carcinoma tissue which was employed in the first series. Table 2 shows the result of this series. Again the increase in the nitrogen gas formation varies within the same limits in the normal as in the carcinomatous serum. In this series the average increase of nitrogen gas seems to be greater in the normal cases than in the carcinomatous. The blood serums of six carcinoma cases were also tested by the dialysis method, while in the other three cases a sufficient amount of serum could not be obtained for the double test. Here again the strength of the color reaction does not coincide with the lesser or greater quantity of nitrogen gas. Case 14 is interesting inasmuch as it was negative with both tests.

The analysis of the results of the present investigation seems to indicate that the more accurate and objective the test employed for the detection of the specific ferment reactions in the blood serum, the less difference can be detected between the reactions obtainable with normal and supposedly specific serums. The diagnostic value of the Abderhalden reaction in cancer is, therefore, to say the least, doubtful, and it must be stated very emphatically that for the present the method belongs to the research laboratory and not to the clinic.

TABLE 2.—SECOND SERIES

No. of Case	Condition	Increase in Nitrogen Gas from 2 c.c. Serum c.c.	Dialysis Test. Ninhydrin Reaction
1	Normal	.10	.....
2	Normal	.21	.....
3	Normal	.06	.....
4	Normal	.16	.....
5	Normal	.11	.....
6	Normal	.10	.....
7	Normal	.19	.....
8	Normal	.18	.....
9	Carcinoma	.10	+++
10	Carcinoma	.14	.....
11	Carcinoma	.05	.....
12	Carcinoma	.07	.....
13	Carcinoma	.08	+
14	Carcinoma	.00	0
15	Carcinoma	.08	+
16	Carcinoma	.13	+
17	Carcinoma	.28	++

Thorough Examinations.—It may sometimes be advanced as an excuse, that the patient objected to some special examination. If the patient cannot be convinced that an examination is necessary, the case had better be relinquished, for it is better to lose a patient than to lose a reputation. The procedure of treating first and examining afterwards may lead to the unfortunate necessity of having to treat not only the disease, but the effects of your own treatment.—Adolphe Abrahams, *Practitioner,* London, March, 1915.

2. Van Slyke, Donald D., and Vinograd, Miriam: Proc. Soc. Exper. Biol. and Med., 1914, xi, 154.

WOMEN IN MEDICINE

RICHARD C. CABOT, M.D.
BOSTON

American women have long since won a place in all the professions which they desire to enter. In this country there is no longer any question of women's "right" to do any work which they care for. There is no longer any serious difficulty confronting a woman who wishes to get a first-class medical education. All is smooth sailing thus far.

It is after graduation that the problems and difficulties arise. What next? No law prevents woman from occupying and cultivating any of the three great fields of medicine—medical science, medical practice and social medicine. No law, I say, but there are obstacles nevertheless, much more subtle and powerful than law. What these obstructions are I can better suggest when I have attempted a brief description of the three main groups or subdivisions which have thus far arisen within the doctor's domain.

(a) *Medical science* is the choice of those who devote themselves to investigation and teaching. It is convenient to group here also those whose medical work is done chiefly in a laboratory without any considerable contact with patients.

(b) *Medical practice* is the choice of the vast majority of our profession, and means the devotion of one's life to the care of sick people in competition with other physicians.

(c) *Social medicine* is done on salary and for the public benefit. Medical missionaries, all physicians in state and city sanatoriums for the tuberculous, college physicians, school physicians, medical inspectors of health in industry or outside it, those employed in the campaigns for "better babies," for the diminution of infant mortality, venereal disease, hookworm disease or industrial disease, physicians working in prisons, reformatories, almshouses, asylums and public hospitals, all health officers in city, county, state or nation —such workers are engaged in what I have called social medicine.

Women have proved their capacity to succeed in each of these fields. They have been successful as practitioners, in research and in social medicine. I have known women making an income of $20,000 a year in practice, and thoroughly enjoying the profession. In scientific medicine the names of Dr. Dorothy Reed, Dr. Mary W. Lawson, Dr. Florence Sabin, Dr. Maude Abbott and others are well known. In social medicine Dr. Alice Hamilton's work in industrial disease, Dr. S. Josephine Baker's in child hygiene, and Dr. Frances S. Bradley's in the United States Children's Bureau is eminently successful.

I have never felt or expressed any doubt on these points. Women certainly *can* make good in any department of medicine. But do they *wish to?* Do they like all branches of medicine equally? Do they feel the same natural zest and aptitude for them all? I think not. One branch—the practice of medicine—is hard for all of us. It is doubly hard for women because it involves competition, not on equal terms, but with an irrational handicap against them. I mean the handicap of a foolish popular prejudice. Quite unreasonable, the great majority of people (of both sexes) still prefer a mediocre man doctor to a first-rate woman doctor. As long as this is so—and I see no improvement in the last twenty years—women will not have a fair chance to get the broadest experience or to give their best service in medical practice.

Moreover women, as I see them, relish competition less than men. Many men dislike it—more women. For competition involves a struggle not only toward the best but against other people on the way. Men often like this. They get into a fight when they can; women when they must. If any one doubts this let him talk to his friends of both sexes about the great war now going on. The number of women who abhor the very idea of war is great—the number of men relatively small.

I do not think any one who has practiced medicine will deny that it involves in its competition a kind of war. The waste and irrationality of this competition from the standpoint of public health is so obvious that many of us are beginning to doubt whether competitive medicine is going to last much longer. Noncompetitive medicine, cooperative or social medicine, seems to some of us the better type. But however this may be, I believe that it is the type that most appeals to women. In social medicine there is no need to spend energy in financial worry or in distancing the other man, no considerable temptation to deceits, large or small, and no advantage in underhandedness. All one's forces can be directed straight at the end of public health.

Because this is not so in competitive medicine, I believe many women find it a disappointment and welcome the opportunity to get into scientific medicine or into social medicine on salary. Men also find medical practice a disappointment, but women more often find it so, perhaps because they are handicapped in competition by the popular prejudice against them. I need not say that I do not share this prejudice, for I have during the last twenty years done my best to help women and to get their help in medicine. But the prejudice exists and will exist for a long time. The average practicing woman physician is, I think, a better doctor than the average man physician, yet the public clings stubbornly to its belief in the superior skill and wisdom of the medical male.

What is my object in saying these things? Because I wish to direct the attention of those concerned in the medical education of women to the great and relatively new field of noncompetitive medicine for which, as I see it, women are often better fitted than men. Granted that women can equal men in any branch of medicine, is that any reason why they should not be trained—in case they prefer it—for that type of medicine in which they naturally and frequently excel men?

Is there any good reason for not having an elective course in social medicine in the colleges which give women their medical training? Ordinary medical education does not prepare one sufficiently for social medicine. The practitioner who turns to public medical service must train himself freshly for that service. Every medical school should provide opportunities to study social medicine; but this is especially the duty, I think, of medical colleges exclusively for women.

If any one thinks that I have asked women to take up the small end of medicine and have reserved the great and glorious portion for men, I can only say that I have recommended to women the type of work which I myself greatly prefer, the type to which I now give most of my time and to which I would like to give the rest of my life.

Moreover, social medicine is, I believe, the medicine of the young future, the medicine whose stock in trade is prevention, education and public service. I do not think it will attract men as much as the old competitive type now attracts them. But I believe it will be work of a higher, better kind. Why should not women prefer it? Why should they not be adequately trained for it—here and now?

1 Marlborough Street.

A CASE OF LYMPHATIC LEUKEMIA WITH APPARENT CURE

R. A. IRELAND, M.D.
CHARLESTON, W. VA.
WALTER A. BAETJER, M.D.
AND
JOHN RUHRÄH, M.D.
BALTIMORE

On Sept. 12, 1913, I was called to see a boy who had not recovered normally from a tonsillectomy done on September 6, and who had been losing weight and energy for about two months without apparent reason.

The patient was 10 years old. His father and mother were living and well. He had four brothers and one sister living and in good health. His family history was negative for syphilis and tuberculosis. He had suffered from measles, whooping cough and other minor diseases of childhood, from all of which he had made uneventful recoveries. For a few days previous to Sept. 6, 1913, he had suffered from tonsillitis. On the date last mentioned the tonsils were removed under chloroform anesthesia. For a month or more his bowels had moved two or three times daily and he had complained of almost constant pain in the abdomen. Recently his nose had bled at frequent intervals.

His mother said that in the last month his habits had greatly changed in that he wanted to be near her constantly. He was of normal build and features. His facial expression suggested bodily discomfort. His skin was bronzed enough to be quite noticeable. Nodules about the size of pigeon's eggs showed under the chin and in the axillae. Palpation revealed the presence of enlarged glands over all the body, and some of them were slightly tender. The spleen was slightly enlarged; the liver was normal. The entire abdomen was slightly tender on palpation but was otherwise normal. Other physical findings were negative. The result of an examination of his stool was negative. His blood count showed a leukocytosis of 20,000. Differential count showed, polymorphonuclears 2.5 per cent., eosinophils 0, basophils 0, small lymphocytes 67.5, large lymphocytes 30, large mononuclears 0, transitionals 0, myelocytes 0, platelets absent, red blood cells 3,000,000, hemoglobin 75 per cent. A Wassermann reaction was negative.

A diagnosis of lymphatic leukemia was made and after a consultation with Dr. G. A. MacQueen, the patient was started on 10 drops of the syrup of the iodid of iron and 1 drop of Fowler's solution three times a day. The Fowler's solution was to be increased 1 drop each second day until 10 drops were given and the rotation started again with 1 drop. In addition, Roentgen-ray exposures were made for five minutes each day. A diet of simple nutritious food was prescribed and directions given for quiet living and plenty of fresh air.

The above treatment was discontinued on Sept. 22, 1913, there being no change for the better in the patient's condition, and 0.3 gm. of neosalvarsan was given by Dr. MacQueen and repeated on September 28, and October 21.

At the time of the last injection another blood examination showed a total white count of 16,000. Differential showed polymorphonuclears 16 per cent., small lymphocytes 69 per cent., large lymphocytes 15 per cent.

The boy had gained 3 pounds in weight and his color had improved. At this time Roentgen-ray treatments were started again. On Jan. 2, 1914, another blood examination showed a total white count of 12,000; polymorphonuclears 44 per cent., small lymphocytes 43 per cent., large lymphocytes 12 per cent., eosinophils 1 per cent.

The boy played with energy and looked well. The Roentgen ray was discontinued and Fowler's solution and the iron were given for a period of two months.

On June 28, 1915, the differential leukocyte count in this case was: polymorphonuclears 37.5 per cent., eosinophils 3.5 per cent., basophils 1 per cent., small lymphocytes 37.7 per cent., large lymphocytes 15 per cent., large mononuclears 2.3 per cent., transitionals 3 per cent.

The red blood cells were normal as were also the platelets.

COMMENT BY WALTER A. BAETJER

The blood picture seen in the original smear would certainly, in my judgment, have made the diagnosis of lymphatic leukemia in an aleukemic or pseudo-aleukemic stage, provided the clinical picture was reasonably typical. There are, however, two features in the smear which are perhaps a little unusual for true leukemia. They are: first, the absence of anemia except perhaps of a slight grade; second, the fact that all of the lymphocytes are so mature and so typical morphologically and in their staining reaction. On the other hand, however, the following points certainly suggest true leukemia: first, high per cent. of lymphocytes, 97.5; second, the large number of large lymphocytes, 30 per cent.; third, complete absence of platelets.

I should personally feel that the diagnosis of lymphatic leukemia was justified in this case; although the reports of a fair number of cases of infectious mononucleosis in the past few years has made me feel a little less sure about making an absolute diagnosis in such a case than formerly.

COMMENT BY JOHN RUHRÄH

Through the courtesy of Dr. R. A. Ireland I had the pleasure of seeing this patient, examining the blood specimens taken during the illness, and of making blood specimens from him in June, 1915. In my mind there can be no doubt that the case presents a typical clinical picture of the disease which we know under the name of lymphatic leukemia and of the type of the disease usually described in the textbooks, a form that is perhaps least common of all. The blood picture is also typical of this same condition, which presents a higher degree of mononucleosis than any other known condition. In the specimen which I examined there were 97.5 per cent. of mononuclear cells. In my experience in the diseases of childhood I have never seen that degree of mononucleosis in any condition other than leukemia.

Turck, Cabot, Jackson, and others have described cases in which, during or following infections about the throat, there was more or less general enlargement of the lymph nodes together with an increase in the number of lymphocytes. Similar blood findings have been described in cases of streptococcus infection due to wound sepsis, in furunculosis, in widespread streptococcus adenitis of tonsillar origin. Some of these cases have also been described following septic sore throat. In Cabot's cases the leukocytes did not exceed 71 per cent. His cases were in adults. In Jackson's remarkable case occurring in a college student 21 years of age, following a sore throat and slight enlargement of the lymph nodes of the neck,

the blood count showed, white blood cells, 40,000; small lymphocytes, 36; large lymphocytes, 59; polynuclears, 5; basophils, 0; eosinophils, 0.

This patient had had typhoid in 1907 and in 1909 had his spleen removed due to rupture caused by a coasting accident. The blood picture following removal of the spleen was normal. This patient's blood became progressively better and in two months after the onset was practically normal and has remained so at the time of his report.

The differential diagnosis between an acute leukemia and lymphocytosis due to infections may be exceedingly difficult. Cabot would base it on the lesser degree of lymphocytosis, on the course of the disease and the recognition of an infectious origin of the adenitis. To these may be added the amount of change in the red blood cells and whether or not there is hemolysis.

Whether or not the patient, who has had a practically normal blood count for two years, can be regarded as cured is open to question and it would seem to me perhaps safer to allow a somewhat longer period to intervene before speaking dogmatically on this subject. Nevertheless this case of Dr. Ireland's is, so far as my knowledge of the literature goes, unique, presenting a higher degree of mononucleosis with a return to normal or more nearly normal than in any other case that has been described. It may be noted that the patient at the time of the last blood examination presented a higher percentage of lymphocytes than is usually seen at 12 years of age. The cure in this case may have been due to the neosalvarsan, as it seems that the improvement took place after it had been administered and when the case had shown no definite reaction to the Roentgen-ray therapy. In any other instances with which I am familiar in which salvarsan has been administered, it has been without effect so far as the eventual outcome is concerned. The same may be stated to be true of Roentgen-ray therapy.

In spite of the small number of cases of leukemia reported in children, I am inclined to believe that the disease is not so infrequent as is thought. There can be no doubt that many cases, particularly in the very young, are overlooked usually because leukemia is not borne in mind as one of the possibilities. When the disease presents a typical picture with general enlargement of the lymph nodes it has probably not escaped diagnosis, but in the acute febrile forms the disease may easily be mistaken for typhoid or paratyphoid if the blood is not examined; the ulcerative stomatitis cases may be mistaken for malignant diphtheria or scurvy or for stomatitis; and the hemorrhagic form for scurvy, purpura, or some severe infection with hemorrhage. I have mentioned only the most likely possibilities. It should be borne in mind that the disease may occur at any age and has been reported in children as young as 16 days. It should also be remembered that it may be exceedingly acute, four and a half days being the shortest period from onset of symptoms until death, or the disease may last for weeks or months.

It is to be hoped that the report of this very unusual case will stimulate others to report single cases of leukemia in children, with particular reference to therapeutic procedure, as our knowledge of this subject is at present exceedingly unsatisfactory.

It may not be out of place to urge the more frequent use of differential counts especially when, for any reason, the examination must be limited. A differential count will give more definite information than any other single procedure of the examination of the blood and may be supplemented with further investigation if deemed necessary.

EPIDIDYMOTOMY: A NEW OPERATION

E. P. MERRITT, M.D.
Instructor in Genito-Urinary Surgery, Atlanta Medical College, Medical Department of Emory University; Urologist to the Atlanta Antituberculosis and Visiting Nurses Association
ATLANTA, GA.

The ineffectiveness of conservative therapeutic measures for the symptomatic relief and abridgment of the course of gonorrheal epididymitis has led to the employment of more radical and direct means of securing these ends.

Hagner in 1908, and others following him, described operations of epididymotomy which to my mind are unnecessarily extensive to attain the desired object. During the last three years, in the treatment of seventy-five cases of gonorrheal epididymitis, I have followed out a procedure which appears to overcome the objections to previous methods, and to be uniformly satisfactory and effective.

The method is as follows:

The site is prepared as for any surgical operation on the scrotum. The scrotum is grasped on the affected side, as much gentleness being used as is consistent with firmness. Three per cent. iodin is applied to the field. A 1 per cent. solution of cocain is injected at the lower part of the scrotum, anesthetizing the skin from one-half to one inch in length. Then the needle is pushed straight down, and a few drops distributed in the globus minor. With a sharp-pointed bistoury, an incision is made along the anesthetized line in the scrotum, and then with care the point of the knife is advanced into the globus minor, and several stabs or punctures are made. A blunt-pointed probe is then pushed along the tracks of the knife, and blind avenues opened up. The wound is then packed with 5 per cent. iodoform gauze. No sutures are required. A plain gauze dressing is applied, and the scrotum kept well supported.

By this operation, free drainage is secured by incision at the most dependent point. Whether or not pus is present, tension is relieved, and thus the most prompt and gratifying relief of pain and discomfort is obtained. It can be performed under local anesthesia with entire satisfaction at one's office or at the clinic. The incision is much smaller than in other operations of epididymotomy. It greatly shortens the duration of the disease and the consequent detention from business, and therefore is of economic value. It is devoid of risk. The technic is extremely simple, and any one with the most casual surgical experience is capable of performing it.

924-926 Candler Building.

Oysters in Interstate Commerce.—Oysters now being shipped from northern oyster beds in interstate commerce are safer than ever before, being as safe a food as milk. This condition has been brought about through the sanitary surveys of oyster beds conducted cooperatively by the Public Health Service and the Department of Agriculture, by the hearty cooperation of the state shellfish authorities with the federal authorities, and finally by a realization on the part of the oyster men that they themselves, in the interests of their industry, must prevent the taking of oysters from suspected or polluted beds.—*Bull. U. S. Dept. Agriculture.*

TUBERCULOSIS OF THE UTERINE APPENDAGES *

HOWARD CANNING TAYLOR, M.D.
NEW YORK

CAUSES

General: Tuberculosis of the uterine appendages is usually secondary to a tuberculous infection in another organ. It can be stated, therefore, that anything that predisposes to tuberculosis in general, predisposes to tuberculosis of the genital organs. This may be family disposition, mode of living, race, etc.

Predisposing: Previous gonorrheal infection of the fallopian tubes is claimed to be a predisposing cause of tuberculous salpingitis. In other organs a simple inflammation doubtless predisposes to a tuberculous infection. In the joints, lungs, pleura and elsewhere a simple inflammation frequently precedes a tuberculous infection, and by analogy it can be assumed that the same is true in the appendages. It is unusual to find gonococci in tuberculous appendages, but this does not prove that they may not have been present at the beginning of the process. That gonorrheal infection does not always precede the tuberculous infection is proved by the frequency of the latter in virgins. It is probable that any other inflammation of the appendages, such, for example, as might result from an abortion or childbirth would predispose to a tuberculous infection in the same way.

If it is true that in many cases of tuberculosis of the uterine appendages the infection reaches the tube by direct extension, either from the peritoneum or from the uterine cavity, then a moderate infection would be more frequently followed by a tuberculous process than the more extensive infection leading to occlusion of the uterine and fimbriated ends of the tubes. It is probable even after both ends of the tube have been occluded that the tuberculous infection can occur either through the lymphatic or blood supply, but it is less likely to result from a direct extension. A tuberculous infection on a hydrosalpinx has been reported. Even though the appendages are occluded, the peritoneal coats may be involved by extension in a general peritoneal tuberculosis.

Congenital deformities and malformation of the appendages predispose to tuberculous infection, according to Sellheim, Freund and other authors. In this class would be included cases of infantile uterus. A number of observers have called attention to the frequency with which an abnormally small uterus is found in cases of tuberculosis of the fallopian tubes.

The puerperal uterus is more likely to become infected with tubercle bacilli than the normal uterus. It has been found that the placental site is more frequently infected than other parts of the uterine cavity. From the uterine tuberculosis the appendages may become secondarily infected. In this indirect way, pregnancies would predispose to tuberculous salpingitis.

Ovarian cysts are sometimes found to have a tuberculous infection implanted on the new growth. I have seen one case in which a fibroma of the uterus was involved in a tuberculous process. It is not probable, however, that either ovarian cysts or uterine fibromas should be considered to be predisposing causes of genital tuberculosis.

FREQUENCY

The frequency with which tuberculosis is found in the uterine appendages depends largely on the regularity with which these organs are subjected to a microscopic examination. If the nature of the process is determined only by the gross examination, the number of cases of tubal tuberculosis reported will be small; if, however, every tube and ovary that is removed is examined microscopically, the number will be found to be surprisingly large. It is probable also that the frequency of genital tuberculosis, as tuberculosis of other organs, varies in different locations and among different people. If gonorrheal salpingitis predisposes to tuberculous salpingitis, as it probably does, then naturally tubal tuberculosis will be found more frequently among the class most frequently subject to the former disease.

Krönig, in a series of 400 appendages removed for chronic inflammation, found tuberculosis in 11.5 per cent. of the cases. If in the series, there were also included the cases in which there was a general tuberculous peritonitis with the involvement of the tubes only on the peritoneal coat, there would have been 22 per cent. of tuberculosis. It is probable, as has been suggested, that the actual number is still larger, because in some old healed cases, the tuberculosis might have been overlooked.

Studdiford found tuberculosis in 6 per cent. of tubes removed for inflammatory conditions.

In my own cases tuberculosis was found by routine examination in 5 per cent. of tubes removed for inflammatory conditions. This represented about 2 per cent. of all abdominal operations.

While statistics of different clinics vary, it is probable that at least 10 per cent. of all inflammatory diseases of the uterine appendages are of tuberculous origin.

The ovary is affected by tuberculosis less frequently than the fallopian tube. It is not possible to give the ratio of frequency with which the two organs are affected. Tuberculosis of the ovary cannot always be detected by macroscopic examination, and frequently the ovary, if apparently not diseased, is not removed with the tube.

As the ovary is most frequently involved by extension from the fallopian tube, the stage of the disease at which the cases are examined would modify the ratio of frequency. This would be seen particularly in comparing operative and necropsy cases. In the late necropsy cases, the ovary would be more frequently involved with the tube than in the earlier operative cases. Different observers estimate that the ovary was jointly involved in 10 to 60 per cent. of cases of tuberculosis of the tubes. In my own cases, the ovaries were involved in 22 per cent. of the cases.

Tuberculosis of the ovary without involvement of the tube is exceedingly rare. No such case is reported among my cases.

The extension of the tuberculosis process from the tube to the uterus is of frequent occurrence. Simmons, as reported by Krönig, found the combination of uterine and tubal tuberculosis in 52, or 65 per cent. of 80 necropsies for genital tuberculosis. This does not mean that in all of these cases, the tuberculous process extended from the tube to the uterus. In a certain number, doubtless the tuberculosis existed first in the uterus and later extended to the tube. Kroenig believes that the combination occurs in about one-half

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

of all cases of genital tuberculosis. This fact is an indication for the removal of the uterus if the appendages are removed for tuberculosis.

SOURCES OF INFECTION

There are three modes of infection in genital tuberculosis. They are: (1) through the blood and lymphatic systems; (2) from neighboring organs; (3) by ascending infection through the vagina.

1. Through the blood and lymphatic systems from a tuberculous focus elsewhere, undoubtedly the greatest number of cases occur. The primary focus is most frequently in the lungs, but may be in any of the other organs. The importance of this mode of infection is illustrated by the claim of some observers that no case of undoubted primary tuberculosis of the uterine appendages occurs in the literature.

2. From neighboring organs the uterine appendages are frequently infected by a tuberculosis process. This most frequently occurs from the peritoneum. Frequently the involvement of the peritoneum and the abdominal organs including the uterus and appendages is so general that it is not possible to determine in which place the disease had its origin. That is, whether the tuberculosis started in the appendages and extended from them to the peritoneum, or whether it started in the peritoneum and involved the appendages secondarily. Most observers believe that the peritoneum is the site of the primary lesion.

Kraus reported a case of tuberculosis of the right uterine appendage in which the infection apparently extended from a tuberculous appendix to the fallopian tube. I recently had under my care a persistent sinus following the removal of the appendix. At the operation, I removed a tuberculous pyosalpinx from the bottom of this sinus. I have been unable to learn from the previous operator the exact nature of the original trouble in the appendix.

3. By ascending infection is meant the involvement of the uterus and appendages from infection introduced into the vagina. It has been questioned that tuberculosis of the uterus or of the uterine appendages can result from tubercle bacilli introduced from without into the vagina. In general there are two methods by which tubercle bacilli may be introduced into the vagina — one by coitus with a man with tuberculosis of the testes or seminal tracts, and the other by fingers, soiled instruments, linen, etc., of a person infected with tuberculosis. Against this mode of infection, it has been stated that the tubercle bacilli are destroyed by the vaginal secretions. Also that even if they were deposited in the vagina and remained alive, they could not gain entrance into the uterus and certainly not into the fallopian tubes.

Menge does not accept these views. By mixing vaginal secretions with a solution of tubercle bacilli under conditions resembling those in the vagina, he found that the bacilli were killed. If, however, the solution was diluted, the bacilli remained alive for a number of days. Menge considered this proof that tubercle bacilli in the semen would be protected from the action of the vaginal secretions by dilution. He also believes that the motion of the spermatozoa is sufficient to carry the tubercle bacilli into the uterus and even into the tubes.

Menge also experimentally produced tuberculosis of the uterus in guinea-pigs by injecting a solution containing tubercle bacilli into the seminal vesicles of the male before intercourse.

Bennecke, experimenting on rabbits, was also able to produce tuberculosis of the genital tract by ascending infection.

These experiments of Menge, Bennecke and others would seem to prove that it is possible that infection of the genital tract by tubercle bacilli introduced into the vagina during intercourse is certainly possible. It is, however, doubtful that it is of frequent occurrence. On the other side Blau (quoted by Bennecke) and Sugimura were unable to produce a genital tuberculosis by ascending infection and doubted its occurrence. Krönig believes that an ascending infection from the vagina probably never occurs.

PROGNOSIS

Indication for Operation: Tuberculosis of the uterine appendages is ordinarily a secondary infection. In nearly every case there is elsewhere in the body one or more tuberculous foci; that is, the genital tuberculosis is a part of a more or less general systemic infection.

In order properly to consider the treatment it is necessary to understand the influence which the tuberculous salpingitis exerts in this general process (1) on the life of the patient, (2) on the health of the patient and (3) on the extension of the infection.

The influence of the tuberculous salpingitis on the life of the patient is comparable to that of other forms of salpingitis. Tuberculous salpingitis is rarely the direct cause of death, neither are other forms of salpingitis. In 64 cases of genital tuberculosis found at necropsy in the pathologic laboratory at Freiburg, the genital tuberculosis was not considered the cause of death in any case. This confirms our clinical experience. Very rarely does a tuberculous salpingitis alone seem to be the cause of death. Theoretically we would not expect it to be. The tubes and ovaries are not necessary to life, and their destruction does not in itself materially affect the health of the patient. It is probable, therefore, that it is rarely necessary to operate in a case of tuberculous salpingitis in order to save the life of the patient.

A more difficult problem is to estimate the tendency which the tuberculosis in the appendages has to extend locally or to produce a general systemic infection. There is no doubt that many cases of tuberculous salpingitis subside and are found only at operations for other conditions or at necropsy. That is, that there are healed tuberculous lesions in the tubes and ovaries as in other organs.

The frequency with which a tuberculous salpingitis produces a general peritoneal tuberculosis is still in dispute. Some observers believe that it is the usual rule that the peritoneal infection is from the tube and advocate the removal of the uterus and both appendages for tuberculous salpingitis to prevent the occurrence of tuberculous peritonitis.

The weight of evidence is against this extension. It is probable that a tuberculous inflammation in the tube would cause the formation of adhesions about it in the same way as other types of salpingitis. These adhesions would tend to localize the infection and prevent the general peritoneal tuberculosis. As is known there is a tendency for any minute foreign body in the peritoneal cavity to be carried into the lumen of the tube in the same way that the ova may be. It is possible that the tuberculous infection can be carried in the same way into the tube. Theoretically,

therefore, we would expect the tube to be infected from the peritoneum and not the general peritoneal cavity from the tube.

There is ample clinical evidence that an active tuberculous salpingitis does not always infect the peritoneum. Frequently one tube is removed for an inflammatory condition, and the other, diseased to a less extent, is not removed. A microscopic examination proved the excised tube to be tuberculous. It is a fair assumption that the inflammation of the tube that was not removed was of the same nature. In their subsequent course these cases rarely show any signs of a tuberculous peritonitis. Krönig reported twelve consecutive cases of this kind, in none of which apparently did the peritoneum become infected. He believes that the tuberculosis rarely extends from the tube to cause a general peritoneal tuberculosis.

The frequency with which healed tuberculous lesions are found in the tubes with apparently normal peritoneum is additional evidence that tuberculosis of the tubes does not usually extend to the peritoneum.

The frequency of the extension of a tuberculosis of the tubes and ovaries to bladder and intestines is also difficult to determine. Krönig holds that it infrequently extends to these organs and rarely is the starting point of a general miliary tuberculosis. In none of my cases were the intestines or bladder apparently involved. There certainly were no fistulas. Other observers, for example Menge, believe that there is a strong tendency to both local and general extension.

Krönig, believing that tuberculous salpingitis rarely extends, disapproves of operation to prevent such occurrences. Menge, holding the opposite view, operates far more frequently on cases of tuberculous salpingitis.

Practically there is no absolute rule regarding operation for tuberculous salpingitis to prevent a local or general extension. Some cases will remain quiescent or subside, others will progress. If by proper treatment the symptoms subside and the infection is not extending, I prefer to delay operation. If the disease is progressing then an operation is indicated.

The influence of a tuberculous salpingitis on the general health in itself is usually not great. The disease usually runs a chronic course and frequently gives no local or general symptoms. In other cases, it runs a chronic course without local or general symptoms excepting during acute exacerbations. In other cases the symptoms may be constant and possibly severe. In other words, with regard to symptoms, tuberculous salpingitis follows closely a salpingitis from other causes, and has in general the same indications for operation.

The ultimate value of the tube must also be considered in deciding on the treatment of tuberculous salpingitis. It is theoretically possible for a tuberculous salpingitis to subside, leaving a patent tube and allowing the patient to become pregnant. It is doubtful if this often occurs. Furthermore, it is doubtful if it is wise that such a patient should become pregnant for fear of starting again the tuberculous process. There is, therefore, no indication to delay an operation otherwise indicated in order to conserve the tube.

TREATMENT

The treatment of tuberculous peritonitis is not properly included in this paper, and it will be considered only as it is necessary to do so in describing the treatment of tuberculous salpingitis.

The treatment of tuberculous salpingitis will be considered under two classes: (1) those cases in which the tube is involved as a part of the general peritoneal tuberculosis and (2) those cases in which there is only a local peritoneal involvement.

If there is a general peritoneal tuberculosis, that and not the salpingitis is the condition that determines the treatment. If, however, the abdomen is opened for such a condition, usually the tubes, if accessible, should be removed. The chances of the tubes becoming diseased from the peritoneum is so great and the chances of regaining their function so small that they should not be retained. If inaccessible they should not be removed unless they are distended, because the additional peritoneal traumatism necessitated by the removal of the tubes would increase the chances of infection. If the tubes are distended, it is usually best to remove them even if covered by adhesions.

The treatment of the uterus and ovaries depends on their condition and the case. At or approaching the menopause, they should be removed. If the ovaries are diseased they should be removed. If the ovaries are removed the uterus should be also.

If there is no general peritoneal tuberculosis, the treatment of the tuberculous salpingitis is practically the same as for other forms of salpingitis. This is true because if there is no general peritoneal tuberculosis, it is practically impossible to diagnose a tuberculous salpingitis from other varieties.

During the acute stage, or during an acute exacerbation, there should be rest in bed, local applications of ice, proper diet, air, etc. Later there should be local treatment and especial attention to general health. There is no doubt that in this way many cases are completely and permanently cured symptomatically without the diagnosis of tuberculous infection being made or suspected.

After the acute symptoms have subsided, if a distended tube, that is, a tuberculous pyosalpinx remains, or if the acute symptoms are too frequently repeated, then an operation is indicated. The indications for operation are practically the same as for other forms of salpingitis.

At the operation no attempt should be made to save any part of either tube. Usually (90 per cent. of cases) both tubes are involved.

If the ovaries are diseased, or if the patient is near the menopause, the ovaries should be removed.

If the ovaries are removed or if the patient is near the menopause, the uterus should also be removed. It is difficult to decide regarding the uterus in young women with normal ovaries. It has been stated that 50 per cent. of cases of tuberculous salpingitis are associated with tuberculosis of the fundus uteri. There is some risk in not removing this tuberculous focus if it is present. There is also a definite risk of mental and physical discomfort if the ovaries and uterus are removed in young women.

I have not removed the uterus in a number of these cases (often the diagnosis of a tuberculous salpingitis was made only by the microscopic examination) and in no known case has there been subsequent trouble.

The postoperative treatment of tuberculous salpingitis is important. The probability of other tuberculous foci, and the personal predisposition of the patient are indications for the best hygienic surroundings with regard to rest, food, air, etc.

32 West Fiftieth Street.

ABSTRACT OF DISCUSSION

DR. PHILEMON E. TRUESDALE, Fall River, Mass.: The study of any obscure disease is always interesting. Tubal tuberculosis is not only clinically obscure, but its true pathology is occasionally overlooked when the lesion is in plain sight. The affected tubes, particularly in the early stages, have certain characteristics which may be well to mention. In the first place, the original focus is always in the ampulla of the tube. As this develops, the process goes on toward the uterine end of the tube in the production of small nodes, invading the stroma of the tube. There is a more or less characteristic appearance of the fimbriated extremity. The fimbriae are short, thick and have a rosette appearance. Until the tube becomes extensively involved and adherent to surrounding structures, the distal end remains patent and presents often this characteristic appearance.

Dr. Taylor has allowed a very liberal latitude for other views. His observations, however, are based on a large experience and are strengthened by the opinions of the master gynecologist, Krönig. They would, therefore, undeniably, be the truest guides. I have held a belief that tuberculous peritonitis is often the manifestation of a primary focus in the tube. This belief is founded on the experiments of Murphy, the clinical experience of the Mayos, and my own more limited observations. Murphy injected tuberculous material into the free peritoneal cavity of the monkey. This gravitated to the floor of the pelvis and produced a peritonitis. In no case was the stroma of the tubes involved. Dr. Mayo reported seven cases in which the patients had been operated on from one to four times, in which he cleared up the peritonitis by removing the tubes. In a few cases we have found tuberculosis in the tubes and a peritonitis somewhat circumscribed, indicating an extension by continuity. One of these patients I operated on for what appeared to be a chronic appendicitis. At the operation there was a little free fluid, which did not appear to be consistent with the process in the appendix. On further examination the terminal end of the ileum was found studded with small tubercles and both tubes were tuberculous. The tuberculous peritonitis in this case was limited to the peritoneum of the pelvis. However, the value of this discussion rests in the fact that the fallopian tubes should always be examined when the abdomen is opened for tuberculous peritonitis.

In some of the more advanced cases it seems to me well to mention the importance of not doing anything surgically. Dr. Taylor has mentioned the fact that the disease rarely, if ever, is the cause of death, while it is limited to the pelvis. Occasionally, the picture at operation is a fused mass with adhesions extensively involving the intestine. Great danger of fistulae and of miliary tuberculosis here accompanies the removal of the disease. So it seems to me to be the part of wisdom occasionally not to proceed with any surgical interference.

I believe that gauze drains should not be used in these cases, except as a temporary expedient to control hemorrhage. Rubber tissue answers the purpose fully and should be employed when any drain is necessary. When the question of drainage is in doubt, I should be inclined to take the risk against the use of any drain.

DR. J. E. ENGSTAD, Minneapolis: Dr. Taylor did not mention the bovine and human types of tubercle bacilli. I believe that the tuberculous infection in the peritoneal cavity is due to the bovine type. Both types may exist in the human simultaneously. I believe that in most cases the infection is hematogenous, the primary foci being in the lungs, in the cervical glands or elsewhere. Infection of the uterine appendages is often due to a primary infection of the appendix. In a large number of cases of chronic appendicitis the causative factor is tubercle bacilli, generally of the bovine type. In regard to adhesions, I have found in many cases of violent infection of the peritoneum an exudate which prevents adhesion or agglutination. I would lay stress on the culture test at the time of operation to prove whether the tuberculous infection is due to bovine or the human type.

DR. C. L. HALL, Kansas City, Mo.: I do not arise so much to discuss the paper as to emphasize the point made by Dr. Truesdale in the discussion in regard to drainage, which, if it is in order, I would say applies to all abdominal drainage. It is now many years since I have introduced gauze of any description into the peritoneal cavity, and I find simply the folding of a part of a rubber glove or a soft rubber tissue so as to make a vent in the abdomen answers every purpose. Anything else becames a stench and a disagreeable feature. I introduce rubber tubage, soft as a rubber glove, and it will answer the results. I feel if the vent is made in the abdomen the natural peristalsis of the bowel—the breathing and extension of the diaphragm—will promote drainage.

DR. E. E. MONTGOMERY, Philadelphia: I should like to emphasize the importance of microscopic investigation of all specimens removed. We are not able to determine, in cases of this character, what the pathogenic condition is unless such an investigation has been made, and it will reveal, not infrequently, that tuberculosis or other conditions existed when they were unsuspected. Four years ago, at the Los Angeles meeting I reported a case in which I had removed a mass from one side about the size of a walnut, and which was supposed at the time to be a fibroid of the fallopian tube. Investigation proved it to be a carcinoma. Remembering the opposite tube was somewhat enlarged at the time of operation, I immediately reopened this woman and removed the uterus and its other appendage. The investigation of the other tube disclosed tuberculosis; so that we had in the patient a malignant disease on one side and a tuberculous disease on the other. Extension of inflammation from the peritoneum to the tube, even though it may be closed, I think is possible.

In a patient on whom I operated some years ago, and removed fibroid growths, a tuberculous peritonitis was found on the left side of the pelvis. Good health followed for some time, when she developed distress in the bladder and was treated quite awhile for cystitis, for which she again came under observation. I found a thickening of the side of the pelvis which, from its situation, was evidently the ureter. Later I removed the left kidney and its ureter for extensive tuberculous degeneration of the kidney and the entire ureter which I attributed to the previous infection extending from the involved peritoneum. With regard to the removal of such a mass, in my judgment, it is quite important that the tube should be removed in patients in whom we recognize a tuberculous condition existing, even though the tube may be open, because of the possibility of extension of such inflammation; the fact that the patient has a tuberculous disease makes it less desirable in her case that she should give birth to progeny than an individual in good health; so, it would seem wise in cases of tuberculous infection of the ovaries that they should be removed.

DR. S. M. D. CLARK, New Orleans: Dr. Taylor touched a very significant point when he referred to the importance of routine examination of specimens. Five or six years ago, I recall when my specimens were sent to the general pathologic department that the percentage of tuberculosis in these cases was not as high as usually found in other clinics. Since adopting the dual method of not only using the regular pathologic service, but in addition employing one especially interested in pelvic pathology, the finding of tuberculosis has notably increased and the percentage has materially risen. I have always looked on the tubes and appendix as having a selective affinity for tuberculosis, and in the great bulk of cases the primary abdominal focus was in these structures. The splendid work in this field of Murphy and Mayo is most striking; therefore, when dealing with tuberculous peritonitis, the first regions to be explored are the tubes and appendix, believing that in their removal a larger percentage of cures will follow. For the past eight months when finding a tuberculous endometrium, I have removed the tubes only and find that the endometrium returns to normal, proving that in nearly all cases the disease of the endometrium is secondary to the tubal disease.

DR. HOWARD C. TAYLOR, New York: It is practically impossible to determine in any case whether the tube or the peritoneum was primarily affected. The cases reported by Krönig, in which one tube after removal was demonstrated microscopically to be tuberculous, and in which the remaining tube was probably tuberculous, demonstrates that a tuberculous peritonitis certainly does not always follow a tuberculous salpingitis. Conversely, the fact that tuberculous salpingitis is usually bilateral is in favor of the salpingitis being secondary to a peritonitis and not the result of a hematogenous infection. I am glad so many have spoken of the necessity of examining every tube removed. It has become more or less common if a woman shortly after marriage starts up an inflammatory condition in the pelvis, at once to draw the conclusion that there is a gonorrheal infection. I think that this is not correct, and that the true explanation is that there is an acute exacerbation of an old tuberculous lesion.

LEUKEMIA—REPORT OF TWO CASES

CARL R. STEINKE, M.D., PHILADELPHIA

CASE 1.—A. N. C., a white merchant, aged 54, married, had negative family and previous medical histories. The patient has one daughter, who is healthy. He was first seen Feb. 23, 1913, complaining of pain in the cardiac and left hypochondriac regions and at times in the lower abdomen. His present trouble began one and one-half to two years previous and he had lost 20 pounds in the preceding six months.

Physical Examination.—Skin and mucous membranes were pale; the thorax negative. The liver extended from the sixth rib to two finger breadths below the costal margin. The kidneys were not palpable. The spleen extended from the ninth rib to 1 inch above the iliac crest with sharp anterior border in the midclavicular line. The inguinal and axillary glands were palpable; no epitrochlear or postcervical glands could be felt. The musculature was flabby.

Urine: 35 ounces in twenty-four hours, was normal. Blood: red cells 3,725,000; hemoglobin 75 per cent.; leukocytes 179,480 with differential count of 70 per cent. polymorphonuclears, 20.3 per cent. myelocytes, 5 per cent. transitionals, 3.6 per cent. lymphocytes, 1 per cent. eosinophils, 1.6 nucleated reds to 100 leukocytes. No treatment was taken until Sept. 27, 1913, when the liver dulness was about as before, while the spleen extended well into the left iliac fossa and to the left nipple line anteriorly.

Treatment and Sequence.—Fowler's solution was given, running up to 12 minims three times a day, with no effect after several weeks' trial. Roentgen-ray treatment three times a week began Jan. 28, 1914. On February 9 he noticed severe pain down the right thigh and leg, nocturnal in character and most marked between 2 and 4 a. m. Nervous and rectal examinations revealed nothing abnormal. By March 30, after eighteen Roentgen-ray treatments, the spleen was considerably reduced in size. He discontinued treatment for two weeks and on return the spleen was larger than ever and his general condition much worse, thus showing the necessity of continuous treatment. Previously the various long bones as well as the spleen had been exposed to the Roentgen ray and Dr. Newcomet decided to expose only the spleen, focusing from various angles. On May 26 the blood count was: red cells 3,990,000; hemoglobin 70 per cent.; leukocytes 211,800; differential count, polymorphonuclears 49.38, myelocytes 20.5, basophils 19.62, large mononuclears 5.3, transitionals 2.1, eosinophils 1.8, lymphocytes 1.3. After forty-one Roentgen-ray treatments together with six weeks of benzol (benzene C_6H_6), the blood count improved as shown in the accompanying table. His temperature ranged between 100 and 103 F. and the pulse averaged about 80. From the middle of June the patient failed more rapidly. July 6 the urine showed a trace of albumin and many granular casts. The blood count was: red cells 3,030,000; hemoglobin 44 per cent.; leukocytes 295,000; polymorphonuclears 28.5, large mononuclears 63, myelocytes 7.5, transitionals 0.5, basophils 0.5; nucleated reds present. Death occurred July 12, 1914, of respiratory failure. The great increase of large mononuclears toward the end of life has been observed by others.

Necropsy at the Presbyterian Hospital gave the characteristic features of splenomyelogenous leukemia, but there was no local cause found for the pain down the right limb.

Case 2 is reported by courtesy of Dr. M. H. Fussell from his service at the Episcopal Hospital.

CASE 2.—Acute lymphatic leukemia: F. U., white, aged 11, had negative family and previous medical histories. No pneumonic history was obtainable. He complained of cough, shortness of breath and a "swollen" chest. He began feeling ill two weeks before admission.

Physical Examination.—This showed a well-developed, well-nourished boy with swollen face, enlarged tonsils, coated tongue, enlarged cervical nodes. Thorax expansion was good on the left but much diminished on the right, where the enlargement, which did not pit on pressure, appeared. The veins over the anterior chest were numerous and dilated (telangiectasis.) The right chest had signs of fluid and 2 c.c. of thin pus were aspirated which gave a negative bacterial smear and culture, while the leukocytes (mostly lymphocytes) were too numerous to count. On the left side the breath sounds were exaggerated, vocal fremitus increased, but there were no râles or friction sounds. The heart was negative. The liver was not enlarged and the spleen not palpable. The extremities were negative. The leukocyte count was 12,160, polymorphonuclears 70 per cent., lymphocytes 22 per cent., mononuclears 5 per cent., transitionals 2 per cent., eosinophils 1 per cent. A roentgenogram of the chest was negative for empyema. Urine: amber, specific gravity, 1.025, acid, contained no sugar, albumin or sediment. Epithelial cells and urates were present, and a few leukocytes, but no red blood cells or casts. The temperature ranged from 98 to 100 F. By August 20 the liver dulness extended from the fifth rib to 1½ inches below the umbilicus in the midaxillary line and the spleen was easily palpable. The abdomen was rigid but not tender. The inguinal nodes were enlarging. Expectoration was bloody and gums bleeding. Fowler's solution, 5 minims three times a day, was given and Roentgen-ray treatments were started.

BLOOD COUNT AND TREATMENT IN CASE 1

Date	Hb %	R. B. C.	W. B. C.	Myelocytes, %	Treatment
2/23/13	75	3,725,000	179,480	20.3	None
9/27/13	73	.....	204,880	30	Fowler's solution
1/28/14	..	.....	240,000	....	Roentgen ray started
3/30/14	80	.....	164,000	....	Benzol given five days
5/ 5/14	..	.....	.....	....	Benzol started again
5/26/14	70	3,990,000	211,800	20.5	
6/12/14	..	.....	.....	....	Benzol stopped
7/ 6/14	44	3,030,000	295,000	7.5	

August 26 the blood count was: reds 4,980,000, hemoglobin 82 per cent., leukocytes 67,500.

August 29: leukocytes 256,800, lymphocytes 93 per cent., polymorphonuclears 6 per cent., eosinophils 1 per cent. His condition rapidly grew worse so that by September 1 the following special features of his condition were noted: He had an anxious expression, his face was puffy, he had marked dyspnea, petechiae on inner side of feet and bluish discoloration of soles, spine bowed anteriorly, discrete enlargement of submaxillary, epitrochlear, and axillary nodes on both sides, inguinal nodes palpable. The right chest gave signs of fluid, with the apex beat in midaxillary line. There was a large mass in the upper abdomen, probably the spleen or liver, as the two could not be differentiated. One and a half pints of bloody serous fluid were aspirated from the right chest and it was still flowing when violent coughing necessitated the withdrawal of the needle. Laboratory report on the fluid gave 10,000 red blood cells and 160,000 white blood cells with a differential count of 98 per cent. lymphocytes and 2 per cent. polymorphonuclears. A smear showed a few diplo-

cocci, but the culture was negative and no tubercle bacilli were in the fluid (guinea-pig test made). The blood count was: red cells 3,000,000, leukocytes 215,000, small lymphocytes 90 per cent. and polymorphonuclears 10 per cent. The gums oozed freely. The patient died suddenly at 6 a. m., Sept. 3, 1914. Unfortunately no necropsy was obtained.

The case conforms to R. C. Cabot's[1] description of acute lymphatic leukemia. In the cases reported by Drs. Fussell, Jopson and Taylor,[2] a number showed an increase in the percentage as well as the actual number of small lymphocytes.

Treatment.—The Roentgen-ray and benzol (7 minims in 7 minims of olive oil in capsule three times a day) treatment in this case of splenomyelogenous leukemia had a very effective result, and had treatment started early and continued faithfully, the condition could at least have been controlled. In the case of acute lymphatic leukemia with such a rapid course, no known treatment would have been of avail.

715 North Fortieth Street.

REPORT OF A CASE OF COMPLETE HEART BLOCK

WALTER J. WILSON, JR., M.D., DETROIT

The patient, F. B., aged 52, of Polish descent, was first seen Jan. 16, 1914, in consultation with Dr. W. R. Chittick. The day before he had fallen in the automobile factory, where he was employed as a sweeper, fracturing the base of the skull. The doctor who first saw him states that his pulse rate then was 8 per minute. At the time of our first observation the

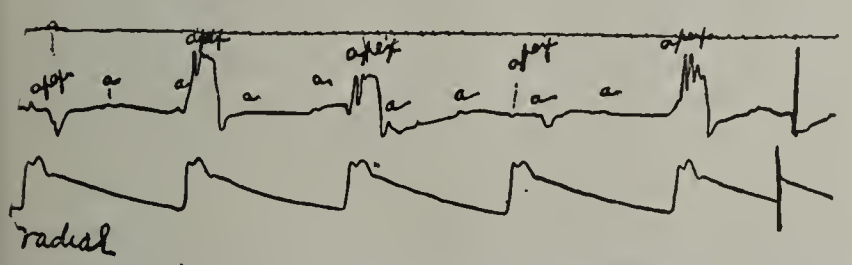


Fig. 1.—Tracing in case of F. B., Jan. 23, 1914, Series 5-a. Upper line, tracing from apex. Note waves marked *a*, resulting from auricular contraction. Lower line, tracing from right radial artery. Time in 1/5 seconds.

pulse rate was 20 per minute by palpation, which by auscultation was also found to be the rate of ventricular contraction. The patient was transferred from his home to Grace Hospital; on entrance the temperature was 99.4 F, pulse rate 21, respiration 20.

Atropin sulphate 1/60 grain was given hypodermically once daily until February 3. Despite this on the succeeding days following January 16, the highest recorded pulse rate was 26, 23, 28, 28, 36, 29, 30, 29, 30, 26, 28, 28, 32, 30, 28, 30, 32. The Wassermann reaction was negative, and the urinary findings were normal.

Family History.—Both his parents died in Germany and no clear idea of the diseases causing death was obtainable. He has two sisters alive, one 65 years old, the other 55, and both are well. One brother is living and well at 57 years of age. Two sisters died in infancy of unknown causes.

Personal History.—As a child, he had none of the usual sicknesses. When 16 years of age, he had an abscess on the neck, which discharged spontaneously. Since then, he declares he has had no illnesses, but on one occasion, he admitted he had had rheumatism, no doubt the ordinary infectious arthritis, but as he hoped to come under the workingmen's compensation law, he denied this on another occasion. He has been married for twenty-five years, has had six healthy children, and his wife has suffered no miscarriages.

1. Cabot, in Osler: Modern Medicine, 1908, iv, 671, 673.
2. Fussell, Jopson and Taylor: Philadelphia Med. Jour., Jan. 7, 1899.

Physical Examination.—The skin is of good color, the subcutaneous tissues well nourished. There is no cyanosis. The tongue is clear, the mucous membranes of normal color. There is no glandular enlargement, and no edema present. The musculature is well developed. The arteries at the wrist are palpable, but not particularly sclerosed. The blood pressure is systolic 130, diastolic 64. The apex of the heart is located in the fifth space, 11 cm. from the midsternal line, the left border being 13 cm. from the midsternal line, the right border 6 cm. from the midsternal line. The upper border is at the upper border of the third rib. There is a loud blowing systolic murmer, replacing the mitral sound.

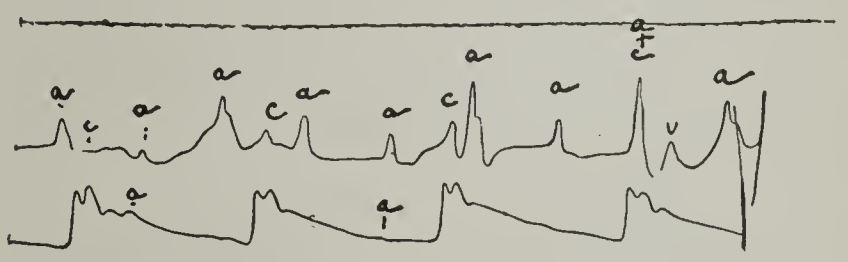


Fig. 2.—Tracing in case of F. B., Jan. 23, 1914, Series 5-c. Upper line, tracing from right jugular vein, *a* representing auricular contraction, *c*, ventricular contraction. Note absence of regular relationship between *a* and *c*, *a* normally appearing 1/5 second before *c* and always followed by *c*. Lower line, tracing from right radial artery, the waves marked *a* due to the influence of auricular contraction. Time in 1/5 seconds.

The other valve sounds are clear but not pronounced. Tracings taken with a Mackenzie polygraph recorded the fact that the auricles were contracting absolutely without relation to the ventricle, at a perfectly independent rate about three times as fast as the ventricle, occasionally contracting at the same time as the ventricle, or just before or just after ventricular contraction.

The cause of his fall was evidently an attack of syncope (he was not near any machinery at the time), to which any one is liable whose pulse rate runs below 30 per minute, especially at the time of change of ventricular rate. The pulse has kept since then nearly at the rate of 30 per minute. At an examination April 13, 1914, the pulse rate was 29 per minute, the systolic pressure 170 mm., the diastolic 130 mm., the systolic murmur persisting as before. On March 2, 1914, the beating of the auricles was audible, being heard in the second right interspace, sounding much like the ticking of a watch.

Feb 10, 1914, the *a* waves were absent in the jugular tracing showing that the auricles had gone into fibrillation. A week later the *a* waves were again present.

June 10, 1915, the patient was seen again and as the tracings clearly show, there is a persistence of the condition, as was to have been expected.

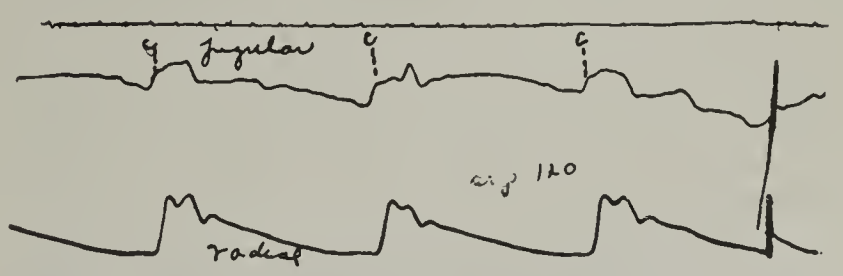


Fig. 3.—Tracing in case of F. B., Feb. 10, 1914, Series 5-f. Upper line, tracing from right jugular vein. Note absence of *a* waves, the auricles evidently having gone into fibrillation. One week later the *a* waves reappeared. Lower line, tracing from right radial artery. Complete dissociation, no irregularity in ventricular contraction.

July 14, 1915, the patient went out of doors to clip some grass about the trees on his front lawn, when he fell to the ground, gasping for breath, and complaining of a pain about his heart. The family physician, Dr. Richard Leiman, was called, who reported to me that the patient's pulse rate was then 19 per minute. He was put to bed and was comfortable, but the same afternoon, as he sat up in bed to vomit, he fell back on the pillow, expiring instantly.

Necropsy was earnestly sought after, but was refused.

David Whitney Building.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, SEPTEMBER 11, 1915

MICROBIOLOGY AND MEDICINE

Through the development of microbiology, "the profession of medicine has grown out of its ignorant mysticism into a science; veterinary medicine has found its inspiration, and public health has become a tangible reality."[1] This summary, so well expressed by Marshall in a symposium on the lower organisms in relation to man's welfare, indicates the dominant point of view of the medical profession in contemplating the enormous progress for which modern bacteriology, or more broadly, microbiology, is responsible. One who is engrossed by the manifold relations of this science to the practices of the healing art, and the routine of both personal and public hygiene, is likely to forget that the gifts of microbiology are "broader than any industry, greater than those of any profession, and they can be measured only by the limitations of humanity." It requires an occasional reminder to reawaken our appreciation of the value of the contributions begun by Pasteur and his followers.

Contemplation of the way in which the underlying features of "fermentation" have permeated into everyday life in its manifold aspects is likely not only to create enthusiastic appreciation but also to initiate pertinent suggestions. Each of the great groups of scientific disciplines is liable to forget that microbiology touches our life at almost innumerable points outside of its own sphere. Hence it is well that we look beyond the borders now and then to refresh our memories. In the domain of agriculture, soil microbiology plays an important part. Though it offers helpful analogies to the medical sciences, this is, after all, the least pertinent of the outlying fields. The relations of bacteriology and cognate branches to animal husbandry and food production are always full of suggestion to practical medicine. Dairy products are notably a possible source of contagion; and in many parts of the country the medical profession is entrusted with the drafting of rules which seriously involve the production and distribution of milk. Nothing seems easier to a city practitioner than insistence on a few simple rules of procedure on the dairy farm. The dairy bacteriologist alone seems to realize at present the complexity of the problems presented. Quoting Marshall, as the milk is exposed to the contaminations of the milker, the air, the utensils and the stable, or as it passes through the paths and by-paths of the milking process — the most crucial undertaking, in reality — it becomes more and more laden with dangers. In the eyes of the milk producer, the drawing of milk from the udder and passing it clean to the consumer is fraught at times with insurmountable difficulties. This task is not easy for a trained, intelligent manipulator, so many and diverse are the ways of contamination. Too many who have never drawn a drop of milk from a cow under the practical conditions which surround her find it very simple to lay down regulations. To carry these into effectiveness by force against possible negligence, ignorance, indifference, and even criminal wilfulness, only increases the strength of the barrier which separates the controlling and the controlled elements.

There are still other branches of the food industries in which the physician, posing as an officer of the law, a hygienist or a scientific adviser, should be ready to apply a breadth of vision to his administrative or scientific work. Microbiology enters into the canning, drying, refrigeration, brining and spoiling of food, and into the production of bread, the fermented beverages and other dietary articles. Microbial life often here is the fundamental factor with which inspection or official control is concerned. The appreciation that micro-organisms engender disease paved the way for inspection; but the time has now arrived for the hygienist charged with public functions to have some intelligent appreciation of the economic aspects of microbiology. A rational respect for the exigencies of commerce does not necessarily imply a failure of hygienic duty.

1. Marshall, C. E.: The Technical Application of Micro-Organisms to Agriculture, Science, Aug. 27, 1915, p. 257.

PROLONGED FASTING

Benedict[1] has recently completed studies of a thirty-one day fast at the National Nutritional Laboratory in Boston. The number of accurately controlled experiments eclipses any work on this subject previously attempted, and as a result, many interesting and clinically valuable facts have been corroborated or established.

The subject was hearty in his cooperation, and took only 900 c.c. of distilled water a day by mouth. He lost 13.25 kg., which was 21 per cent. of his normal weight. This is in accord with the results of other fasts. Succi lost 25.6 per cent. of his body weight in a forty-day fast. A dog fasting 117 days lost 62.9 per cent. of the initial weight. He was fed, regained his original weight, starved 111 days, and lost 53 per cent.

1. Benedict: A Study of Prolonged Fasting (monograph), 1915.

of his weight. Luciani, who controlled the forty-day fast of Succi in Florence, has assumed that there is a mathematical relationship between the loss per day and the length of the fast. Benedict, however, has shown that this does not hold for human beings. He regards the weight loss as due to two factors: First, tissue is oxidized to supply material for a maintenance of body activities. Second, there is a loss of preformed water, that is, the water in the oxidized tissues. This water is lost more rapidly during the first days of a fast because there is greater tissue disintegration. This metabolic activity decreases for the reason that the subject becomes less inclined to do muscular work; he conserves his energy. He even clothes himself more heavily in order to preserve the body heat. Weight loss during a fast is decreased by the drinking of large amounts of water. It has been assumed that this water acts as a nutrient and spares the tissues. It is surprising to note that the loss of water as insensible perspiration, in Benedict's subject, varied between 371 and 691 gm. per twenty-four hours. In an individual on a full diet, this amount is much higher.

The Berlin investigations on Cetti, a professional faster, describe the "irritable heart of fasting." The pulse rate is supposedly much increased on even slight exertion. Benedict's work does not confirm this. On the contrary, the amplitude of the pulse rate, that is, the difference between the pulse rate at first as compared with the rate when active, became less and less as the fast progressed. Accompanying this was a progressive decrease in the blood pressure, a maximum fall of 30 mm. of mercury resulting. There was also an actual decrease of 3 cm. in the width of the heart. These findings have been reported in other investigations, and are probably due to a decreased peripheral resistance. When, at the conclusion of the fast, food is again taken, the usual pulse amplitude returns and the blood pressure soon rises to normal. From this work it is claimed that the pulse rate may be used as a legitimate index to metabolism.

Numerous changes have been reported as occurring in the blood of fasting subjects, among these a marked increase in the number of red cells. Benedict found chiefly an early rise of polynuclear leukocytes, and an increase in the blood acidity. The leukocytosis is apparently of little importance, since the leukocytes are the most sensitive of the blood cells, and respond to such stimuli as a meal or a cold bath. Their number fell to normal after the first few days of the fast. The blood acidity, from a study of the alveolar air, was found to increase markedly on the second and again on the fourteenth day of the fast, and remained at this high level throughout. When the fast was broken, it fell to normal. The hemoglobin and the total quantity of blood remained constant.

During the first days of the fast, more heat came from the glycogen that was burned than from the protein so used. Since glycogen burns most easily, it was rapidly drawn on and the available supply quickly depleted. From the first to the third day, from 10 to 16 per cent. of the heat was derived from glycogen. From the third to the thirteenth day, from 1 to 3 per cent. was so obtained. The combustion of glycogen ceased after this time. As one would expect, fat eventually becomes the chief source of heat. In normal catabolism, fat is burned completely, the end-products being carbon dioxid and water; but in some pathologic conditions and in inanition, fat combustion is defective, and certain partially oxidized substances known as acetone bodies are produced and excreted chiefly in the urine. The clinical significance of this phenomenon is well known. These acetone bodies were present in the urine throughout the latter part of the experiment. The concentration of alkali necessary for their combustion greatly exceeds that which can be tolerated by the body.

Indicative of the so-called acidosis that occurs during starvation, besides the acetone bodies, the urine contains a large number of organic and inorganic acid radicals. Thus chlorin, phosphorus pentoxid, sulphur trioxid, and oxybutyric and other fatty acids are found. An albuminuria with hyaline and a few granular casts may also occur, but clears up after the fast is broken.

From a study of the oxygen consumption, the carbon dioxid excretion, the pulse rate and the temperature, one may conclude that there is a parallelism between these activities and the metabolism, and that the body acts as a unit irrespective of its state of nutrition.

THE SWEET POTATO AND ITS SUGARS

It often happens that the things with which we are most familiar are those about which least is known. Thus, we venture to surmise, few remember much of the history of that lucious vegetable, the sweet potato; and few stop to consider what makes it sweet.

Humboldt says that sweet potatoes were among the trophies which Columbus brought back from the New World to lay at the feet of Isabella of Castile. It is regarded as certain that their introduction into Europe antedated that of Irish potatoes. Indeed, historically, the yellow or sweet potato (*Convolvulus batatas* or *Batatas edulis*), instead of the "common," white or Irish potato (*Solanum tuberosum*), is the rightful claimant to the unmodified title of potato. Such was the meaning of the word down to the middle of the seventeenth century. Thus, when Falstaff, in "The Merry Wives of Windsor," exclaims, "Let the sky rain potatoes . . . hail kissing comfits and snow eringoes," it is to sweet potatoes that he refers. ("Eringoes," by the way, were the roots of *Eryngium maritimum*, formerly esteemed as delicacies when candied.) It will be observed that the fat knight classes

potatoes with sweetmeats. Shakespeare probably knew these roots as luxuries brought from Spain or Portugal, for sweet potatoes were largely imported from those countries during the reign of Queen Elizabeth.

As indicated by the botanic names, the sweet potato belongs to a different family (the *Convolvulaceae,* or morning glory family) from that of the Irish potato (the *Solanaceae,* or nightshade family). Its general chemical and nutritive properties are similar to those of its namesake, though the percentage of starch and sugar is higher in the tuberous roots of *Convolvulus batatas* than in the tubers of *Solanum tuberosum.* The sweet potato owes its distinctive yellowish tint to xanthophyll, which is distributed throughout its substance. Its characteristic sweet taste is due to various sugars. Sugars are present in the Irish potato also, but in much smaller proportions.

Stone,[1] twenty-five years ago, demonstrated the presence in sweet potatoes of sucrose or cane sugar. This is one of the more complex sugars in which the molecules are so bound that they do not reduce Fehling's solution. Later observers have found reducing sugars present also.

It has been known for some time that in the tuberous roots of the sweet potato, as in the resting storage organs of other plants of temperate regions, starch is transformed into sugar. In most plants the transformation of starch into sugar ceases at a few degrees above the freezing point. The sweet potato is exceptional in that, soon after it has been gathered, transformation of starch into sugar takes place at much higher temperatures — as high as 30 C. (86 F.). A higher proportion of sugar is formed in cold than in warm storage, however.

Hasselbring and Hawkins[2] mention another interesting peculiarity of the sweet potato. Except in soft-wooded trees, reducing sugars have been observed as the usual and most abundant products of starch transformation in resting storage organs. In the sweet potato, on the contrary, little reducing sugar results from this transformation; the principal product is sucrose. Hasselbring and Hawkins found that, while the cane sugar content of sweet potatoes rose as high as 8.74 per cent. in cold storage, the proportion in all cases remained approximately 4 or 5 parts of sucrose to 1 of reducing sugar.

A further contribution to the study of the carbohydrates of the sweet potato has recently been made by Professor Miyake of the Tokoku Imperial University, Sapporo, Japan. Miyake finds that, in addition to fructose (levulose), which had previously been recognized, the reducing sugars of this root include glucose (*d*-glucose, grape sugar, dextrose). Since the sucrose molcule is made up of a glucose and a levulose molecule, it might be regarded as a possibility that these reducing sugars are the result of a splitting of the sucrose. This, however, is not discussed by Miyake.

It would be pleasant to believe that all these researches might have a practical — a gastronomic — outcome. At its best and rightly cooked (baked "in its jacket," so that the rich, black, syrupy juice is incrusted wherever the cook's fork has pricked it), this vegetable is a unique delicacy. As it reaches our Northern markets, or, at any rate, our Northern tables, however, it is too often dry and insipid. Would that science could procure and insure for us the sweet potato as the South knows it at its delectable prime!

1. Stone, W. E.: Ber. d. deutsch. chem. Gesellsch., 1890, xxiii (1), 1496.

2. Hasselbring, H., and Hawkins, L. A.: Physiological Changes in Sweet Potatoes during Storage, Jour. Agric. Research, January, 1915, p. 331. Ripening and Storage of Certain Foods, editorial, The Journal A. M. A., April 3, 1915, p. 1165.

THE NORMAL BLOOD-SUGAR CONTENT

Whenever a new diagnostic test or procedure is introduced into medicine, the limits of normal reaction or response must usually be settled. What are the "normal" blood pressure, the "normal" output of uric acid, the "normal" acidity of gastric contents, the "normal" number of erythrocytes or leukocytes in a unit volume of blood? These are questions which we must repeatedly ask ourselves. As knowledge has increased, statistical data have accumulated in greater and greater numbers, and each individual method has been subjected to more critical examination. The usual outcome has ultimately been to show that, instead of insisting on a "normal" as something fixed and invariable, we must usually regard it as a changing record of some function which varies within reasonable ranges, depending on physiologic circumstances. Exercise, food, temperature and diurnal rhythms in the mode of life are all factors which introduce a play of new variables on the performances of the bodily mechanism.

The estimation of the sugar content of the blood is experiencing a similar history. The diagnostic importance of determining this "constant" when its diagnostic usefulness is indicated has now become firmly established in the routine of the clinic. First, the methods of analysis were subjected to criticism and improvement, and now the question is asked, What is the "normal" sugar content of human blood?

The statistics of ten or twelve investigators have placed the answer at figures showing variations as wide as from 0.05 to 0.12 per cent. In such a range, little consideration has been given to differences occasioned by meals in contrast with the fasting condition, or by other influences that might affect "sugar mobilization." The newest attempt to obtain a clearer understanding of the actual meaning of the word "normal" as applied to blood sugar is that made by Strouse[1] and his collaborators at the Michael Reese

1. Strouse: S.: The Accurate Clinical Study of Blood Sugar, Bull. Johns Hopkins Hosp., 1915, xxvi, 211.

Hospital, Chicago. Their experiments on healthy young men and women were planned to determine the normal variations throughout the day's routine. It was found that a very definite curve could be plotted for every individual and that, although the exact height of the figures varied slightly under similar living conditions, the curves of all normal persons followed similar lines. It became evident, in harmony with the observations of other investigators, that the carbohydrate in the diet is the most important factor influencing the daily changes in blood sugar. The lowest normals are usually obtained in the early morning; after breakfast there is a rise followed by a fall, and a second rise after dinner. In persons who partake of no carbohydrate, a practically constant figure is obtained all day.

In the experience of these investigators, the normal blood sugar, studied with relation to the diet, varies from 0.04 to 0.12 per cent., with an average of 0.084 per cent. in the ordinary day of a normal person. Hirsch[2] has likewise found, in his studies on patients in the Städtisches Krankenhaus in Wiesbaden, that the blood sugar content of the healthy, fasting individual does not exceed a value of 0.12 per cent. In the course of the day the figures obtained by Hirsch for this index of the blood showed pronounced variations dependent on the character of the diet. The highest values, amounting to 0.18 per cent., were obtained at from 2½ to 4 hours after the noon meal. From this it will be seen that there are no fixed normal values. As Strouse has expressed it, the only difference in blood sugar between the normal and the diabetic organism is one of degree. The diabetic diurnal curve is identical in form with the normal curve, but the low figures are not obtained and the variations are wider. In mild diabetes, the blood sugar on a fasting stomach may be within normal limits. Therefore, comparisons of single blood sugar determinations on individuals, from the standpoint either of diagnosis or of treatment, may be of little value. A postprandial hyperglycemia may be decidedly significant. It follows that blood sugar determinations, to serve their greatest usefulness, should be performed both before and after an ordinary meal containing carbohydrate.

Now that the existence of quite decided normal diurnal variations in the sugar content of the blood have been conclusively demonstrated and an explanation has been secured, the debated question of the influence of drugs, particularly the anesthetics and narcotics, deserves a reconsideration from a new standpoint. This has been attempted by Hirsch.[2] In twenty-four cases after uniform chloroform or ether narcosis or mixed anesthesia with simultaneous administration of oxygen, a rise in the blood sugar values not attributable to dietary factors was uniformly observed. The upper limits reached approached 0.18-0.19 per cent., never exceeding 0.21 per cent. No attendant glycosuria was discovered in any of these instances. Evidently the kidneys are not permeable to sugar at such levels of the blood content except under special circumstances.

2. Hirsch, E.: Ueber physiologische Tagesschwankungen im Blutzuckergehalt des Menschen unter Beeinflussung desselben durch Aether- und Chloroformnarkose, Ztschr. f. physiol. Chem., 1915, xciii, 355.

THE REGULATION OF THE CIRCULATION

Recent experiments on man at rest and at work by Boothby,[1] in the surgical clinic of the Peter Bent Brigham Hospital at Boston, indicate that the circulation rate increases progressively with the oxygen consumption, in a manner corresponding to the increase in the total ventilation. This seemingly close interrelationship between the respiratory functions of the lungs and the circulation of the blood has suggested that there is some underlying biologic or physiologic factor which controls both of these processes. Indeed, in its broadest sense, respiration consists of something more than the physical and mechanical changes which have their seat in the lungs. It is not uncommon to speak of cell respiration or tissue respiration as an aspect of the metabolic functions on which life depends. Between the gases of the atmosphere and the body cells, the devices for the diffusion and transport of oxygen are interposed.

The control of breathing is effected with such a degree of nicety as to afford one of the most striking examples of a delicate physiologic regulation in the organism. It aims to maintain in each individual a practically constant partial pressure of carbon dioxid in the alveolar air. The latter reflects the conditions obtaining from moment to moment in the blood. A rise in the pressure of carbon dioxid promptly increases the breathing. It is now generally agreed that the action of the blood on the respiratory center is due to its "total acidity," not to the carbon dioxid alone. The effect on the regulatory mechanism is determined essentially according to the concentration of the hydrogen ions in the arterial blood that reaches it.

Boothby[1] finds it difficult to believe that one part of this respiratory mechanism—the ventilation of the lungs—is carefully and delicately regulated to the needs of the body without the other mechanism—the circulation of the blood—being likewise as carefully and delicately regulated. He ventures the assumption that the factor which regulates and controls respiration governs both these mechanical processes—the ventilation of the lungs and the circulation of the blood—and not merely one of them, as heretofore believed.

The conception that the acidity factor of the arterial blood controls with equal delicacy the ventilation

1. Boothby, W. M.: A Determination of the Circulation Rate in Man at Rest and at Work, Am. Jour. Physiol., 1915, xxxvii, 383.

of the lungs and the rapidity of the blood flow is strengthened, according to Boothby, by the evidence that after forced breathing — which produces a reduction in the arterial carbon dioxid tension with a parallel decrease in the hydrogen ion concentration — the circulation rate is slowed.[2]

From the standpoint of this hypothesis, we may postulate a respiratory center in a newer sense — a combination of a subordinate circulatory center and ventilation center. In addition to the chemical regulation of the circulation, Boothby points out, it is evident that the blood movements can be influenced by factors of nervous or psychic origin in the same manner as in the pulmonary ventilation. Such influences, however, are only temporary, he adds, and designed to meet sudden emergencies which require immediately in the muscles a greatly increased oxygen supply, before a sufficient time could elapse for the chemical stimulus to be produced and to take effect.

Current Comment

THE HYPOTHESIS OF PROTECTIVE ENZYMES

Recently Taylor and Hulton[3] of the University of Pennsylvania pointed out that the hypothesis of Abderhalden, which forms the basis of certain current serum tests, has suffered from dogmatic generalization. The theory of the formation of protective enzymes by the organism has become the foundation for the specific diagnosis of pregnancy and malignant neoplasms, and it predicates in a general way the formation of fairly specific proteolytic enzymes in response to the parenteral introduction of foreign proteins. The latter have been taken to include a protein not ordinarily found in the body, for example, one derived from another species, as well as a protein "displaced in the body," as in the case of placental tissue products distributed through the circulation. In order to test the hypothesis in its generalized form, Taylor and Hulton have employed a rather unique protein, the protamin of a salmon, in order to develop the alleged protective device. Normally the blood serum digests this protamin in very slight degree at best. The blood of "immunized" animals likewise gave negative results. From this the Philadelphia investigators feel constrained to remark that the dogmatic statement that the body responds with protective ferments to the injection of foreign proteins as a class reaction cannot be maintained. They properly warn us, however, that negative results should not be abused as the original hypothesis has been, for that result does not prove that in response to placental protein no protective enzyme is formed. Generalizations, when made too hastily, may be detrimental.

2. Boothby, W. M.: Absence of Apnoea After Forced Breathing, Jour. Physiol., 1912, xlv, 328.

3. Taylor, A. E., and Hulton, F.: On the Formation of Specific Proteolytic Ferments in Response to the Parenteral Introduction of Foreign Protein, Jour. Biol. Chem., 1915, xxii, 59.

LIGHT, NOT LAWS

The tendency to load the American Medical Association with responsibilities that should be borne by other organizations has long been deprecated by THE JOURNAL. Hardly a day passes that a letter is not received at THE JOURNAL office suggesting that the American Medical Association should prosecute this, that or the other fraud, or should use its influence to have a special law passed to put some particular swindle out of business. The reply to such suggestions is, obviously, that it is not the province of the American Medical Association either to prosecute frauds or father laws. As a matter of fact there are already in existence not only laws enough and to spare for attacking most of the frauds in medicine, but also the legal machinery to enforce such laws. This machinery will continue to move slowly, spasmodically and inefficiently, until public opinion has been aroused to the way in which people are duped and swindled by frauds of a medical and quasi-medical type; and public opinion can be aroused only by education. THE JOURNAL'S propaganda against fraud in medicine is wholly educational in character — not punitive.

"DID THEY GET ANY OF YOUR MONEY?"

It is a matter of satisfaction to the medical profession when it finds its self-imposed burden of attempting to protect the public from schemes that are questionable or worse, being shared by other organizations of a public or semi-public character. This thought is inspired by a sixteen-page pamphlet that has just come to THE JOURNAL office. It is entitled "Did They Get Any of Your Money?" and is issued by the Cleveland Chamber of Commerce and deals with an institution styled the "Children's National Tuberculosis Society." Some details of this "society" appear in the Propaganda department of the current issue. The Cleveland Chamber of Commerce maintains a "Bureau of Soliciting Schemes" which, it is estimated, saves the people of Cleveland $90,000 a year "by suppressing ill-advised or fraudulent soliciting for alleged charitable purposes." The Cleveland public has learned the value of this bureau of their Chamber of Commerce and has cooperated heartily with it by reporting new soliciting schemes, as they are started, and requesting advice regarding such schemes. The "Children's National Tuberculosis Society" while not fraudulent, seems to be one of those quasi-philanthropic organizations which, with a minimum of practical work, deflects the greater bulk of the subscriptions collected into the pockets of the promoters or their agents. In the five months the "Children's National Tuberculosis Society" operated in Cleveland, it is estimated that the local agency collected $2,500 from the people of that city. As this amount would have steadily increased had the "society" been permitted to continue its operations, the financial value alone of the service given by the Chamber of Commerce can be readily appreciated. Such activities as those exhibited by the business men of Cleveland, through their own organization, are highly encouraging and make for optimism.

THE OLDER MEDICINE IN THE LIGHT OF MODERN SCIENCE

It is an interesting fact that many customs and practices, which were popular long before the advent of modern knowledge, are finding a justification in the discoveries of the science of today. In an address before the Mellon Institute of the University of Pittsburgh, Abel,[1] of Johns Hopkins, has pointed out another instance, like bloodletting, of the everyday observation of mankind justified by science. Various races have long made use of the skin of the toad for medicinal purposes. The Chinese still use as a cure for dropsy a preparation called senso, derived from toad skin. We are told that among western nations it has always been a folk remedy; and Abel states that almost up to the time of the introduction of digitalis as a medical agent, in 1775, the best medical authorities used toad skins in dropsy. A toad ointment including a concentrated decoction of the animal, fresh butter and tincture of arnica was in use among our early New England colonists for the treatment of sprains and rheumatism. A rationale for this procedure has been found in the fact that the skin of certain species of toads is now known to yield powerful poisons.[2] The familiar epinephrin has been isolated from the skin secretion of a tropical species. A quite different principle, a crystalline compound of the formula $C_{18}H_{24}O_4$, named bufagin, has been determined by Abel to be responsible for the curative power which the toad skin has for dropsy. That powdered toad skin should cure dropsy, he reminds us, has been ridiculed by the learned for a century; but now we possess in bufagin and in the slightly different bufotalin, which has only recently been obtained in crystalline form from the skin of the common European toad, the actual proof of the correctness of the old belief.

LOCAL INDUSTRIES AND THE SOFT PEDAL

The American Public Health Association has just held its convention in Rochester, N. Y. Rochester has been the home of many medical frauds, of which Duffy's Malt Whiskey, if not the greatest, is probably the best known. When the program of the association was being made up, a physician connected with the Department of Health of New York City was invited to give an address on "The Patent Medicine Fraud." The invitation was accepted. Later a Rochester physician—who was not on the program committee—wrote to another official in the New York Health Department intimating that any discussion of local "patent medicine" frauds would not be desirable and expressing the opinion that "to bring battle into the enemy's own country would be rubbing it in, no matter how well-merited the censure might be!" These facts in greater detail are brought out in the *Weekly Bulletin* of the Department of Health, City of New York, for August 28. It is the old story: Don't hurt local industries. No matter how fraudulent, how subversive of the public good, how dangerous to the public health, the industry brings money to the town; that is enough — speak softly! Doubtless it was this spirit that a few years ago inspired the secretary of the Chamber of Commerce of Rochester, the postmaster of Rochester, the cashier of one of Rochester's national banks and the president of the Rochester *Herald* Company each to write a testimonial letter relative to the "business integrity" of the "New York Institute of Science" — as bald a swindle as ever drew a fraud order from the federal government. Probably the same spirit induced the late Congressman Perkins of Rochester to come to the defense of Duffy's Malt Whiskey when the federal officials seized a large consignment of this fraudulent nostrum under the powers granted them by the Food and Drugs Act. If the "patent medicine" interests of Rochester are doing a legitimate and honest business they had nothing to fear from an address on "Patent Medicine Frauds." If, on the other hand, they are defrauding and swindling the sick, then the public-spirited citizens of Rochester should be the first to denounce the evil within their gates.

1. Abel, J. J.: Experimental and Chemical Studies of the Blood, with an Appeal for More Extended Chemical Training for the Biological and Medical Investigator, Science, Aug. 6, 1915, p. 165.
2. Abel, J. J., and Macht, D. I.: The Poisons of the Tropical Toad, Bufo Agua, THE JOURNAL A. M. A., May 27, 1911, p. 1531; Two Crystalline Pharmacological Agents Obtained from the Tropical Toad, Bufo Agua, Jour. Pharmacol. and Exper. Therap., 1912, iii, 319.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Typhoid Fever.—Dr. C. St. Clair Drake, secretary of the State Board of Health, in his latest bulletin notes that there are approximately 1,200 cases of typhoid fever in the state and this under ordinary conditions means that the number will be trebled before the end of September.

Typhoid Vaccination for Railway Employees.—Dr. Guy G. Dowdall, chief surgeon of the Illinois Central Railroad has asked the State Board of Health to send him 500 packages of antityphoid serum for the inoculation of employees of the system.——Moline physicians have sent a request to the state board for sufficient antityphoid serum to vaccinate 400 persons.

Personal.—Dr. George W. Brock has resigned as physician to the State Penitentiary, Joliet.——Dr. D. C. Richards, Bloomington, is reported to be critically ill.——Drs. F. W. Broderick and R. Leslie Hopkins, Sterling, were seriously injured in a collision between their automobile and an interurban car, August 22.——Dr. Ed M. Irwin, Belleville, has been appointed local surgeon for the Southern Railway.

Foot and Mouth Disease.—Foot and mouth disease has affected the prize herd of cattle of Mr. Samuel Insull at Libertyville, and ninety head of stock were killed.——An infected herd has been discovered on the lines between Lee and Bureau counties and the territory closed on account of this outbreak includes the townships of Ohio, Lamoille and Clarion in Bureau County, and the townships of East Grove, May and Sublette, in Lee County.

Examination for State Epidemiologist.—An examination is announced to fill the position of epidemiologist for the Illinois State Board of Health, a position created by the last legislature and carrying a salary of $2,400 per annum. This examination has been thrown open by the state civil service commission, Springfield, to male residents of the United States, over 25 years of age. Questions will be sent out to all applicants at a given time, touching on their education, professional experience and other training and from the answers, a selection will be made of those who appear to have the necessary qualifications and these will be asked to

assemble at a later date for an oral interview. The duties of the position are to make laboratory and field investigation of diseases of men, in relation to prevalence, causation and methods of control; to conduct field studies of public health matters; to advise and assist in the organization of health service in communities; to conduct educational campaigns so far as may relate to this particular phase of this endeavor, and to perform such other services as may be required by the board.

Chicago

Chicago Jewish Physicians Organize.—Jewish physicians, dentists and druggists met in the Hotel Sherman, August 18, and organized the Chicago Professional Men's Jewish Congress Association, which is to make a concerted effort to relieve the conditions of Jews in the warring countries of Europe. The following officers were elected: president, Dr. Hyman Cohen; secretary, Dr. Louis J. Pritzker, and treasurer, Dr. Henry Frankel.

Warning to Parents.—Dr. John Dill Robertson, health commissioner of Chicago, has appealed to all parents to have their children examined by the family physician prior to the opening of school. The physicians and nurses of the health department who are on duty at public schools will examine only children who have symptoms of contagious diseases and for this reason the health commissioner seeks the cooperation of all parents in seeing that their children are free of all diseases.

MARYLAND

South Baltimore Hospital Reopens.—Closed since July 31, the South Baltimore Eye, Ear, and Throat Hospital was opened September 1. The main building was closed during August, the work being conducted in the dispensary.

Baltimore Physicians Return from War Service.—Dr. Roades Fayerweather, Baltimore, in charge of the American Red Cross Hospital at Pau, France, left Pau August 20 and after about a month, will return to the United States.——Drs. Harry R. Slack, Jr., and J. A. Campbell Colston, Baltimore, who have been on duty at the Pau Hospital, sailed from Naples on their way home, August 17.

Dairymen Defy State Officers.—Western Maryland dairymen and owners of thoroughbred cattle, who recently united to refuse to obey the milk and health laws of Maryland, had their first clash with the state authorities, August 11, when a well-known cattle owner and dairyman near Yellow Springs threatened to shoot Dr. John S. Fulton, Baltimore, and Dr. Billings. This action followed a resolution passed the day before by the directors of the Dairymen's Association, to disregard all orders of the state authorities.

Personal.—Dr. Mary R. Fleming, Hinsdale, sailed for Urumiah, Persia, from New York, August 26. She goes by way of Scandinavia, Finland and Russia.——The residence of Dr. Michael A. Abrams, Baltimore, was damaged to the extent of more than $2,000 by fire, August 26.——Dr. Alvin McClung of the staff of Mercy Hospital, Baltimore, resigned August 19 and will practice near Richwood, W. Va.——Dr. David Silberman, chief resident physician to the Hebrew Hospital, Baltimore, who has been seriously ill with hemorrhages for which blood transfusion was necessary, is reported to be improving.——Dr. James E. Gauline, Baltimore, who is helpless from paralysis, was chloroformed and robbed August 5.——Dr. James A. Nydegger, Baltimore, who has been in Europe for four months studying immigration problems, has returned to the United States.

MICHIGAN

Pellagra Survey.—Pellagra has been made a reportable disease in Michigan. The discovery of a case of this disease at Hancock has aroused a sentiment in favor of having a pellagra survey of the state. Within the last two years it is said six or seven deaths have been reported from the disease.

Careless Physicians.—The secretary of the state, in a letter to the health officer of Detroit, names 172 physicians of Detroit as having failed to answer the question on the birth certificates regarding the treatment of the eyes of the new-born infant. He also names thirty midwives who have committed the same violation of the state law.

Indians Are County Wards.—Attorney-General Fellows has informed Secretary John L. Burkart of the State Board of Health that Indians are county wards and must be cared for in the same manner as other indigents. The reason for this decision was a report from Dr. George E. Moore, Ironwood, of the Indian Service, of the deplorable condition among Indians in a small village on the shores of Lake Vieux Desert, in Gogebic County.

Hospital Items.—The Flint Board of Health has adopted resolutions setting forth that it is the opinion of the board that the new contagious hospital, made possible through the generosity of the Hon. C. S. Mott, should be constructed as one of the Hurley Hospital group of buildings and should be maintained and operated under the same management.—— The new hospital, which Henry Ford is building in Detroit, will be formally opened this month. A few rooms have already been prepared to care for alcoholic and drug addicts.

Personal.—Dr. Willard H. Hutchings, Detroit, has returned after three months service abroad.——Dr. Ben S. Gutelius, Dollar Bay, has been appointed physician for the Loretta Mining Company at Loretta and Dr. E. B. Kebbe has succeeded Dr. Gutelius at Dollar Bay.——Dr. Duncan A. Cameron, Alpena, in celebration of his thirtieth year in the medical profession, entertained local professional men at the country club, August 20.——Dr. Freeman A. Jones has been appointed examining surgeon for the police and fire departments at Lansing.

Sanatorium Notes.—The Tuberculosis Hospital for Jackson was opened for public inspection, August 20, and received patients a week later.——Two new wings are being added to the Detroit Sanatorium, Highland Park, at a cost of $50,000, and a cottage for children with accommodations for thirty, has also been added to the institution.——The proposed site for the State Tuberculosis Sanatorium at Midland is facing the problem of water.——Grand Rapids is making an effort to secure the location of the State Tuberculosis Sanatorium, and to this end has offered to donate to the state so much of the 31-acre tract of land where the local hospital is located, as the state may desire.——The first tent for the municipal tuberculosis hospital to be established in Kimball Park, Battle Creek, was purchased by the city commission, August 23.

MINNESOTA

Dispensary to Move.—The university free dispensary will be moved from 1810 Washington Avenue, S. E., Minneapolis, to the basement of Miller Hall on the university campus.

Personal.—It is reported that Dr. Heber W. Coulter, formerly of Mountain Lake, a medical officer with the allies, has been wounded by a shell fragment; he is said to be improving.——The house of Dr. Oscar F. Mellby, Thief River Falls, was seriously damaged by fire, August 9.—— Dr. Thorvald Petersen, Gaylord, has accepted a position with the Swedish Hospital, Minneapolis.

Diphtheria.—In July 80 cases of diphtheria were reported from thirty-one counties of the state. Eleven cities had 65 cases, including 28 in Minneapolis, 23 in St. Paul and 1 in Duluth. Four villages had four cases; eight townships had 11 cases, but only 5 were over 2 miles from a village. Before patients are discharged from quarantine two negative cultures must be obtained. The State Board of Health has ordered that all children who have had the disease must have two negative throat cultures before they will be allowed to enter the schools this fall. This is to exclude carriers.

Faculty of Graduate School.—The regents of the state university have approved the recommendation of a special committee on graduate medical teaching of the University of Minnesota, consisting of President Vincent, Dean Lyon, Dean Guy Stanton Ford of the graduate school, Drs. James E. Moore and Clarence M. Jackson, Minneapolis, which suggested the following names for the graduate faculty: Dr. Charles H. Mayo, professor of surgery; Dr. Edward S. Judd and Dr. Emil H. Beckman, associate professors of surgery; Dr. Christopher Graham, professor of medicine; Dr. Henry S. Plummer, professor of medicine; Dr. Herbert Z. Giffin and Dr. Walter D. Shelden, associate professors of medicine; Dr. William F. Braasch, professor of urology; Dr. Melvin S. Henderson, associate professor of orthopedia; Dr. Carl Fisher, associate professor of ophthalmology and otology; Dr. Justus Matthews, associate professor of rhinology and laryngology; Dr. Russell D. Carman, professor of roentgenology; Dr. Louis B. Wilson, professor of pathology; Dr. William C. MacCarty, associate professor of pathology; Dr. Edward C. Rosenow, professor of experimental medicine, all of Rochester.

NEW YORK

Constitutional Convention Passes Welfare Bills.—After a very bitter fight, the constitutional convention on September 3 adopted the proposal giving the legislature power to regulate manufacturing in tenements and also the proposal enabling the law-making body to bring occupational diseases within the scope of the workmen's compensation law. The vote on the first proposal stood 97 to 46 and on the second 125 to 17.

Personal.—Drs. C. Burns Craig, Fordyce B. St. John and John A. McCreery, New York City; and Dr. Edwin G. Ramsdell, White Plains, have returned from work in the American ambulance, Paris.——Dr. Edward S. Van Duyn, Syracuse, was operated on, at his summer home in Skaneateles, for appendicitis, August 29, by his father, Dr. John Van Duyn. ——Dr. Andrew J. Gilmour, New York City, is said to have made the first successful ascent of Mount Geikie in the Selkirk Range.

New York State Sues New Jersey on Account of Nuisance.—There have for some time past been many complaints from residents along Riverside Drive because of the noxious odors emanating from the plant of the General Chemical Company at Edgewater, N. J. Appeal to the attorney-general and to the governor of New Jersey did not result in any improvement in conditions. Finally, after investigation by the office of the attorney-general, steps have been taken to present a bill in equity before the United States Supreme Court. The state of New York will thus bring suit against the state of New Jersey for the abatement of the nuisance which cannot be abated by the health department of the city or the state of New York as the source is outside their jurisdiction.

Typhoid Carrier Discovered.—A case that parallels that of "Typhoid Mary" is said to have been discovered by the state sanitary supervisor for Jefferson, St. Lawrence and northwest Franklin counties. Investigation as to the origin of a number of cases of typhoid fever along the course of a small stream that had been known as Typhoid Creek lead to the suspicion that a carrier was responsible for the prevalence of the disease in this locality and further investigation seemed to point to a particular woman who had acted as housekeeper in various places where cases of typhoid fever had occurred. Cultures taken from this woman show that she is a carrier though she has never had the disease, according to her statement. Her record as far as worked out shows at least eleven cases of typhoid fever for which she is directly responsible, seven of them occurring during the short period of seven months.

New York City

Rumors of Cholera on Liner Baseless.—Thirteen steamers of the North German Lloyd and the Hamburg American lines lying up at the companies' piers in Hoboken were quarantined for twenty-four hours as the result of the discovery that sixteen men on the *President Lincoln* had developed intestinal trouble and high temperature. The investigations of the bacteriologist under Dr. O'Connell showed that the illness of the men was probably due to eating or drinking something which had disagreed with them. All of the men made a speedy recovery and soon returned to work.

Germans to Send Relief Expeditions.—An organization was incorporated at Albany on September 3, to be known as the American Physicians' Expeditions Committee, the purpose of which is "to equip and send to foreign countries and therein maintain surgical, medical and other relief expeditions." The directors are Arthur von Briesen, Bernhard H. Ridder, Victor F. Ridder, Carl L. Schurz and Adolph Kutroff, all of New York City. The first of the expeditions, preparations for which have been going on for some time, will sail on September 9, and will consist of twenty persons, surgeons and nurses. Dr. Herman Fischer will head the initial expedition. Part of this expedition will go to Berlin and part to Austria.

Honor List of Smokeless Boats.—Since the department of health undertook to suppress the smoke nuisance in the vessels operating about the city many maritime interests have complied with the regulations; some, however, even after repeated warnings, have persisted in discharging dense smoke and have been summoned to court and several of these cases are now pending in the court of special sessions. In justice to those who have complied with the sanitary code a list has been prepared containing the names of companies or individual owners of boats operating in the waters about New York who have complied with the requirements which is being given publicity and the attention of citizens and other steamboat owners is called to these names.

PENNSYLVANIA

Personal.—Dr. Frank F. Simpson, Pittsburgh, who has had for several years a decided hyperglycemia, has decided to cease practice temporarily.——Dr. Charles J. Hunt, Harrisburg, has resigned as chief medical advisor to the State Medical Department to accept the post of medical supervisor of the Clifton Springs, (N. Y.) Sanitarium.——Dr. Thomas A. Kurr, Fredericksburg, is reported to be critically ill in the Good Samaritan Hospital, Lebanon.

Typhoid.—Pittston is reported to have about twenty cases of typhoid fever, due it is said to impurity in the milk and water supply.——There are said to be eighteen cases of typhoid fever among the patients and nurses at the Danville Hospital for the Insane. The milk and water supply is apparently pure and the suspicion exists that there is a typhoid carrier in the institution.

Philadelphia

Physicians Asked to Help Find Drug Victims.—That the work of rounding up drug users may be facilitated, the Bureau of Internal Revenue has requested physicians to cooperate with the department and give information that is of value to the government in the prosecution of cases.

Attention to Defects of Children.—The *Bulletin* of the Board of Health, issued August 29, urges parents to have the physical defects of their children corrected before the opening of the fall school term, calling special attention to the eye, ear and teeth of the children. At the beginning of the school year the medical inspectors of the Bureau of Health examine all the pupils. Those who have physical defects are recommended to their family physicians and those who cannot pay are referred to the hospital dispensaries or to free dental and eye dispensaries of the bureau.

VIRGINIA

Hospital Nearly Completed.—The new Newport News Hospital, which has been erected on Fiftieth Street, is almost completed. The institution will care for forty patients and has cost about $30,000.

Physicians' Register.—The State Board of Health announces that it is preparing to issue its biennial register showing the name and location of all physicians, health officers and registrars of births and deaths in the state.

Active Tuberculosis Campaign Urged.—The State Tuberculosis Commission recently met at the Catawba Sanatorium and after a study of the statistics of deaths from tuberculosis in the state during 1914, urged that the state begin a more active campaign for the prevention of the disease. The consensus of opinion of the commission was that while Virginia needs institutions for the care of consumptives, she needs still more to inform her citizens of the ravages of the disease and of the means by which it may be combated.

Personal.—Dr. Jesse H. Crouch, district physician of the Health Department of Richmond, has resigned, taking effect September 1.——Dr. Harvey W. Wiley, formerly chief of the bureau of chemistry of the Federal Department of Agriculture, has been appointed president of the Federal Societies for Community Betterment in Loudoun County.——Dr. Otis Marshall, Culpeper, was seriously injured by the overturning of his automobile, August 11.——Dr. John W. Wallace has succeeded Dr. Wilbur B. Payne as secretary of the Board of Health of Covington.

SOUTH DAKOTA

Anthrax.—Dr. Carl Viers, a veterinarian of Vermilion, is confined in a local hospital suffering from anthrax contracted from a steer dead of that disease.

Detention Hospital Completed.—The Detention Hospital for Watertown has been completed at a cost of $1,700. The building will accommodate nine patients and a nurse.

New Hospital.—The Providence Hospital Association, Faulkton, has purchased the Morse residence for $10,000 and will remodel the building and open it as a hospital.

Receiver for Sanatorium.—The Minneapolis Trust Company has been appointed receiver for the Lawrence Sana-

torium Company as the result of a controversy derived from the annulment of the sanatorium company's charter in South Dakota.

Personal.—Dr. Charles Flett, Milbank, has been appointed county superintendent of health for Grant County.——Dr. Hampton R. Kenaston, Bonesteel, has been elected president of the South Dakota State Board of Health and Medical Examination.——Dr. Gustave A. Landmann, Scotland, has been appointed coroner of Scotland County, vice Dr. Black, resigned.——Dr. and Mrs. Thomas T. Church, Scotland, started on a trip to the Pacific Coast, August 3.

WISCONSIN

Barber Examining Board.—The State Board of Health, in accordance with an amended law of the last legislature, has appointed the members of the new State Board of Examination for Barbers.

Dispensary Enlarged.—The Milwaukee Society for the Care of the Sick is about to enlarge its southside free dispensary by the addition of three more rooms to its quarters in the Juneau Building.

State Medical Board Appointments.—Dr. Royal C. Rodecker, Holcombe, was appointed to succeed Dr. Abner B. Bailey, Fennimore. Additional appointments were as follows: Dr. John M. Dodd, Ashland; Dr. Henry W. K. Abraham, Appleton, and Dr. George H. Ripley, Kenosha.

Boats as Tuberculosis Hospitals.—Paul L. Benjamin, secretary of the Antituberculosis Society of the Milwaukee Associated Charities, has suggested the use of old river boats for floating hospitals for tuberculosis patients. This plan has been adopted with success in New York City where ferry-boats are used for this purpose.

Whooping-Cough.—September 1 it was reported that there had been 700 cases of whooping-cough reported to the health office in Milwaukee. Several deaths from the disease are said to have occurred. The superintendent of the schools has been notified that children who cough or show evidences of the disease must be sent home for a period of two weeks.

Branch Laboratory for Ashland.—Dr. John M. Dodd, Ashland, is making an effort to have the branch of the state hygienic laboratory established in Ashland, and has offered for this purpose, his private laboratory and office building. The act requires the city in which the laboratory is to be located to contribute $2,500 toward the erection of the laboratory.

Central Bureau for Tuberculosis Administration.—The State Antituberculosis Association is planning to establish a central bureau at some point at which physicians may ascertain in what institutions, outside of the counties in which they practice, vacancies exist. This information to be used in the event of the institution in the physician's own county being overcrowded.

Personal.—Dr. A. Melbourne Foster, Racine, who was injured in an automobile accident, August 16, is still at St. Mary's Hospital, Racine, and not yet out of danger, although he is reported to be improving.——Dr. James R. Kingsley, Sheboygan, was the guest of honor at a banquet given by the Sheboygan Medical Association, August 19. Dr. Kingsley is about to leave Sheboygan to establish a sanatorium in Three Rivers, Mich.——Dr. Fred L. McDaniel has been transferred from the Hayward Indian School to the Pueblo Bonito Indian School, Crown Point, N. M.

CANADA

Lepers in Canada.—In the leper lazaretto at Tracadie, N. B., there are sixteen patients—seven males and nine females. This is the smallest number in years. This is claimed to be the result of the system of treatment now being carried out in that institution. Two former inmates discharged in 1912 remain cured.

Saskatchewan Hospital Unit.—Good progress has been made in the organization of the Saskatchewan Hospital Unit. The medical men of the province, through the medical council, have contributed $10,000, the provincial government has given an equal amount, and the city of Swift Current has offered to furnish the operating room at a cost of more than $3,000. The unit consists of 200 beds with a complete nursing and orderly staff and has been offered to the Imperial government and accepted by it.

Disease After War.—The danger of disease after war is over is commencing to engage the attention of the Dominion of Canada quarantine authorities. When wounded soldiers are being brought back, the utmost vigilance will be exercised by those authorities. During the past year Canada was saved by watchfulness at the ports of entry from the inroads of any epidemic diseases from abroad. At the various quarantine stations 253,608 persons were inspected and a total of 543 persons were quarantined.

Personals.—Dr. Walter W. Wright, Toronto, has returned from graduate work in London, England.——Dr. S. Alexander, Elmira, Ont., has arrived safely in England, where he has been appointed senior medical officer to a British regiment.——Dr. Jack Maynard, Stratford, Ont., has gone to Camp Niagara where he will be medical officer with the ninety-second battalion. He is the third Stratford physician to be given a responsible military post, Dr. Oscar Cannon being at the Dardanelles with the A. M. C., and Dr. David Smith with the thirty-fourth battalion at London, England.

The Disablement Fund.—The Disablement Fund being started in Canada under the auspices of the Military Hospital Commission has started off with a good subscription. Mr. James Caruthers, Montreal, has donated $100,000. Among those who have offered their residences for convalescent homes for returned wounded is Mrs. Ross, widow of the late Dr. James F. W. Ross, Toronto. The commission is equipping part of the new Immigration Building, Quebec, for a distribution hospital. The men on arrival will be examined at this institution and allotted to convalescent homes accordingly.

Base Hospital Personnel.—There is said to be no truth in the rumor in Toronto that the University of Toronto Base Hospital in England has been broken up. It has been separated for a time but will be recalled into a unit when necessary. Dr. Andrew R. Gordon is at home ill. Drs. Royce and Stanley Ryerson went to the Horse Guards; Dr. Graham Chambers was given work in London hospitals attending wounded officers; Drs. Gaillie, Pearse, Armour, Gaby, Imrie, and Fletcher went to the London hospitals; Brodie, Mackenzie, and Caulfeild are doing special work in pathology in London; Drs. Malloch, Wilson and McPhedran went to Aldershot; Drs. King Smith, Hewitt and Sharpe went to Woolwich; Dr. McVicar to Taplow; Dr. Graham to France, and Drs. Primrose, McKeown, Parsons, Hendry, Watson, and Boyer are doing "board work" at Moore Barracks.

Public Health President Advocates Universal Military Training.—As a means of physical development and promoter of public health, Dr. Maurice M. Seymour, Commissioner of Public Health in Saskatchewan and president of the Canadian Public Health Association, strongly advocated universal military training for all young Canadians at the annual meeting of the association in Toronto, September 3 and 4. Dr. Seymour also spoke of the necessity of caring for prospective mothers. He outlined the new law in Saskatchewan which gives every mother $25 and pays a doctor a fee of $15 for medical attention. Various aspects of the problem of the feeble-minded in Canada were discussed. Dr. J. D. Page, quarantine officer for the Canadian government in Quebec City, attributed the excessive growth of the number of feeble-minded in Canada to the lax methods of enforcing the immigration law in regard to the inspection of immigrants. He declared the men employed for this work were in the main inefficient and got their positions through political pull. Dr. J. W. S. McCullough, chief medical officer of health for Ontario, addressed the congress on Modern Military Sanitation, and from his experience at Camp Niagara the past summer, considered that tent life was far superior to life in barracks, providing there was protection from inclement weather.

Hospital News.—Hon. W. J. Hanna, provincial secretary for Ontario, announces that since war was declared the Guelph Central Prison has been busy on making hospital beds. The Ontario government received a request for 1,500 beds, 1,500 mattresses and 3,000 blankets for use in Canadian hospitals in England. They turn out fifty enameled beds per day and will fill the entire order by November 1.——On his return, the premier of Canada, Sir Robert Borden, has announced that the Dominion government has decided to provide a hospital near Paris for wounded French soldiers. The government has decided to equip the hospital with French-Canadians. Canada has contributed nobly for alleviating the suffering of the wounded in France, the gifts having included $100,000 towards a French hospital at Dinant. The hospital staff is already in England under command of Col. A. Mig-

nault of Montreal, with a staff of French-Canadian medical men and nurses, and was in charge of a tent hospital capable of caring for 500 hundred wounded on the south coast of England. This hospital will leave for France in the near future.——The Ontario government announces that there is no truth in the rumor that a certain Toronto doctor has been appointed chief surgeon of the Ontario hospital being established in England. Appointments to the staff of that hospital have not yet been considered by the government.——Fifty men have already been accepted for No. 6 Laval Hospital for overseas service and the applications of fifty nurses are being considered. A knowledge of the two languages is preferred for recruits for this hospital.

GENERAL

Southern Physicians to Meet.—The annual meeting of the Southern Medical Association will be held in Dallas, Texas, November 8 to 10.

Guard Ports Against Cholera.—Surgeon General Rupert Blue and the United States Public Health Service are using the most stringent methods to prevent the admission of possible cholera patients through United States ports. Cholera is reported in twenty-three localities in Germany and it is now rumored that the cholera infection in the Balkan territory has been carried into Italy.

Membership of the National Tuberculosis Association.—On July 1 there were 2,357 members in the National Association for the Study and Prevention of Tuberculosis. Of these, one half are physicians and one half laymen. Of the fifty-eight directors, thirty-six are physicians and twenty-two laymen. The far Western states show the largest percentage of medical membership. This is probably explained by the fact that most of the climatic resorts of the country are located in the West. In the Eastern states the laymen predominate. The eastern states also have the largest proportion with 3.8 members for each 100,000 population. The central states have 1.3 members and the Western states 2.5 members per 100,000.

Bequests and Donations.—The following bequests and donations have recently been announced:

Jewish Consumptives Relief Society and Associated Jewish Charities, Chicago, each $10,000, by the will of Bernard Baumgarden, Chicago.

To build a hospital in Darlington, S. C., for negroes, the estate of Edmund H. Dease, valued at from $25,000 to $30,000, on the death of his widow.

Rockefeller Institute for Medical Research, New York City, $200,000, by the will of Henry Rutherford.

Lima (Ohio) Hospital, improved real estate in Lima, contingent on the death of his sons, childless.

Ladies Aid Society of the Presbyterian Hospital, Philadelphia, nine shares of stock in Mine Hill and Schuylkill Railroad, by the will of Mary Sutherland.

To introduce a hospital for the cure of inebriates in Wilkes-Barre, Pa., the estate of Mrs. Rose Payson, Wilkes-Barre, subject to her husband's life interest in the estate.

Work of the Special Relief Society.—The Special Relief Society, through its executive committee, is endeavoring to arouse the women of America to a full realization of the importance of immediate preparedness. The work which the women can do consists in the offering of summer homes for emergency hospitals in the event of war, the preparation of kits for the regular and volunteer army, the making of garments needed in the field, the making of an auxiliary kit, convalescent kit, hospital kit, the provision of extra camp comforts for the soldiers, the organization of sewing clubs, contribution of materials and funds, the preparation of a list of volunteer nurses. The membership of the society consists of the following classes: sustaining members, annual members, contributing members and life members.

Race Betterment.—The second international conference on race betterment was held at San Francisco, August 4 to 8, and discussed race decadence, the possibilities of race improvements, and the agencies of race betterment. Among the important papers presented was that of Luther Burbank on, "Evolution and Variation with the Fundamental Significance to Sex," in which he claimed that only through constant selection of the best can any race be improved. Paul B. Popone, in discussing "The Natural Selection of Man," declared that there were only two ways to improve the general character of the race: one, by killing off the weakling, and the other by eugenics. Dr. John H. Kellogg of Battle Creek proposed that the conference institute a eugenics register which would take note of two classes: first, those who are found to measure up to eugenic standards; second, children born of patients who conform to the required standard.

First Aid Conference.—On August 23 and 24 a first aid conference was held in Washington, D. C. In this conference both surgeons of the Army and Navy and Public Health Service, railway surgeons and civil surgeons, participated. The plans of the conference as summarized in the prospectus were: to take active measures to capitalize for Army purposes the best medical talent in the United States; to awaken the profession to a realization that emergency surgery and surgery of infected wounds is being neglected; to standardize first aid appliances and incidentally surgical appliances so that not only uniformity may be secured, but the prices of all appliances may be reduced; to provide for active cooperation between military and civil surgeons, so that the Army may secure the best men and the colleges may secure the services of Army men as instructors; to standardize the service supply tables, cutting out useless drugs, etc. Backed by the approval of the U. S. Medical Association, this standard would have great weight; to provide for a permanent board selected from Civil and Service surgeons to pass on these and other subjects—their decisions to be ratified by the American Medical Association, etc. Permanent organization was effected under the name of the First Aid and Accident Surgery Society. Major General William C. Gorgas, surgeon general, U. S. Army, was elected president; Dr. Joseph C. Bloodgood, Baltimore, secretary, and the following were appointed members of the executive committee: Col. W. S. Battle, general claim agent of the Norfolk and Western Railroad; Dr. A. S. LeConte, Philadelphia; Dr. Eve of North Carolina; Dr. Jonathan N. Wainwright, Scranton, Pa., and Surg. Gen. Rupert Blue, U. S. P. H. S.

FOREIGN

Award for Mothers with Four Children.—The sum of $25,000 has recently been presented to the province of Düsseldorf the income of which is to be distributed among mothers who have four well-kept children under 14.

Deaths in the Profession Abroad.—J. U. T. Quensel, professor of pathologic anatomy and hygiene at the University of Upsala, aged 75.——G. Cattaneo, for half a century professor of surgery at the University of Pavia, aged 83. He bequeathed most of his property to found an institution there for treatment of the maimed and crippled. He was also one of the first to organize a dispensary for tuberculous children, and he served the community in various local political offices.

Personal.—The Moxon gold medal of the Royal College of Physicians has been awarded to Prof. J. J. Déjerine, and the Baly gold medal to Dr. F. Gowland Hopkins.——Dr. H. P. Römer, director of the Institute of Hygiene, Greifswald, Germany, has succeeded Professor Fränken, at the University of Halle, Germany.——Dr. Seishu Kenoshita, professor of gynecology and obstetrics in the Imperial University, Tokyo, Japan, has been designated by the government to make an extensive tour and study of American hospitals. A dinner of farewell was arranged by Dr. R. B. Teusler, director of St. Luke's Hospital, Tokyo, who spoke eulogistically of Professor Kenoshita. Dr. Ichiki also spoke of the value of the work being done by Dr. Teusler and his associates.

Drug Supply in the Netherlands.—The National Public Health Service of the Netherlands announces that arrangements have now been made with the German government whereby the Rijksmagazin at Amsterdam is to serve as the intermediary for distribution of certain drugs the exportation of which from Germany is now permitted. The list includes aspirin, formaldehyd, iodin, sodium iodid, iodoform, antipyrin, salipyrin, pyramidon, phenacetin, mercury and its salts, salicylic acid, senega, tartaric and citric acid, and all surgical, medical and bacteriologic instruments and equipment, vaccines and serums. The *Nederlandsch Tijdschrift* in publishing this notice gives a long list of other drugs which cannot be obtained in this way, either because there is already an ample supply in the Netherlands or Germany has none to spare. This list includes Peruvian balsam, dressing materials, opium, quinin, phenol, cocain and ipecac. The articles the exportation of which is thus permitted, can be obtained only in lots equivalent to three months' regular use of the drug in question. Orders are to be placed as usual with the wholesale houses and these will fill the orders through the Rijksmagazin.

The Drug Supply in Italy.—A letter from the president of the organized pharmacists of Rome, published in the *Giornale d'Italia,* an Italian daily, gives the soaring prices of certain drugs: acetylsalicylic acid from 10 lire is now 120,

potassium bromid from 5 has risen to 50, and the salicylates from 5 to 50, 80 or 100 lire. A lira is equal to 20 cents of our money. The price of phenol has increased tenfold, benzonaphthol fourfold, chloral nearly as much, thymol nearly four times and chlorate of potash threefold, while others have gone up from 15 to 100 per cent. in price. Notwithstanding this, forty of the pharmacists in Rome have hitherto kept on supplying drugs to their customers at the prices that have been the standard during the last five years. This altruistic action is at a heavy expense to them, particularly as certain large manufacturing chemists in Italy have raised their prices to correspond to those of the imported drugs, while there is no excuse for this in most cases. The Italian daily publishing the letter urges the government to take steps to safeguard the supply of drugs and keep the price within bounds, just as the grain supply has been taken over into the hands of the state.

WAR NOTES

Communicable Diseases.—Advices from Vienna by way of Zurich, say that the Austrian Minister of the Interior states that there are 929 cases of cholera in Austria at present.——Surg. Gen. Otto von Schjerning of the German Army, states that typhoid fever on the western front is very rare owing to the provision of sterilized water for the soldiers, and the antityphoid inoculation.

Vaccination Against Cholera.—The German authorities have ordered that all persons employed on the railroads in the eastern part of the empire are to be inoculated anew against cholera. It is assumed that the time has arrived for a repetition of the vaccination. The *Münchener med. Wochenschrift* relates that General von Ziegler of Vienna, commander of an Austrian cavalry corps, recently died from Asiatic cholera. There has been no other case of cholera in his staff and troop, and he was the only officer of the entire troop who refused to be vaccinated against cholera.

Care of Wounded by English.—Dr. J. C. H. Beaumont, surgeon of the White Star Steamer *Baltic,* who has returned after three months' tour of base hospitals in England and Scotland, speaks of the rapidity in the removal of wounded men from the front to base hospitals. He says that large steamers are constantly crossing the channel between Havre and Southampton, that each has accommodations for 1,200 men, and that by the speed and regularity of their trips it is possible for a soldier wounded at Ypres in the morning, to be in the London Hospital under treatment within twelve hours.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American Physicians for the Aid of the Belgian profession for the week ending Sept. 4, 1915, states that no contributions were received for the week ending Sept. 4, 1915.

Previously reported receipts		$7,814.84
Total receipts		$7,814.84
Previously reported disbursements:		
1,625 standard boxes of food at	$3.20	$3,575.00
1,274 standard boxes of food at	2.30	2,930.20
353 standard boxes of food at	2.28	804.84
Total disbursements		7,310.04
Balance		$ 504.80

F. F. Simpson, Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

New Zealand Equips Hospital Ship.—New Zealand has equipped a hospital ship for war service. The ship, formerly the *Maheno,* has been remodeled so that it is now said to be one of the best, if not the best, hospital ship afloat. She has been painted white with green bands and red crosses. The cabins have disappeared and the saloon has been transformed. Two special wards for five patients each, an officer's ward, a noncommissioned officer's ward and ten wards for enlisted men have been put in. The large wards contain sixty-four beds. One row of beds is composed of fixed cots while a second row is so constructed that it will swing with the movements of the vessel. The total number of beds for patients is 388, but if necessary, the officers' and nurses' drawing room can be transformed into a ward for sixty additional patients. Patients are received into the ship through the iron water-tight doors at the ship's side, at the level of the lower deck and are transferred by trolleys and lifts. Elaborate provision has been made for sterilization apparatus, laundry, etc. There are two operating theaters, one for minor and one for major surgery, and a Roentgen-ray room and bacteriologic laboratory are also provided. The staff is housed on the upper decks. No field hospital affords the comfort or security which the *Maheno* provides and it is said that few base hospitals are as well equipped.

LONDON LETTER

London, Aug. 27, 1915.

The War

STILL MORE PHYSICIANS REQUIRED

The War Emergency Committee of the British Medical Association has made a personal appeal to every member of the medical profession for service as a naval or military medical officer if of military age, and if over age, for cooperation, so as to set free the men willing to go. The appeal is meeting with a ready response, and local committees have been set up to make the necessary arrangements. There will be two classes—men under 40, whose services will be accepted for a period of twelve months and who will be liable for service at home and abroad, and men over 40, who may offer their services for a period of six or twelve months. The latter will not be sent to the front, but will be employed in this country (if they join for six months only) or in such stations as Egypt, Malta and Gibraltar (if they join for twelve months). To meet the difficulty of physicians leaving their practices, the committee, acting in cooperation with a local committee, endeavors to protect the interests of those who respond to the call. Responsibility for carrying on the physician's work rests primarily with his neighbors, and frequently physicians have expressed to the committee their deep disappointment at finding that patients fail to appreciate the sacrifice made in giving up a practice built up by years of work. As a principle, people all agree that it is right and patriotic for a physician to volunteer for medical service, but often after arrangements are completed, a patient disregards them and applies to another physician. But this must be expected, for after all the choice of a physician is under all circumstances the right of the patient.

THE MEDICAL ARRANGEMENTS AT THE DARDANELLES

The magnitude and the unusual character of the operations at the Dardanelles have presented a difficult problem to the medical staff. The total number of casualties up to the middle of July was 37,982, of which 8,099 were fatal. The foothold obtained by the British and French for the large forces employed was very limited and was almost everywhere exposed to the enemy's fire, so that no site for a hospital was possible. Even casualty clearing stations had to be shifted, as they were several times shelled out. The wounded brought down from the field ambulances were put as quickly as possible on board barges, and towed out to hospital ships, by which they were taken to the base hospitals at Lemnos, Alexandria and Malta. Within three weeks as many as 20,000 wounded were taken to Alexandria. Many of these had been shot long before they reached the shore. Some of the boats were sunk and others had to turn back full of wounded with scarcely an unwounded man on board. As the hospital ships were insufficient for the large numbers of wounded, the transports which took out the troops had to be utilized. In some cases these refilled so quickly with urgent cases that they returned to the base even before the last of their stores were disembarked. Physicians from field ambulances, with what orderlies could be spared, were put on board. These worked night and day during the return voyage, but often could not render more than the most urgent first-aid treatment. Though each transport carried only three medical officers, a few orderlies and no nurses, they had about 1,000 wounded, and in one case as many as 1,618 for the two and a half days' voyage to Alexandria. Later better arrangements, in the form of transports fitted for use as hospital ships with staffs of four medical officers, six nurses and twenty orderlies, were made. The transference of the wounded from the shore frequently took place under fire. Often the men had dragged themselves or been helped by less severely wounded comrades for about 2 miles to a dressing station. Occasionally aeroplanes dropped shells on the hospital ships, killing some of the wounded.

Excessive Prescribing

As physicians do not supply drugs to their patients under the insurance act (unlike the custom in private practice) they have no interest in economy. The resulting extravagance has been referred to in previous letters to The Journal. A recent report of a Panel (insurance) committee on the subject is instructive. The members of the committee

were of the opinion that it is essential for the panel committee to adopt a settled policy and to carry out that policy with determination. Either they must abandon all care of the drug fund or put down excessive prescribing. That two thirds of the men on the panel can give adequate treatment for an average of less than 36 cents a head per annum shows that excessive prescribing is unnecessary and a waste of public money. They recommended that from time to time warning notices should be sent to those physicians who appeared to be exceeding 50 cents a head, and that no surcharges should be made until the end of the year. Then, after full inquiry into any possibly mitigating circumstances, a surcharge should be recommended of those physicians who continued to prescribe excessively after the warnings. Several reasons were given for this course: Many prescriptions to which exception was taken might be defended if considered alone, but taken in bulk, their successful defense would be impossible. Further, it might fairly be argued that a peculiarly bad case may have caused the amount for any particular month to appear excessive, but at the end of the year, if the average rate of prescribing had been anything reasonable, there should be no excuse for exceeding the 50 cents. A study of the prescriptions in general suggested that some of the excessive prescribers treated symptoms merely, and when at a loss for further treatment gave pleasing drafts of well-flavored mixtures. Thus, they failed to cure their cases, and patients came again and again for medicine, giving these practitioners a fictitious appearance of high sickness incidence. The argument that this is to the advantage of insured persons and to the funds of approved societies did not stand examination for a moment. Such methods of treatment were considered disadvantageous to both. In prescribing, as in most other things, economy and efficiency walked hand in hand.

PARIS LETTER

Paris, Aug. 19, 1915.

The War

OPERATIVE INDICATIONS IN THE ARMY ZONE

At a recent session of the Société de chirurgie de Paris, Professor Quénu made a report on an important memoir on this subject which has been addressed to the society by Dr. Heitz-Boyer, surgeon of the hospitals of Paris. In surgery, as practiced in the army zone, the following three great divisions may be established: (1) immediate surgery, comprising operations which, if not done instantly, are useless; (2) urgent surgery, that is to say, operations which must be performed within the first twenty or twenty-four hours at most; (3) early surgery, comprising operations of the first two or three days.

1. The operations to be performed on the spot, even if this be on or near the battlefield itself, are not numerous: hemostasis, tracheotomy and the separation of a limb which is held in place by a mere shred of tissue. The hemostasis most frequently consists in placing a Kocher forceps or a tourniquet, very seldom a ligature.

2. The operations of the first twenty or twenty-four hours are much more varied. So far as fractures are concerned, while it is true that operations should not be performed in those cases in which the perforations of entry and exit are small, it should also be remembered that bullets fired from a short distance have explosive effects, producing lacerations comparable to those of fragments of shell. From the point of view of treatment, it is necessary, moreover, to distinguish fractures of diaphyses from fractures of epiphyses. For the first class free opening of the wounds, removal of detached fragments of bone and of those which are held by a shred and which would necrose unless removed, excision of portions of muscle which are comminuted or contused—these measures constitute the procedure to be followed. For fractures of the epiphyses, it is necessary at the outset not merely to open up the wound but freely to excise broken or comminuted osseous tissue. If this preventive excision is not practiced, the necessity for a secondary resection or even an amputation in bad local conditions and extremely bad general conditions will present itself some weeks later.

Articular lesions ought to be cleaned out early, and after having been disinfected, drained liberally. Their prognosis, in fact, is particularly serious, and they urgently demand early operative treatment.

Quénu states that abdominal wounds may be classed in four divisions: (1) tangential wounds involving only the abdominal walls; (2) nonperitoneal wounds with visceral lesions; (3) penetrating peritoneal wounds without visceral lesions, and (4) penetrating wounds with visceral lesions. The first two classes do not call for laparotomy. Wounds of the third class may benefit by it. Laparotomy is the treatment of choice for wounds of the fourth class.

For penetrating wounds of the chest, nonoperative treatment is the rule followed by all surgeons. Heitz-Boyer remarks, however, that in certain gross parietal lesions one ought to disinfect and drain the osseous thoracic seat of the lesion as one would drain that of a limb.

In the class of urgent surgery, it is necessary also to include certain serious wounds of the soft parts, such as wounds of the buttock, the thigh, etc., which should be opened up at once; this measure is a real surgical operation. Finally, those patients who have a number of serious lesions—a frequent case in the present war—present themselves with the maximum of depression, if not of shock; they need to be operated on rapidly after having received epinephrinized serum, etc.

3. For early surgical operations (that is, operations which, for lack of means or time, could not be performed in the first twenty-four hours and which are performed after thirty-six or forty-eight hours or even a little later), surgical centers quite near the army zone are necessary. It is a crime against surgery and against humanity to send such patients on a twenty or twenty-four-hour journey by rail.

A FUND FOR AIDING MEDICAL VICTIMS OF THE WAR

The Association générale de médecins de France, a huge federated organization, fifty years old, has just founded the Caisse d'assistance médicale de guerre for the purpose of aiding medical men who are victims of the war, especially those of the invaded regions. This fund for medical assistance will be administered by a committee composed of representatives of the general association and delegates from the component societies, and has as chairman Dr. Gaucher, professor at the Faculté de médecine de Paris. Members of the honorary committee being formed will be also M. Justin Godart, assistant secretary of war (medical service), our heroic colleague, Dr. Langlet, mayor of Rheims (The Journal, Nov. 28, 1914, p. 1967, and Dec. 5, 1914, p. 2055), Professor Combemale, dean of the Faculté de médecine de Lille, Dr. Gairal of Carignan, president of the Union de syndicats médicaux, the deans of the medical colleges, the directors of the medical schools, the presidents of the great scientific and professional societies, etc. The president of the republic has very kindly permitted himself to be named as one of the patrons of the society, declaring that he is happy to manifest his sympathy with the medical profession, whose courage and devotion at the front he has often had occasion to appreciate. The total of the subscriptions for the fund at present amounts to 43,725 francs (about $8,745) out of which 22,000 francs (about $4,400) have already been paid in. Subscriptions may be sent to M. le Trésorier de l'Association générale de médecins de France, 5, rue de Surène, Paris.

UTILIZATION OF THE ABILITIES OF MEDICAL MEN

A deputy, M. Piat, has called the attention of the minister of war to the failure to utilize the special abilities of medical men in the medical service. He has especially asked why agrégés and professors of the medical colleges are not given a military rank corresponding to their civil positions and their abilities. The minister of war has replied that the officers of the medical service, like other officers, are subject to the provisions of the law of April 14, 1832, with regard to advancement in the army, and that these rules do not permit the minister to award ranks in the manner indicated by M. Piat. Moreover, the physicians of the reserve (those not belonging to the regular army) need to acquire military and administrative knowledge, which can be obtained only by passing through the successive grades, and technical proficiency would not suffice to enable professors and agrégés of the medical colleges to fill military positions corresponding to their civil positions and their abilities. Notwithstanding the four-year period at the end of which physicians holding the position of *aide-major* of the second class (second lieutenant) are promoted to first class (lieutenant) has been reduced to two years for those who have certain qualifications such as those possessed by professors and agrégés of the medical colleges. The minister added that he had always paid great attention to university positions in forming schedules of advancement.

Marriages

Horace Rowe Taylor, M.D., and Miss Alvis Hogsett, both of Philadelphia, who had been associated as medical missionaries of the Presbyterian Board at San Juan, P. R., August 26.

John Carl Teufel, M.D., Buffalo, Iowa, to Miss Myrta Young of Ainsworth, Iowa, in Davenport, Iowa, August 20.

John Joseph Farrell, M.D., Hannibal, Mo., to Miss Stella Moore of Kansas City, Mo., at St. Louis, in August.

Dean F. Winn, M.D., Atlanta, Ga., to Miss Alexandra Hartmann, at Pachelma, Russia, September 1.

Woodrow Charles Pickering, M.D., to Miss Josephine M. Senter, both of Columbus, Ohio, August 23.

Joseph Moffett Hall, M.D., Minneapolis, to Miss Alberta May Morgan of Sunbury, Pa., August 10.

Nathaniel Garland Keirle, M.D., to Miss Pattie Exum McCoy, both of Baltimore, August 24.

Harry Gill Pamment, M.D., Toledo, Ohio, to Miss Vera Swift of Mohawk, N. Y., August 25.

Theodore Charles Riebe, M.D., Chicago, to Miss Emily Gabrial of Elgin, Ill., August 14.

John Henry Rice, M.D., Quincy, Ill., to Miss Leonora Welsh of St. Louis, August 24.

Joseph Everett King, M.D., to Miss May Dolan, both of Detroit, August 26.

Deaths

William J. Chenoweth, M.D. University of Louisville, Ky., 1853; Illinois Army Medical Examining Board, 1861; aged 92; surgeon of the Thirty-Fifth Illinois Volunteer Infantry and brigade surgeon of volunteers during the Civil War; formerly local surgeon to the Illinois Central and Peoria, Decatur and Evansville railroads, at Decatur, Ill., and consulting surgeon to St. Mary's Hospital in that city; for many years a member of the Illinois State Medical Society; was instantly killed in a collision between his automobile and an interurban car at Cassell's Crossing, Decatur, August 19.

Hoell Tyler, M.D. Dartmouth Medical School, Hanover, N. H., 1881; aged 59; formerly a Fellow of the American Medical Association; assistant physician and assistant medical superintendent of the New York City Hospital for the Insane, Blackwell's Island, from 1881 to 1884; formerly president of the Physicians' Club of Redlands, Calif., San Bernardino (Calif.) Medical Society and Southern California Medical Society; a physician and druggist of Redlands; died at his home in that city, August 25.

James George Harper, M.D. Trinity Medical College, Toronto, Ont., 1885; aged 50; a Fellow of the American Medical Association; surgeon to the Emergency Hospital, Carbondale, Pa.; local surgeon at Carbondale for the New York, Ontario and Western Railroad; while crossing the tracks of the Delaware and Hudson Railroad at Carbondale, in his automobile, August 24, was struck by a train and sustained injuries from which he died in the Emergency Hospital, two hours later.

Henry A. Smith, M.D. Physio-Medical Institute, Cincinnati, about 1852 (license, Washington, registration, 1882; aged 85; for more than sixty years a practitioner of Seattle; surgeon of volunteers during the Indian wars of 1855 and 1856; for eight years resident physician on the Tulalip Indian Reservation; a member of the Washington Territorial Legislature in 1860 and first superintendent of schools of King County, Wash.; died at his home in Seattle, August 16.

Richard Jerome Church, M.D. Minnesota College of Physicians and Surgeons, Minneapolis, 1895; aged 44; formerly a member of the American Medical Association; a member of the North Dakota State Medical Association; local surgeon of the Soo Line at Park River, N. D.; for three years chairman of the Walsh County Board of Health; died at his home in Park River, August 15.

Solomon Bowers Hiner, M.D. Medical College of Ohio, Cincinnati, 1864; aged 77; a member of the Ohio State Medical Association and president of the Lima Hospital for many years; a veteran of the Civil War; died at his home in Lima, August 20. At special meetings of the Allen County Medical Society and the trustees of the Lima Hospital, resolutions were adopted expressing esteem and regret.

Calvin Colton Halsey, M.D. Castleton (Vt.) Medical College, 1846; aged 92; a member of the Medical Society of the State of Pennsylvania and formerly secretary and vice president of the Susquehanna Medical Society, of which he had been a member for sixty years; until recently a Fellow of the American Medical Association; died at his home in Montrose, Pa., August 21.

William Hollinger, M.D. New York University, New York City, 1892; aged 49; a Fellow of the American Medical Association, and for the last nine years a practitioner of Newburgh, N. Y.; a surgeon on duty with the German Red Cross from the outbreak of the war until early in August; died in St. Luke's Hospital, New York City, August 19, from heart disease.

John Milton Edwards, M.D. College of Physicians and Surgeons, Chicago, 1899; aged 41; for several years editor of the college paper, the *Plexus*; formerly of Mankato, Minn.; assistant local surgeon for the Northwestern and St. Paul systems and commissioner of health of Mankato; died at his home in Portland, Ore., August 26, from carcinoma of the rectum.

Frederick P. Leich (license, Wisconsin, 1906), aged 75; a practitioner of Wisconsin for nearly thirty-five years; formerly a clergyman of the Reformed Church; a veteran of the Schleswig-Holstein and Austro-German wars, in which he served in the field hospital; president of the Jackson (Wis.) State Bank; died at his home in Jackson, August 19.

John Randolph McCluggage, M.D. Rush Medical College, 1877; aged 71; formerly a Fellow of the American Medical Association; and president of the South Kansas and Butler County Medical societies; probate judge of Butler County, and one of the oldest practitioners of Augusta, Kan.; died in a hospital in Wichita, Kan., August 22, from heart disease.

Leon J. R. Coria, M.D. University of Minnesota, Minneapolis, 1904; aged 34; a Fellow of the American Medical Association and a specialist on diseases of the eye, ear, nose and throat; a member of the attending staff of the University Free Dispensary, Minneapolis; died at the home of his mother in Minneapolis, August 22, from septicemia.

Robert H. Henry, M.D. Starling Medical College, Columbus, Ohio, 1870; aged 73; a veteran of the Civil War and a member of the city council of Columbus from 1903 to 1906; died in the City Hospital, Columbus, August 19, as the result of a fracture of the skull received in a collision between his automobile and a street car a few hours before.

Amos G. Browning, M.D. Georgetown University, Washington, D. C., 1860; aged 81; once president of the Mason County (Ky.) Medical Society; jail physician to Mason County; surgeon in the Confederate service during the Civil War; for many years a member of the Consular service; died at his home in Maysville, Ky., August 19.

William W. Sheppard, M.D. College of Physicians and Surgeons, Chicago, 1885; aged 66; a Fellow of the American Medical Association; for many years a practitioner of Chicago; but for a short time a resident of St. Petersburg, Fla.; died at his home in Chicago, August 16.

William Scanlan, M.D. Hamline University, Minneapolis, 1896; aged 46; a Fellow of the American Medical Association; city health officer and for seventeen years a practitioner of Fargo, N. D.; died at the sanatorium of his brother in Volga, S. D., August 23, from nephritis.

William Seymour Morris, M.D. New York University, New York City, 1896; aged 42; a member of the Medical Society of the State of New York; a member of the staff of St. Elizabeth's Hospital, Utica, N. Y.; died at his home in Utica, August 25, from heart disease.

Frank William Maloney, M.D. Niagara University, Buffalo, 1891; aged 50; of Rochester, N.Y.; a Fellow of the American Medical Association; a specialist on diseases of the ear, nose and throat; died at his home in Rochester, August 23, from pneumonia.

William Mount Johnson, M.D. Medical College of Ohio, Cincinnati, 1859; aged 79; a member of the Medical Society of the State of Pennsylvania; for many years an esteemed practitioner of Venango, Pa.; died at the home of his son in Meadville, Pa., June 11.

Charles Franklin Mohr, M.D. College of Physicians and Surgeons, Baltimore, 1891; aged 42; of Providence, R. I.;

who was shot and fatally wounded while riding in an automobile near Nayat, September 1; died in the Providence Hospital, September 2.

Reuben W. Van Dyke, M.D. University of Vermont, Burlington, 1907; aged 33; of Malone, N. Y.; a member of the Medical Society of the State of New York; died at the home of his wife's parents in Westport, N. Y., August 11.

Edward Orlando Ellison, M.D. Rush Medical College, 1915; an intern in Cook County Hospital, Chicago; aged 26; was accidentally drowned while swimming in Mouse River, Minot, N. D., where he was spending his vacation.

Elmer E. Bartelt, M.D. University of Leipzig, Germany, 1886, aged 53; of Lamar, Colo.; a Fellow of the American Medical Association; died in a hospital in Denver, August 13, after a long illness and two abdominal operations.

Wilbur Harold Clippinger, M.D. Hahnemann Medical College, Chicago, 1900; aged 37; formerly a practitioner of Mercer, Ohio, but later engaged in the automobile business at Columbus; died suddenly August 8, in Detroit.

Harry O. Cox, M.D. John A. Creighton Medical College, Omaha, 1906; aged 32; a member of the Florida Medical Association and formerly a practitioner of Bartow, Fla.; died in Denver, July 9, from pulmonary tuberculosis.

William H. Case, M.D. (Registration, Ontario) aged 79; died in the City Hospital, Hamilton, Ont., May 15, from the effects of a fracture of the neck of the femur sustained in an accidental fall at his home several weeks before.

James H. Kizer, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1887; for many years coroner of Marshall County, Ind.; also a druggist; died at his home in Inwood, Ind., August 15, from cerebral hemorrhage.

Harry James Mustard, M.D. Rush Medical College, 1913; aged 30; an intern at the St. Louis City Hospital; died in that institution, May 14, from heart failure following an operation for strangulated hernia.

Thomas C. Beeler (license, Oklahoma, act of 1908), aged 30; chief clerk to the First State Board of Public Affairs of Oklahoma; died at his home in Guymon, Okla., August 18, from heart disease.

William Dudley James, M.D. University of Maryland, Baltimore, 1881; aged 55; a practitioner of East Brady, Pa.; died at the Kittanning (Pa.) Hospital, August 14, from cirrhosis of the liver.

Henry Aiken Jones, M.D. New York University, New York City, 1892; aged 47; a member of the Medical Association of Georgia; died at his home in Millen, Ga., August 28, from heart disease.

Paul Smits, M.D. University of Michigan, Ann Arbor, 1897; aged 45; also a druggist; died suddenly at his summer home near Aberdeen, Wash., August 24, from cerebral hemorrhage.

Isaac N. Cromwell, M.D. Willamette University, Salem, Ore., 1875; aged 73; formerly a member of the Oregon State Medical Association; died at his home in Union, about August 11.

James A. Turner, M.D. Louisville (Ky.) Medical College, 1886; a member of the Medical Society of the State of North Carolina; died at his home in High Point, N. C., August 28.

Harry A. Evans, M.D. Chicago College of Medicine and Surgery, 1912; aged 28; of Springfield, Ill.; a member of the Illinois State Medical Society; died in Terre Haute, Ind., August 9.

Philander H. Harris, M.D. College of Physicians and Surgeons, Chicago, 1887; aged 61; of Milwaukee, Wis.; died in St. Mary's Hospital in that city, August 22, after a surgical operation.

Nathaniel Wallis, M.D. University of Vermont, Burlington, 1894; aged 59; of Fitchburg, Mass.; died in the Burbank Hospital, Fitchburg, August 18, from disease of the intestines.

John P. Jackson, M.D. Milwaukee Medical College, 1898; aged 76; a practitioner of Los Angeles, and Milwaukee, Wis., also a dentist; died in a hotel in Muscatine, Iowa, August 14.

Charles A. Archer, M.D. American Medical College, Eclectic, St. Louis, 1891; aged 58; formerly of Warren, Ohio; died at his home in Cleveland, about August 22.

Mary Eva Waidelich, M.D. Women's Medical College of Pennsylvania, Philadelphia, 1914; aged 25; died at her home in Allentown, Pa., August 20, from tuberculosis.

The Propaganda for Reform

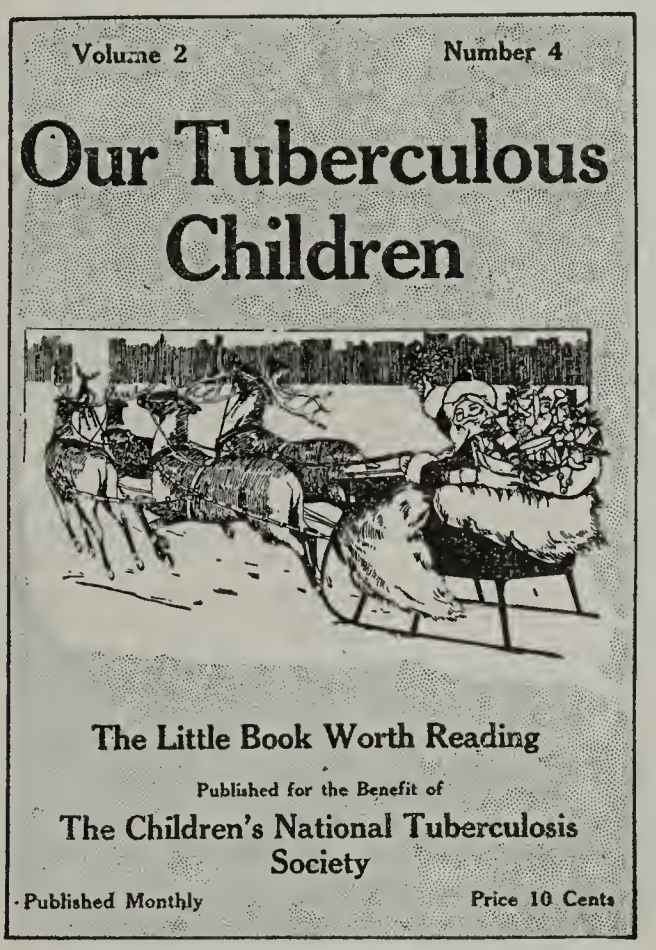
IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE CHILDREN'S NATIONAL TUBERCULOSIS SOCIETY

Many inquiries have been received by THE JOURNAL relative to a concern known as the "Children's National Tuberculosis Society" which has its headquarters in Chicago. According to the advertising matter put out by this "society" its president, vice president and secretary are, respectively:

DR. CYRILLE VERMEREN
DR. DAVID H. REEDER
DR. PAUL BURMASTER

The "society" claims to have for its aim "the establishment of homes and camps for tubercular children in every state." It obtains its finances by selling a leaflet. The first number

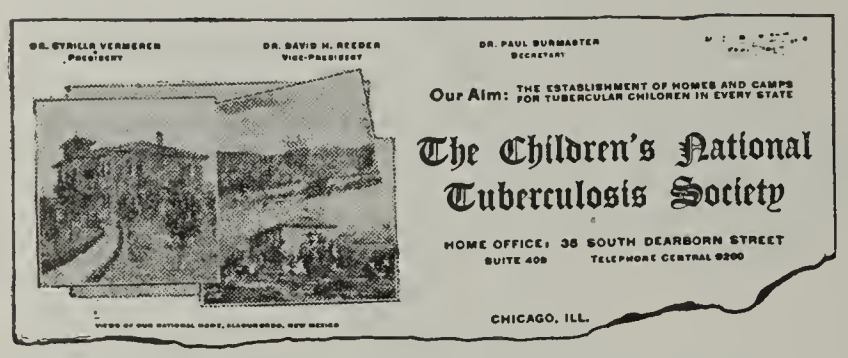


No longer does the date of issue appear on the cover (or elsewhere) of the pamphlet *Our Tuberculous Children;* the reason may be found in the accompanying article.

of this leaflet is said to have been issued in May, 1913, under the title *Our Tubercular Children;* it sold for 25 cents a copy and the date of issue was printed on the cover. Later the title was changed to *Our Tuberculous Children,* the price reduced to 10 cents and the date of publication no longer appeared. Women and girls who are employed as agents to peddle this pamphlet on the streets, receive from 40 to 50 per cent. of the money they take in. Local managers are appointed who receive 20 per cent. of the total receipts. Out of the 30 per cent. left, the cost of operating the home office and the not inconsiderable expense of printing and publishing the leaflets must come. The balance—what little there is—is said to go to the support of an institution, or "home," the "society" operates in Alamogordo, N. M., although, according to a "local manager" "it takes a lot of money for Dr. Burmaster to travel around and for office rent, etc."

Some interesting side-lights have been thrown on the methods of this concern through the activity of the Cleveland

(Ohio) Chamber of Commerce. This admirable organization, it is stated, saves the people of Cleveland about $90,000 a year by suppressing ill-advised or fraudulent solicitation for alleged charitable purposes. In March, 1915, the Cleveland Chamber of Commerce, through its Bureau of Soliciting Schemes, investigated the "Children's National Tuberculosis Society" because at that time the "society" had a Cleveland


DR. CYRILLA VERMEREN, President — DR. DAVID H. REEDER, Vice-President — DR. PAUL BURMASTER, Secretary

Our Aim: THE ESTABLISHMENT OF HOMES AND CAMPS FOR TUBERCULAR CHILDREN IN EVERY STATE

The Children's National Tuberculosis Society

HOME OFFICE: 36 SOUTH DEARBORN STREET — SUITE 409 — TELEPHONE CENTRAL 6200

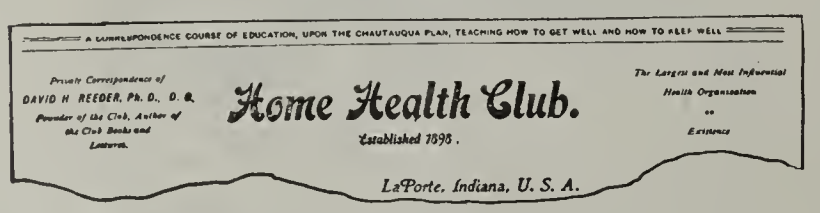
CHICAGO, ILL.

Greatly reduced reproduction of the letter-head of the "Children's National Tuberculosis Society." The "Home Office" address is also the office of Dr. Paul Burmaster and the "Chicago Eye, Ear, Nose and Throat Institute."

representative, one G. W. Patterson. Women agents were making a systematic canvass of Cleveland, the soliciting being under the direction of Patterson, whose business and professional ethics may be judged from the following statement credited to him:

"This world owes every man a living. What difference does it make whether he gets it selling books for charity or any other way? Why, I give a man credit if he can fool the public and get rich, don't you? There are a lot of people who do worse things than this. No one will ever miss that dime, so why should anyone else kick?"

The Cleveland Chamber of Commerce brought to light many interesting things in connection with the methods of the "society." While *Our Tuberculous Children* was issued as early as May, 1913, the Cleveland reports states that the sanatorium was not opened until August, 1914, and

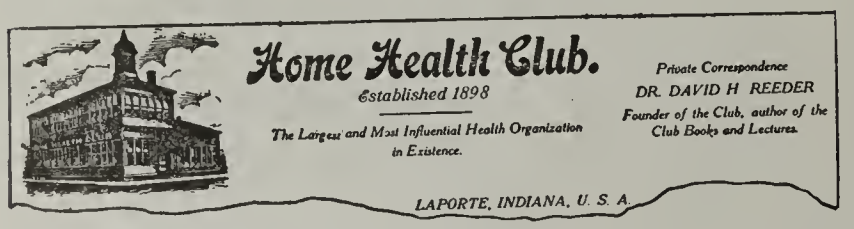

A CORRESPONDENCE COURSE OF EDUCATION, UPON THE CHAUTAUQUA PLAN, TEACHING HOW TO GET WELL AND HOW TO KEEP WELL

Private Correspondence of DAVID H. REEDER, Ph. D., D. O. Founder of the Club, Author of the Club Books and Lectures.

Home Health Club. Established 1898.

The Largest and Most Influential Health Organization in Existence

LaPorte, Indiana, U. S. A.


Home Health Club. Established 1898

Private Correspondence DR. DAVID H. REEDER Founder of the Club, author of the Club Books and Lectures.

The Largest and Most Influential Health Organization in Existence.

LAPORTE, INDIANA, U. S. A.


ADDRESS ALL CORRESPONDENCE TO THE HOME REMEDIES COMPANY, LAPORTE, INDIANA.

CAPITAL STOCK $100.000.

The Home Remedies Co.

GRANDMOTHERS HERB REMEDIES

MODERN HOME REMEDIES ETC.

La Porte, Ind. U.S.A.

TRADE MARK

Some letterheads of the "Home Health Club" and the "Home Remedies Company" when these were operated at La Porte, Ind. "Dr." David H. Reeder calls himself "founder" of the "club," and he is president of the "patent medicine" concern.

that as late as December, 1914, there were but two or three "patients." The charitably minded of Cleveland were found to have been relieved of about $2,500 during the five months the "society" was operating in that city. The instructions given to the girls and young women who applied to the Cleveland agency for positions as solicitors were, according to the Cleveland report, to this effect:

"All you need to do," the solicitor was told, "is to hold these books in your arm this way, pull one out and say: 'Won't you buy one of these books to help sickly children?' and you will see how fast you sell them."

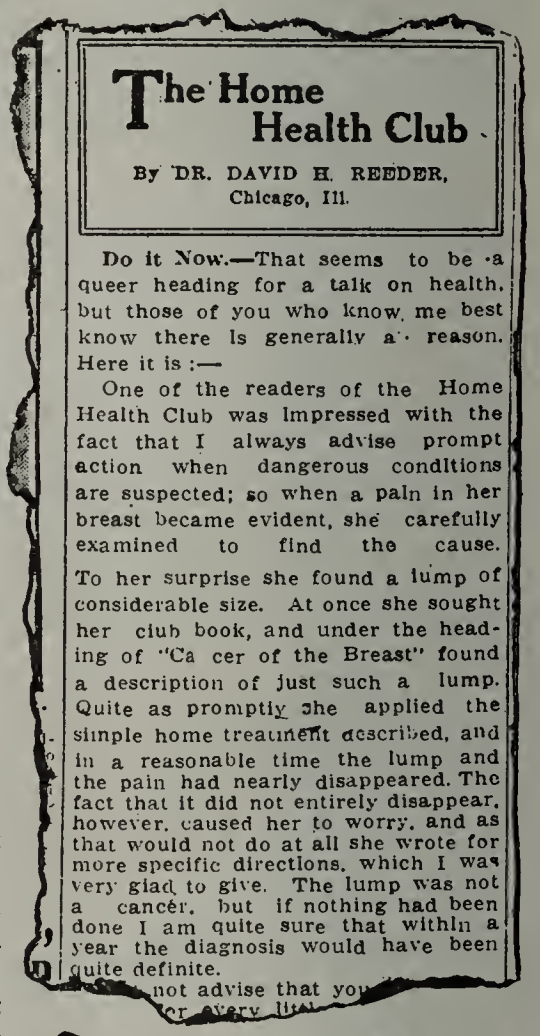
Patterson's explanation regarding the omission of the date from the pamphlets as now sold, was:

"We do not put dates on the pamphlets because you see if we have a lot of copies left over we sell them the next month. I let my agents sell them just the same. For where people buy them separate like that they do not take notice of it."

Of the three men operating this "society" who term themselves "doctors," the following data on file in THE JOURNAL office will be of interest:

PAUL BURMASTER — SECRETARY

Dr. Paul Burmaster, secretary of the "society" and "editor" of *Our Tuberculous Children* was, according to our records, graduated in 1895 by the Hahnemann Medical College of Chicago, receiving an Illinois state license in 1896 and a New Mexico license in 1912. For some years Burmaster has been closely connected with L. D. Rogers and his — now defunct — "National Medical University" of Chicago. The "National Medical University" was, until it went out of existence, a low-grade school of the "sundown" variety. For some time before it went out of existence it was not recognized by the Illinois State Board of Health, nor by many other states. The "Annual Announcements" sent out for several years by the "National Medical University" contained Burmaster's name in such capacities as: (1) "Secretary" of the "National Medical University Corporation"; (2) one of the "Board of Directors" of the same corporation; (3) "Registrar" of the so-called university, and (4) "Professor of Diseases of Eye, Ear, Nose and Throat" of the "university." Furthermore, Burmaster's picture adorned some of these "announcements." In addition, Burmaster was "Secretary of the "National Emergency Hospital," an adjunct to the "National Medical University." This hospital has figured at various times in the police courts and newspapers. Burmaster's name also appears as one of the incorporators of another Rogers' organization, the "International Association of Pan-Pathic Physicians"—whatever that may be. Burmaster's office address is also the "home office" of the Children's National Tuberculosis Society" and the "Chicago Eye, Ear, Nose and Throat Institute."


The Home Health Club

By DR. DAVID H. REEDER, Chicago, Ill.

Do it Now.—That seems to be a queer heading for a talk on health, but those of you who know me best know there is generally a reason. Here it is:—

One of the readers of the Home Health Club was impressed with the fact that I always advise prompt action when dangerous conditions are suspected; so when a pain in her breast became evident, she carefully examined to find the cause. To her surprise she found a lump of considerable size. At once she sought her club book, and under the heading of "Cancer of the Breast" found a description of just such a lump. Quite as promptly she applied the simple home treatment described, and in a reasonable time the lump and the pain had nearly disappeared. The fact that it did not entirely disappear, however, caused her to worry, and as that would not do at all she wrote for more specific directions, which I was very glad to give. The lump was not a cancer, but if nothing had been done I am quite sure that within a year the diagnosis would have been quite definite.

...not advise that you ... for every little ... acid ... a little wa... absorbent cotton in the inner corner of the eye. It is perfectly safe and very efficient.

All readers of this publication are at liberty at all times to write for information pertaining to the subject of health. Address all communications to the Home Health Club, 5,039 Cottage Grove avenue, Chicago, Ill., U.S.A., with name and address in full and at least four cents in postage.

PAUL O'DELL

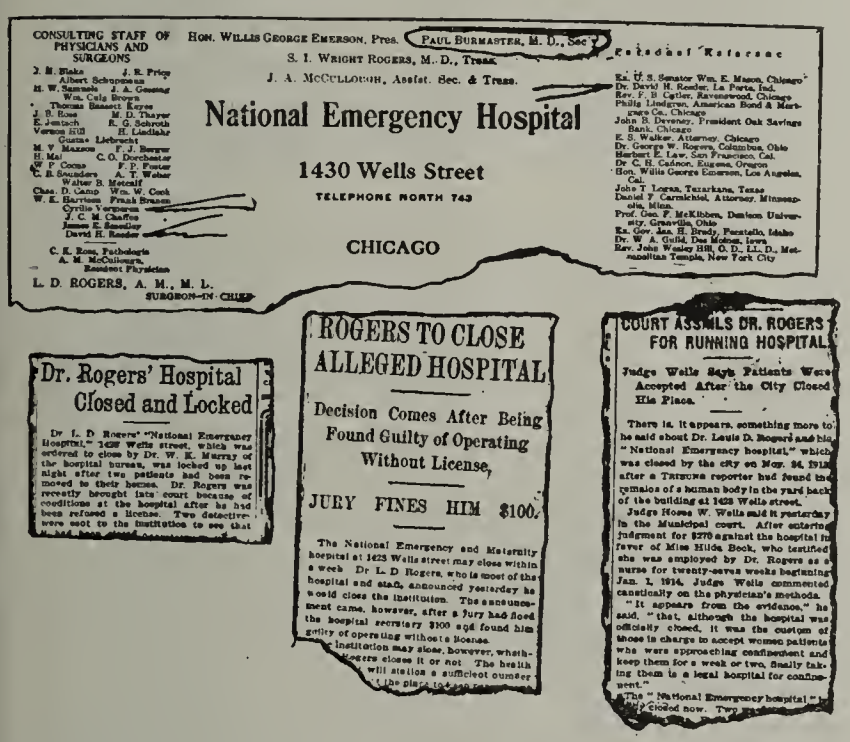
To obtain a "sucker list" for his mail-order "patent medicine" business, Reeder offers to furnish newspapers with "copy" for a "health department" on the understanding that all enquiries are turned over to him. Here is a sample of the "copy."

CYRILLE VERMEREN—PRESIDENT

Dr. Cyrille Vermeren, president of the "Children's National Tuberculosis Society," is, according to our records, a graduate of Rogers' "National Medical University." He, too, seems in the past to have been closely allied with Rogers' disreputable school. According to the "Annual Announcements" of the "National Medical University" Vermeren was "Professor of Psycho-therapeutics" at that institution. He was, furthermore, on the "Consulting Staff of Physicians and Surgeons" of the "National Emergency Hospital." His name appears also in connection with that of Rogers and Burmaster as one of the incorporators of the "International Association of Pan-Pathic Physicians."

"DR." DAVID H. REEDER—VICE PRESIDENT

"Dr." David H. Reeder, Vice President of the "Children's National Tuberculosis Society," is, so far as our records show, not a physician at all. In spite of his lack of qualifications—possibly because of it—his name appeared on the stationery of the "National Emergency Hospital" as one of the "Consulting Staff of Physicians and Surgeons." Reeder


CONSULTING STAFF OF PHYSICIANS AND SURGEONS

HON. WILLIS GEORGE EMERSON, Pres. PAUL BURMASTER, M. D., Sec'y
S. I. WRIGHT ROGERS, M. D., Treas.
J. A. McCULLOUGH, Assist. Sec. & Treas.

National Emergency Hospital

1430 Wells Street

TELEPHONE NORTH 743

CHICAGO

L. D. ROGERS, A. M., M. L. SURGEON-IN-CHIEF

Dr. Rogers' Hospital Closed and Locked

ROGERS TO CLOSE ALLEGED HOSPITAL

Decision Comes After Being Found Guilty of Operating Without License,

JURY FINES HIM $100.

COURT ASSAILS DR. ROGERS FOR RUNNING HOSPITAL

Judge Wells Says Patients Were Accepted After the City Closed His Place.

The National Emergency and Maternity hospital at 1425 Wells street may close within a week Dr L D Rogers, who is most of the hospital and staff, announced yesterday he would close the institution. The announcement came, however, after a jury had fined the hospital secretary $100 and found him guilty of operating without a license.

There is, it appears, something more to be said about Dr. Louis D. Rogers and his "National Emergency hospital," which was closed by the city on May. 24, 1913, after a TRIBUNE reporter had found the remains of a human body in the yard back of the building at 1428 Wells street.

Judge Hoses W. Wells said it yesterday in the Municipal court. After entering judgment for $270 against the hospital in favor of Miss Hilda Bock, who testified she was employed by Dr. Rogers as a nurse for twenty-seven weeks beginning Jan. 1, 1914, Judge Wells commented caustically on the physician's methods.

"It appears from the evidence," he said, "that, although the hospital was officially closed, it was the custom of those in charge to accept women patients who were approaching confinement and keep them for a week or two, finally taking them to a legal hospital for confinement."

The "National Emergency hospital" is [illegible] closed now. They

The "National Emergency Hospital" was an annex to the "National Medical University," a low-grade medical school now defunct. The "hospital" has received frequent but not flattering notices in the newspapers. Notice that on the "Consulting Staff of Physicians and Surgeons" the names of Reeder and Vermeren appear, while the "Secretary" of the "Hospital" was Burmaster.

lays claims to the degrees of "Ph.D." (university not mentioned) and also "D.O." It seems he used to operate a so-called "Health Sanatorium" in Chicago. Later, his name appears as "President of the Home Remedies Company" of Laporte, Ind. This is a "patent medicine" concern operated on the mail-order plan. For the purpose of getting a mailing list, Reeder offers to furnish certain newspapers with a so-called "Home Health Club" department. Readers of this "department" who desire any information pertaining to the subject of health, are urged to correspond with the "Home Health Club" or with "Dr. David H. Reeder." Those who have written have been solicited to purchase some of Reeder's publications or buy some of his nostrums. Not content with selling its nostrums, the "Home Remedies Company" through Reeder, seems to have attempted to sell stock in the fakery to the public. The "Home Remedies Company" is now doing business in Chicago.

SUMMARY

Summed up, then, the "Children's National Tuberculosis Society" is a self-styled charitable organization in which the bulk of the funds collected seem to go not to the charity in question, but to those who collect them. Three of the officers of the "Society" claim to be doctors. Two of these three have been connected with medical enterprises of a questionable nature, while the third is apparently not a physician but engaged, among other things, in the "patent medicine" business. Reputable associations of business men and reputable organizations for the study and prevention of tuberculosis that have investigated the concern have refused to approve, endorse or countenance the policy or methods of the "Children's National Tuberculosis Society."

Correspondence

Fraternitas Medicorum

To the Editor:—In THE JOURNAL, Aug. 14, 1915, p. 642, there is a letter from Dr. W. W. Jarrell in which he justly calls attention to the rather puzzling expression of a "child's breathing" (in utero) which occurred in an abstract in THE JOURNAL of an article by Ahlfeld in a German medical monthly. He then continues to say: "Or maybe the illustrious Teuton has discovered that the German fetus is equipped with gills. This assumption in a way seems plausible, for at times I am unable to tell if the Teuton is fish, or flesh, or fowl. Now I may be displaying British stupidity, but honestly, Doctor, do German babies breathe in utero, and if so, how?" I am quite sure that I never came across language of such a character in the discussion of a scientific subject in a medical paper. In the appeal which was published in THE JOURNAL, July 31, 1915, p. 451, the attention of medical men and women was called to the high moral standard which the medical profession is occupying in all countries even during this exciting ferocious war. It was expressly stated that it was not the object of the proposed brotherhood to influence the feelings and views of any one regarding the problems involved in the present war—in other words, it is neither a pro-Teutonic nor a pro-Allies organization. "It is desired merely to bring to the full consciousness of the members of the medical profession the exceptional moral position which all civilized nations, even while at war, permit and expect medical men to occupy." It is certainly not too utopian a suggestion to make in the name of the Medical Brotherhood to medical writers, that they abstain from coloring scientific discussions of medical topics with racial and national antipathies. May we not also ask medical editors to use their blue pencil in such cases?

S. J. MELTZER, M.D., New York.
President of the Medical Brotherhood.

Local Applications of Fuchsin in the Urethra and Bladder

To the Editor:—It is with great satisfaction that I am able to report that anilin. red, commonly called fuchsin, is a remedy which invariably gives excellent results in acute and chronic diseases of the urethra and bladder, whenever the disease, as usual, is caused by an invasion of any kind of pathogenic germs.

My attention was called to this by Dr. Stable of Redding, Calif., when he reported to me the controlling of pain caused by tuberculous ulcers in the bladder in a patient I had previously examined for him with the cystoscope. At once I began to wonder why I did not think of the use of fuchsin in all the many perplexing cases which defy various treatments.

Cells and elements are readily stained with fuchsin. Gonococci, tubercle bacilli and most other micro-organisms are fuchsinophil. A stained bacillus is always a good bacillus; fuchsin when used in from 0.25 to a 1 per cent. solution penetrates into the deeper layers of the mucosa, and causes no pain and no irritation. I knew that it was used as a local application in diseases of the larynx, and decided at once to try it in the urethra and in the bladder.

In the literature there is nowhere found any mention of the use of fuchsin in genito-urinary practice.

Years ago methylene blue was employed a great deal internally, but the results hoped for did not materialize. Many physicians still cling to its use, probably because it never fails to impress the patient. The concentrations passing through the urine, however, are too insignificant to disturb the life of the diplococcus. It is different with fuchsin; the staining of the mucosa remains for days. It is a tedious treatment, requiring precautions against staining what is not to be stained, careful dosing, and the use of only the best medicinal fuchsin obtainable.

I think that a cautious local application of fuchsin in the ureters and even the kidney pelvis, whenever indicated, ought to give good results. Up to date I have had no chance to try it.

VICTOR G. VECKI, M.D., San Francisco.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

EFFECT OF BLUE COHOSH

To the Editor:—What would be the effect of the administration of 1 dram of tincture of blue cohosh, three times a day, for two months on a full-term fetus at about the time of birth. A primipara indulged in this medication at the suggestion of a neighbor woman who claimed it would make labor easy. The woman had no trouble of any kind during the pregnancy. The movements of the fetus were felt the day before confinement. Pains started in the morning and continued all day. I was called at 8 p. m. and found the uterus dilated and membranes broken, but the patient had not noticed the escape of any fluids. The external parts were covered with a dark slimy material which I believed, at first, was fecal matter, but there was no odor. Later as pains increased I noticed a thick greenish fluid escaping, which also was odorless. The abdomen of the patient was tender. Labor was slow and difficult and terminated at 3:30 the next morning, when a perfectly formed 10-pound boy was born — dead. There was no pulsation in the cord, which was black to the skin. The skin of the baby was mottled with large dark spots from head to foot, which later disappeared, only the cord remaining black and flabby. The placenta and its membranes were dark and soft, but odorless. The mother felt well before, during and after the confinement, and did not develop any symptoms of chills or fever. The history is negative as to anything that might cause her trouble. Quite a few women have used tincture of blue cohosh for the same purpose on advice of the same woman and had no trouble from it.

F. E. N., M.D.

ANSWER.—It does not seem likely that the use of blue cohosh itself could have caused the death of the fetus. In a report of the Council on Pharmacy and Chemistry on some unimportant drugs, it is stated that the basis for the use of this drug was its employment by the American Indians, among whom it had the reputation of favoring the progress of labor. It was formerly official in the U. S. Pharmacopeia, but having failed to sustain its reputation, it was dropped from the eighth revision. Recent literature respecting this drug is mainly from homeopathic and eclectic journals, but is very indefinite as to the actual pharmacologic action of the drug.

Incidentally, it is difficult to conjecture the exact cause of the death of the infant in this case, especially as it is sometimes impossible to determine the etiology of such instances when the case is actually before the observer.

WAR BREAD

To the Editor:—Please let me know the formula for Germany's "war bread" (potato-starch, rye and wheat flour).

M. D. HOGE, Jr., M.D., Richmond, Va.

ANSWER.—A discussion of this subject appeared under War Notes in THE JOURNAL, Jan. 2, 1915, p. 66. According to a decree of the Bundesrat effective Dec. 1, 1914, no bread could be baked of pure wheat flour; it must contain at least ten parts—by weight—of rye flour to ninety parts of wheat flour. Rye bread must be made with at least five parts potato flour to ninety-five parts rye flour. The baker may increase the portion of potato flour, but bread with more than five parts potato flour must be marked with the letter "K" (*Kartoffel*, potato). If there are more than twenty parts potato flour, the figure must be added to the "K." The term "bread" includes loaves, rolls, etc., but not zwieback or cake.

SODIUM CITRATE AND BLOOD TRANSFUSION

To the Editor:—Please refer me to literature pertaining to blood transfusion by the Lindeman method, or methods involving the use of agents to prevent clotting, such as potassium citrate.

J. C. HOLZBERGER, M.D., Brooklyn.

To the Editor:—Please refer me to articles concerning sodium citrate in blood transfusion. We have an excellent field here in Panama for further experimentation in this line.

O. T. BROSIUS, M.D.,
Santo Tomas Hospital, Panama, R. P.

ANSWER.—The following articles may be referred to:

Lindeman, Edward: Simple Syringe Transfusion with Special Cannulas, *Am. Jour. Dis. Child.*, July, 1913, p. 28.
Hustin: Principe d'une nouvelle méthode de transfusion muqueuse, *Jour. méd. de Brux.*, 1914, xii, 436.
David, V. C., and Curtis, A. H.: Recent Experiences with Blood Transfusion, THE JOURNAL, March 7, 1914, p. 775.
Lindeman, Edward: Blood Transfusion, THE JOURNAL, March 28, 1914, p. 993.
Weil, Richard: Sodium Citrate in Transfusion of Blood, THE JOURNAL, Jan. 30, 1915, p. 425.
Unger, L. J.: A New Method of Syringe Transfusion, THE JOURNAL, Feb. 13, 1915, p. 582.
Zingher, A.: Simple Syringe Method of Transfusion of Citrated Blood in Children, *Med. Rec.*, New York, March 13, 1915.
Abelmann, H. W.: Blood Transfusion Simplified by Use of New Method and Apparatus, THE JOURNAL, April 17, 1915, p. 1315.
Lewisohn, R.: Sodium Citrate as Aid in Blood Transfusion, *München. med. Wchnschr.*, May 25, 1915.
Krida, A.: Technic of Lindeman's Blood Transfusion, *Albany Med. Jour.*, June, 1915.
Lewisohn, R.: Blood Transfusion by Citrate Method, *Surg., Gynec. and Obst.*, July, 1915.
Helmholz, H. F.: The Longitudinal Sinus as the Place of Preference in Infancy for Intravenous Aspirations and Injections, Including Transfusions, *Am. Jour. Dis. Child.*, September, 1915.

BOOKS ON BLOOD PRESSURE — THE BLOOD PRESSURE OF MORPHIN HABITUÉS

To the Editor:—Please tell me what in your opinion is the best book on blood pressure.

W. B. SHEPPARD, Fort Collins, Colo.

To the Editor:—1. Please refer me to some works on blood pressure. What I should like particularly is the interpretation of manometer reading in life insurance work.

2. Please inform me as to the effect of habitual taking of morphin on blood pressure.

F. W. L., M.D., Cleveland.

ANSWER.—1. The following books may be consulted:

Nicholson, Percival: Blood-Pressure in General Practice, Philadelphia, J. B. Lippincott Company, 1913, price $1.50.
Faught, F. A.: Blood-Pressure from the Clinical Standpoint, Philadelphia, W. B. Saunders Company, 1913, price $3.
Goodman, E. H.: Blood-Pressure in Medicine and Surgery, Philadelphia, Lea & Febiger, 1914, price $1.50.
Morris, G. W.: Blood Pressure, Philadelphia, Lea & Febiger, price $3.

2. Pettey (Narcotic Drug Diseases and Allied Ailments) found high blood pressure uniformly in morphin habitués on admission, but unloading of the portal system resulted in marked reduction of blood pressure. This reduction of arterial tension, he believes, is an essential factor in preventing collapse and other dangerous complications of the withdrawal. In practically every instance after the drug had been withdrawn and the metabolism had been restored to normal conditions, the blood pressure of the individual patient was found to be less than previously.

TREATMENT OF BEE STINGS

To the Editor:—What is the latest and most approved method of treating bee stings? A few days ago I was called to see a patient who had been stung by a honey bee in the scalp one hour previously. I found her very nervous and covered with a scarlet eruption from head to foot, consisting of large wheals and coarse punctate areas. The itching was severe, temperature 97.6, pulse 72, and the lips were swollen to three times their normal size. On this and previous occasions it has required about forty-eight hours for her to recover from the attack.

G. D. KETTELKAMP, M.D., Huntley, Mont.

ANSWER.—The local treatment of bee stings is purely symptomatic, and includes the application of lotions or ointments containing ammoniated water, menthol, potassium permanganate, etc. Waterhouse (*Lancet*, London, Oct. 17, 1914, p. 946) describes a similar case to that mentioned above, and calls attention to the resemblance between these serious effects and the symptoms of anaphylaxis. The treatment is similar to that described in other instances of anaphylaxis with urticaria, antipruritic and sedative preparations being indicated. In THE JOURNAL, Feb. 7, 1914, p. 456, under Therapeutics, the treatment of the local manifestations is given in detail.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, October 5-6. Sec., Dr. John Wix Thomas, 200 National Bank of Arizona Bldg., Phoenix.

COLORADO: Denver, October 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, October 12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

GEORGIA: Atlanta, October 12. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Wallace, October 5. Sec., Dr. C. A. Dettmen, Burke.

ILLINOIS: Chicago, October 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

IOWA: Des Moines, October 19-21. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

KANSAS: Topeka, October 12-14. Sec., Dr. H. A. Dykes, Lebanon.

MASSACHUSETTS: Boston, September 14-16. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

MICHIGAN: Lansing, October 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, October 5-8. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSOURI: Kansas City, September 28-30. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

MONTANA: Helena, October 5. Sec., Dr. William C. Riddell, Helena.

NEW HAMPSHIRE: Concord, September 15-16. Sec., Dr. Walter T. Crosby, Pembroke Bldg., Manchester.

NEW JERSEY: Trenton, October 19-20. Sec., Dr. G. H. Norton, 429 E. State St., Trenton.

NEW YORK: Albany, Buffalo, New York, Syracuse, October 5-8. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, October 12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, October 4. Sec., Dr. Quevedo Baez, Allen St., San Juan.

RHODE ISLAND: Providence, October 7-8. Sec., Dr. Gardner T. Swarts, State House, Providence.

UTAH: Salt Lake City, October 4-5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WYOMING: Laramie, October 13-15. Sec., Dr. H. E. McCollum, Laramie.

New Rules in Pennsylvania

The Pennsylvania Bureau of Medical Education and Licensure, July 12, adopted a rule that, after Oct. 1, 1915, in order to receive approval, any school teaching massage and allied branches must maintain as a minimum standard a graded course of instruction of not less than thirty-five hours each week of actual work in didactic, laboratory and clinical study in a single calendar year, this course to include anatomy, physiology, hygiene and practical bedside work. The course in anatomy is to include demonstrations and study from wet dissected specimens of the human body not less than three hours each week for the full period of the course, and the course in practice is to include not less than four hours daily of actual study and manipulation of the living human body.

Other rules adopted provide that (*a*) hereafter the semiannual examinations will be held in January and July of each year so that a certificate of a full year's service as a hospital intern can be submitted with the application for examination; (*b*) applicants will not be admitted to the examination until they have submitted a certificate of their full year's service as an intern in an approved hospital; (*c*) no hospital on the approved list shall accept an intern who has left another hospital with the disapproval of the authorities of that hospital which he has been serving; (*d*) no applicant for the written examination will be considered if he is a graduate from a school not on the approved list of the bureau, and (*e*) such medical colleges as do not enforce their published rules and regulations governing the admission of students will be dropped from the approved list.

Colorado July Report

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the oral and written examination held at Denver, July 6, 1915. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 13, including 2 osteopaths and 1 nongraduate, all of whom passed. Twenty-two candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Colorado	(1915)	77, 79.7, 80, 86.5, 87.8, 89.6
Hahnemann Medical College and Hospital, Chicago	(1915)	83.2
John A. Creighton Medical College	(1914)	81.2; (1915) 77.6, 81.2
Nongraduate		85

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Leland Stanford Junior University	(1914)	California
Hahnemann Medical College and Hospital, Chicago	(1884)	Illinois
Northwestern University	(1892)	Illinois
Rush Medical College	(1906, 2)	Illinois; (1909) Illinois
Hospital College of Medicine, Louisville	(1898)	Kentucky
Kentucky School of Medicine	(1906)	Kentucky
Louisville Medical College	(1898)	Illinois
Detroit College of Medicine	(1911)	Michigan
Barnes Medical College	(1896)	Missouri
St. Louis University	(1908)	Missouri; (1909) Arkansas
Washington University, St. Louis	(1911)	Missouri
Lincoln Medical College	(1903)	Kansas
Omaha Medical College	(1896)	Iowa
Bellevue Hospital Medical College	(1887)	New York
University of Buffalo	(1900)	New York
Medical College of Ohio	(1891)	Indiana
Miami Medical College	(1897)	Ohio
University of Tennessee	(1912)	Tennessee
University of Pavia	(1910)	Italy

The following questions were asked:

ANATOMY

1. Describe a typical dorsal vertebra. 2. Describe the shoulder joint. 3. Explain anatomically why dislocations of the shoulder joint constitute about 40 per cent. of all dislocations. 4. Describe the fascia lata. 5. Name the "hamstring muscles," giving origin and insertion of each. 6. Describe the popliteal space. 7. Discuss the blood supply of the uterus. 8. Give a full description of the musculospiral nerve. What traumatism is it subject to, and with what definite result? 9. Describe the lesser cavity of the peritoneum. 10. Give gross anatomy of right kidney. What structures are severed when it is exposed by a posterior lumbar incision?

PHYSIOLOGY

1. Describe the histologic structure and functions of the different varieties of blood corpuscles. 2. Discuss the arrangement and function of the lymphatic system. 3. Describe the circulation in the brain, touching upon the arterial supply; the venous supply; the meningeal spaces, and the intracranial pressure. 4. Give in detail the digestive action of the pancreatic juice. 5. Mention the function of the spleen, glomerulus, thyroid gland, adrenal bodies. 6. What are the functions of the hydrocarbon food? 7. Describe the digestion of the carbohydrates. 8. Locate and describe the action of the sympathetic nervous system. 9. Describe the salivary glands as to their location, secretion, innervation and the influence of their secretion on normal digestion. 10. What do you understand by internal secretions? Give example.

TOXICOLOGY

1. Name three narcotic poisons, and give symptoms of two of them. 2. Name three mineral poisons, and symptoms produced by one of them. 3. What are the lethal effects of phenol? 4. What are postmortem findings in oxalic poisoning? 5. What is the general treatment of all cases of acute poisoning? 6. Name three coal tar derivatives having poisonous properties. 7. How is death caused by illuminating gas? 8. Symptoms of plumbism. 9. Contrast symptoms of opium and belladonna poisoning. 10. What disease state resembles opium poisoning. Differentiate.

CHEMISTRY

1. What chemical tests are used to detect albumin in urine? Describe one. 2. Name two chemical antidotes for arsenic and tell how one may be prepared in an emergency. 3. Define a base, acid, salt, alkaloid. 4. Describe one chemical test for blood in feces. 5. What is the relative importance of the element carbon in chemistry? 6. How is chlorin gas prepared, and what are its uses? 7. State concisely what you know of oxygen. 8. What is an ion? 9. What form of sugar is found when Fehling's test is positive? 10. What is synthetic chemistry?

SYMPTOMATOLOGY

1. Discuss pneumococcic infections. 2. Give the signs and symptoms of incipient pulmonary tuberculosis. 3. Give the symptoms and course of acute catarrhal jaundice. 4. Give the symptoms, course and diagnosis of bronchiectasis. 5. Discuss the heart in arterial sclerosis. 6. Give the symptoms of pyelitis. 7. Give the symptoms of anomalous thyroid secretion. 8. Give the symptoms and course of acute anterior poliomyelitis. 9. Describe the Babinski reflex, and tell in what conditions it is present. 10. What is the active cause of syphilis, and what is the effect of the disease upon the circulatory system?

OBSTETRICS

1. Discuss your treatment of a case of normal labor. 2. What instructions would you give to a primigravida (normal) who comes in third month of pregnancy to engage your services? 3. Discuss the causes and treatment of postpartum hemorrhage. 4. Discuss the pathogenesis of puerperal infection caused by the streptococcus group of organisms. 5. Discuss the case of the breasts during pregnancy and during the puerperium. 6. Mention the indications for low forceps. 7. What is the significance of the Abderhalden test? 8. Give the etiology, symptoms and management of albuminuria of pregnancy. 9. Discuss the early diagnosis of eclampsia, and briefly outline the treatment. 10. What will you carry in your obstetric bag?

SURGERY

1. Explain septicemia, sapremia, pyemia. 2. Give the differential diagnosis of aneurysm, abscess, tumor, cyst. 3. Give signs, symptoms, diagnosis and complications of phlebitis. 4. Give the diagnosis and prognosis of bursitis, arthritis, synovitis. 5. Give the symptoms of Pott's disease. 6. Give the causes of intestinal obstruction. 7. Give the symptoms of stone in the kidney. 8. Give the symptoms and causes of pyloric

stenosis. 9. Give the differential diagnosis between fracture of neck of humerus and dislocation of shoulder joint. 10. Define ischemic paralysis, infarction, thrombosis, osteomalacia.

PATHOLOGY

1. What are the causes of a rise of temperature in the body? 2. What are the complications arising from burns? 3. What are the causes of edema? 4. Give the causes of tumor formation. 5. Explain the difference between carcinoma and sarcoma. 6. Give the pathology of nephritis following scarlet fever. 7. Give the pathology of typhoid fever. 8. What are the causes of cardiac hypertrophy? 9. Describe the heart in mitral stenosis, and in aortic regurgitation. 10. What is the difference between congestion and inflammation?

Delaware June Report

Dr. W. H. Briggs, secretary of the Medical Council of Delaware, reports the written examination held at Dover and Wilmington, June 15-17, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 7, all of whom passed. Four candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Syracuse University	(1913)	79.7
Hahnemann Med. College and Hospital, Philadelphia	(1914)	90
Jefferson Medical College	(1915)	79.9, 87.6
Medico-Chirurgical College of Philadelphia	(1914)	83.6
University of Pennsylvania	(1883)	75
Royal University of Naples	(1906)	85.5

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Yale Medical School	(1909)	R. Island
University of Maryland	(1913)	Maryland
Hahnemann Med. Coll. and Hosp., Philadelphia (1904) Penna.	(1914)	Virginia

Ohio June Report

Dr. George H. Matson, secretary of the Ohio State Medical Board, reports the oral, practical and written examination held at Columbus, June 8-11, 1915. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 143, of whom 140 passed and 3 failed. Thirty-three candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Rush Medical College	(1914)	83.5
Hahnemann Medical College and Hospital, Chicago	(1915)	83.3
Indiana University	(1915)	85.2
Johns Hopkins University	(1914)	84.4
Boston University	(1915)	84.8
Cleveland-Pulte Medical College	(1914)	82.4
Eclectic Medical College, Cincinnati	(1910)	84.4; (1915) 75, 77.6, 80.1, 80.3, 82.1, 82.5, 82.7, 82.8, 83.7, 83.8, 84.7, 84.7, 84.8, 85.3, 85.7, 86.4, 88.8, 89.9.
Ohio State University College of Medicine	(1914)	78.5; (1915) 79.1, 79.6, 80.1, 81.4, 81.4, 81.9, 82.6, 83, 83.2, 83.3, 83.8, 83.9, 84.2, 84.4, 84.4, 84.5, 85.2, 85.6, 85.8, 86.2, 86.2, 86.2, 86.2, 86.3, 86.6, 86.7, 86.8, 86.9, 87.2, 87.6, 87.8, 87.9, 88, 88, 88.1, 88.2, 88.5, 88.5, 88.9, 88.9, 89.2, 90, 90.3, 90.5.
Ohio State Univ., Coll. of Homeo. Med	(1915)	76.7, 77.4, 77.6, 78, 78.9, 79.9, 80, 80.2, 82.8, 83.4, 83.5, 83.8, 83.8, 84, 85.3, 85.7, 87.3
University of Cincinnati	(1915)	75.1, 78.7, 79.1, 79.1, 79.5, 79.8, 79.9, 80.8, 81.3, 82.7, 84, 84.1, 84.3, 84.5, 84.7, 85.4, 85.6, 86.5, 88.5.
Western Reserve University	(1915)	78, 81, 81.6, 81.8, 82.6, 83, 83.6, 83.7, 83.9, 84.8, 84.8, 84.8, 85.1, 85.3, 85.4, 85.4, 85.9, 86, 86.2, 86.7, 86.9, 86.9, 87.1, 87.7, 87.7, 87.9, 88, 88.2, 88.3, 88.8, 88.9
Jefferson Medical College	(1915)	86.9
University of Pittsburgh	(1914)	83.6
University of Toronto	(1906)	75

FAILED

College	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery	(1913)	71.2
Ohio State University, College of Medicine	(1914)	73.6
Ohio State University, Coll. of Homeo. Med	(1915)	72.5

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Howard University	(1913, 2)	Dist. Colum., Kansas
Chicago College of Medicine and Surgery	(1912)	New York
Hahnemann Medical College and Hospital, Chicago	(1913)	Illinois
Northwestern University	(1912)	Illinois
Rush Medical College	(1890) Indiana; (1913)	Illinois
Indiana University	(1910)	Indiana
State University of Iowa, College of Medicine	(1881)	Kansas
Atlantic Medical College, Baltimore	(1909)	W. Virginia
Baltimore Medical College	(1894) Illinois; (1901)	W. Virginia
Coll. of Phys. and Surgs., Baltimore	(1910) Maryland; (1912)	W. Virginia
Johns Hopkins University	(1912)	New York
University of Michigan Medical School	(1907)	Michigan
University of Michigan, Homeo. Med. School	(1914)	Michigan
St. Louis University	(1912)	Missouri
Albany Medical College	(1914)	New Jersey
Columbia University, Coll. of Phys. and Surgs	(1912)	New York
Cornell University	(1910)	Louisiana
University and Bellevue Hospital Med. Coll.	(1913), (1914)	New York
Jefferson Med. Coll.	(1912) New York; (1913, 2)	Penna., Vermont
Medico-Chirurgical College of Philadelphia (1888)	Neb. (1913)	Penna.
Univ. of Pennsylvania.	(1903) New York; (1907) (1909) (1913)	Penna.
Vanderbilt University	(1910)	Illinois

Book Notices

SENESCENCE AND REJUVENESCENCE. By Charles Manning Child, of the Department of Zoology, University of Chicago. Paper. Price, $4. Pp. 481, with illustrations. Chicago: The University of Chicago Press, 1915.

This work is divided into five parts. Part One deals with the problem of organic constitution, or the theories of life, and contains a summary of the author's views. The various theories are taken up in turn, beginning with the Neo-vitalistic. This theory, the chief modern exponent of which is Driesch, assumes the existence of a vital principle as absolutely indispensable for any adequate conception of life. The fatal objection to this theory, however, is that it lacks the essential element of proof, namely, a foundation on fact, and assumes that which it is supposed to prove. In other words, it is based on an undetermined and undeterminable assumption. As all vitalistic theories are based on the same or similar assumptions, the author rejects them all, not only for the reason that the assumption is unprovable, but also for the reason that the facts brought to light by the development of experimental methods and of the physical sciences are showing more and more the improbability of such a principle, and are removing the necessity for one. The author then shows that the same objections are applicable to the various corpuscular theories, such as the gemmules of Darwin, the pangens of DeVries, the physiologic units of Spencer, the biophores and determinants of Weismann, etc., all of which may be called the morphologic or static group. These theories, according to the author, do not help to solve any of the fundamental problems of biology. They merely serve to place these problems beyond the reach of scientific investigation. As all of the various particles of these theories are endowed with the attributes of life as exhibited in the organism, the study of life is simply removed from the organism to the corpuscle, and nothing is gained thereby.

With the development of chemistry, it became apparent that chemical action played a very important part in life processes, and the chemical theory of life rapidly came to the front. Life consisted in the changes which were constantly taking place in the extremely complex protein molecules called protoplasm. These protein molecules were regarded as highly labile chemically, so that they were able to respond to stimuli of various kinds by decomposition and the very rapid liberation of energy. It soon became apparent that it was necessary to distinguish between living and dead protein. The difficulties were overcome by assuming that liability is the property only of living proteins, and disappears with death. "Death, in fact, was regarded as resulting from this change from liability to stability." The author analyzes the chemical theory and points out its insufficiencies. He says: "It appears, then, that when we analyze this hypothesis of the labile proteid substance which gives rise to the manifestations of life by its chemical transformations, we find that it does not help us to any great extent in bridging the gap between the organism and the inorganic world. . . . The numerous difficulties which arise in connection with hypotheses of this character must at least raise the question whether the point of view on which they are based is fundamentally correct. Is life at bottom simply a complex of chemical reactions or is there some other factor involved which the hypothesis of the labile corpuscle as the basis of life fails to take into account?" This the author attempts to answer in his discussion of the physicochemical theory. In this section it is pointed out that the complexity of the protein molecule is not so great as

it was formerly believed, but that it is built up from certain relatively simple compounds. The proteins exist in the colloid conditions. "Protoplasm, instead of being a peculiar living substance, with a peculiar complex morphological structure necessary for life, is on the one hand a colloid product of the chemical reaction, and on the other a substratum in which the reactions occur, and which influences their course and character both physically and chemically. In short, the organism is a physico-chemical system of a certain kind."

"In every living organism known to us the chemical processes of metabolism take place in the complex colloid field or substratum. . . . The properties of these substances as colloids are no less important for the living organism than their chemical constitution. . . . The more we know concerning colloids the less possible it becomes to conceive of anything similar to what we regard as life apart from them. Whatever else it may be, it seems certain that the organism is a colloid system. From this point of view, our definition of a living organism must be somewhat as follows: A living organism is a specific complex of dynamic changes occurring in a specific colloid substratum which is itself a product of such changes and which influences their course and character and is altered by them."

The question of morphology and the relation between structure and function are discussed, the author concluding that neither structure nor function is conceivable except in relation to each other, and that structure and function are, therefore, indissociable.

The second chapter of this work deals with the life cycle. In it are discussed growth and reduction and senescence and rejuvenescence. Senescence is defined as "a decrease in rate of dynamic processes conditioned by the accumulation, differentiation, and other associated changes of the material of the colloid substratum." It is, therefore, a necessary and inevitable feature of growth and differentiation. Rejuvenescence is an increase in rate of dynamic processes conditioned by the changing in the colloid substratum in reduction and dedifferentiation.

Parts Two, Three and Four, forming about three fourths of the entire work, contain a great mass of experimental and other data, which form the basis of the author's conclusions. Part Five, which closes the work, is theoretical and critical, and contains a review of some current theories on senescence and rejuvenescence, ending with some general conclusions. The whole subject seems to be well summed up in the last sentence: "The age changes in the organism are merely one aspect of *Werden* and *Vergehen*, the becoming and passing away which make up the history of the universe." The whole work is extremely interesting, and shows an immense amount of research and study on the part of the author. Extensive references to the literature follow each chapter, and a comprehensive index closes the volume. The reading of this book cannot help but be of value, even to one who always looks to the practical end of things; for anything which helps to give to the physician a clearer insight into life's processes must make him a better doctor.

TEXT-BOOK ON NERVOUS DISEASES. By G. Aschaffenburg, H. Curschmann, R. Finkelnburg and others. Authorized English edition edited by Charles W. Burr, B.S., M.D., Professor of Mental Diseases in the University of Pennsylvania. Two volumes. Price, $12 net. Pp. 1132, with 246 illustrations. Philadelphia: P. Blakiston's Son & Co., 1915.

Written by authors of international reputation as clinicians and research workers, and edited by Curschmann, this textbook has at last been translated into English. The German edition bears the date 1909, and has already become an oft-quoted classic. Originally intended for students and practitioners, it has also become popular with neurologists. For the general practitioner Curschmann's book is what Oppenheim's textbook is for the special student of neurology. Like Oppenheim's book, it covers the subject of neurology in a complete and up-to-date manner, but, unlike that famous classic, it addresses the practitioner in a conversational style easy to follow. The illustrations are excellent, there being many colored original drawings among them. The article of Max Rothmann on the diseases of the cord, that of Liepmann on diseases of the brain, and Krause's section on operative treatment of nervous diseases are excellent. In addition, the splendid article of L. R. Müller on diseases of the conus and the cauda equina, with its illuminating differential diagnostic considerations, as well as the articles of Aschaffenburg and Curschmann, deserve special praise.

The American editor in the preface states that "the translators have endeavored to do their work faithfully and to give an accurate rendering of the writer's statements." We regret that the translators have been too accurate and subservient to the German text. When will American translators learn that literalness of translation is not the equivalent of accuracy? In our opinion, it is not essential to be constantly reminded that one is reading a foreign work when perusing a translation. Englishmen long ago learned to render good translations of foreign books. Is any one, for instance, conscious on reading Tanzi's textbook on mental diseases in English that the book is a translation from the Italian? This much for the translation. The special chapter contributed by the American editor on the diagnosis and treatment of neurasthenia, psychasthenia, hysteria and borderland mental states, though incomplete is a valuable addition. The entire book has intrinsic merit, and will no doubt find favor with the English-speaking physician.

THE MEANING OF DREAMS. By Isidor H. Coriat, M.D., First Assistant Visiting Physician for Diseases of the Nervous System, Boston City Hospital. Cloth. Price, $1. Pp. 194. Mind and Health Series. Boston: Little, Brown & Co., 1915.

The author believes that Freud's interpretation of dreams represents "one of the greatest advances ever made in our knowledge of the human mind and of human motives." He compares the value and importance of dream analysis with the discovery of the origin of species and the theory of evolution, and is inclined to call Freud a second Darwin. According to the same author, dream analysis not only helps us to fathom the mysteries of the unconscious, but also has given to medicine one of its most potent weapons to combat certain functional nervous disturbances. Having made these extravagant statements, he proceeds to analyze several dreams according to the freudian method in a style and manner easily grasped. Indeed, any one can readily learn the great art of dream interpretation by following the author's model prescriptions. This little volume, containing as it does nothing original, has the merit of being less involved than Freud's padded book on the interpretation of dreams. While ostensibly writing on the meaning of dreams, he really injects his own meanings into otherwise quite harmless dreams, and makes them fit his own sex conceptions derived from the freudian sex nursery.

MATERIA MEDICA AND THERAPEUTICS. A Text-Book for Nurses. By Linette A. Parker, B.Sc., R.N., Instructor in Nursing, Teacher's College, Columbia University. Cloth. Price, $1.75 net. Pp. 311, with 32 illustrations. Philadelphia: Lea and Febiger, 1915.

The author has described all the more important and most commonly used drugs, and has given information concerning them which will enable the nurse to administer them intelligently. Drugs are classified according to the part of the body on which they act: nervous system, circulatory system, etc. Under "Analgesies," attention is directed to the danger of coal-tar remedies and "patent medicines." Other remedial measures described are psychotherapy, hydrotherapy, electrotherapy, serums and vaccines and ray therapy. The illustrations, particularly plates which show plants in natural colors, are interesting.

AMNESIA AND ANALGESIA IN PARTURITION (TWILIGHT SLEEP). By Alfred M. Hellman, B.A., M.D., F.A.C.S., Adjunct Attending Gynecologist and Obstetrician, Lebanon Hospital. Cloth. Price, $1.50 net. New York: Paul B. Hoeber, 1915.

The present rejuvenation of "twilight sleep"—largely an artificial interest created by the lay press—has prompted the issuing of several books on the subject. In the author's note to the present book, he gives special thanks to his publisher, at whose request the book was written. The author's aim was to give a summary of the literature, and he seems to have done this quite satisfactorily.

Miscellany

The Internal Secretions and the Interrelationship of the Various Organs

The modern theory of the influence of internal secretions was foreshadowed, according to J. J. Abel (*Science*, Aug. 6, 1915, p. 165), in the eighteenth century. Abel says that even from remote antiquity it has been known that the gonads or sex glands exercised a marked influence on the development and structure of the body, but the means by which this influence was exercised was unknown. The medicine of an older time used the term *consensus partium* to indicate the harmonious accord of organ with organ. Until quite modern times the nervous system was supposed to be the sole medium through which this *consensus* of the various organs was effected. Yet, meanwhile, the old humoral theory, revivified by Harvey's discovery of the circulation, sought to establish the importance of the blood stream in regulating the interrelationship of the organs.

In 1775, Théophile de Bordeu, whom Abel describes as a fashionable practitioner of Montpellier and later of Paris, "propounded the doctrine that every organ lives its own life and is the source of specific chemical substances (*humeurs particulières*) which are yielded up to the blood and which are necessary to the integrity of the body." The blood, Bordeu maintained, "contains an extract of each glandular organ which contributes its share to the emanations in which all the solid parts [of the blood] swim. . . ."

The first experimental evidence in support of this theory was furnished three quarters of a century later, by A. A. Berthold, professor of physiology in Göttingen. Berthold transplanted the sex glands of young cockerels from their normal position to the outer surfaces of the intestine in the peritoneal cavity. The birds showed none of the changes which distinguish the castrated fowl; in vocal capacity, desire for battle, growth of comb and wattles and sexual instinct, they remained male birds. Berthold concluded that, in addition to the reproductive function, the sex glands have an important function in maintaining the *consensus partium* through their influence on the blood.

Berthold's observations were forgotten and had no apparent influence on work during the half century which followed. It remained for Claude Bernard, Brown-Séquard, Basedow, Graves, Addison and many others of a later period to build up the structure of the theory of the endocrine glands.

The Number and Kind of Drug Addicts

M. I. Wilbert, of the United States Public Health Service, in *Public Health Reports* calls attention to the fact that many of the statements as to the number of drug addicts in the United States are not based on reliable data. Others, while partially true, are misleading because of their incompleteness or because of partial misstatement of fact. The number, he believes, does not even approximate the large number which has been sometimes claimed. Among the statements which he quotes as being incorrect are that more than 2 per cent. of the people in this country are addicted to the use of opium and cocain, and that this number is being augmented at the rate of 100,000 a year; that fully 90 per cent. of the opium we import is used for illegitimate purposes; that for every ounce of cocain employed legitimately, there are 200 ounces sold illegitimately; that physicians are responsible for at least 95 per cent. of the habitual users of opium, its compounds and alkaloidal salts; that more dope fiends have been created by the refilling of prescriptions than in any other way, and that at least 10 per cent. of the 45,000 drug stores in the country exist largely on the illegitimate sale of habit-forming drugs. Wilbert says that the total amount of opium and cocain brought into the country is pretty well known, and he makes the calculation as to the probable number of doses and the proportion that could possibly be used illegitimately. From this he concludes that the number of addicts must be grossly exaggerated. He quotes the figures of Lucius P. Brown, state food and drugs commissioner of Tennessee, in the *American Journal of Public Health*, in which Brown says that after twelve months of operation of the Tennessee anti-narcotic law, there were registered in the state 2,370 habitués of all ages and colors. The average consumption per day for morphin was 8.5 grains, or approximately 1,000 doses each month or 12,000 doses a year. As the state of Tennessee contains slightly more than 2 per cent. of the population of the United States, at the same ratio there would be a little over 118,000 drug habitués in the United States, and these would consume nearly a billion and a half of doses at the same rate. This is about six times the total importation of opium. Making a calculation of the amount of cocain brought into the country and the amount said to be used by cocain addicts, the estimate has been made that there are 150,000 users of cocain. This estimate has been made on the basis of 1 ounce of cocain per habitué per year. Steinmetz, however, has found in a study of fifteen cases that the daily quantity taken was from 20 to 60 grains, which would give a total quantity in the year of about 15 ounces. Calculating from the 325,000,000 doses of coca leaves and cocain said to be brought into the United States yearly, the estimate of 150,000 would be much too high.

Wilbert calls attention to the large hole left in the Harrison law by Section 6, which permits of the use of narcotic drugs in certain nostrums. He says that as long as the drug fiend can get sufficient of a nostrum containing his favorite drug, the rest of the Harrison law will be a matter of indifference to him. Wilbert concludes that though the amounts of opium and coca consumed annually in this country are out of all proportion to the actual need for medicinal purposes, the number of addicts is certainly not so high as has been claimed; but to locate the existing leaks, the followers of all branches of medicine, particularly pharmacists, must purge themselves of even a suspicion of being directly or indirectly to blame for existing abuses either in the unauthorized refilling of prescriptions or otherwise.

Origin of Jitney Bus

The jitney bus originated in the West, writes E. Gordon Lee, in the August *Case and Comment*. The term is applied to any automobile or mechanically driven bus carrying passengers for a 5-cent fare. The word "jitney" in western parlance is equivalent to our eastern nickel. The expression is said to be a corruption of a Japanese term for a small coin of such little value that it is usually spoken of with great contempt. Others believe the word to be of negro origin, and assert that in the old days of the Mississippi steamboats the dock roustabouts were wont to refer to a nickel as a jitney. Another account avers that a penitentiary trusty named Jedney used to smuggle tobacco, sugar and other supplies to the prisoners, giving them 5 cents' worth for 10 cents, thus resulting in a nickel profit to himself, the transaction being obscurely referred to as a jitney.

It is said that the first jitney bus appeared in Oakland, Calif., when a second-hand automobile stopped at the curb bearing the placard, "Will take you anywhere, or stop anywhere, for one jitney." About a year ago one L. R. Draper, a citizen of Los Angeles, started a business of this kind in that city, and many regard him as the originator of the idea. Be that as it may, California is certainly responsible for setting up the most rapid disturbance in city transportation this country has ever seen.

Inheritance.—A good cricketer may be the father of a good cricketer, not because he has acquired the art of bowling and batting, but because he has the correct eye, hand and brain, which was bred in him, and which he may transmit to his son; nor must we forget the force of tradition and of example, which may technically be called the liberating stimulus which induces the son to follow in the footsteps of his father.—F. M. Sandwith, *Clinical Journal*.

Medicolegal

Practicing as a Nondrug-Giving Physician

(State vs. Siler (N. C.), 84 S. E. R. 1015)

The Supreme Court of North Carolina says that the defendant was tried and found guilty, in the municipal court of Greensboro, of practicing for fee and reward, without license, as "a nondrug-giving physician." On appeal to the superior court of Guilford, on a special verdict finding the facts, the judge held the defendant not guilty, and the state appealed. The Supreme Court reverses the latter judgment. It holds that on the special verdict the lower court should have held the defendant guilty. The Supreme Court says that it was agreed that the defendant was resident in Greensboro April 14, 1914, and on that day was engaged in the practice of "chiropractic and suggesto therapy" as a nondrug-giving physician, and received compensation therefore; that chiropractic is a system of treating human diseases without use of drugs by manipulating the spine, and that suggestotherapy is a system of treating nervous diseases without the use of drugs by mental suggestion. By the act of 1907 (Chapter 764) it was intended to protect the public against imposition by those claiming to heal diseases without the use of drugs as osteopaths. Since then those claiming to heal without prescribing drugs have taken various and numerous appellations, and thus avoided the protection intended to be afforded the public as to "nondrug-giving physicians" by the act of 1907. In consequence, the act of 1907 was amended in 1913 to add after the word "osteopathy" the words "or other nondrug-giving school of practice." The act also fully and elaborately prescribes that it shall apply to all practice of healing of every kind that is not drug-giving, excepting only "Christian Scientists or masseurs or any one following in his or her practice the orders of licensed drug-giving physicians." The object of the act of 1913 is simply to extend the protection to the public given by the act of 1907, as against all other nondrug-giving practitioners of healing, with the exception just quoted. That this is the scope of the act, and that it is not intended to make compliance therewith a monopoly in the hands of "osteopaths," the act prescribes an examination only in the following subjects: "anatomy, physiology, pathology and diagnosis." Less could not be required reasonably of any one holding himself out as competent to prescribe for "the ills that flesh is heir to." The intent of this statute is clearly and solely for the protection of the public. An uneducated, ignorant and incompetent doctor turned loose on a helpless community is as deadly as a park of artillery.

Not Liable for Amputation of Leg—Admissibility of Evidence

(Barfield vs. South Highland Infirmary et al. (Ala.), 68 So. R. 30)

The Supreme Court of Alabama in this action for alleged malpractice affirms a judgment in favor of the defendants, and denies a rehearing to the plaintiff. The court says that the defendants were the infirmary and a surgeon, whom the plaintiff charged with having wrongfully and without her consent amputated one of her legs. The infirmary was not liable because the medical and surgical treatment and operation were prescribed and performed by the surgeon under an independent employment by the plaintiff, and he, though he was a shareholder and officer of the infirmary, in treating and operating on the plaintiff acted not at all as the agent of the infirmary nor within the line and scope of his authority as an officer. Beyond question or doubt any negligence, unskilfulness, or other wrong, if any there was, was his wrong, and for it he alone was responsible.

It scarcely need be debated that the plaintiff, if capable of intelligent consideration of the question involved, had the absolute moral and legal right to determine the issue for herself with regard to having the amputation, and an operation of this capital character, performed without regard to her wishes in such case, could not be justified in any forum of law or conscience. But considering the incapacity she claimed to have labored under at the time, and the extreme urgency of the case as shown by the expert evidence, if believed, it was proper for the defendant to consult with the mother—and not conceivably improper in any event—and to act on her consent as the implied consent of the plaintiff. Moreover, his testimony was admissible that a nurse came down and said that the plaintiff was willing to have her leg cut off. Under the circumstances which appeared, no negligence could be charged to the defendant in accepting this statement and that of the plaintiff's mother as expressing the true state of the plaintiff's mind; at least these statements, though falling in the general class of hearsay, went a part of the way toward demonstrating the defendant's good faith in performing the operation which the plaintiff charged was performed without her knowledge or consent. And if the plaintiff was wholly incapacitated to consent, the defendant may have been justified in acting on a consent, not actually given, but to be implied on considerations of custom, humanity and reason.

The defendant was a witness, qualified as an expert on the questions involved. The jury was entitled, in a general way, to be informed of his opportunities for observation and experience in his line, and in general to know what manner of man he was. Within this rule, without prejudice to the plaintiff's case, and without conveying any intimation that such conditions affected the rule of due care, the jury might be given to understand whether the defendant was young or old, did a large practice or none at all, resided in Birmingham or Toad Vine, and other like things, and the court does not see that it makes any difference in principle that inquiries to this end were directed to another witness rather than to the defendant himself. Again, the defendant had a right to consider the charts or records kept by the nurses in determining his treatment, and the jury was properly allowed to have these charts before it as part of the evidence in the case, though doubtless they signified little to any but the skilled professional mind.

Nor was there error in a refusal to instruct the jury that in determining the defendant's liability they should not consider the fact, if it was a fact, that another surgeon or physician had made a failure in an attempt to treat the plaintiff's leg, and had made it probable that the plaintiff would lose her life if the leg was not amputated. To so instruct would be manifestly wrong. A question as to what the defendant charged for what he did was presumptively inadmissible. He was normally and legally bound to exercise the same degree of care, diligence and skill, whether his charge was large or small.

A Valid Medical Practice Act Imposing $50 License Fee on Vendors

(Ex parte Ambler (Okla.), 148 Pac. R. 1061)

The Criminal Court of Appeals of Oklahoma holds that the writ of habeas corpus obtained by the petitioner, who had been convicted of violating the medical practices act embraced in sections 4242-4264 of the Compiled Laws of 1909, section 4260 being the particular section covering the offense charged, should be discharged, and the prisoner remanded to the custody of the sheriff to be dealt with as the law provides. The court says that it is of the opinion that the act is a valid law, enacted within the reasonable exercise of the police power of the state, and a wholesome provision which infringes on no constitutional provision of Oklahoma or of the United States.

Section 4260, relating to peddlers of medicine and medical appliances, provides that an annual county license fee of $50 shall be paid by all such itinerant vendors, doing business in any county in the state, said sum to be turned over for the use of the county road and bridge fund of said county. It appears that the most that can be said against the Oklahoma medical practices act is that the title is broader than the

enacting part, and covers, or might be construed to cover, another subject, that is, the licensing of vendors; but by a careful examination of the body of the bill it is easily to be determined that it relates only to such things as pertain to the practice of medicine. If no reference had been made to vendors in the title, that section of the act which relates to vendors of medicine and medical appliances could have been properly included in the measure because such a provision is referable and cognate to the subject expressed in the title, and constitutes only a part of a complete enactment as a complement to the main thought therein expressed. This being true, the fact that the word "vendors" was not followed by the words "medicine and medical appliances," in the title of the act, was immaterial.

The contention is without merit that the medical practices act is a revenue measure, and that it did not originate in the House of Representatives, and was not passed more than five days prior to adjournment, and for that reason is in conflict with the state constitution. Revenue is a mere incident to the law, and not its primary purpose. If the $125 license fee imposed by a similar law under a similar constitutional provision in the state of Minnesota does not have the effect of converting the act into a revenue measure in that state, then the $50 license fee as imposed here certainly does not convert the act into a revenue measure. This court is not inclined to twist a construction out of these enactments that will thwart the will of the people, expressed through the legislature, and especially so when such construction is unsupported by reason or authority. The legislature of Iowa enacted a law almost identical with the medical practices act of Oklahoma, except that in Iowa $100 was imposed, instead of $50, and it was held to be a reasonable police provision. Nor is the statute invalid because the fees provided for are to be used for other purposes, and not for the purpose of enforcing the law under which they are imposed.

Society Proceedings

COMING MEETINGS

American Academy of Ophth. and Oto-Laryn., Chicago, Oct. 5-7.
Amer. Assn. of Obstetricians and Gynecologists, Pittsburgh, Sept. 14-16.
American Association of Railway Surgeons, Chicago, Oct. 13-15.
American Electro-Therapeutic Association, Atlantic City, Sept. 14-16.
American Roentgen Ray Society, Atlantic City, Sept. 22-25.
Association of Military Surgeons of the U. S., Washington, Sept. 13-15.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Indiana State Medical Association, Indianapolis, Sept. 23-24.
Kentucky State Medical Association, Louisville, Sept. 21-23.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
Missouri Valley Medical Society, Des Moines, Sept. 23-24.
Pennsylvania State Medical Society, Philadelphia, Sept. 20-23.
Utah State Medical Association, Salt Lake City, Sept. 28-29.
Virginia State Medical Society, Richmond, Oct. 26-28.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

August, LXXII, No. 2, pp. 209-384

1 *Complications of Ovarian Tumors. S. Wiener, New York.
2 Pelvic Varicocele. E. W. Pinkham, New York.
3 *Relation of Albuminuric Retinitis to Toxemias of Pregnancy. J. R. Miller, Baltimore.
4 Psychoses and Neuroses of Pregnancy and Puerperium. D. J. McCarthy, Philadelphia.
5 Cesarean Operation; Its Wider Application; Report of Cases. W. E. Parke, Philadelphia.
6 Mitral Disease and Gestation; Report of Cases. D. Longaker, Philadelphia.
7 Shoulder Presentations; Report of Three Cases. G. M. Astley, Philadelphia.
8 Technic Applying Heat in Treatment of Inoperable Uterine Carcinoma. J. F. Percy, Galesburg, Ill.
9 Inversion of Uterus; Report of Case of Complete Inversion with Prolapse. H. L. D. Kirkham, Houston, Texas.
10 Roentgen Ray Diagnosis of Pregnancy. A. M. Judd, Brooklyn.

1. **Complications of Ovarian Tumors.**—This paper is based on a series of 240 consecutive operations for ovarian tumor. As there were bilateral tumors in twenty-nine cases, there were 269 tumors in all. Torsion was encountered thirty-three times in 269 tumors (12.26 per cent.). There were five cases of rupture of the cyst wall. There were six cases of infected cysts (2.23 per cent.). There was one case of streptococcus infection, one mixed infection of *Streptococcus pyogenes* and *Staphylococcus albus,* one case of typhoid infection, in one case culture showed no growth, and in two cases the organisms were unidentified. There were five cases of malignant degeneration in benign growths, three times there were squamous cell carcinomas developing in dermoid cysts; once a papillary adenocarcinoma developing in a serous cystadenoma; and once an adenocarcinoma developing in a pseudomucinous cystadenoma. There were eleven operations for ovarian tumor complicated by pregnancy. In only two of these was the operative interference followed by uterine contractions of sufficient strength to discharge the products of conception. Including under the term "ascites" only the presence of considerable transudate in the peritoneal cavity, there were twenty-one cases in the series. Eleven times ascites (mostly blood tinged) was found with carcinomas; once with an uncomplicated papillary cystadenoma; five times with tumors with twisted pedicle (one fibrosarcoma, two papillary cystadenomas, one simple cystadenoma, one multilocular pseudomucinous cystadenoma); once with an infected dermoid cyst; and three times with simple uncomplicated fibromas. There were of uterine fibroids, 4 cases; chronic metritis or "fibrosis uteri," 3 cases; retroflexion, 2 cases; hydrosalpinx, 5 cases; gonorrheal salpingitis (chronic), 4 cases; pyosalpinx, 2 cases; incomplete abortion, 1 case, and ectopic gestation, 2 cases.

3. **Toxemias of Pregnancy.**—In Miller's experience albuminuric retinitis of pregnancy affords evidence strongly indicative of primary nephritis, though it is not always present in cases of nephritic toxemia. He says that the retinoscopic examination, when positive, enables one to make an early diagnosis of the underlying kidney condition, which at present, is sometimes impossible without necropsy findings or extended observation.

American Journal of Public Health, Boston

August, V, No. 8, pp. 687-809

11 Public Health Authorities and Campaign Against Cancer. C. E. Lakeman, New York.
12 Midwives: Their Influence on Early Infant Mortality. C. C. Terry, Jacksonville, Fla.
13 Reliability of Certain Classes of Death Certificates. H. Emerson, New York.
14 Public Health as Affected by Chronic Diseases of Heart, Kidneys and Arteries. H. Greeley, Brooklyn.
15 Results of Studies on Dust and Bacteria Content of Air of Cities. M. C. Whipple, Cambridge, Mass.

American Journal of Roentgenology, Detroit

April, II, No. 6, pp. 709-748

16 Roentgen Examination of Foreign Bodies. G. W. Grier, Pittsburgh.
17 Hard Roentgen Rays. W. D. Coolidge, Schenectady, N. Y.
18 Protection Necessary When Using Harder Roentgen Rays. H. W. Van Allen, Springfield, Mass.
19 New Position in Radiographing Shoulder Joint. W. S. Lawrence, Memphis, Tenn.
20 Radium and Mesothorium in Conjunction with Roentgen Therapy. R. H. Boggs, Pittsburgh.
21 Portable Viewing Box. J. M. Berry, Albany, N. Y.
22 Characteristic Roentgen Findings of Duodenal Ulcer. P. Eisen, Milwaukee, Wis.

Boston Medical and Surgical Journal

August 26, CLXXIII, No. 9, pp. 301-336

23 Acute Tubercular Inflammation of Ileocolic Glands Simulating Appendicitis. H. Gage, Worcester.

24 *Use of Digitalis in Various Forms of Cardiac Arrhythmia. H. A. Christian, Boston.
25 *Relationship of Abnormal Heart Beat to Prognosis. P. D. White, Boston.
26 *Treatment of Heart Disease. F. C. Shattuck, Boston.

24. **Use of Digitalis in Forms of Cardiac Arrhythmia.**—An important evidence of the beneficial action of digitalis, Christian says, is the decrease in the pulse deficit, namely, in the difference between apex beat and radial pulse. In using digitalis it is particularly important to keep this effect in mind, for if one counts the radial pulse alone there may be no particular change in pulse rate, though the number of cardiac contractions has been materially decreased. In fact, in this form of cardiac arrhythmia the counting of the radial pulse may be misleading, it being within normal limits when actually the heart is beating very rapidly. To count the heart beats with the stethoscope is the all-important thing, not the counting of the radial pulse. Digitalis impedes conduction in the His bundle, and the result is that fewer auricular contractions send through impulses to originate ventricular contractions and so the ventricle beats more slowly. Beating more slowly, there is more time for the ventricle to fill and more time for the muscle to recover from fatigue, so the systolic output is increased. Probably, also, digitalis exerts an action on the myocardium, causing the contraction to be more forcible and by its action it improves coronary circulation.

In some cases with auricular fibrillation in which edema is marked, a much better diuresis is obtained by combining with the digitalis a diuretic drug, such as theocin. In another form of arrhythmia, namely, auricular flutter, digitalis usually produces a striking effect. Digitalis in these cases either throws the auricle into fibrillation and when digitalis is stopped the normal rhythm is restored, or the heart slows down directly into a normal rhythm with great improvement in the patient's condition. In pulsus alternans digitalis frequently produces good results. In the rapid, regular, decompensated heart digitalis slows the rate by increasing vagus inhibition and by increasing conduction time between auricle and ventricle, and it strengthens heart action by some direct action on the myocardium and coronary circulation. This type of case often seems definitely resistant to digitalis and the patient may take large amounts before any effect can be detected. It is always well to remember in such cases to watch the patient carefully, for sometimes the digitalis action, which has been long delayed, develops with great rapidity into marked activity so that the patient, who shortly before has shown no digitalis effect, quickly develops toxic symptoms.

In paroxysmal tachycardia there is little evidence that digitalis produces any good effect. In sinus arrhythmia and in compensated hearts with ectopic beats or extra systoles digitalis is not indicated. In cases of heart block not of digitalis origin, digitalis should be tried if the patient is decompensated. Results are sometimes good; at other times it would seem that the patient is made worse.

25. **Relationship of Abnormal Heart Beat to Prognosis.**—Of disturbances of the rhythm of the heart beat, White says, auricular fibrillation (absolute irregularity) and auricular flutter have the gravest prognosis, for not only are these conditions indices of myocardial damage, but they themselves increase the difficulty of the circulation by their rapid driving of the heart. Sometimes, however, many years may elapse before the death of these patients. Of eighty-six cases of auricular fibrillation seen at the Massachusetts General Hospital, 16 per cent. are known to have died within ten months of discovery. Premature beats and paroxysmal tachycardia are compatible with a long and active life, but their frequent association with cardiac damage should lead one to be a little cautious in prognosis. Permanent damage to the atrioventricular bundle of His or its branches is evidence of widespread damage to the myocardium. Hence the prognosis concerning a patient showing such a condition should be guarded. Defective contraction of the heart, as shown by familiar symptoms and signs, has a prognosis dependent on the number and degree of these symptoms and signs, plus a consideration of similar trouble in the past and of the way in which the heart responds to rest and digitalis. Of all the individual signs of abnormal contracting power of the heart pulsus alternans is one of the most important and consistent. Of eighty-three cases of alternation of the pulse seen at the Massachusetts General Hospital 31.3 per cent. are known to have died within ten months of discovery.

26. **Treatment of Heart Disease.**—Shattuck points out that the details of medicinal treatment of true angina depend somewhat on its origin—whether this be infectious or noninfectious, and if infectious whether of syphilitic or other origin. Medicinal treatment is usually of minor, though still of real importance. Strychnia is to be avoided as tending to heighten reflex excitability. Digitalis is indicated only so far as myocardial failure is suggested by symptoms other than pain. Small doses of potassium iodid can seldom be harmful, and seem to be of value even in nonsyphilitic cases. The action of glonoin is so transitory that its value between attacks is doubtful. If it be desirable, as Shattuck believes to be rarely the case, to try to secure constant reduction of blood pressure, sodium nitrite or erythrol may be used.

Indiana State Medical Association Journal, Fort Wayne

August, VIII, No. 8, pp. 367-412

27 *Treatment of Incipient Cataract with Subconjunctival Injections of Cyanid of Mercury. A. B. Knapp, Vincennes.
28 Indications for Cesarean Section. W. F. Howat, Hammond.
29 Extra-Uterine Pregnancy. E. Cox, Kokomo.
30 Why Surgery in Intestinal Stasis? A. P. Roope, Columbus.

27. Abstracted in THE JOURNAL, Oct. 31, 1914, p. 1603.

Journal of Biological Chemistry, Baltimore

August XXII, No. 1, pp. 1-239

31 *Assimilation of Cholesterol and Its Esters. J. H. Mueller, New York.
32 Rate of Passage of Fatty Acid of Food into Mammary Glands of Goat. O. C. Bowes, New York.
33 Influence of Ingestion of Fat. J. R. Murlin and G. Lusk, New York.
34 Mineral Excretion of Monkey. L. Baumann and E. Oviatt, Iowa City, Iowa.
35 Origin of Creatin. L. Baumann and J. Marker, Iowa City, Iowa.
36 Use of Aluminum Hydroxid Cream for Removal of Albumin in Nitrogen Partition in Urinary Analysis. G. Tracy and W. H. Welker, Chicago.
37 Formation of Specific Proteolytic Ferments in Response to Parenteral Introduction of Foreign Protein. A. E. Taylor and F. Hulton, Philadelphia.
38 Estimation of Nonprotein Nitrogen and Glucose in Finger Blood. A. E. Taylor and F. Hulton, Philadelphia.
39 Study of Protein Metabolism under Conditions of Repeated Hemorrhage. A. E. Taylor and H. B. Lewis, Philadelphia.
40 Predominance of Liver in Formation of Urea. A. E. Taylor and H. B. Lewis, Philadelphia.
41 Experimental Studies of Urinary and Blood Nitrogen Curves After Feeding. O. H. P. Pepper and J. H. Austin, Philadelphia.
42 Final Hydrogen Ion Concentrations of Cultures of Bacillus Coli. W. M. Clark, Washington, D. C.
43 Rôle of Oxidases in Respiration. G. B. Reed, Cambridge, Mass.
44 Studies of Autolysis. Acceleration of Liver Autolysis. H. C. Bradley, Madison, Wis.
45 Rôle of Halogens as Accelerators of Tissue Enzyme Action. M. Morse, Madison, Wis.
46 *Method for Determination of "Lecithin" in Small Amounts of Blood. W. R. Bloor, Boston.
47 Simple Method of Converting Duboscq Colorimeter into Nephelometer. W. R. Bloor, Boston.
48 Determination of Iodin in Presence of Organic Matter. R. B. Krauss, Philadelphia.
49 Presence of Iodin in Tuberculous Tissues and in Thyroid Gland. P. A. Lewis and R. B. Krauss, Philadelphia.
50 Question of Fat Absorption from Mammalian Stomach. L. B. Mendel and E. J. Baumann, New Haven, Conn.
51 Rate of Metabolism of Proteins and Amino-Acids. N. W. Janney, New York.
52 Quantitative Determination of Total Protein and Nonprotein Substances of Muscle. N. W. Janney and F. A. Csonka, New York.
53 Metabolic Relationship of Proteins to Glucose. Glucose Formation from Body Proteins. N. W. Janney and F. A. Csonka, New York.
54 Rôle of Digestive Glands in Excretion of Endogenous Uric Acid. L. B. Mendel and R. L. Stehle, New Haven, Conn.
55 Microrefractometric Method of Determining Percentages of Globulin and Albumin in Small Quantities of Blood Serum. T. B. Robertson, Berkeley, Calif.

31. **Assimilation of Cholesterol.**—Cholesterol, Mueller states, is readily absorbed from the intestinal tract through the

chyle and may be recognized in the contents of the thoracic duct. When cholesterol is fed entirely in the free condition, a portion is esterified during the absorption and appears so in the chyle, and vice versa. Hence either in the intestinal contents or in the wall of the intestine, processes of esterification or of hydrolysis may take place which result in the absorption of the cholesterol in approximately the same proportion of free to ester found normally in the chyle. This ratio seems not to be affected by the presence of small quantities of fatty acids in the food.

46. **Lecithin in Blood.**—The method used by Bloor consists in the extraction of the phosphatids from the blood or serum by treatment with warm alcohol ether and the determination of their amount by precipitation of the phosphoric acid after ashing, as the silver salt (or the silver ammonium salt). The phosphate is precipitated by silver nitrate in faintly alkaline solution in the presence of ammonium salts and the amount of precipitate is measured by the nephelometer.

Journal of Nervous and Mental Disease, Lancaster, Pa.

August, XLII, No. 8, pp. 529-592

56 Psychoses of Feebleminded. H. V. Wildman, Jr., New York.
57 Mental Disease and Language. W. McDonald, Jr., Providence, R. I.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

July, VII, Nos. 1-2, pp. 1-224

58 *Effect of Certain Drugs on Respiration and Gaseous Metabolism in Normal Human Subjects. H. L. Higgins and J. H. Means, Boston.
59 *Intrapericardial Medication and Massage in Treatment of Arrest of Heart. J. A. Gunn and P. A. Martin, England.
60 *Effect of Intravenous Injections of Sodium Phosphate. I. Greenwald, New York.
61 *Action of Veratrum Viride, with Remarks on Interrelationship of Medullary Centers. W. Cramer, Edinburgh.
62 *Action of Drugs on Isolated Gallbladder. C. C. Lieb and J. E. McWhorter, New York.
63 *Effects of Chelidonin on Smooth Muscle. P. J. Hanzlik, Vienna.
64 Comparative Action of Stereo-Isomers of Hydroxyhydrindamin. Y. Ikeda, Cambridge, Mass.
65 Antitoxin Action of Rattlesnake Serum on Rattlesnake Venon with Percentage of Total Solids of Serum and Bile. W. H. Welker and J. Marshall, Philadelphia.
66 Observations on Plasmaphaeresis. B. B. Turner, E. K. Marshall, Jr., and P. D. Lamson, Baltimore.
67 Toxicity of Certain Hirudin Preparations. E. K. Marshall, Jr., Baltimore.
68 Rôle of Liver in Acute Polycythemia; Mechanism for Regulation of Red Corpuscle Content of Blood. P. D. Lamson, Baltimore.

58. **Effect of Certain Drugs.**—The drugs selected by Higgins and Means are those ordinarily used as respiratory stimulants, including atropin, caffein, camphor and strychnin, and those as respiratory depressants, including morphin and heroin. The results obtained by the authors may be summarized as follows: They believe that any respiratory stimulation due to atropin is to be explained by (1) the increased "dead space," or dilatation of the bronchi, and (2) increased metabolism. The metabolism being increased, the respiratory volume increases to rid the body of CO_2 produced, and for a unit of CO_2 eliminated, the respiratory volume increases because of an increased "dead space." Caffein is a respiratory stimulant because of its effect on the respiratory center. It also seems occasionally to have a bronchodilator effect. It increases the gaseous metabolism and the respiration rate.

Camphor is by no means certain to stimulate the respiration, and when the respiration is stimulated, it is due to increased "dead space" (bronchodilatation) and not to increased sensitivity of the respiratory center. The total metabolism is sometimes increased by camphor injection, but hardly more than 10 per cent. The respiration rate is likely to show a small decrease after camphor; the nature of the respiration as shown by the pneumograph is unchanged. In general, strychnin did not affect the gaseous metabolism, the respiration rate and regularity, or the sensitivity of the respiratory center. Sometimes it appeared to cause bronchodilatation. In experiments with normal individuals, morphin and heroin in therapeutic doses acted as respiratory depressants, sometimes by acting directly on the center and sometimes by bronchoconstriction and in one instance by both. The total gaseous metabolism showed as a rule no change in oxygen consumption (or a slight diminution) and a marked drop in the carbon dioxid elimination; whether this is due to metabolic changes or to storage of CO_2 due to the respiratory depression is not clear. The respiration rate usually showed a small increase and the pulse rate a small decrease.

59. **Intrapericardial Medication and Massage.**—Two methods of starting an arrested heart were employed by Gunn and Martin: (1) by massage; (2) by drugs. They found that atropin, pilocarpin and epinephrin when injected into the pericardial sac in the rabbit can rapidly produce their characteristic effects on the heart up to a certain point. The immediate action obtained in this way is a local action on the heart and is not simply due to absorption of the drugs into the general circulation. In performing massage of the arrested heart with a view to reviving the spontaneous contractions, the following points are dwelt on by Gunn and Martin: Compression should be gradual and relaxation abrupt. The rate of compression should be, at most, less than half the normal heart rate. Massage should be regularly interrupted at short intervals for a few seconds to allow the spontaneous beats to develop. When the heart is arrested, massage, properly performed, acts both as an artificial circulation and as a mechanical stimulus to the heart muscle. Massage can be performed in the following ways, arranged in order of efficacy: (1) by direct compression of the heart through an opening in the thoracic wall; (2) by compression of the heart above the diaphragm through an opening in the abdominal wall; (3) by simple compression of the abdomen; (4) by simple compression of the thorax.

Direct thoracic massage combined with intrapericardial injection of epinephrin can revive the heart in practically any case of chloroform poisoning in the rabbit, even though the treatment be not begun until fifteen minutes or more after the heart has completely ceased to beat. In about 70 per cent. of cases recovery can be obtained, if treatment is commenced ten minutes after arrest of the heart, by the following procedure: artificial respiration through a tube in the trachea; intrapericardial injection of epinephrin; massage through an opening in the abdomen. If, when the heart has been started, the blood pressure continues low, and the heart beats remain (chiefly as a consequence of this) feeble, speedy and permanent improvement of the heart and blood pressure can be obtained by intravenous injection of either epinephrin or pituitary extract. Treatment on these lines is suggested for cardiac arrest in man, occurring either in chloroform poisoning or in other conditions in which general recovery might be anticipated to result from resuscitation of the heart

60. **Intravenous Injections of Sodium Phosphate.**—Four solutions were used by Greenwald. These were fifth molar and fifteenth molar solutions of trisodium phosphate and also of a mixture of nine parts disodium and one part monosodium phosphate. The results were entirely negative. Large amounts of these solutions were injected intravenously into the animals without apparent ill effect. Excessively large doses were fatal but no tremor or convulsions were observed. The trisodium phosphate appeared to be slightly the more toxic but the effect seemed to be due to the probable interference with the respiratory exchange caused by the introduction of so much alkaline solution.

61. **Action of Veratrum Viride.**—From Cramer's experiments it appears that veratrum viride in small doses has a selective action on the afferent (pulmonary) nerve endings of the vagus. In cats it thus produces, reflexly, slowing or stoppage of respiration and a fall of blood pressure due to vasodilatation. As a rule there is, in addition, a marked slowing of the heart beat produced reflexly through vagus inhibition, but in cats this effect is sometimes absent. These effects of small doses are dependent on the integrity of the vagus nerves. The drug after having stimulated the afferent nerve endings of the vagus, paralyzes them so that a second or third dose is without effect. With larger doses the drug, in addition to the effects just mentioned, paralyzes the cardio-inhibitory nerve endings of the vagus and has also a direct action on the medullary centers leading to vasoconstriction

and to paralysis of respiration. These additional effects are not dependent on the integrity of the vagus nerves. Since large doses of the drug have so many diverse and partly antagonistic actions, the general result of a large dose of veratrum viride is very complex and irregular. The manner in which veratrum viride acts reflexly on the medullary centers leads to the conclusion that impulses arriving at the respiratory center can be communicated to the vasomotor center and to the cardioinhibitory center and that a central connection exists between these medullary centers. The question whether veratrum viride owes its action to veratrin or to protoveratrin or to another alkaloid is discussed and left undecided. It is pointed out, however, that in the light of the present observations, the pharmacologic action of veratrin and protoveratrin requires reinvestigation. Veratrum viride is therapeutically valuable, as in suitable doses it affords a means of producing a lasting vasodilatation through acting reflexly on the vasomotor center.

62. **Action of Drugs on Isolated Gallbladder.**—According to Lieb and McWhorter morphin relieves the pain of biliary colic by acting on the central nervous system. Atropin and the nitrites would seem to be indicated in the treatment of gallstone colic. The use of epinephrin to produce relaxation of the gallbladder is not justifiable, inasmuch as a systemic action can be obtained only after intravenous injection.

63. **Effects of Chelidonin on Smooth Muscle.**—Hanzlik found that chelidonin promptly abolishes the spontaneous contractions of the following excised organs: Esophagus, fundus and pylorus of the frog's stomach, intestine of cat and rabbit, and pregnant uterus of guinea-pig. Chelidonin removes the effects of pilocarpin, pituitary extract, histamin and barium chlorid on surviving organs. The peripheral blood vessels of the frog previously contracted by epinephrin are more rapidly dilated by chelidonin than by Ringer's solution alone. There is also a definite dilator effect on the untreated vessels. The constriction of the bronchial musculature by histamin in the surviving lungs of the guinea-pig is removed by chelidonin. Bronchoconstriction does not occur with mixtures of histamin and chelidonin. Rabbits previously treated with large doses of chelidonin do not show bronchial spasm with the same doses of histamin as untreated rabbits. Chelidonin has no demonstrable effect on the pupil of the excised eye of the frog. In the living rabbit intravenous injection of chelidonin depresses intestinal peristalsis, and large doses remove the stimulant effects of pilocarpin. It appears that chelidonin exerts its main effects directly on smooth muscle. Therapeutically, chelidonin should prove beneficial in the treatment of such symptoms as asthma, colic and various other enteralgias and gastralgias, and in conditions in which morphin is not well tolerated.

Kentucky Medical Journal, Bowling Green

August 1, XIII, No. 9, pp. 355-404

69 Sex: Its Relation to Woman's Life. J. O. Jenkins, Newport.
70 Indications for Use of Obstetric Forceps. J. J. Molloy, Covington.
71 Gullible Doctor. T. J. Widrig, Newport.
72 Plea for Earlier, Less and Better Surgery. W. E. Senour, Bellevue.
73 Clinical Significance of Faucial and Pharyngeal Tonsil. W. J. Thomasson, Newport.
74 Tuberculosis in Infancy and Childhood. C. Youtsey, Newport.
75 Preventive Medicine: Regarding Children. C. E. Zimmerman, Newport.
76 Some Thyroid Facts. G. W. Hermann, Newport.
77 Pellagra. R. L. Bird, Covington.
78 Popular Errors and Superstitions in Medicine. W. W. Anderson, Newport.
79 Relaxation of Muscles in Treatment of Fractures. A. J. Graham, Chicago.
80 Vaccine Therapy. H. J. Farbach, Louisville.
81 Pseudo-Influenza vs. Influenza Vera. E. D. Burnett, Anchorage.

Maine Medical Association Journal, Portland

August, VI, No. 1, pp. 1-64

82 Internal Secretions. W. S. Bainbridge, New York.

Medical Record, New York

August 28, LXXXVIII, No. 9, pp. 341-382

83 Cooperation in Treatment of Nervous Maladies. J. M. Taylor, Philadelphia.
84 *Rational Method of Treating Lobar Pneumonia. E. E. Cornwall, Brooklyn.
85 Responsibility of State in Tuberculosis Movement. E. O. Otis, Boston.
86 Analysis of Claustrophobia. C. P. Oberndorf, New York.
87 Fallacy of Eugenics. A. L. Sweet, Geneva.
88 Chronic Appendicitis—Its Relation to Cardiospasm and Other Neurospasm. T. A. Kenefick, New York.
89 Chemical and Pathologic Observations in Case of Mercury Poisoning. M. Kahn, V. L. Andrews and J. H. Anderson, Pittsburgh.
90 Cesarean Section. C. F. Kivlin, Troy.

84. **Rational Method of Treating Lobar Pneumonia.**—Cornwall employed his treatment in 133 consecutive cases with fourteen (10.5 per cent.) deaths. A particular, specified diet is given, which is modified in definite ways to meet special indications. This diet is limited in quantities of protein and fuel to somewhat less than the minimum health rations, it is fluid, it is easy of digestion, it supplies salts needed by the body, and it is nonputrefactive. Evacuations of the bowels are not artificially induced, as a rule, although in exceptional cases laxatives of a mild character are given. Agents to stimulate the heart are given according to a definite plan. The treatment of symptoms is exceedingly conservative. The diet is given according to three regular prescriptions. The first prescription is for the active period of the disease, and the second and third for the convalescent period. During the febrile period and for two or three days after defervescence, 7.5 ounces of a 2:1 mixture of milk and barley water to which has been added 5 grains of sodium chlorid are given seven times daily, and 10 grains of calcium chlorid dissolved in 5 ounces of water, are given four times daily. On the third day substitute 6 ounces of moist cooked cereal and 3 ounces of milk, an equal quantity of boiled rice and milk, and two slices of milk toast, for three of the milk and barley water feedings, respectively, with omission of the calcium chlorid. On the sixth day, after defervescence in uncomplicated cases a more liberal diet is given.

In young or middle-aged adults with originally healthy hearts stimulation is usually delayed until signs of heart strain appear, which is usually not later than the fourth day. The first stimulant given is strychnin sulphate, in doses of 1/60 of a grain three times a day or every four hours. If the pulse becomes unduly rapid or the right ventricle shows signs of dilatation, tincture of strophanthus is also given, in doses of 1½ minims every four hours. If the signs of cardiac strain become pronounced, the dose of strophanthus is increased to 2½ minims and the dose of strychnin to 1/30 of a grain, and perhaps citrate of caffein in 2-grain doses every four hours is added. More than this amount of stimulation is seldom required in patients treated according to this method, but if it should seem to be required, digitalin in doses of 1/100 to 1/50 of a grain is given hypodermically every four hours, and perhaps spirits of ammonia in doses of ½ a dram every one or two hours is added. When more stimulation than that afforded by the strychnin, strophanthus and caffein is required the prognosis is usually bad. In the small proportion of cases which show a gastric or intestinal idiosyncrasy with respect to strophanthus, that drug should be omitted and caffein substituted as the second stimulant. In the aged, in alcoholics, and in patients with preexisting heart disease stimulation is usually required from the beginning. In the aged and in alcoholics whisky or brandy is usually given in small doses throughout the disease. In infants and young children heart stimulants are almost never given, even though the pulse may be very rapid.

Pain, cough, restlessness, or insomnia are relieved by the application of hot poultices to the chest and perhaps by the administration of morphin or codein in small doses but only in the early stages of the disease. Diarrhea is treated by restriction of the diet to barley water. Vomiting is treated by stopping all food for a while, and perhaps, if in an early stage of the disease, by small doses of morphin. Tympanites, which is said to be of rare occurrence in cases treated according to this method, calls for reduction of the diet to barley water and orange juice alone, to barley water alone, or to water alone, and if it is severe, it may call for a simple enema or one of soapsuds or fel bovis and perhaps the introduction of the rectal tube.

New Jersey Medical Society Journal, Orange

August, XII, No. 8, pp. 365-416

91 Mental Hygiene in General Practice. W. G. Schauffler, Lakewood.
92 Needs of Insane in New Jersey. E. M. Fisher, Morris Plains.
93 Treatment of Empyema. E. Marvel, Atlantic City.
94 Cellular Factor in Arteriosclerosis. L. F. Bishop, New York.
95 Pathology of Cystic Tumors of Ovary. A. Rothseid, New York.
96 Early Cystic Degeneration of Ovary. V. Parsonnet, Newark.
97 Vision of Children. S. E. Pendexter, East Orange.
98 Tuberculosis in Childhood. B. S. Pollak, Secaucus.
99 Experience with Emetin. T. R. Chambers, Jersey City.

New Mexico Medical Journal, Las Cruces

August, XIV, No. 5, pp. 129-160

100 Some Studies in Character of Percussion Note. E. A. Duncan, Silver City.
101 Acute Osteomyelitis. W. T. Joyner, Roswell.
102 Blood Pressure. I. D. Locwy, Silver City.

New Orleans Medical and Surgical Journal

August, LXVIII, No. 2, pp. 77-144

103 History of Cataract Extractions. T. J. Dimitry, New Orleans.
104 Some Experiences with Von Ruck's Watery Extract of Tubercle Bacilli and Vaccine for Tuberculosis. B. F. Terry, Houston, Texas.
105 Some Stomach (?) Cases. J. T. Halsey, New Orleans.
106 *Medical Career. I. Dyer, New Orleans.
107 Use of Chloretone in Case of Extensive Burns of Child 12 Years Old. W. P. Bradburn, New Orleans.
108 Drainage of Abdominal Cavity. A. Jacoby, New Orleans.
109 Case of Purpura Hemorrhagica, with Accidental Complication Following Subcutaneous Use of Horse Serum. R. Lyons, New Orleans.
110 Subacute and Chronic Osteomyelitis. J. F. Oechsner, New Orleans.

106. Abstracted in The Journal, March 20, p. 1025.

Ohio State Medical Journal, Columbus

August XI, No. 8, pp. 481-548

111 Operative Treatment of Fractures. C. L. Scudder, Boston.
112 Some Practical Points in Obstetrics. J. F. Baldwin, Columbus.
113 Cutaneous Eruptions of Pellagra. A. Ravogli, Cincinnati.
114 Typhoid in Ohio. F. G. Boudreau, Columbus.
115 Arteriosclerosis. W. W. Beauchamp, Lima.
116 Disinfection of Water. W. H. Dittoe, Columbus.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

August, XXI, No. 2, pp. 53-91

117 Mild Cases of Manic-Depressive Psychosis; Cyclothymia. B. R. Tucker, Richmond.
118 Tuberculosis; Disease of Childhood. T. Frazier, Asheville, N. C.
119 Early Recognition and Rational Treatment of Pulmonary Tuberculosis. W. K. McCoy, Gum Spring.
120 Acute Glossitis. B. E. Summers, Richmond.
121 Vicarious Menstruation. A. A. Marsteller, Richmond.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

August 14, II, No. 2850, pp. 245-280

1 *Immediate Effects of Inhalation of Chlorin Gas. E. Schäfer.
2 *Treatment of Gas Poisoning in Transvaal Mines. A. H. Watt and L. G. Irvine.
3 Some Results of German Gas Poisoning. W. Broadbent.
4 *Isolation of Typhoid and Paratyphoid Bacilli from Feces. C. H. Browning and L. H. D. Thornton.
5 Historical Note on Farr's Theory of Epidemic. J. Brownlee.
6 Tubo-Ovarian Abscess, Intestinal Obstruction, and Ureteric Obstruction: Six Abdominal Sections: Recovery. J. D. Malcolm.
7 Inversion of Uterus in Nullipara due to Submucous Fibromyoma. R. B. Johnston.
8 Acute Septic Meningitis due to B. Coli Following Skull Wound. C. E. H. Milner.
9 Congenital Hereditary Absence of Some of Digital Phalanges. D. S. Clarke.

1. **Effects of Inhalation of Chlorin Gas.**—From experiments Schäfer concludes that chlorin produces its fatal results by causing obstruction of the pulmonary vessels, amounting in some cases to complete stasis, and not by causing contraction of the bronchioles. Confirmation of this conclusion is obtained as the result of microscopic examination of the lungs of "gassed" animals. The pulmonary capillaries are gorged with blood, and there is an extraordinary amount of edema in the interstitial tissue of the lung. Presumably the edema is secondary to the vascular obstruction, but even if this is so it must set up a vicious circle by increasing the obstruction, and this again will increase the edema; so that in cases of survival the edematous condition must tend to increase, at any rate for some time. Apart from the extreme congestion of the vessels and the edema, the tissues of the "gassed" lung are normal; the epithelial cells of the bronchial tubes are well preserved, and there is usually little increase of mucus within them. That secretion of mucus does not play an important part in connection with the fatal inhalation of chlorin is evident from the fact that death results just as inevitably and rapidly after a prior dose of atropin as without it. So far as the other organs are concerned, the heart retains its excitability for some time after death, although its contractions are weak. The right side, especially the auricle, is fuller than the left, but not engorged with blood as in ordinary asphyxia. The liver and abdominal organs have a normal appearance; they are not specially congested; the intestines are usually bloodless, although the veins at the back of the abdomen are full of blood. Bromin vapor, although much more irritating to the conjunctival mucous membrane, is less deleterious to the respiratory organs than chlorin, the fulminating effect of which appears to be absent in the case of bromin.

2. **Treatment of Gas Poisoning.**—Cases of poisoning by nitrous fumes are not uncommon in the mines of the Witwatersrand, and from published descriptions of "gassing" in the trenches the symptoms appear to be very similar. The treatment employed is described by Watt and Irvine as follows: Every man who has been exposed to nitrous fumes must be kept under observation, in the hospital if possible, for at least twenty-four hours. An emetic of copper sulphate, 8 grains, followed by a large quantity of water, is given, or a hypodermic injection of apomorphin. It is imperative that vomiting should be freely induced. If an emetic is given early, any other treatment except rest in bed for a day is not usually required. The onset of dyspnea and cyanosis is watched, and should moist sounds develop at the bases of the lungs bloodletting is employed, and as much as a pint may be withdrawn from a vein in the arm. This is usually difficult, as the blood is tarry and coagulates very rapidly. The authors have transfused with saline to replace some of the blood withdrawn. Atropin may be given hypodermically. Inhalation of oxygen is also useful. Should symptoms of general edema of the lungs develop, the prognosis is extremely grave. Very few recover when this stage has been reached.

4. **Isolation of Typhoid Bacilli from Feces.**—The method of Browning and Thornton is carried out as follows: Specimens of feces should be cultured within several hours after evacuation. In cases in which feces are normally solid, it is advisable to give purgatives and examine the resulting fluid motions. Make the usual smear cultures on plates of solid medium containing an indicator—for example, Endo or MacConkey's. At the same time inoculate peptone water containing brilliant green; employ preferably a series of tubes for each specimen, but when time prevents this, use a concentration of 0.5 c.c. of 1:10,000 brilliant green in 10 c.c. of medium. The direct plates and the brilliant green peptone water cultures are then incubated; if typical colonies are not found on the direct plates, or if "likely" colonies are scanty, make subcultures (successive strokes) from the green tubes on Endo or MacConkey's medium. These are then incubated for twenty-four hours and examined in the usual way; should typhoid or paratyphoid bacilli be present in the subcultures from brilliant green medium they usually occur as an abundant growth of typical colonies, and it is possible to proceed at once to identify them by the usual fermentation and serum reactions. In certain cases (in which green-resisting organisms are present) positive results may be obtained only when telluric acid is employed, in addition to the green, in the medium. The cultures in the green telluric acid mixture may be made simultaneously with the others, or this medium may be reserved until the other procedures have failed. Thus, should direct plates fail to yield positive results, and the green medium be overgrown (inosite fermenters), then, in further examinations of the case, employ, in addition, peptone

water medium containing a mixture of brilliant green with telluric acid.

Lancet, London

August 7, II, No. 4797, pp. 267-318

10 *Experiences in Vaccine Treatment. F. C. Madden.
11 *Malignant Aortitis; Hypoplasia of Aorta; Report of Case. H. D. Rolleston.
12 Case of Placenta Praevia with Threatened Puerperal Eclampsia, Treated by Cesarean Section. J. B. Hellier.
13 Mechanical Treatment of Compound and Septic Fractures. R. McQueen.
14 *Direct Hemolysis; Test for Bacterial Toxins and for Estimation of Dosage in Vaccine Therapy. H. L. Smith and A. C. Brown.
15 *Relation of Ventricular Fibrillation to Clinical Chloroform Syncope. E. H. Embley.

August 14, No. 4798, pp. 319-370

16 Investigation of Causes which Determine Life of Fetus in Utero. W. S. A. Griffith.
17 *Treatment of Wounded by Vaccines. H. L. Tidy.
18 *Hemoptysis Due to High Tension; Report of Cases. F. de H. Hall.
19 *Treatment of Cystitis by Intravesical Injections of Lactic Bacillus Cultures. D. Newman.
20 School Medical Inspection and British Army. G. Finch and C. W. Hutt.
21 Transient Renal Congestion; Report of Cases. C. W. J. Brasher.
22 Case for Symptomatic Treatment in General and for Antipyretic in Particular, with Special Reference to Cryogenine. H. Sainsbury.

10. **Experiences in Vaccine Treatment.**—An autogenous vaccine is preferred by Madden, as in its preparation the true causal organism, or group of organisms, is isolated and grown, and a more potent and direct vaccine made available. The strength of the vaccine used by him is generally 250 million to 1 c.c., and a start is made with 50 million. The intervals between the doses depend on the case itself and the reaction produced, but they are never less than five days. He has employed vaccines systematically in the treatment of boils and furunculosis generally. So universally successful has this method been in his hands that he never employs any other. A start is made with 100 million followed by 500 million five days later, and at a similar interval by 1,000 million. Generally this series of three injections suffices to cure in the ordinary case; but in more intractable cases a further series working rapidly up to 5,000 million, will almost certainly be sufficient.

He has also had some success in cases of pyorrhea alveolaris with an autogenous vaccine, but he advises that vigorous local treatment must be carried out at the same time. In acne the results have been on the whole very disappointing. Comparatively recent and uncomplicated pustular acne does, however, very promptly react in almost the same degree as an inveterate furunculosis; but in old cases, in which there is much scarring about the sebaceous follicles, results are likely to be disappointing. A further very important use of vaccines, Madden says, is in boils, carbuncles and cellulitis occurring in diabetes. Here particularly one must make a practice of giving large and repeated doses of vaccines, alternating in extreme cases with antistreptococcic serums. Septic infection from operation wound or injury may also be controlled by vaccines; but it is very necessary to make sure of the causal organism before beginning a series of injections.

Madden points out that in all vaccine treatment it must be remembered that an incision into the affected part acts like a vaccine, as it produces a phagocytosis which will itself have a vaccinal effect, quite apart from the evacuation of pus and septic serum and the relief of tension by the incision. Care must therefore be taken not to give a strong dose of a vaccine at the same time as the incision or too violent a reaction may occur. Further, vaccine must not be given during the stage of depression or of anaphylaxis resulting from the vaccinal effect of the incision. In closing, Madden refers to his experience with those "shotgun" bacterial preparations sold under the name of "Phylacogens": "I have used all the phylacogens, but have never seen any benefit from them except in rheumatism, and then only after a long series of rapidly increasing injections."

11. **Malignant Aortitis.**—The morbid lesion present in Rolleston's case, which appeared to be analogous to malignant or subacute bacterial endocarditis, being situated in the arch of the aorta instead of on the endocardium, was not proved to be infective, as the only blood culture made was negative and no bacteria were seen in a smear from the pus found just outside the aortic lesion. Although the blood culture was made when, as shown by the temperature chart, the disease was active, Rolleston did not regard it justifiable to explain the failure to obtain a positive result by the hypothesis that this was an analogous bacteria-free period in a case of infective aortitis.

14. **Direct Hemolysis.**—When blood corpuscles, washed free from fibrin and serum, are brought into contact with emulsions of bacteria with which the blood has been previously sensitized, as a result of acute or chronic infection, hemolysis occurs. The evidence in support of this statement was obtained by Smith and Brown from a series of experiments begun in November, 1914. Of 180 cases which have been investigated in this way, a large proportion have been of chronic arthritic types. The remainder has been made up from various catarrhal conditions, nerve affections, cutaneous and glandular lesions, and a few cases of acute pulmonary affections. The technic employed is described in detail and clinical notes of cases treated by inoculations suggested by direct hemolysis are given.

15. **Ventricular Fibrillation and Chloroform Syncope.**—Embley has noted the occurrence of ventricular fibrillation during the administration of chloroform to three out of five cats in succession, while out of several hundred dogs, in which, in succession, death has been caused designedly by chloroform under a great variety of conditions, he has never observed it except as a terminal process when the blood pressure has fallen very low from shock or some other cause, quite a distinct event from that form of fatal syncope in cats. His experiments with cats in chloroform narcosis indicate that fully established ventricular fibrillation is fatal. Neither rhythmic heart massage nor any other measure has any effect on it. After short periods of imperfect fibrillation recovery is spontaneous.

17. **Treatment of Wounded by Vaccines.**—Tidy's article is based on experience of the treatment of wounded at the British Red Cross Hospital, Netley. He says that vaccine treatment is unnecessary in mild cases. Given by suitable methods, a vaccine is not contraindicated by any degree of severity or acuteness. Whenever possible an autogenous vaccine should be given. The more acute the condition is the more important it becomes that an autogenous vaccine should be employed; but while this is being prepared a stock vaccine should be used. With streptococci, commence with 1 to 2 millions, not exceeding 2 millions. With *Bacillus coli*, an initial dose of 30 millions can be used. Of coliform bacilli of the types which appear most powerful, forming little acid and gas in carbohydrate mediums, the initial dose should be 2 to 5 millions. At the other end of the series will be bacilli more closely related to the typical *Bacillus coli*. Of such strains probably larger initial doses may be given, but as a general rule, it is inadvisable to inject as a first dose more than 5 millions of any bacillus which grows on McConkey's medium with yellow colonies. Of *Staphylococcus aureus*, an initial dose of 30 millions may be given. As a rule five days should be allowed between successive doses. When a dose is progressing satisfactorily each successive dose should be 50 per cent. larger than the previous one.

If the temperature has obviously risen as the result of the previous injection, give a dose of half the amount. After the injection the evening temperature may be 103. If such a rise occurs after the first injection the same dose should be repeated. If on a third visit it is found that the temperature as a general average has remained the same, then an increase in dose should be made. This should be 25 per cent. Subsequently the temperature, though gradually subsiding, may remain irregular. The dose should be carefully increased by 25 to 50 per cent. each time. If after any injection the temperature has definitely risen the dose should be reduced to the amount of the last but one, or, if the rise is marked, to half of the last dose. Acute septicemia is not a contraindication to the administration of vaccines.

Almost invariably a streptococcus is the causal organism. Time is so important that a stock vaccine should always be given while an autogenous one is being prepared. The injections should be repeated every two or three days. The initial dose should not exceed 2 million streptococci.

Of mixed vaccines the initial dose of each bacterium need not be smaller than the amounts given above. In subsequent doses the bacteria considered to be most important should be increased more rapidly than the other or others, by increases of 50 per cent., while the others are increased by 33 per cent. A vaccine should not be given within thirty-six hours previous to any operation on a patient with a septic wound. Even a small counter-incision through healthy tissues is followed frequently by an immediate and marked rise of temperature and much discharge. During a course of vaccines such an operation should be considered to take the place of an injection, the next dose being given five days later. This does not apply to the commencement of injections in acute streptococcal cases of a septicemic type.

18. **Hemoptysis Due to High Tension.**—Five cases are cited by Hall to drive home the conclusion that in certain cases of hemoptysis the cause is to be sought in the condition of the vascular system rather than in pulmonary tuberculosis. In the hemoptysis due to high tension, he advises inhalation of nitrite of amyl at the time of the hemorrhage, with low diet and not too much liquid. When the bleeding has been arrested, then attempts should be made to regulate the patient's mode of life so as to reduce the high blood pressure. The prohibition of alcohol, the limitation of meat and salt, and a generally restricted diet are indicated. If the patient be engaged in business his hours of work should be abridged, and if the case be a serious one it may be necessary to advise that all work be discontinued for a time or even permanently. The skin should be kept active by means of warm baths, and a daily action of the bowels, a rather loose motion being aimed at, should be secured. Drugs such as iodid of potassium and lithium hippurate should be given, and an occasional dose of calomel or blue pill is most useful in lowering tension. By these means further hemoptysis may be prevented and the patient's life prolonged, but, should apoplectic symptoms threaten, prompt venesection should be carried out.

19. **Cystitis Treated by Lactic Bacillus Cultures.**—When the symptoms point to a subacute cystitis with decomposition of urea prior to evacuation, Newman says, intermittent catheterization and irrigation, followed by instillations of pure lactic bacillus cultures, may soon effect a cure. The treatment, however, must be carried out regularly, because, if interrupted before the bladder is thoroughly cleansed, the pyogenic bacilli have an opportunity of reasserting themselves. The bladder must be distended as fully as possible, short of producing pain, and evacuated from four to six times at each sitting by means of a syphon arrangement; syringes are of no use. In "incrusted cystitis" the most conspicuous benefit is obtained from lactic bacillus treatment.

Archives des Maladies du Cœur, Etc., Paris

August, VIII, No. 8, pp. 237-280

23 Treatment of Angina Pectoris. (Angine de poitrine.) F. Soca.
24 Sodium Citrate Test for Coagulating Power of the Blood. (Bases expérimentales d'un nouveau procédé pour mesurer la coagulabilité sanguine. Analyse de l'action anticoagulante du citrate de soude. Rôle du calcium sanguin dans le maintien de la fluidité du sang et dans la coagulation.) M. Bloch.

Bulletin de l'Académie de Médecine, Paris

July 27, LXXIV, No. 30, pp. 95-120

25 *Acute Meningitis among the Troops at the Front. Sacquépée and others.
26 Reeducation of the Maimed in War. (Rééducation chez les blessés de la guerre et le rôle de la suppléance.) P. Kouindjy and A. Rodiet.
27 Sterilization of Vaccination Lancets. L. Camus.
28 *Nine Months of Surgery in the Field. H. Reynès.
29 Utilization of Camp Kitchens for Steam Sterilization and Shower Baths. Chauchard.

August 3, No. 31, pp. 121-138

30 Typhoid and Paratyphoid Flora of Cerebrospinal Fluid. G. Daumézon.
31 The Oscillometer in Estimation of Obliteration of Artery. L. Rénon.
32 Roentgen Ray Localization of Projectile during its Removal. (Méthode d'extraction des projectiles basée sur le contrôle radioscopique de leur situation exacte pendant tous les temps de l'acte opératoire.) Bouchacourt.
33 Devices to Correct Radial and Sciatic Paralysis. Sollier.

25. **War Meningitis.**—In examining the cerebrospinal fluid from 121 cases of suppurative meningitis, the meningococcus was found only in about 50 per cent.; in times of peace the proportion is between 80 and 90 per cent. Carriers were found less frequent than in times of peace. A number of cases at one time in one troop were due to the meningococcus. Later, a group developed due to the pneumococcus, and still later a streptococcus group. Sacquépée thinks that the nervous strain and air concussions in trench life render the meninges more susceptible to injury of any kind.

28. **Nine Months of Surgery at Verdun.**—Reynès says that the inevitable gravity of the wounds keeps increasing on account of the firing of hand grenades, etc. This close firing causes such a number of injuries and general shock that the prognosis is very grave. He is with a field hospital at Verdun.

Presse Médicale, Paris

August 5, XXIII, No. 36, pp. 289-296

34 *Icterus from Absorption of Picric Acid, and its Differentiation. M. Wahl.
35 Technic for Sterilization of Drinking Water with Iodin or Hypochlorites. A. Gascard and G. Laroche.
36 The So-called New Antiseptic: Chlorinated Lime plus Sodium Carbonate. H. D. Dakin.

34. **Jaundice from Absorption of Picric Acid.**—Wahl has found that picric acid in the urine reacts to various tests exactly like bile pigments. This might be a source of error under certain conditions. The symptoms induced by absorption of picric acid also are very similar to those of catarrhal jaundice. He has been experimenting on monkeys, giving them a subcutaneous injection of picric acid. It was eliminated within a short period but not all could be refound, part of it evidently being eliminated in some other form.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 7, XLV, No. 32, pp. 993-1024

37 *Diagnosis of Incipient Pulmonary Tuberculosis. (Zur Frühdiagnose der Lungentuberkulose mit Ausschluss der Röntgendiagnose.) O. Amrein.
38 Importance of Iodin in Wounds to Ward Off Tetanus. A. Häberlin.

37. **Early Diagnosis of Pulmonary Tuberculosis.**—Amrein discusses in turn each of the principal points in making an early diagnosis of tuberculosis of the lungs, especially the history of the case and inherited taints; the behavior of the temperature, particularly in the rectum after exercise; the changes from normal found on physical examination, noting with special care any tendency to muscular spasm; spinalgia; low position and reduction in size of area of apical resonance; reduction of resonance to actual dulness; rough, impure, weaker, accentuated, staccato respiration; prolonged expiration; weaker inspiration; slight crackling to distinct crepitation and rhonchi; louder whispering voice, and lagging of one lung behind the other in the excursions of the chest. He regards a rough and a staccato type of breathing as pathognomonic of a tuberculous process in the lung, particularly in the apex, and declares that the former, especially, is one of the very first auscultation findings in incipient pulmonary tuberculosis. In analyzing the history of the case, note any readiness to fatigue, irritability, anemia, especially in girls, distaste for eating, especially for breakfast, exaggerated heart action on climbing stairs, panting in climbing or walking faster, or talking while walking, sweaty hands, loss of weight and unhealthy aspect—any of these are suggestive of tuberculosis although they may occur with other affections.

A tendency to slight hoarseness is also significant, or rather fatigue of the voice, the voice partly giving out on loud speaking and requiring frequent clearing of the throat to go on. This change in the voice is a very early symptom and may be explained by reflex irritation of the vagus fibers in the lung or by compression of the recurrent nerve by enlarged glands, or it may be the consequence of actual

damage of the speech apparatus and irritation of the upper air passages from the pharynx down to the larynx. More or less shortness of breath after climbing, singing or talking has the same significance. Coughing may be induced in the same way by irritation of the sensory fibers of the vagus or by compression from glands. It generally commences as a dry hacking and hawking, especially in the morning and also at evening and in warm rooms, after talking and walking. The vasomotor system may be unstable from toxic influences, the color fluctuating, ready blushing yielding to pallor, the cheeks keeping red, the blood pressure low. Loss of appetite and a sense of oppression in the stomach and sluggishness of the bowels are also common in incipient tuberculosis. The lagging of one lung behind the other is seen best by standing behind the seated patient and looking down from above on the front of the chest. The slightest difference in the convex outlines of the infraclavicular regions is readily recognized by this means. Turban declares that this lagging behind of the diseased apex is the more distinct the more incipient the tuberculous process.

Deutsche medizinische Wochenschrift, Berlin

July 29, XLI, No. 31, pp. 905-936

39 Estimation of the Heart Disturbances among the Troops at the Front. (Zur Würdigung der Herzstörungen der Kriegsteilnehmer.) P. Fürbringer.
40 *Necropsy Findings May Explain Otherwise the Deaths Ascribed to Salvarsan. (Todesfälle nach Salvarsan.) B. Fischer. To be continued.
41 *Radiotherapy of Hypophysis Tumors. L. Küpferle and A. v. Szily.
42 Intra-Uterine Transmission of Paratyphoid. P. Schmidt.
43 Typhoid and Protective Vaccination. W. Kühl.
44 Antibody Titer in the Serum as Guide to Treatment of Diphtheria. (Antitoxinbestimmung bei Diphtheriekranken vor und nach Heilseruminjektionen.) H. Opitz.
45 *The Coagulation Reaction in Syphilis. (Gerinnungsreaktion bei Lues.) M. Brandt.
46 *Correction of Saddle Nose. (Sattelnasenkorrekturen.) E. Eitner.
47 Improved Technic for Sterilizing the Hands. J. Schumacher.
48 Extension Screw for Plaster Cast. (Schraubenstreckverband.) H. Töpfer.
49 *Albumin "Drawn from the Air." (Eiweiss aus Luft. Bedeutung der Herstellung der sogen. Mineralhefe.) H. Boruttau.

40. **Necropsy Findings Exonerate Salvarsan.**—Fischer relates that in the course of six thousand necropsies, since 1910, he has encountered a number of cases in which the death had been apparently the direct consequence of the salvarsan the individual had been taking. He gives the details of three cases in this part of his article. In one all the circumstances seemed to incriminate the salvarsan, but necropsy revealed tuberculosis just becoming generalized, both suprarenals being destroyed. In a second case, progressive fatal anemia followed the salvarsan, but signs of recent abortion and hemorrhage pointed to another factor in the anemia. In the third case, unsuspected pneumonia explained to some extent the febrile response to the salvarsan in a hard drinker.

41. **Radiotherapy of Hypophysis Tumor.**—Küpferle and von Szily report the case of a well-to-do man of 65 who had a cancer in the hypophysis partially removed by way of the orbit. A few months later vision was lost in consequence of the recurring growth of the cancer; but under intensive crossfire Roentgen exposures, vision gradually improved until it was 6/24 in one eye and with the other eye the patient could count fingers at half a yard. The eyesight has kept at this point for seven months to date. Béclère has reported four similar cases of improvement of symptoms of pressure from a hypophysis tumor under Roentgen exposures, and Gunsett has also published a case. In none in this last group had operative treatment been applied, and the exposures were less intensive than in Küpferle and von Szily's case. They supplemented the Roentgen exposures with mesothorium in the pharynx.

45. **Coagulation Reaction in Syphilis.**—Brandt has applied, in 500 cases, the technic published by Hirschfeld and Klinger (summarized in THE JOURNAL, 1914, LXIII, pp. 1060 and 1241). He paralleled it with the Wassermann test and with the deviation of complement test, and found a remarkable concordance between the findings with them. When there was divergence, the clinical history generally sustained the coagulation test. For this, 0.1 c.c. of the serum to be examined is added to 0.1 c.c. of the diluted emulsion of extract of guinea-pig heart. After this has been set aside at room temperature for one hour, 1 c.c. of a solution of salt with a little calcium chlorid is added and 0.5 c.c. of diluted sheep serozyme. Syphilitic serum inhibits the action of the cytozyme in the organ extract and no thrombin is formed, as this requires for its production both the serozyme in the plasma and the cytozyme from the cells. (The test is generally called the coaguloreaction. It is based on the inhibition of coagulation in oxalated beef blood plasma when syphilitic serum has been added to the organ extract previously diluted with rabbit or other serum and a 1 per cent. solution of calcium in physiologic salt solution. The thrombin itself is assumed to be the product of the interaction of a serozyme (an albuminoid), a cytozyme (a lipoid), and a calcium ion.)

46. **Correction of Saddle-Nose.**—Eitner makes a wax or plaster cast of the saddle-nose, and then models an ivory support for it. He has been much gratified with the ease and simplicity of this method of building up a new nose as he has applied it in eighty-six cases; only twelve were of syphilitic origin. This last group was the most difficult to correct, and satisfactory results were obtained at once only in three cases; six required one or two supplementary operations and three are still under treatment. The success depends on the mechanical factors. The ivory support can be hollowed out and perforated at various points to make it as light as possible. The surface is left rough and uneven to aid its growing into place.

49. **Yeast as Food.**—Boruttau discusses the yeast food, *Nährhefe,* which is made from brewers' yeast, dried. About 40 per cent. of its dried substance is pure albumin, while it can be grown on sugar, ammonia and other inorganic salts. In this way a large amount of albumin is produced from the sugar soil and the nitrogen of the ammonia. He calls it "drawing albumin from the air," in much the same way as Frank, Caro and Haber have succeeded in making sulphuric acid and ammonia on a large scale from the nitrogen of the air. Yeast grows so rapidly with the proper soil and temperature that with it, he says, we can produce as much albumin in a few hours, independent of fields and weather, as otherwise would require months for sowing, cultivating and harvesting. Out of 100 parts by weight of sugar and 52 of mineral substance, at least 270 parts by weight of compressed yeast can be produced with 80 of dry substances. Tests of this yeast food are now under way; the results of some were given recently in these columns, August 21, page 747.

Münchener medizinische Wochenschrift, Munich

July 27, LXII, No. 30, pp. 1005-1036

50 The Germ Content of Cholera and Typhoid Vaccines. (Keimgehalt von Cholera- und Typhusimpfstoffen.) v. Rembold.
51 *Influence of Killed Yeast on the Digestive Ferments. (Einfluss der abgetöteten Hefe auf die Verdauungsfermente.) M. Winckel.
52 *Splenectomy in Kala-Azar. D. Kokoris.
53 *Durable Traces of Roentgen Exposures. F. Janus.
54 *The Chromogen Test in the Urine. (Zur Urochromogenprobe im Harne.) E. Pulay.
55 Albuminometer. (Ein einfacher Apparat zur quantitativen Bestimmung von Eiweiss, selbst in kleinsten Mengen.) R. Weiss.
56 Relapsing Fever as Cause of Dropsy in Russian Prisoners. (Zur Aetiologie der Oedemkrankheiten in russischen Gefangenenlagern.) T. Rumpel.
57 Gas Gangrene from Anaerobic Streptococci. (Gasbrand.) Marwedel and Wehrsig.
58 Gas Phlegmons. Fessler.
59 Injuries of Peripheral Nerves. L. Mann.
60 Treatment of Neuroses Following Grenade Explosions. A. Bittorf.
61 *Return of Tetanus after Three Months. (Zur Lehre vom Wundstarrkrampf.) Happel.

51. **Yeast in Therapeutics.**—Winckel relates that the results of his analysis and experiments with ferments have demonstrated that the therapeutic efficacy of yeast has nothing to do with its fermenting properties. They can be annulled by brief heating without impairing its other properties. These seem to inhere in the nuclein substance of the killed yeast cell.

52. **Splenectomy in Kala-Azar.**—Kokoris has removed the spleen in treatment of this disease in three children, but

only one child threw off the disease completely afterward. He says that kala-azar is endemic on some of the isles of Greece where it has been long described under various names. Cases are encountered occasionally in Greece proper although they are usually mistaken for malaria. Recovery may occur spontaneously in kala-azar; Lignos reported three spontaneous cures in nineteen cases on the island of Hydra. Splenectomy, however, does away with the main focus of the disease, and when this is gone the organism may be able to cope with those that remain. The chances are better the earlier the disease is recognized.

53. **Warm Bath Brings Out Traces of Former Roentgen Exposures.**—Janus while taking a warm full bath noticed that a circumscribed redness appeared on his abdomen over areas that had been previously exposed to the Roentgen rays. He suggests that a hot bath thus sometimes might give useful information as to former local applications.

54. **The Chromogen Test.**—Pulay applied the diazo test and Weiss' potassium permanganate urochromogen test to 125 healthy persons and eighty-five with typhoid, seven with tuberculosis and six with pneumonia. There was no reaction in the healthy with either test, nor in sixty-four who had been inoculated against typhoid, but the findings were positive and concordant with both tests in fifty-seven of the eighty-five typhoid patients and in five of the seven tuberculous. Strange to say, in the six pneumonia cases the diazo was constantly positive and the chromogen constantly negative.

61. **Relapsing Tetanus.**—Happel reports the case of a soldier who had tetanus after a severe shrapnel injury, but recovered. Three months afterward erysipelas developed from a small still unhealed part of the wound, and tetanus developed anew. This time it proved fatal. The first attack had been treated with large intradural doses of antitetanus serum but even this did not suffice to ward off the second attack.

Zeitschrift für Tuberkulose, Leipzig

July, XXIV, No. 3, pp. 161-240. Last indexed August 14, p. 656

62 *The War and Tuberculosis. E. Effler.
63 *Treatment of Tuberculosis in City Hospital. (Ergebnisse der Krankenhausbehandiung bei Lungentuberkulose.) C. Moewes.
64 Suggestions for Combating Tuberculosis in Belgium. A. Mayer.
65 Treatment of Tuberculous Soldiers. (Richtlinien der Kriegstuberkulosebehandlung.) C. Kraemer.
66 *Lactic Acid in Treatment of Incipient Tuberculosis. F. Jessen.

62. **The War and Tuberculosis.**—Effler relates that the hasty mobilization of the German army resulted in many tuberculous soldiers taking their places in the ranks and thus providing foci for infection of others. It has taken a long time to weed out the suspects and keep them under observation until their disease or health was established and suitable measures taken. No tuberculous soldier is discharged now until he has taken a thorough course of sanatorium treatment. Much of the confusion might have been avoided if the physicians with the troops had been informed of the pathologic antecedents of the men in their charge, and he insists that the public sanatoriums, hospitals, etc., at least, should record their cases in such a way that troop physicians can be posted as to the tuberculosis morbidity of the men in their charge. This cannot be done now without the patient's consent, but only when this restriction is removed and every case recorded, will a scientific campaign against tuberculosis be possible.

He declares that it is not enough to examine and treat the individual patient, which has hitherto been the standpoint of the physician in all ages. The physician should look on the individual tuberculous patient as one symptom of a disease affecting the whole body of the people. It is a fine thing to cure a case of surgical tuberculosis, but the family and environment of the patient should be taken into account too. The profession must enlarge its sphere of responsibility, and it must not be allowed to happen any more that men with "open" tuberculosis are dismissed from hospitals to return to their family or troop and endanger others. It should not be allowed to happen that they drift away without the tuberculosis dispensaries being notified to look after them and protect the families. The profession must learn to appreciate the fact that tuberculosis is not an individual but a folk disease. The authorities should spare no expense to impress this fact on the profession and enable physicians to act on it. Free postgraduate courses should be provided to train physicians in this form of social medicine, the state realizing that it is the one to gain by this, and should bear the expense of it and of increased numbers of antituberculosis dispensaries. Physicians, on their part, must be leaders in educating the public. What can the most zealous physician hope to accomplish in a tuberculous family when the family do not comprehend the necessity and the reasons for the measures advised? These measures usually come too late besides; the children are the ones to teach and train, commencing in the school. In conclusion he urges the necessity for financial aid when needed by a tuberculous family. Constructive assistance at the right time may transform a family of almstakers into tax-paying citizens. Housing conditions are an important factor, and he declares that the state must intervene here too. The conditions brought by the war have changed things so that progress along all these lines seems feasible.

63. **Pulmonary Tuberculosis in City Public Hospital.**—Moewes analyzes the experiences with 1,000 patients with pulmonary tuberculosis at the Stubenrauch Hospital at Berlin. About 44 per cent. were in the third stage of the disease; 50 per cent. were improved; 33.3 per cent. died. Nine tables are given showing the outcome of various methods of treatment. The experiences with artificial pneumothorax (15 cases) were quite favorable, especially as a symptomatic measure and in pleurisy with effusion. The results of tuberculin treatment were also surprisingly good, considering the class of cases that come to a city hospital; 9 patients in the first stage were cured and 10 improved; 7 in the second stage were cured and 55 improved and 21 were improved of the 29 in the third stage, while 6 died and 2 did not seem to be benefited. These figures are equivalent to 14.5 per cent. cured, and 78.2 per cent. improved out of 110 given tuberculin treatment. In 29 of the cases the patients had fever and in 21 the fever subsided abruptly soon after the tuberculin was commenced.

66. **Destruction of Tubercle Bacilli by Lactic Acid.**—Jessen reports "brilliant" results in treatment of tuberculosis in the early stages with intravenous injections of a 1 per cent. solution of lactic acid, repeated once a month or once or twice a week. Cultures of tubercle bacilli are killed off promptly with dilute lactic acid, but it can act in the body only when in direct contact with the bacilli and hence has to be injected directly into the blood. The cases thus treated were those in which only the expert would have recognized tuberculosis, others seeing in them merely neurasthenia, poverty of the blood, stomach trouble, especially hyperacidity, or dysmenorrhea. Glandular tuberculosis also proved amenable to the lactic acid, but it is not adapted for treatment of advanced tuberculosis because the bacilli are liable to be ensconced in inaccessible quarters, and the destruction of large numbers of bacilli would release dangerous amounts of bacterial endolysins.

Grèce Médicale, Athens

May 1-15, XVII, Nos. 9-10, pp. 17-20

67 *Albuminuria Not Constant with Meningeal Hemorrhage. E. Macris.

67. **Albuminuria Not Constant with Meningeal Hemorrhage.** Macris reports a case of severe meningeal hemorrhage with left hemiplegia and epileptiform convulsions terminating fatally. There was slight albuminuria, with tube casts, evidently the result of some mild kidney trouble. The patient was a woman of 35, alcoholic, and necropsy revealed the large clot of blood on the motor zone of the right hemisphere. In a second case a man of 38 was beaten by bandits and suffered afterward from retrograde amnesia and agraphia until the accumulation of blood on the brain was removed through a trephining operation. The urine was examined for albumin repeatedly but there was no trace of albumin at any time. These two cases thus disprove the assertions of Guillain and Vincent that meningeal hemorrhage entails massive albuminuria reaching its height in twenty-four or forty-eight hours

and then disappearing completely. They called attention to this in 1909 and about eighteen cases have been reported since in France sustaining their statement, but Macris' experience has been the reverse.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 3, XXXVI, No. 54, pp. 833-848

68 Elimination of Indol by the Skin and Urine. O. Cantelli.

Riforma Medica, Naples

July 31, XXXI, No. 31, pp. 841-868

69 Negative Results of Experimental Lesions of Vagus to Induce Gastric Ulceration. P. Fiori.
70 Vaccine Therapy of Tuberculosis in Children. U. Provinciali. Commenced in No. 30.

August 7, No. 32, pp. 869-896

71 *Stability of the Blood Corpuscles from Standpoint of Clinical Medicine. (Le resistenze globulari ed i poteri antiemolitici del sangue nella practica clinica.) A. Roccavilla. Commenced in No. 30.

71. **Stability of the Red Corpuscles and Antihemolysis Properties of the Blood.**—Roccavilla has been studying, on sixty-two patients with various diseases and minor ailments, the response of the blood corpuscles to different hemolytic agents, including the hypotonic sodium chlorid solution, saponin and serum from the blood of certain animals. He emphasizes that hemolysis may occur from a chemical reaction on the part of any one of the colloids in the corpuscles. Also that the quality and force of the resistance offered by the red corpuscles, and the quality and force of the protection afforded the corpuscle by the plasma must be taken into account in studying the blood. Test tube experiments do not reproduce all these factors, and consequently the findings in laboratory experiments do not apply unqualifiedly to clinical conditions. He gives the tabulated details of the results of his tests, showing that abnormal conditions in the blood can be classified by the responses to these simple tests, thus permitting estimation of the outcome.

Brazil Medico, Rio de Janeiro

July 8, XXIX, No. 26, pp. 201-208

72 Cure of Venereal Granuloma under Roentgen Exposures. H. C. de S. Araujo.
73 Immunity to and Prophylaxis of Tuberculosis. (Immunidad antituberculosa e prophylaxis social.) L. Freire. Commenced in No. 25.

July 15, No. 27, pp. 209-216

74 Mediastinum Syndrome from Metastasis of Abdominal Cancer. M. Rezende. Commenced in No. 25.

Russkiy Vrach, Petrograd

March 7, XIV, No. 10, pp. 217-240

75 Epilepsy and Pregnancy. S. A. Soukhanoff.
76 Vaccine Treatment of Gonorrheal Arthritis. N. P. Froloff. Commenced in No. 9.
77 Calculus Almost Filling the Kidney. B. Y. Susloff.
78 Treatment of the Wounded in Base Hospitals. A. A. Augspakh.

March 14, No. 11, pp. 241-264

79 The Mechanism of Root-Sciatica. M. N. Lapinsky.
80 Pain in the Neck and Scapulae in Relation to Disease in the Small Pelvis. M. N. Lapinsky.
81 *Bedbugs and Relapsing Fever. (Proiskodit-le peredacha vozvratnago tipha chrez klopoff?) V. K. Stephansky.
82 Metabolism of Heat. N. V. Vesselkin.
83 Active Immunization against Neoplasms. A. A. Krontovsky. Commenced in No. 10.
84 *The Spirochete of Syphilis and Its Cultivation. L. S. Shapiro.

March 21, No. 12, pp. 265-288

85 *Diagnosis of Chronic Appendicitis. K. M. Rutkevich.
86 Woff-Junghans Reaction for Cancer of the Stomach. P. I. Lenskaia.
87 *The Composition of Saliva and the Salivary Reflexes. S. P. Lubimoff.
88 By-Effects of Neosalvarsan. M. A. Versilova.
89 *Skin Tuberculin Reaction in Infants. M. S. Voronin.
90 Cooperative Methods in the Treatment of Tuberculosis. S. T. Unterberger.

81. **Relapsing Fever Not Transmitted by Bedbugs.**—Stephansky infected old and young generations of bedbugs with blood from patients with relapsing fever, and examined them later for the presence of spirochetes. An hour after infection the spirochetes had lost their motility, and they had disappeared altogether after four or five hours. In another series of experiments ten grown bedbugs infected with relapsing-fever blood were killed and an emulsion made of them in normal salt solution. This was injected subcutaneously into monkeys, with negative results. Sixty-five infected bedbugs and their young were fed once a week on the blood of a perfectly healthy man who during two months was bitten by them at least 500 times, and remained unaffected. It is evident, therefore that bedbugs have no share in the spread of relapsing fever.

84. **The Spirocheta Pallida and Its Cultivation.**—Shapiro studied experimentally the modes of infection of rabbits with syphilis and the growth of spirochetes on horse serum. He comes to the conclusion that, contrary to the assertions of Ross, McDonagh and many others, the pale spirochete is a typical organism *sui generis*, the cause of syphilis, and not a transitional form of a plasmodium.

85. **Diagnosis of Chronic Appendicitis.**—Rutkevich says that chronic appendicitis frequently runs its course under the form of various gastric and intestinal disorders which are usually misinterpreted as some functional nervous disorder. During one year he encountered 76 cases of chronic appendicitis, all in women. In 60 an operation was done and 16 refused an operation. The disease usually occurred between the ages of 16 and 35, and in more than half of the cases it lasted two or three years. In 49 cases there was no history of previous attacks which, however, might have been overlooked if not very severe. Only 27 patients had a history of previous pain, usually in the right iliac region, radiating to the thigh, lumbar region, liver, etc. The pain was also located in some on the left side in the epigastric region, and in many cases was independent of the time of food taking. Constipation was present only in 31 cases. McBurney's point was tender in 21 of 50 operative cases, and in 22 it was found painless. The temperature was found normal in 28 of the 76 patients, and Rovsing's sign was negative in all. Leukocytosis was found but once (in 33 patients).

Therefore there are no pathognomonic signs of chronic appendicitis. The only reliable method of examination is by palpation. With this he could feel the appendix in 68 per cent. of cases, and in 88 per cent. it proved to be painful, and simultaneous pain was frequently noted at other points in the upper abdomen. Unfortunately the appendix cannot always be palpated.

Rutkevich recommends a new method of exploration by adduction of the cecum. The flexed fingers of the right hand are worked between the external wall of the cecum and the abdominal wall; then by extending the fingers the examiner tries to push the cecum toward the median line of the abdomen. In case of chronic appendicitis this will cause pain. In all of his cases (76) this sign was positive, and was confirmed by the operation. The pain can be explained by adhesions or by appendicitis. This sign in combination with palpation of the ileum (its sensitiveness or absence of pain) helps to differentiate appendicitis from diseases of the adnexa in the pelvis (salpingitis, oophoritis, etc.).

87. **Research on the Saliva.**—The viscosity of saliva depends on the quality of the food being taken. Lubimoff found that the saliva in dogs becomes less viscous if they are given, for instance, dry toast at five-minute intervals. If then the saliva is passed through a narrow glass tube, it will be found that the first portion requires fifteen seconds for its passage, the third, fourteen seconds, the last portion about twelve seconds. When given 10 c.c. hydrochloric acid (0.25 per cent. solution) every five minutes, collecting each time the saliva in test tubes, Lubimoff found that the viscosity of the saliva increased, and the secretion was more profuse. These and other tests showed that repeated frequent irritation of the salivary glands with food causes not only a diminution in the quantity of saliva, but also in its content of solid substances. Substances other than food had just the opposite results.

89. **Skin Tuberculin Test in Infants.**—Voronin applied the Pirquet test to 140 infants all 3 or 4 months old, except ten who were older (6 months to 1 year). The tuberculin was used in 5 per cent. up to 75 per cent. solutions. He found that the weak tuberculin solutions caused no reaction whatever in the infants, and that only 1.4 per cent. reacted to a very strong solution or to the undiluted tuberculin. As

children with a positive reaction usually die within the first year, the prognostic value of this reaction is evident.

Hospitalstidende, Copenhagen

July 28, LVIII, No. 30, pp. 733-768

91 Congenital Deformities of Fingers, and Their Pathogenesis. C. Otto. Commenced in No. 29.
92 The Development of the Thumb. (Om Tommelens Ontogenese.) E. Als.

August 4, No. 31, pp. 769-792

93 *Phototherapy of Pulmonary Tuberculosis. (Lysbehandling ved Lungetuberkulose.) V. Rubow and C. H. Würtzen. Commenced in No. 31.
94 *Syphilitic Parotitis. O. Haslund.

93. **Phototherapy of Pulmonary Tuberculosis.**—Rubow and Würtzen have been applying the arc light in treatment of advanced pulmonary tuberculosis at the Finsen institute, regarding it as a stimulant to the vital processes. They began it cautiously, exposing only part of the legs at first and gradually increasing until the whole trunk was exposed front, back and sides in turn. The details of sixteen cases are given and the results justify further trials of the measure. The fear that the exposures might do harm, bring on hemoptysis or fever, seems to be ungrounded. The patients were all in the third stage of pulmonary tuberculosis. The temperature, pulse and respiration did not show any modification from normal and the patients did not lose flesh from augmented metabolism. The râles subsided in some of the patients and disappeared completely in a few who had taken the longest course of treatment. All in all, they conclude, a trial on a larger scale is justified. They used two arc lights of 75 amperes (60 volts) each, and kept the dosage below the erythema dose as a rule. A few patients developed an erythema, as the arrangement of the room did not permit the patients to be at the distance from the light which is best at first. As they lacked the support of sanatorium treatment, being all outpatients of the Finsen Institute, the benefit realized was particularly significant.

94. **Syphilitic Parotitis.**—Although this is a very rare affection, Haslund remarks that its differentiation has great practical importance as preventing treatment on a mistaken basis, especially warding off operative measures. Gerber has compiled thirty-seven cases of a syphilitic affection of one or more of the salivary glands; the parotid gland was involved in twenty-eight of the cases. There seems to be no characteristic findings. In four of Gerber's thirty-seven cases the syphilis was inherited, and Haslund adds another case from his own practice to this group. This patient was a girl of 8 who, during the last three or four years, had been given systematic specific treatment. The parotitis developed during this treatment, under the physician's eyes, as it were. Haslund had a somewhat similar experience in another case, a nodule developing on the tongue while the man was taking a course of treatment. His infection dated from fourteen years previously. He had taken thirty-nine inunctions, and 102 gm. potassium iodid besides other measures. The nodule finally retrogressed completely. The hard lump in the parotid in Haslund's child patient did not retrogress under forty-nine inunctions and 39 gm. potassium iodid. The lump was then incised and drained, and it gradually subsided under local and continued general treatment. There are two cases recorded in Danish literature of possible syphilitic parotitis, which he summarizes. One developed acutely with fever, along with mastoid suppuration, and probably was not of exclusive syphilitic origin.

Hygiea, Stockholm

LXXVII, No. 13, pp. 705-768

95 *Chronic Thrombosis of Splenic and Portal Veins, Simulating Banti's Disease. (Till kännedomen om kronisk mjältven — och portatrombos, en Bantiliknande sjukdomsbild.) O. Lindbom.

95. **Chronic Thrombosis of Splenic and Portal Veins.**—Lindbom's patient was a woman of 56 with two healthy daughters; three other children had died in childhood. At 40 the spleen enlarged, and at 46 she began to vomit blood at times. After five years of this, Banti's disease was supposed to be responsible for the clinical picture, especially as ascites developed four years later requiring frequent tapping. The liver findings were normal but the blood showed anemia with low color index and large numbers of nucleated reds, resembling the blood picture after splenectomy. The trouble proved to be the result of syphilitic changes in the vessel walls entailing thrombosis of the splenic vein. There is no doubt, Lindbom declares, that many cases have been diagnosed Banti's disease that were really of this type of chronic thrombosis of the splenic vein. The portal vein becoming involved likewise brings ascites in time. The special features which differentiate the condition from Banti's disease are the advanced age, the protracted, long stationary course, and the relative lymphopeny. Splenectomy is peculiarly risky in such cases and the effects uncertain, as the source of the trouble is not in the spleen but in the splenic and portal veins. The Wassermann reaction was constantly negative but he suspected the syphilitic nature of the trouble from a perforation found in the septum, a history of optic neuritis twenty-one years before, ascribed to an assumed brain tumor at the time, and the fact that the temperature fluctuated under potassium iodid. An intercurrent erysipelas hastened the fatal outcome.

Norsk Magazin for Lægevidenskaben, Christiania

August, LXXVI, No. 8, pp. 985-1072

96 Grape Sugar in the Urine. (Om paavisning av smaa mængder druesukker i urinen.) H. C. Geelmuyden.
97 *Rupture of Kidney; Two Cases. (Ruptura renis.) N. Barth.
98 Rupture of Intestine in Hernia, without Incarceration. (Tarmruptur ved brok.) N. B. Grøndahl.
99 *Acute Glaucoma Developing After Instillation of Holocain or Zinc Sulphate. (Kan et akut glaukomanfald utløses ved holokainzinkinddrypning.) H. Gjessing.

97. **Rupture of the Kidney.**—In both of Barth's cases the accident rupturing the kidney did not cause much disturbance otherwise. Comparing them with those on record shows that considerable and protracted hemorrhage testifies to a severe lesion of the kidney but that the organ may also be seriously injured even when there is but little blood in the urine, as the blood may be accumulating outside. The severe hematuria in his first case testified to the necessity for prompt operative treatment, and recovery soon followed nephrectomy. The kidney had been torn entirely across; the halves were held together only by the hilus. The abdomen was tender and a tumefaction, increasing in size, could be felt in the kidney region. In the second case the only sign was blood-stained urine after the contusion of the kidney region. The patient was kept in bed on a milk diet and given gelatin. By the ninth day the urine was normal, and he was discharged as cured. After injury of a kidney, the patient should be under constant medical oversight for the first week. If there are signs of injury of the bowel, a prompt operation is the only salvation. The pulse, the temperature, tumefaction and tenderness should be watched from day to day, and it should not be forgotten that hematuria may be a symptom of rupture of the ureter or bladder.

99. **Acute Attack of Glaucoma Following Instillation of Holocain and Zinc.**—Gjessing discusses further a case he published in 1914 of acute glaucoma following at once an instillation of 1 per cent. zinc sulphate, preceded by a local anesthetic (2 per cent. holocain hydrochlorid). Gjessing's second patient was a man of 79 subject to acute attacks of glaucoma of the type known as glaucoma with intermittent hemostasis. The tension in the eye had been 53 mm. of mercury. The two cases teach the necessity for instilling a myotic at once after tonometry if the tension is in the neighborhood of 50 mm. Both holocain and zinc cause transient hyperemia in the conjunctiva. Plastinin of Moscow has reported a similar case under holocain alone.

Ugeskrift for Læger, Copenhagen

July 29, LXXVII, No. 30, pp. 1225-1256

100 Regional Morbidity in Denmark, 1890 to 1909. (Sygeligheden i By og paa Land i Danmark i de 2 Tiarr 1890-1909.) P. Heiberg.
101 Acids and Base-Forming Elements in Foods. (Vore Næringsmidlers Saltindhold. Syrer og Baser.) M. Hindhede.

August 5, No. 31, pp. 1257-1306

102 Variability of Duration of Pregnancy. (Om Svangerskabstiden og dens Svingninger.) V. Ellermann.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 12 CHICAGO, ILLINOIS SEPTEMBER 18, 1915

INTRA-URETHRAL OPERATIONS

FOR PATHOLOGIC CONDITIONS IN THE PROSTATIC URETHRA AND AT THE BLADDER NECK *

GRANVILLE MacGOWAN, M.D.
LOS ANGELES

That small portion of the body of the male, situated between the inner border of the sphincter vesicae and the triangular ligament, has a greatly varied functional activity determined by its anatomic structure and its intimate relations with the genital and urinary systems, and is very subject to pathologic changes, occasioned thereby. Very few of these ailments may be cured by medical measures alone; most require the services of a surgeon, any surgeon. But there is a class of ills among them that can only be helped by technically trained specialists, possessed of an extensive armamentarium of expensive instruments, and a high degree of mechanical skill in using them that can only be acquired by a prolonged and large clinical experience. It is a special field of surgery in which the general surgeon will always be at a disadvantage. He may take out an enlarged prostate quite as well as the urologist, but he will not be able to tell what is the matter if the result is not good, or correct the defect when it is discovered.

The presence of polypoid and papillomatous growths in the posterior urethra has been well understood ever since the work of Grünfeld and Ultzman in the eighth decade of the last century. As better systems for lighting endoscopic tubes were evolved, these growths were recognized, described and treated more often, especially on and in the immediate neighborhood of the colliculus; but the fact of their great frequency in chronic infections of the glandular structure of the prostate, or of the mucous glands of the prostatic urethra, was not known and appreciated until the advent of the water-dilating urethroscope of Goldschmidt in 1906; and their successful and convenient treatment followed only after men overcame their fears of causing a little hemorrhage and learned to use large-sized, well-lighted endoscopic tubes in the posterior urethra, and had efficient electrical cauterizing apparatus to work with through these tubes.

At present, by the use of the improved diagnostic instruments of Leo Burger, Wossidlo, Gairenger and McCarty, these growths come into the field of vision of the skilful operator like moving pictures on a screen, and float out into the irrigating fluid as the plants in a marine garden move with the tide. It becomes easy to determine their number, position, relative size, pathologic species and attachments. With this knowledge the trained urologist is in a position to attack and destroy them through the modern, well-lighted, open or dilating air urethroscopes of which the MacGowan, Luys, Koch and Marks are the best types. Allowance must always be made for the reduction of the image, as seen by these instruments, from the magnified one presented by the ocular of the water urethroscopes.

CAUSE OF THESE GROWTHS

They undoubtedly originate like papillomas about the outer genitals, through the baring of the papillary bodies, by slight injuries, in the presence of the favoring elements of heat, moisture and chronic infection. While the influences that give rise to a true papilloma or wart and a polypus are essentially the same, there is a marked difference in their clinical appearance. The polypoid growths may readily be divided into two classes:

First, the soft or mucoid, that in their gelatinous consistence resemble the polypi of the ocean, and structurally have but one layer of flat epithelium and one central blood vessel, which is the diagnostic point by which they are to be distinguished from the bullae of bullous edema. This blood vessel is surrounded by a stroma that is negligible. Clinically they are easy to shrivel and destroy by a light touch of a glowing electric point, or a single flash from a high-frequency wire, or even by the topical application of solid silver nitrate, trichloracetic acid, or aromatic sulphuric acid, unless they are situated directly on the bladder neck where they are liable, if disturbed and not perfectly destroyed, to occasion very persistent and sometimes disagreeable hemorrhage.

Second, fibroid polypi. In this class the central blood vessel may be single or branched, it is surrounded by an appreciable stroma and presents, externally at least, two layers of flat epithelium. This type is not so translucent when viewed by the water urethroscope; the central blood vessel is not so apparent, and does not bear the same proportional relation to the size of the polyp. They are not so easy to destroy unless one is fortunate enough to sever the base by the cautery knife or coagulate the central blood vessel by the spark on the first trial. Though either type of polyp may spring from any surface of the prostatic urethra, the fibrous is most apt to be found attached to the lateral walls posterior to the colliculus and grow toward the bladder, or to be attached to the lateral or upper surfaces of the bladder neck, within the grasp of the sphincter or just outside of it. True papillomas or warty growths are

* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

not so common. It has been my experience that they are found more frequently in front of the colliculus and within the grasp of the external sphincter. They are generally difficult to cure, often requiring many applications of the cautery at intervals of from two to three weeks before they disappear finally.

ADENOID AND CYSTIC GROWTHS

The mucous membrane of the prostatic urethra being abundantly supplied with glands, one would expect to find at times both cysts and adenomas, and we do; the former rather frequently may be single or multiple, and, when not large, are easily destroyed by the cautery. Adenomas occur more rarely, but I have encountered them on the floor and lateral walls of the urethra, both before and posterior to the colliculus and beneath the mucous membrane of the internal sphincter, and have succeeded in destroying them in these situations from within the urethra. I have also seen them several times growing from the superior wall of the urethra just outside of the bladder neck, but to effect their removal I was compelled to operate through a suprapubic wound with rongeurs. Neither the cysts nor the adenomas are, in my opinion, the direct result of infective processes, though the urinary and sexual symptoms occasioned by their presence may be much the same as those seen with granulations, papillomas, polypi, or edema of the colliculus.

It is true that any one of these growths may be the cause of vesical irritation, more or less obstruction of the urinary stream, and even partial or complete retention; hence it cannot be good surgical judgment to conclude that because a man who is 50 or more years of age presents these symptoms of prostatism, particularly when they are accompanied by some apparent enlargement of the gland as indicated by the sense of touch applied through the rectum, necessarily is suffering from an enlarged prostate which he should have removed. He may need nothing beyond having a polypus, cyst or adenoid growth removed through the urethra to rid him of his urinary inconveniences. As an illustration of this I present a case in which the classical symptoms of commencing prostatism presenting themselves, a careful examination of the posterior urethra with a water urethroscope demonstrated polypi and adenoids which, when removed, left the patient without any vesical irritation and with the ability to empty his bladder, though there were evidences in the contour of the urethra of commencing lateral hypertrophy.

CASE 1.—Nov. 11, 1914: F. A. F., aged 65, a patient of Dr. Ralph Avery, after a severe wetting in March, 1914, had total retention and had to be catheterized for four days. Since that time he has had diurnal and noctural frequency. The urine is clear, acid, with specific gravity of 1.024; no sugar, no albumin or blood; residual urine, 200 c.c. The prostate, as examined through the rectum, is not enlarged and is of normal consistence.

Cystoscopic examination shows a normal bladder with slight enlargement of the intra-ureteral fold, and a very slight convexity of the posterior segment of the image of the bladder neck.

Endoscopic examination with the water urethroscope shows that, from the anterior sphincter to the colliculus, the floor of the urethra is filled with whitish adenoid growths which do not bleed easily, are not ulcerated, and opening in which a number of glandular ducts may be seen. The impression produced by these new growths is rather that of cancer than simple adenoma. The colliculus, slightly congested, shows plainly the openings of the spermatic ducts and the utricle. Directly posterior to the colliculus a small but perfect pear-shaped cyst swings from the posterior wall on the right side into the stream; further along the acclive, many mucoid polyi stud the right side of the urethra; much of the remaining mucous membrane is covered with firm granulations and a few small cysts, clear up to the bladder neck.

After a preliminary meatotomy this condition was removed with the electric cautery and solid silver nitrate in eight sittings, from two to four weeks apart, the last on May 24, of this year. The channel is clear and a cure is effected.

In another case I found the entire channel of the urethra from the external to the internal sphincter choked with papillomas and adenomas. The symptoms were those of advancing prostatism without any enlargement to be felt. After tedious removal of all of the growths by the cautery, I found I had still to deal with a contracture of the vesical neck, with a fibroid shelf jutting out over the urethral floor. This was with difficulty removed by a punch operation and sharp rongeurs, assisted by a finger in the bladder through a suprapubic opening. The channel secured was absolutely smooth. Sections of the pieces removed showed the usual fibromusculo degeneration. After a month the Gairenger urethroscope showed an adenoid growing directly in the center of the groove that had been punched through the internal sphincter, presumably from one of the Albarran group of glands. This was becoming obstructive and was successfully destroyed by the cautery, working intra-urethrally through a MacGowan urethroscope.

CASE 2.—July 25, 1914: J. H., an oil well driller, aged 45, a patient of Dr. Lissner of Bakersfield gives a history of severe gonorrhea fourteen years ago. He complains now of a continuous uneasy feeling at the neck of the bladder, burning, and obstruction to the passage of urine. The urine is acid, with a specific gravity of 1.020, contains many epithelial cells and a few blood cells, both red and white, no pus, and is otherwise negative. The prostate by rectum is not enlarged, but is rather more dense in the left upper quadrant.

A No. 16 acorn-pointed stricture searcher is arrested at the triangular ligament, but No. 24 Van Buren steel sound passes to the bladder.

Cystoscopic examination by No. 18 Wappler convex sheath shows a healthy bladder. Inspection of the posterior urethra shows a large, raw, edematous colliculus covered with papillomas; a dense adenoma on the right side of the urethra extending from a point just posterior to the colliculus to the bladder opening; a cyst on the left lateral wall of the acclive, and a smaller adenoma of the left wall just above the cyst.

Between July 25 and November 18, these were all removed by the electric cautery, and the Day high-frequency spark, at sittings three weeks apart. Then it was found that, though the channel was clear, there was still difficulty in urinating, and residual urine. On November 27, through a suprapubic opening, I found that there was a marked contracture of the bladder neck and a moderate-sized fibroma growing directly up into the narrow urethral opening from the bladder side, which had not been observed either by the cystoscope or the urethroscope. There was a pocket underneath the vesical sphincter from the urethral side. I cut a channel through this myofibromatous curtain with Young's punch, but was unable to bring the floor of the bladder and that of the urethra to the same level with the instrument and had to complete the undertaking by sharp rongeurs. I afterwards inspected my channel and found it smooth. After a month, when the bladder was healed, another examination by the cystoscope showed a small curiously shaped adenopapilloma growing in the middle of the channel I had cut just within the bladder. This grew rapidly and was per-

sistent, requiring three good burnings with a cautery point through the MacGowan urethroscope, on January 15, February 9 and March 10, before it was finally destroyed. Out of all this work we obtained a free channel with perfect urinary control and a cessation of the annoying symptoms.

From time to time one sees men who have had clean-cut, well-performed prostatectomies, either suprapubic or perineal, from five to fifteen years previously, who, after a prolonged peace, have again symptoms of frequent and difficult urination and partial retention. The natural thought of both layman and doctor is that the trouble is caused by a prostatic renaissance with obstruction—and such a conclusion is neither wild nor improbable, for no man has ever yet succeeded in removing all of the prostate by any of the usual methods of enucleation, no matter how skilful and careful he may be. There is always some glandular structure left in the capsular fragments and the compressed shell, and under favorable conditions further obstructive adenomas may develop. We examine the region of the prostate through the rectum and find only a normal-sized swelling in the prostatic region. We examine the bladder with the cystoscope and find a reasonably normal vesical neck. But when we use the irrigating urethroscope, we find the cavity from which the prostate was enucleated filled wholly or partially with polypi, papillomas, cysts or adenomas, which have grown from the capsular fragments remaining after the some-time prostatectomy. Continuous heat and moisture have favored the development of these fungous new growths in the semiclosed chamber. Patient and cautious use of the cautery and high-frequency spark will destroy them, and with their going the symptoms of prostatism disappear. In illustration of this clinical phase I now present three cases, two fifteen years, and one three years after successful prostatectomy. In the latter case I still have the prostate removed whole and "in its capsule" as Mr. Freyer would claim.

CASE 3.—N. W., aged 79, was operated on by me for enlarged prostate in 1900, through the perineum. In 1905 I removed an adenoid about the size of a large pea, that hung by a long pedicle from the vault of the vesical neck and obstructed the stream. The bladder was closed and after ten days the patient was well again and remained so until October, 1913, when he commenced to complain of urinary frequency and vesical irritability accompanied by loss of weight and strength, and acquired a sallow unhealthy look, and lack of the vigor for which he was always noted among his business associates.

On March 25, 1914, he was brought to me by his physician, Dr. Merrill, for local examination, as stone was suspected. The cystoscope showed very little cystitis, no stone, and a good bladder neck. The prostatic cavity showed a number of adenoids projecting into the channel; some of them had interfered with the passage of the catheter used for irrigating his bladder daily, and were ulcerated from the violence done to them. There were also a few polypoid growths in the neighborhood of the colliculus, and on some of the adenomas near the bladder neck. A belief was entertained that some of these nodules were cancerous, and this was fostered by the loss of weight, and of strength of mind and body, and the irritability and pain in this region without any symptoms pointing to systemic troubles. He was treated from March 25, 1914, to March 1, 1915, the tumors being removed by repeated burnings with the electric cautery at intervals of three weeks. Some papillomas grew just inside the vesical neck, posterior and to the right during the last two months. They were the last to be disposed of, and without the aid of the MacGowan or the Luys urethroscopes they could never have been reached. The clinical result is excellent—a clear channel, cessation of the distressing symptoms, a healthy mucous membrane in the prostatic cavity and restoration of his general health, so that he easily works ten or more hours a day in the managing of his large business interests.

CASE 4.—Feb. 25, 1915: From S. D. C., aged 85, I removed the prostate in 1900 by perineal prostatectomy. He now complains of obstruction to the urinary stream during the past six months, its passage requiring much effort. The emptying of the bladder is only accomplished by his bending or stooping well forward. Examination of the prostatic region through the rectum shows a body about the size and shape of a normal prostate. There is no residual urine. Intra-urethral examination by the Gairenger irrigating urethroscope and the Wappler 18, shows a great number of polypi of the mucous type obstructing the channel from the external sphincter back, and a few fibroid polypi attached to the floor and sides of the cavity back of the colliculus. Two of these swing with the stream into the bladder through the internal meatus. On the roof of the urethra is a large flat adenoma, covered with polypi, like mussels on a rock. This man underwent two attacks on the polypi, once with the cautery February 9, and once with the Day high-frequency current, March 16. He had a secondary hemorrhage from the latter on March 20. He has been much relieved by his treatments but refuses to go on with them through fear of the possibility of more bleeding.

CASE 5.—From W. H. L., aged 76, I removed the prostate July 18, 1912, by suprapubic operation, in one piece after the method of Freyer. The clinical results were exceptionally good.

About Jan. 12, 1915, he sought me again, complaining of a cystitis and the tightening of a stricture of moderate caliber, following a cold. April 23, cystoscopic examination, and urethral examination with irrigating urethroscope showed a general cystitis of a mild grade, and a large fibroid polypus attached to the left lateral wall of the urethra, posterior to the colliculus and extending back into the vesical neck. This was removed on May 2 with the cautery. The symptoms of vesical irritation are much improved but have not entirely disappeared.

In operating on cancerous and chronic inflammatory conditions of the prostate it is often impossible to obtain a smooth channel through the posterior urethra — projecting nodules and capsular protuberances obstruct or occlude the canal, and they cannot be gotten rid of by rongeur, curet or scissors. The combination of the irrigating cystoscope and urethroscope as a means of accurately locating them, and the electric cautery or the high-frequency bipolar spark as a means of their destruction, is particularly valuable, inasmuch as it furnishes the means of relief in, or apparent cure of, cases otherwise impossible to deal with. On this point I report the following case.

CASE 6.—Aug. 23, 1914: A. S. P., aged 74, a patient of Dr. Stockwell, complains of a severe cystitis and retention of urine. There is a history of a prostatic abscess about five weeks ago, which was punctured by a catheter. The prostate is moderately large, but not hard and immobile.

Cystoscopic examination demonstrates an intense general cystitis, a large intra-ureteral bar and a change in the vesical ring, above, to the right and to the left. Urethroscopic examination, by water-dilating urethroscope, shows a colliculus of moderate size; glandular tumors project into the urethra from the right side at the level of and below the colliculus; above the colliculus and on the left side of the urethra, abundant stringy pus can be seen issuing from the glandular ducts. The nodules on the right make a shelf and beneath this is a large cavity or diverticulum that probably marks the situation of the abscess five weeks ago. On August 31 I removed the right side of the prostate with great difficulty by a combination of partial enucleation and the use of cutting rongeurs. The left side could not be

budged. I succeeded only in cutting away a few fragments of it with sharp rongeurs. I ruined the blades of my Young's punch on it without effect. It is curious that this prostate felt reasonably soft from the rectum, but from the bladder it was stone hard to the sense of touch. Microscopic examination showed it to be a carcinoma. It was not thought probable that any permanent benefit would accrue to the patient aside from the relief afforded by suprapubic drainage. As he had bad strictures near the meatus and in the bulb, on September 11 a free internal urethrotomy was done for him, and the strictures treated by dilating until he could take a No. 26 sound easily almost to the bladder neck, where it met with obstruction. On September 29 a cystoscopic and urethroscopic examination with water-dilating instruments was made and showed some cancerous nodules on the right growing on the surface from which the right lobe had been torn. There were also on the left some similar nodules on the bladder neck; and the large longitudinal nodule which represented the left lobe. On October 14, under spinal anesthesia these were sparked with the Day bipolar high-frequency electrodes. The large nodule on the left was attacked in three places; in one place the electrode burned clear through the lobe and the bladder neck. The destruction was extensive and it was not until October 24 that the sloughing surfaces were clean. On October 22 the remaining nodules at the bladder neck were further sparked and also cauterized with a heavy cautery point. On November 29 he was sent home urinating comfortably, emptying his bladder. On Jan. 18, 1915, he presented himself for examination. The posterior urethra was clear, with a good bladder opening, no nodules, no ulcers and apparently healthy. He had no vesical irritation and no residual urine. At this date of writing he is said to be still in good health. The clinical cure could not be more perfect. Of course I doubt its permanency, but certainly radium could do no better.

Such results are not only interesting, they are amazing. It is easily seen that the field of usefulness of the modern instruments for the diagnosis and treatment of growths in the prostatic urethra is a wide one. Nearly all of these operations can be carried out under local anesthesia with stovain, novocain or alypin nitrate solutions, and when this is not sufficient, intradural anesthesia with tropacocain is the method of choice. The subject of the operation must be quiet; under ether or chloroform anesthesia he never is, for it is tedious and difficult surgery, very trying to the eyes and the nerves of the operator, but accurate and satisfactory and a boon to the patient, who is not slow to see that something intelligent is being done for him, instead of the endless and meaningless passage of sounds and dilators, and the instillation of caustic liquids, which seldom relieve, and never can cure this class of cases.

602 Lissner Building.

Strychnin.—Speaking of strychnin Dr. James Mackenzie in *Medical Press and Circular*, July 28, says: "I have carefully sought for its special effect upon the heart, and have found none. When I inquired into the evidence for its supposed good effect, I found it was practically all clinical, and clinical evidence endows the drug with the most diverse properties. It is recommended as a cardiac tonic in slow-acting hearts, and even in heart block it is said to quicken the beat. It is also recommended in the too excitable heart, as when there are extra systoles, and in the rapid heart of acute myocardial affections. It is said to be beneficial in cases of low blood pressure and equally beneficial in cases of high tension and even in angina pectoris. The evidence that can show a drug to possess the property of exciting the sluggish and of soothing the excited, of raising the low pressure and relieving the high, speaks more for unreasoning faith in the drug than for the beneficial properties of the drug itself."

NITROUS OXID ANALGESIA IN OBSTETRICS

ITS ADVANTAGES OVER THE FREIBURG METHOD *

CARL H. DAVIS, M.D.

Assistant Attending Obstetrician and Gynecologist to the Presbyterian Hospital

CHICAGO

If the belief that pain is an inevitable accompaniment of labor has, in the past, reconciled mothers to endure it, the joy of successful motherhood has caused them to forget it. Severe pain is not essential to childbirth, and there is no logical reason why women should endure it. For many centuries drugs have been used to relieve pain in surgical cases, but it was only sixty-eight years ago that Simpson introduced anesthetics into obstetric practice. Six years later, when Queen Victoria gave them her seal of approval chloroform *a la reine* became the fashion and analgesia was maintained for many hours in large numbers of cases.

DEVELOPMENT OF ANESTHETICS

The development of anesthetics is an interesting chapter in the history of medicine. Sir Humphrey Davy, in 1800, discovered the anesthetic properties of nitrous oxid, and suggested its employment in surgery in the following words: "As nitrous oxid, in its extensive operation, seems capable of destroying physical pain, it may probably be used to advantage during surgical operations in which no great effusion of blood takes place." In 1818, Faraday showed that the inhalation of ether vapor produced anesthetic effects similar to those of nitrous oxid. Crawford W. Long of Georgia, in 1842, used ether to produce anesthesia during surgical operations. Two years later, Horace Wells had a tooth extracted while under the influence of nitrous oxid. Morton used ether for surgical anesthesia in the Massachusetts General Hospital in 1846, and made the first public announcement of its use for this purpose. In January, 1847, Simpson first used ether to produce analgesia in midwifery. Flourens, in March of the same year, announced the anesthetic properties of chloroform, and Simpson, in November, read his paper entitled, "Notice of a New Anesthetic Agent as a Substitute for Sulphuric Ether in Surgery and Midwifery." From this time there was a rapid development of chloroform anesthesia, while after the death of Wells little use was made of nitrous oxid until after Edmund Andrews, in 1863, suggested its use with oxygen.

SCOPOLAMIN AND MORPHIN IN OBSTETRICS

Steinbüchel of Gratz first used scopolamin and morphin for obstetric analgesia in 1903. Gauss published his first results in 1906. The method was tried by many physicians with varying degrees of success, but until the recent visit of Gauss to America and the magazine publicity given his "Dämmerschlaf," the use of scopolamin and morphin did not become a question of vital importance. The magazines have proclaimed to the women of America that no longer shall it be said: "In sorrow thou shall bring forth children." The "Freiburg method" has been used with some degree of success in a large number of cases, but those who have had the largest experience are agreed that this method

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

should be employed only in a well-equipped hospital with a delivery room protected from all noise and confusion. The physician must have had a large experience with the drugs used. The scopolamin must be of a stable brand and freshly prepared. The cases must be carefully selected. Notwithstanding all these precautions, failures are reported in from 10 to 40 per cent. of the cases. From a careful study of the published reports, we are convinced that the "Dämmerschlaf" is not the panacea the lay press has led our patients to believe. Although this method can never come into general use, the suffering during labor is but the tide in the ocean of motherhood, and the desire of mothers is not for amnesia, but for eutocia.

NITROUS OXID IN OBSTETRICS

Klikowitsch of Petrograd applied nitrous oxid and oxygen analgesia to twenty-five obstetric cases in 1880. He used 80 per cent. nitrous oxid and 20 per cent. oxygen, and observed that three or four inhalations rendered the uterine contractions painless without clouding the consciousness. He reported that the uterine contractions were often stimulated and that in no case was there any diminution in their frequency or strength. Tittel and Doederlein condemned the use of nitrous oxid, but they gave it to the stage of anesthesia and it often caused asphyxia.

J. Clarence Webster was one of the first in America to use nitrous oxid and oxygen in obstetric practice. About ten years ago he began to use it in operative obstetrics when ether and chloroform were contraindicated, and gradually extended its use to all types of cases. In 1909 I gave the anesthetic for him in the first cesarean section which was performed under nitrous oxid and oxygen. During that year we gave this anesthetic for all types of operative obstetrics, and in one primipara gave a few inhalations during each uterine contraction for about two hours prior to a forceps delivery in a case of persistent occipitoposterior position. Although at that time we appreciated the value of nitrous oxid in obstetric practice, its use was largely limited to the end of the second stage, as the hospital was not willing to bear the expense of its prolonged administration. Arthur Guedel, in 1911, advocated the use of nitrous oxid and air analgesia during the second stage of labor; but our first knowledge of its prolonged use in America was in July, 1913, when Drs. Lynch and Hoag attended in confinement the daughter of a Mr. Clark, the maker of a gas-mixing apparatus. In that case, Mr. Clark's demonstrator gave the analgesia for more than six hours. Dr. Lynch was very enthusiastic over the results obtained and since then has used it in nearly all his cases. Dr. Heaney, who began its extended use about the same time, is equally enthusiastic.

It is our custom at the Presbyterian Hospital to begin the analgesia whenever the uterine contractions become painful. If started early in labor, we use a higher percentage of oxygen and give three or four inhalations. Later we use less oxygen and allow five or six deep inhalations previous to the bearing-down effort. The gas must be inhaled with the first suggestion of a contraction; after the patient has made strong traction on the straps, which we fasten to the foot of the bed, she is often given another inhalation containing a larger percentage of oxygen. In giving the analgesia the gas-bags should be only about half filled. The mixture required varies considerably and must be determined for each patient.

To understand nitrous oxid analgesia, you must experiment on yourself. Take six deep inhalations of nitrous oxid and note the effect. Try nitrous oxid and air; and nitrous oxid with various percentages of oxygen; take an inhalation of pure oxygen after securing analgesia. With the knowledge thus obtained you may soon become proficient in its use.

CHOICE OF GAS MACHINE FOR ANALGESIA

A satisfactory analgesia in most cases can be obtained with nitrous oxid and air as has been advocated by Guedel. We have used this method with very good results; but it must be remembered that in giving 20 per cent. air we are supplying 16 per cent. nitrogen, displacing an equal amount of nitrous oxid and delaying the analgesia by at least one inhalation.

For the nitrous-oxid-air analgesia we have a machine with an automatic regulator and a foot control. This apparatus has an advantage over that used by Guedel in that we can maintain a constant pressure in the gas-bag and may control the administration throughout labor without assistance. But after considerable experience with both methods, we are convinced that the better results will be obtained when oxygen is used; and while it necessitates a more expensive apparatus and slightly increases the cost of administering the analgesia, we advise its use. In the maternity ward of the Presbyterian Hospital we are using a mixing apparatus equipped with automatic regulators which enable us to maintain a constant pressure in the gas-bag. These lessen the amount of nitrous oxid and oxygen used. For use in the home I have a similar machine, but on a smaller stand, so that it may be carried easily in an automobile. The mixture of the gases is accomplished with a single dial, so that the nurse or intern, if at the hospital, or some member of the family, if in the home, may readily give the proper mixture. Since we wish the patient to make traction during her pains, self administration is not practical during the latter part of labor, although it may be used in the early part.

COST OF NITROUS OXID-OXYGEN ANALGESIA

By using nitrous oxid and air we have maintained analgesia for three and one-half hours with a 100 gallon tank of gas. After considerable experimenting we have made a hospital charge of $1.50 per hour for the nitrous oxid and oxygen used in maintaining analgesia. As we use the large cylinders, it allows for any leakage and usually gives the hospital a small profit.

In no case has it been necessary to maintain the analgesia for longer than six hours. In multiparas it is rarely necessary to give it for more than two hours. In primiparas the labor is usually terminated in less than three hours from the beginning of the painful contractions. Should an operative delivery be necessary, the analgesia is increased to anesthesia. Much depends on the prenatal care of the mother and the position of the child. In maintaining analgesia the confidence of the patient is necessary, and mental suggestion is of great value.

ADVANTAGES OF NITROUS OXID-OXYGEN ANALGESIA

Nitrous oxid and oxygen is known to be the safest of anesthetics. Given to the stage of analgesia it may be administered with safety over long periods of time. Nitrous oxid can only cause death by asphyxia. Dentists give it to the stage of analgesia to thousands of patients every year. It is quickly eliminated and has

no deleterious effects on mother or child. In no case will the analgesia lengthen labor, but rather will shorten it because of better assistance on the part of the mother. We concede that it is easier to carry a hypodermic needle than a gas machine; but the "Freiburg method" may be used only by the specialist, while nitrous oxid and oxygen analgesia may be employed safely and efficiently by all who will. It is as safe in the home as in the hospital. It may be used in all classes of cases, the results varying with the cooperation of the patient and the skill of the obstetrician. It gives an increased control over the patient, in that there are none of the hysterical outbursts so often seen in the delivery room.

Thirty years ago in speaking of the expectant mothers, Lusk warned us that: "As the nervous organization loses in the power of resistance as the result of higher civilization and of artificial refinement, it becomes imperatively necessary for the physician to guard her from the dangers of excessive and too prolonged suffering."

Recent investigations have shown that both chloroform and ether are a source of danger and their use has been limited to the end of the second stage. In an alternating series of cases at a Brooklyn hospital, Allen has shown that the women under scopolamin and morphin are in labor longer and do not feel as well afterward as the women who have the nitrous oxid and oxygen analgesia. Drugs act differently; people have their idiosyncrasies; the hypodermic injection of scopolamin and morphin is beyond recall. But with the nitrous oxid and oxygen analgesia we have eutocia without danger to mother or child. In the use of nitrous oxid and oxygen we have a method which may be used in the home and in the hospital; a method which does not interfere with an aseptic technic.

25 East Washington Street.

MORPHIN AND SCOPOLAMIN AMNESIA IN OBSTETRICS*

JOHN OSBORN POLAK, M.D.
Fellow of the American College of Surgeons; Professor of Obstetrics and Gynecology, Long Island College Hospital
BROOKLYN

Just a year ago, through the publication of an article in the lay press describing painless labor as conducted at Freiburg, the interest of the women of this country was awakened in the so-called "twilight sleep," and since that time women have been calling for its general adoption, while the profession, as a whole, has refused its endorsement, claiming that the merits of the method are not proved. It is my purpose in this brief paper to present the facts, without prejudice or bias, based on a most careful study of this form of amnesia in both Europe and America.

Before taking up a consideration of the method, its indications, advantages, and limitations, we must settle whether a woman is entitled to relief from pain in labor, for some claim that because labor is a physiologic process there is no need of using anything to ameliorate suffering. With this I cannot agree, for physiologic acts are better and more easily performed when one is insensible to physical pain.

"Dämmerschlaf" is a partial narcosis produced by morphin and scopolamin, which should be so light as to eliminate memory of subjective pain without interfering with the uterine contractions. In reality it is an amnesic state in which the patient forgets the successive events in her labor. This effect is produced by individualizing the patient and inducing the "twilight" state, as it is called, by administering an initial dose of $\frac{1}{6}$ or $\frac{1}{4}$ grain of morphin muriate and $\frac{1}{130}$ grain of scopolamin hydrobromid. The morphin is seldom if ever repeated; the scopolamin is repeated in doses of $\frac{1}{400}$ to $\frac{1}{200}$ grain, at varying intervals, until the desired effect is attained. Going into the twilight state is very similar to going under an anesthetic: the personality of the operator, the confidence of the patient, the quiet of the environment, have much to do with the ease of the patient's transition from consciousness to unconsciousness.

The critics of this method claim that it is dangerous to both mother and child; that it does not benefit the patient, for the successes are so few and the effects of the drug so unreliable, that its further trial is not justified; that it prolongs labor; that it provokes postpartum hemorrhage; that it is impossible to maintain an aseptic technic because of the necessity of more frequent examinations to watch the progress of the labor. Also that owing to the delirium and restlessness produced by the drugs it is difficult to maintain the aseptic drapings *in place*, and that the eye and mental symptoms persist in a certain proportion of the cases. All of these criticisms must be refuted or admitted before morphin-scopolamin amnesia can take a place in rational obstetrics.

Dr. Ralph M. Beach and I have studied over four hundred labors under scopolamin-morphin amnesia occurring in our services at Long Island College Hospital, Methodist Episcopal Hospital, and Jewish Hospital, Brooklyn. In this series there has been no maternal mortality, and less than the usual morbidity. No child has been born dead. There has been no case of postpartum hemorrhage following any of these deliveries. A moderate degree of oligopnea has been present in 15 per cent. of the cases. Real asphyxia was noted less frequently than after ordinary labor. Three children died within the first ten days after delivery. All three were necropsied and the following were the pathologic diagnoses: diaphragmatic hernia with transposition of the viscera; hemorrhage into both suprarenal capsules; and microcephalus. The lungs were specially examined for atalectasis, with negative findings. Certainly the most skeptical cannot say that the scopolamin caused these deaths. The condition of the baby at birth and the spontaneity of its first cry are determined by the skill of the operator in producing the "twilight state" with the minimum dosage, and the length of time of the second stage. As Dr. Beach has so admirably said: "A certain number of women are destined to need a forceps delivery, twilight or no twilight, and it is poor judgment to wait indefinitely for a spontaneous labor in these cases, to the detriment of the baby."

Our critics say that these are selected cases, which is true. For of all the women who have elected to come to us to deliver them, over 50 per cent. were private patients, either primaparas who feared confinement under the usual methods, or women who had had previous children with forceps or had had dead-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

born children after difficult labor, and were willing to make the sacrifice to come to Brooklyn.

These records include eleven cases of cardiovascular disease, in which there had been or was present a break in the cardiac compensation; two cases of exophthalmic goiter; six cases of pulmonary tuberculosis; eight eclamptics and twenty-two borderline contractions in which a test of labor was given. Hence it will be seen that we have not confined our energies to the normal case and excluded the pathologic.

To use morphin-scopolamin amnesia properly, certain requisites are necessary: first, a fundamental knowledge of the principles of obstetrics; second, a rational conception of the degree of amnesia to be obtained; third, the attendance of trained operators; fourth, the willingness on the part of the operator to give the time necessary to the proper conduct of the case; and finally, a proper hospital environment. From our experience we cannot comprehend the failures recorded by even good men with this method, unless those in charge of the services do too little and expect too much to secure success. The same sane obstetric principles apply just as much to the conduct of a labor under morphin-scopolamin as when no medicinal aid is used. A woman must have labor pains; the cervix must be dilated; and the presenting part and fetus must be able to pass through the pelvis at both the inlet and outlet, in order that the child may be born. Dilatation takes time and pain, and hundreds of our present-day women tire before this dilatation is complete and are subjected to the trauma consequent on untimely surgical intervention.

We may expect amnesia (no memory of the progress of the labor) in from 70 to 80 per cent. of the cases, and though the patient may have islands of memory, the course of the first stage is always eased and the first stage in primaparas actually shortened. Dilatation of the cervix is promptly effected. This is especially noticeable when the membranes have ruptured early. The greatest advantage gained by the use of scopolamin-morphin is that it affords time for the natural processes to obtain the complete dilatation of the cervix, which admits, if there is any disproportion between the head and the pelvis, that the presenting part is driven farther into the pelvis, and consequently should operative procedures be necessary they are of trivial moment. This to my mind has been conclusively shown by the fact that there has been a great reduction in the median forceps operations, not only in our own clinics but in other clinics in this country in which twilight sleep has been used.

Granting, for the sake of argument, that "dämmerschlaf" is a rational obstetric procedure, what are its indications? It may be used in any labor in which the pains are actually established and there is no marked disproportion between the head and the pelvis. It is especially suitable in long, painful, first-stage labors, or in minor degrees of contraction when it is desirable to give the woman a full test of labor, and in the neurotic women of the mentally and physically unfit class. It is contraindicated in primary uterine inertia, marked pelvic contractions, accidental hemorrhage, placenta praevia, the presence of a dead or dying fetus, as well as in obstetric emergencies, as prolapsed cord, prolapsed arm, and transverse presentations in which the membranes have long been ruptured.

From our experience we can state with reasonable positiveness that this method has certain definite advantages; namely, first, the patient, in from 70 to 80 per cent. of the cases, has a practically painless labor; second, that the nerve exhaustion which comes after prolonged labor is absent when morphin and scopolamin have been used properly; third, that the milk secretion is definitely increased, as shown by the gain in weight of the children in our series; fourth, that the cervix dilates more easily under this form of medication, hence cervical injuries are less frequent; fifth, that the number of midplane forceps operations is diminished; sixth, that the cardiac patients, even when there is some break in compensation, go through labor with a minimum of nervous apprehension and less muscular effort; seventh, the toxemic cases, even with increased blood pressure, go through labor with less likelihood of convulsions, and the urinary output is not affected; and, finally, more babies are born alive owing to the more accurate observation of the fetal heart, and the observance of obstetric indications than is common under ordinary methods. The dangers to the mother are practically nil, to the child the danger is from the prolongation of the second stage due to overdosage, and there is an interrelation between these two.

We have found little difficulty in watching the course of labor by abdominal and rectal examination, and in this way the number of vaginal examinations has been minimized. During the second stage the fetal heart should be auscultated every fifteen minutes and any change in its rhythm or rate noted. A prolonged second stage is injurious to the child and we meet this condition by the application of a tight abdominal binder, forced flexion of the thighs on the abdomen, expressio foetus, pituitary extract when the head is on the pelvic floor, and a median perineotomy in the presence of a rigid perineum. A proper appreciation of these suggestions will minimize even the number of low forceps required to terminate the second stage. The very severe pain of this stage may be relieved by nitrous oxid and oxygen, as suggested by Webster and Lynch, or the employment of a few drops of chloroform.

In the better class of patients there is little or no delirium. In the lower and more ignorant class considerable restlessness is always noted in the second stage. From my personal experience and from the admirable statistics based on 1,000 cases collected by Dr. Beach, which include the work of twenty-six different operators, we can draw the following conclusions:

1. The twilight sleep state is a reality and is applicable in any labor in which there is no primary inertia, marked pelvic contraction, or the presence of obstetric accidents.
2. It is especially applicable to nervous women of the physically unfit type.
3. It is a valuable adjunct in the management of borderline contractions, for it allows the woman a full test of labor.
4. It is distinctly a first-stage procedure and bears the same relation to the first stage as chloroform and nitrous oxid bear to the second stage: it relieves the pain but does not inhibit the progress of labor.
5. It is particularly useful in cardiac cases as it relieves the nervous apprehension and secures dilatation with less muscular effort.

6. It diminishes the shock of labor, whether that labor be normal, prolonged or operative.
7. It does not diminish the milk supply.
8. It does not predispose to postpartum hemorrhage.
9. It does decrease the number of high forceps operations.

And, finally, it has a distinct place in hospital obstetrics, and should be tried out by those who have control of sufficient material definitely to determine its position in obstetric practice.

287 Clinton Avenue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. DAVIS AND POLAK

DR. WALTER E. LIBBY, Los Angeles: As my experience has been limited to the use of scopolamin and narcophin during labor, my discussion will cover that phase of the subject. This experience is based on forty-two cases observed at the University of California Hospital. Of these cases, twenty-one were multiparas and twenty-one were primiparas. They all had normal pelves and in every case the fetus presented by the vertex. The technic followed was that advocated by Siegel—a definite amount of the drugs at a stated interval. We found that if this schedule was followed implicitly, in some instances the anesthesia was too deep, resulting in asphyxiation of the child. In other words, this method represented the maximum dosage. Believing that the asphyxiation was due to too much narcophin, we have eliminated it except in the first dose. Moreover, we have attempted to individualize each case as to dosage. This has yielded good results and in our last twelve cases not a single case of asphyxia has been encountered. Supplementary anesthesia by chloroform was used, as is our custom, except in eight cases. These exceptions were made in order to demonstrate the effectiveness of the anesthesia. Although none of these patients remembered anything about the delivery, we believe better technic results if chloroform is given. Results of this series are as follows: total number of cases, 42; successful cases, 35, 85 per cent.; partial success, 2, 4 per cent.; failures, 5, 11 per cent.; largest number of doses, 12, covering a period of nineteen hours; average dosage, 5. The effect on the mother was negligible. Excitement which required attention occurred three times. Thirst was observed in about two thirds of the cases, but was never distressing. Muscular twitchings were noted twenty-eight times. Slight acceleration of the pulse rate and other circulatory disturbances of a minor character, such as flushing of the face, were noted. The effect on labor was as follows: 1. Prolongation, multiparas one hour, primiparas two to three hours. The third stage of labor was normal. 2. Pituitary extract was used eleven times, but only four times successfully. In the remaining seven cases forceps were necessary. 3. Forceps were used seven times, 14 per cent.: two times a midforceps and five times a low. The effect on the child varied according to the dosage. Alarming asphyxia occurred six times and all of these patients required resuscitation with hot and cold water for a period of fifteen to thirty minutes. Since our change in technic deep asphyxia has been absent. One fetal death occurred and necropsy revealed a perforate intraventricular septum, stenosis of the pulmonary valve with dilatation of the pulmonary artery and hypertrophy and dilatation of the heart. No detrimental effect on the child during the puerperium was noted.

DR. W. FRANCIS B. WAKEFIELD, San Francisco: I have confined my eighty-one patients under scopolamin anesthesia. I am sorry because Dr. Davis chose exactly the title that he did for his paper. I think it is to be deprecated that we should make comparisons that might, perhaps, have an influence on the minds of those listening to us, between one good method and another good method. It is evident to me that Dr. Davis has had no personal experience with scopolamin as an anesthetic in labor, and that he has had a great deal of useful experience with nitrous oxid. The same thing may perhaps hold true with Dr. Polak, with the thing reversed. I think it is high time that the American obstetricians were willing to try out these different methods of ameliorating the pain of childbirth and let each one choose the one which appeals most strongly to him, and which has given the best results in his individual experience. So far as I am concerned, I have been using for the last thirteen months, in my private work entirely, scopolamin amnesia, and it has given me thoroughly satisfactory results. I can concur in almost every statement that Dr. Polak has made. I don't see why he excludes the women with dead babies from participating in these benefits. I have had two women who came to me within the last month, in both of whom there was every evidence of a dead fetus, and the history in the first case would show that the fetus had been dead ten days, and in the second case eight. In these I induced labor and put them under scopolamin anesthesia as in the others, because I see no reason why they should be deprived of painless labor. I cannot agree with Dr. Davis when he says that the statements that have been made in the public press for the most part are erroneous. I believe that the *Dämmerschlaf*, properly used, does carry out practically all the rational statements made in the popular press.

When I speak of the "twilight sleep" I wish to speak of one single technic which originated at Freiburg, the Gauss technic, and no other. There has been a lot of work done in a haphazard kind of way with other forms of technic, using scopolamin as a basis, and some of the results have been very bad. I cannot agree with the statement of Dr. Davis that these patients, after scopolamin amnesia, did not feel as well as with nitrous oxid. I have used nitrous oxid to some extent, and one of the most remarkable things about the scopolamin amnesia is that these patients, when they waken from the sleep (and it is a couple of hours before they wake up; we let them have their sleep out), wake with all their vital forces thoroughly aroused. They feel good and strong and active and I have great difficulty in keeping most of these women in bed twenty-four hours.

DR. JENNINGS CRAWFORD LITZENBURG, Minneapolis: I think perhaps, I am in an enviable position. None of the gentlemen who have spoken here have had experience with both methods; I have. After I returned from Europe I thought it the duty of every man with a clinic to experiment with the *Dämmerschlaf*. This has been done for the past several months in the University Hospital in Minneapolis.

Some difficulty has been experienced in keeping my associate from becoming overenthusiastic. We have to warn ourselves continually that our series is small; it is yet less than one hundred. However, I cannot quite understand some of the dire results that have been obtained in some other hospitals, or why certain hospitals in this country have forbidden the use of the *Dämmerschlaf*, because our results have been, as far as we have gone, satisfactory. The series is so small that we are not willing to draw final conclusions. I am simply reporting the results. They are about the same as Dr. Polak's: about 15 per cent. of failures or practical failures and no fatally asphyxiated children. Only three had to be tubbed for asphyxiation; sometimes there was only very mild delirium in the mother.

In the use of nitrous oxid my experience has been delightful. The women are enthusiastic about it. They also have the "twilight" condition. The next day, even though they had complained during the labor, they say they have forgotten that they did and that they knew they were bearing down, but that they felt no pain whatever. In other words, there is a twilight condition with the nitrous oxid. I have been averse to using it in the private home, because in all my work I have had the expert anesthetists of the hospital give it, and only in the hospital, and I would like to ask Dr. Davis if his statements about the small danger of it can reasonably be true. I have felt with the experience we have had in surgery perhaps there might be some danger with the nitrous oxid in unskilled hands. Allow me to say that it shortens labor.

DR. CARL G. PARSONS, Denver: As a professional anesthetist for the last twelve years, I have had a good deal of experience in all sorts of anesthesia and also in *Dämmerschlaf* (Gauss method).

The various ways of administration and dosages of scopolamin have tended to bewilder the profession, so it seems pertinent to outline the different methods of use of this drug alone or in conjunction with other drugs: 1. As a preliminary to anesthesia, both local and general. 2. As a true hypodermic anesthetic (surgical anesthesia) without the addition of any inhalation anesthetic. 3. As *Dämmerschlaf* (Krönig-Gauss-Freiburg method). 4. Innumerable modifications of No. 3. 5. When given for therapeutic purposes.

DR. CARL L. HOAG, San Francisco: Dr. Davis in his admirable paper has not given us any information as to the degree of relaxation of the perineal muscles under nitrous oxid and oxygen compared with that obtained when using chloroform or ether. From my rather extensive experience with nitrous oxid and oxygen in the surgical field, I should say that the main reason why this anesthetic has not rapidly supplanted the others is that by itself it does not give sufficient muscular relaxation. A similar failure of relaxation in the perineal muscles would greatly increase the risk of tearing and might offset any other advantages the new anesthesia might have over the old. The added feature that makes nitrous oxid and oxygen the anesthetic of choice in surgery is the local blocking of impulses from the operative area to the brain—Crile's "anociassociation." In the early part of this year I began to apply this principle in the obstetric field. Using nitrous oxid and oxygen as Dr. Davis has described; when the head begins to distend the perineum in the second stage, the vulval edges are turned back and the levator ani muscles and perineal body are thoroughly injected with novocain. When this is well done the effect is striking. The same relaxation can be secured here as in the abdominal muscles. The injection of this region with novocain has been done so many times in rectal and perineal operations that we need not fear edema, hematoma, infections or delayed healing. The effects of the drug on the child must be slight, if any. Similar amounts have been used without deleterious effects in many cesarean sections.

DR. L. I. BREITSTEIN, San Francisco: These methods of anesthesia are very important and have merit. They should be used when properly indicated. No one should limit himself to a routine method. Each case should be individualized and the form of anesthesia best suited to the case in hand should be employed. For instance, in dealing with a primipara—one who is full of fear, who cannot stand pain, who is of an hysterical nature—morphin-scopolamin anesthesia is best suited in that particular case, because these drugs have a selective action when it comes to allay fear and produce amnesia. On the other hand, in a multipara who has had three or four children, whose soft parts are relaxed and who has short labors, the anesthetic of choice would be a few whiffs of chloroform as the head passes over the perineum. It is ridiculous to try to give such women the "twilight sleep." Furthermore, take the cases you see for the first time at the end of the first stage of labor, or during the second stage; these cases are best treated with the nitrous oxid and oxygen method. You have to individualize your cases. My experience with nitrous oxid and oxygen has been limited to seven cases and my only objection has been the expense. Dr. Davis spoke of the ridiculously low cost for the administration of nitrous oxid and oxygen. My experience has been otherwise.

The prospective mother now consults the obstetrician early to find out if her particular case is suitable for the "twilight sleep." She has been informed that certain examinations—urine, blood pressure, etc.—are necessary. She knows that these examinations have to be made at regular intervals. In other words, we get the patients early and we can give them good prenatal care. During labor the condition of the fetus is ascertained by repeated examinations. The constant presence of the obstetrician insures early detection of complications. I do not wish to be misunderstood; I make it understood that obstetric anesthesia is not a panacea for all obstetric complications that are apt to arise.

DR. M. W. KAPP, San Jose, Calif.: I am one of the little fellows from the country, without a hospital or the material to give the nitrous oxid. I have not the help always to give the *Dämmerschlaf* treatment, but I have had experience with another line with which I have had broad success. I have found something that for four years I have used with perfect success and safety. It is so ridiculously simple that you will laugh at it, but try it some time when you are all alone and the woman crying out in agony. It is heroin, and it will work in every case except in uterine inertia. I have used it in about 140 cases. Heroin one-twelfth grain hypodermically as soon as the pains become severe, no matter what stage of labor. You get the full effect in fifteen or twenty minutes and it will relieve the patient be she primipara or multipara. It does not produce amnesia but it does produce sufficient analgesic effect so that the patient will "rise up and call you blessed."

DR. E. M. LAZARD, Los Angeles: On hearing the favorable reports of those who have preceded me, I wonder why the *Dämmerschlaf* has not been adopted by all the practitioners throughout the country. I am the more diffident in speaking on this subject after a remark by one of the preceding speakers that usually a critic does not know what he is talking about. I have had no experience with the *Dämmerschlaf*; frankly, I have been afraid of it; I felt that the claims of the lay journals were, to say the least, overdone. Some of the points of doubt in my mind have not been changed by the speakers this afternoon, and I would like to ask a question or two. The impression prevails among the laity that all women should have the benefit of the *Dämmerschlaf*. In Harrar and MacPherson's report they say that to not more than 25 per cent. of the women that come into the hospital in labor can they apply this, because the labor is too far advanced, and in that 25 per cent. of cases they have only 70 per cent. success. I would like to ask Dr. Polak to what percentage of women who come into his lying-in clinics in labor is the method applicable? Nothing has been said as to the memory test. Krönig and Gauss lay particular stress on this portion of the technic, saying that the entire method must stand or fall by the memory test. If I am not mistaken, Dr. Wakefield, who has spoken, and who has reported favorably on his cases, has done away entirely with the memory test. Am I correct, Dr. Wakefield?

DR. WAKEFIELD: That is correct.

DR. LAZARD: I would not call that the Freiburg technic, because the Freiburg authorities insist on the memory test as a control of dosage; so nearly every observer has some modification of the method as elaborated at Freiburg. From reports from the various clinics we hear of wild delirium, and this question has been minimized by the speakers. I would like to ask them what their experience in this regard has been. The Michael Reese Hospital gave the method a thorough trial, and, in THE JOURNAL, gave, as you probably all know, a very unfavorable report of their experience. Dr. Frankenthal, who is in charge there, had made the suggestion that possibly an impending rupture of the uterus might be covered up by the drugs, and in their series they report one case with rupture of the uterus with a fatal ending. This was not considered due to the drug, but there would appear to be less likelihood of detecting symptoms of an impending rupture with a patient under *Dämmerschlaf*.

DR. L. M. GATES, Scranton, Pa.: Like all new methods, there has been a constantly changing technic, and it is the early technic with the large and repeated doses of morphin that caused the death of the babies. If that is the case, cannot we, by some other method produce the same results? I would suggest first the use of scopolamin; then, if you need morphin, use it later. I have tried it and find you can accomplish the results without the use of morphin. In one case recently, that of a weak patient with a poor heart and valvular lesion, a decided blonde to whom I did not desire to give morphin, crying for help, I gave $\frac{1}{200}$ grain of scopolamin.

She quieted down and worked hard and it accomplished the same result. If heroin is better than morphin, why not use it, and in small doses along with scopolamin?

DR. HUGH S. MOUNT, Oregon City, Ore.: I concur in the remarks of Dr. Polak on "twilight sleep." I do not wish to go into details of cases, but we have had excellent results.

If the general practitioner feels that he can use "twilight sleep" and make a success of it, he is mistaken. He will have to give up his other practice, because he will have to sit on the job from the time labor starts until it is finished; that has been our experience. It ties you up for fifteen to twenty hours, and you have to know every minute what the mother is doing, and the baby as well. You have to have a history of every pain. Who is there in general or surgical practice that wants to take a case like this and sit down to make the history? It is a fine thing for the mothers, and if it does nothing else, will raise the standard of obstetrics.

This country is being flooded with proprietary drug preparations, to which the President of the Association called our attention this morning. There have been several representatives of this class to see me who have "twilight sleep" put up in tablets, principally morphin, and they say they make *real* "twilight sleep." I want to call your attention to the fact that these are dangerous, and I have no more respect for the physician that would give repeated doses of these than for the one who would give a pound bottle of chloroform to the husband with instructions to use it when labor begins.

"Twilight sleep" is a good thing in the hands of those who have the time and technic for it. Every woman who takes it wants it again; even if amnesia be not complete, they desire the relief from the mental suffering that it gives.

DR. WM. R. LIVINGSTON, Oxnard, Calif.: I have had about forty-five cases in which I employed "twilight sleep" since my return from Freiburg last autumn, and the results have been very satisfactory. A constant surprise to us has been the condition of these women postpartum. Following these labors there seems to be an entire absence of the customary shock. To further this, we are careful that the post delivery sleep is as long as possible. On the following day there is difficulty in keeping these patients in bed, and we usually get them up on the second or third day. In every consideration of the subject of "twilight sleep" we should recognize, first, that there is a technic of Gauss, with individualization of the patient, and in which the dose of morphin or other opium derivative is seldom repeated; second, that there is a technic of Siegel, with a prearranged schedule, and that this was an experimental attempt to standardize the treatment; third, the use of morphin with each injection of scopolamin is sometimes wrongly spoken of as "twilight sleep"; and fourth, there is a tendency to use the term "twilight sleep" in any treatment in which some opium derivative, as for instance, heroin, is given alone. These different procedures must not be confused if we are to have any definite understanding of the subject. I believe most of the men who have had favorable results have followed the method of Gauss. I think those who have followed Siegel's technic have found it unsatisfactory, because they did not individualize the patients. The attempt to follow this prearranged schedule is the probable reason for the unsatisfactory reports of some of the earlier cases. I believe we are all coming to the individualization method of Gauss.

DR. CARL H. DAVIS, Chicago: I have no intention of condemning the use of scopolamin and morphin when it is used at the patient's request, and according to the method outlined by Gauss. If we are to believe the public results of Gauss and other observers, its use by the general practitioner must be condemned. It would be splendid if every woman could go into an especially equipped hospital for confinement. We hope that the obstetric standards will greatly improve, and that large endowments may be secured for maternity hospitals. But at present few women are delivered by the obstetric specialist, and a method which cannot be used safely by the general practitioner will be of no assistance to most mothers.

Nitrous oxid and oxygen analgesia has in our hands relieved the suffering in every case. Since we only give from four to six deep inhalations in securing analgesia, the assistance of a trained anesthetist is not necessary, provided one uses a simple apparatus such as we use at the Presbyterian Hospital. As stated in the paper, we can maintain analgesia for more than three hours with a hundred gallon tank of nitrous oxid. While the cost is increased by using the small tanks which must be employed in the homes, the cost should average from four to six dollars and rarely exceed twelve dollars. But you must be careful not to allow a leakage, as it will prove expensive. I find that most patients are willing to pay for the gas.

A combination of two methods, as was suggested by Drs. Polak and Litzenburg, may be of value in selected cases. The use of morphin or heroin either alone or combined with chloral hydrate has long been employed in cases with a protracted first stage. It is possible that the scopolamin might be better than the chloral. We have not had occasion to combine the methods although our staff have discussed its possibilities.

The perineal injection of novocain has been used in Chicago. About a year ago M. L. Harris blocked the nerve and did a low forceps delivery. Dr. Heaney has used it in combination with the nitrous oxid analgesia. While it is of great help in destroying the pain, I fear that it might increase the number of lacerations. The combination of nitrous oxid and oxygen analgesia with the local anesthesia with $\frac{1}{200}$ grain novocain is the ideal anesthetic for cesarean section. I trust that during the next year the members of this section will try the nitrous oxid and oxygen analgesia. In selected cases try the combined methods, but remember that it is rarely necessary.

DR. JOHN O. POLAK, Brooklyn: It seems that those men who are really trying this method are beginning to come to the belief that there is something in it. The unfortunate position that we have been in in the East has been that those who would not try it damned it, and those who tried it lauded it. I agree absolutely with those who said we should individualize each patient. It is only a small proportion of the patients brought into our maternity service by the ambulance on which this method can be used. It is the patients whom we send in at the expected date or a few days before on which we use this method throughout, for the reason that the patient cannot be too far advanced in labor if we are to get a good amnesia. The danger is the prolonged second stage. We have obviated this by not using it or beginning it too close to the beginning of the second stage. We practically discontinue the method and substitute either gas and oxygen or chloroform for the second stage. This continues the amnesia produced by the scopolamin. In other words, we have done what Crile does: given them their preoperative doses of morphin and scopolamin.

The danger to the child is threefold: (1) overdosage; (2) in interference with the uteroplacental circulation after the rupture of the membranes; and (3) the prolongation of the second stage due to the breaking of the rules of obstetric procedure, that is, letting the second stage go beyond two or two and a half hours.

We are holding a necropsy on every baby that dies, and are learning that babies die from causes independent of the anesthetic and nonclosure of the foramen ovale. It is for this reason that I said in my paper that we would not give it in case there was a dead or dying child.

We test the memory by noting whether the patient remembers the last hypodermic injection. If the patient has lost memory of the last hypodermic injection and does not know when that was given or how many injections she has had—we do not try to wake her up by dolls or watches or anything of that sort.

We have had a few cases of delirium just as the head was passing over the perineum. This has been in foreign women. In the better class of women we have had practically no delirium. These patients go to sleep and wake up three hours afterwards, with no bad results.

THE TREATMENT OF HIGH BLOOD PRESSURE*

ARTHUR R. ELLIOTT, M.D.
CHICAGO

During the past ten years I had under observation for longer or shorter periods of time approximately five hundred cases of abnormally high blood pressure. Only cases showing a systolic pressure of 160 mm. or over are included in this material. Prior to the standardization of diastolic readings, the stethoscopic fourth phase method being used, no reliable record of diastolic pressure was possible in clinical work, owing to shortcomings in technic. Since the introduction of this method, stethoscopic estimation of diastolic blood pressure has been made a routine part of every observation. Of cases so studied there have been 130, and I propose to submit this material to a brief analysis. Seventy-four of these patients were males and fifty-six females. The average age was 54, and average pressures: systolic, 195 mm.; diastolic, 117 mm.; pulse pressure, 78 mm. The average age of male patients was 55 years, with average pressures: systolic, 189 mm.; diastolic, 119 mm.; pulse pressure, 70 mm. The average age of female patients was 55 years, average pressures: systolic, 193 mm.; diastolic, 115 mm.; pulse pressure, 78 mm. (Table 1).

TABLE 1.—AVERAGE PRESSURE IN CASES STUDIED

Total number of cases	130
Males	74
Females	56
Average age	54
Average systolic pressure	195 mm.
Average diastolic pressure	117 mm.
Average pulse pressure	78 mm.

CLINICAL GROUPS

A review of my aggregate material would appear to show that cases of high blood pressure lend themselves broadly to a certain clinical grouping somewhat as follows:

1. Secondary or symptomatic high blood pressure.
2. Neurogenic high blood pressure.
3. Essential high blood pressure.
4. Nephritic high blood pressure.
5. High blood pressure heart failure.

1. Secondary or symptomatic high blood pressure occurs in association with a variety of pathologic states. Principal among these are states of increased intracranial pressure, aortic insufficiency, asthma and emphysema, chronic thyroidism, uterine fibroids, diabetes mellitus and syphilis. In cases of this character, the treatment of the primary etiologic factor may exert a marked influence on the secondary vascular reaction. In the high pressure of chronic thyroidism, a partial thyroidectomy may be followed by a decline to normal, as happened in a case observed two years ago in which successful operation reduced the blood pressure from 190 mm. to 150 mm., at which point it still remains. Myomectomy in two of my cases was followed by the same favorable effect. In the elevated pressures of chronic diabetic subjects, the surest way to influence the blood pressure is to secure control of the diabetes. Syphilis is a not infrequent cause of vascular degeneration and high blood pressure. A positive Wassermann test immediately suggests the employment of antisyphilitic medication. Of the series now under consideration, ten cases were subjected to vigorous antisyphilitic treatment. The results were in every instance disappointing, little influence on the blood pressure curve being secured.

2. High blood pressure of apparently neurogenic origin has been observed. In this group possibly belong the elevated blood pressures occurring about the menopause in neurotic women. When this manifestation was not accompanied by urinary signs of nephritis, the outlook proved good, a gradual decline to approximately normal figures being frequently observed. A good instance of this type of case is furnished by a woman, aged 50, with palpitation, flushing and emotional instability, and a blood pressure: systolic, 190 mm.; diastolic, 140 mm. Two years later her pressure is: systolic, 135 mm.; diastolic, 90 mm.

Transient high pressure waves in individuals under severe nervous strain and in patients with insomnia are not infrequent. These occur mainly in individuals in middle life who rarely are without some evidence of vascular degeneration. One patient recently under observation had vascular crises with systolic pressure registering as high as 190 mm., accompanied by vertigo. Following the settlement of distressing family difficulties, the systolic pressure declined to 140 mm., where it now remains. Another instance in point is the case of a man of 55 who, while passing through a serious business crisis, displayed a systolic pressure of 190; diastolic, 100 mm. Following settlement of his difficulties, and rest, his pressure returned to his former average normal: systolic, 150; diastolic, 90. Still another patient, aged 69, had a systolic pressure of 190; diastolic, 100, following the death of his wife. His systolic pressure now, two years after, is 145, diastolic, 80. This spastic or neurogenic origin of elevated blood pressure in individuals without albuminuria should be kept in mind, as it may prove an important factor.

3. I shall not discuss the problem as to whether or not every case of persistently elevated blood pressure is produced by an underlying nephritis. The point is not easily settled and cannot be dismissed arbitrarily in the affirmative, as is done by some writers on the subject. Whatever view we incline toward, there is no doubt that cases with and without albuminuria form two clinically different groups, differing in the severity of their symptoms and complications and differing in their prognosis and amenability to treatment. For the purpose of this discussion I shall adopt the designation "essential arterial hypertension," suggested by Janeway, for those cases not displaying urinary evidence of nephritis. In Table 2 are recorded fifty-nine instances of high blood pressure without albumin

TABLE 2.—AVERAGE PRESSURES IN FIFTY-NINE CASES WITHOUT ALBUMINURIA

Cases without albuminuria	59
Males	27
Females	32
Average age	55
Average systolic blood pressure	179 mm.
Average diastolic pressure	109 mm.
Average pulse pressure	70 mm.
Males:	
Average age	60
Average systolic blood pressure	175 mm.
Average diastolic blood pressure	108 mm.
Average pulse pressure	67 mm.
Females:	
Average age	53
Average systolic blood pressure	183 mm.
Average diastolic blood pressure	108 mm.
Average pulse pressure	75 mm.

* Read before the Illinois State Medical Society, Springfield, May 19, 1915.

in the urine. To be sure, the absence of albumin in the urine does not necessarily exclude the existence of nephritis, and no claim is made that this entire group of cases is non-nephritic in type, for undoubtedly latent nephritis has existed in many instances. The division is made on purely clinical grounds. The blood pressure, both systolic and diastolic, averages considerably lower in these cases than in those of the group showing albuminuria and this irrespective of age or sex influence. In the nonalbuminuric cases the average pressures are: systolic, 179 mm.; diastolic, 109 mm.; and in the albuminuric cases: systolic, 200; diastolic, 123 mm. The fact that blood pressure readings are higher in cases showing positive evidence of nephritis is in line with practical clinical experience, which I think generally has demonstrated the greater severity and inveteracy of nephritic high blood pressure. An interesting fact in the material submitted is the relative sex contribution to each of these classes. In the group without albuminuria, the preponderating sex is the female (females, 32; males, 27); whereas, in the albuminuric group, the reverse is the case (males, 38; females, 22). This contrast may throw some light on the relatively better progress and more favorable outlook of the nonalbuminuric class of cases.

TABLE 3.—AVERAGE PRESSURES IN SIXTY CASES WITH ALBUMINURIA AND GOOD CARDIAC COMPENSATION

Cases with albuminuria and good cardiac compensation	60	
Males	38	
Females	22	
Average age	53	
Average systolic blood pressure	200	mm.
Average diastolic blood pressure	123	mm.
Average pulse pressure	77	mm.
Males:		
Average age	53	
Average systolic blood pressure	196	
Average diastolic blood pressure	124	mm.
Average pulse pressure	72	mm.
Females:		
Average age	53	
Average systolic blood pressure	206	mm.
Average diastolic blood pressure	123	mm.
Average pulse pressure	83	mm.

Twenty-seven cases of nonalbuminuric type that remained under observation for six months or longer displayed an average decline in blood pressure of: systolic, 27 mm.; diastolic, 12 mm.; whereas, twenty-four cases with albuminuria under observation for equal periods showed average declines of: systolic, 21 mm.; diastolic, 8 mm. The relatively good prognosis of nonalbuminuric as contrasted with albuminuric cases seems indicated by the fact that of twenty-one deaths reported in the entire series of 130 cases, but two were cases without albuminuria, as against nineteen with albumin in the urine.

4. When we come to study the albuminuric high pressure cases, we find not only a high average of systolic and diastolic pressure, but also a lack of amenability to control that is characteristic. The morbidity is high, the causes of death being heart failure, uremia and apoplexy, in their order of frequency. The highest average of both systolic and diastolic blood pressure is furnished by those patients dying in uremia, the average of six cases being: systolic, 230; diastolic, 148. Two patients dying of apoplexy gave an average systolic pressure of 230; diastolic, 140. In contrast to this, patients dying of heart failure gave an average systolic pressure of 197; diastolic, 122. These figures furnish some support to the contention of Janeway that mortality in high blood pressure cases cannot be predicated on the height of pressure alone. Heart failure may occur as frequently in the group with blood pressure below 200 mm. as when systolic pressure ranges above that figure. Janeway suggests that a pressure sustained above 200 mm. raises a certain presumption in favor of death by uremia or apoplexy, an assertion which the accompanying observations appear to support. A point bearing on the incidence of cerebral terminations (apoplexy and uremia) would appear to be persistent high elevation of diastolic pressure.

5. Heart failure in hypertension may occur on a falling systolic pressure or on a sustained or even an increasing systolic pressure with the element of peripheral block much in evidence, as indicated by high diastolic readings. Eleven cases of heart failure are included in the accompanying statistics. Four of these cases occurred in patients with comparatively low or falling pressure, the average being: systolic, 180 mm.; diastolic, 111 mm.; pulse pressure, 69 mm. A typical instance of heart failure with falling pressure is that of a man of 60, whose previous pressure range during cardiac compensation had been: systolic, 200 mm.; diastolic, 110 mm. With the advent of edema and orthopnea, pressures fell to: systolic, 140 mm.; diastolic, 100 mm.; subsequent improvement in his condition was accompanied by a rise of both systolic and diastolic pressures to former levels, the dropsy disappearing. High pressure stasis or failure with rising blood pressure characterized seven of the eleven cases observed, the average pressures being: systolic, 221 mm.; diastolic, 136 mm.; pulse pressure, 85 mm. A typical case of this group is that of a woman of 43 who, during the height of her asystole, had pressures of: systolic, 280 mm.; diastolic 170 mm. Recovery of compensation under free purgation and strophanthin altered the blood pressure picture to: systolic, 214 mm.; diastolic, 142 mm.

THE REDUCTION OF HIGH BLOOD PRESSURE

In the compass of this necessarily brief discussion, it will be impossible to more than indicate a few of the general conclusions that the experience of the past ten years has emphasized. Those who have paid particular attention to this phase of circulatory disturbance will recall that the earlier assumptions regarding the significance of high blood pressure were, to say the least, not very definite. The fear engendered by the realization that the upper limit to blood pressure is set by the reserve power of the heart, a factor difficult if not impossible to estimate, and that in consequence cardiac exhaustion or apoplexy was pending in every patient with a sustained high blood pressure, led to ill-advised efforts to reduce the pressure by direct attack. Experimental investigation and the argument of clinical experience combine to convince us that hypertension is part of a mechanism for compensating visceral deficiency, and that rude efforts to reduce blood pressure are unphysiologic, and disturb some status or equilibrium essential to comfort and life. In this item undoubtedly, as in certain other compensatory adjustments, there may be overcompensation; and many patients with excessive pressures would be better off were the blood pressure at a lower average.

The proper means to accomplish this result must undoubtedly be by a careful study of the individual case, and systematic adjustment of the diet and personal hygiene so as to eliminate or minimize those

actors that are contributing to the production or progression of the underlying pathologic condition. A discriminating study of each case on its own merits will often point the way to effective means of relieving cardiovascular wear and tear. The art of history taking, a sadly neglected but most essential item, will, in this class of cases, if properly applied, furnish important points of departure from which to supply precept in personal hygiene of the utmost advantage in treatment.

Without going into detail, it may be said that the most important measure in the management of high blood pressure states is the proper regulation of the personal habits and diet. The gain over excess pressure accomplished by this means is purely net gain, involving no interference with Nature.

It is apt to be otherwise when we attempt to reduce high blood pressure by routine use of drugs. Fortunately, the effect exerted by vascular drugs is evanescent — coterminous with the physiologic action of the drug employed. It soon becomes obvious that the vasodilator cannot be continued indefinitely, and it may be equally apparent that the patient's condition has been in no real sense improved. With the discontinuance of the medication, blood pressure returns to its former height and the experiment is ended.

I am far from believing that vascular drugs are of no value in high blood pressure. They serve a very useful purpose by modifying hypertension in the presence of certain complications, such as angina, apoplexy prodromes, stenocardia and high tension headaches. Even as a routine they may occasionally prove of service, although in no instance should depressor effects be sought by the use of drugs alone. In a number of cases of nonalbuminuric type with pressures ranging high and the spastic element prominent, I have found the use of sodium nitrite administered in moderate doses twice or thrice daily of considerable value in relieving distress. For this type of case I have reason to commend the combination recommended by Lauder Brunton, consisting of sodium nitrite, potassium nitrate and sodium bicarbonate. The employment of iodids in arterial hypertension should receive mention. I cannot speak of their action, for I do not know what that is, or, indeed, that they exert any real therapeutic effect on blood pressure; but I can discuss their employment, for I have used them extensively. They serve the very useful purpose of a routine medicament. They constitute the placebo of high blood pressure. Moreover, they appear to be a placebo that does good in some mysterious way, if long continued in small doses. Their employment meets the very human demand which hypertension patients make for drug treatment, and without which they are rarely satisfied.

To keep up a constant moderate depletion from the bowel has long been a recognized procedure in the treatment of chronic nephritis (Dickinson's "morning purge"). It undoubtedly exerts a beneficial effect on blood pressure. One objection to the routine use of saline laxatives is that occasionally they give rise to colitis. A number of my patients have been seriously inconvenienced in this manner, and latterly I have preferred less irritating measures, such as liquid petrolatum preparations.

Phlebotomy appears to me to be indicated in certain high tension cases. Hypertension crises, uremic waves of excessive pressure, and stenocardia may furnish indications for its employment as a means of reducing pressure quickly. A type of case occasionally seen is hypertension with polycythemia. In such instances the red blood count may rise to 6,000,000 or more per cubic millimeter, and the pressure range be high. I have bled in such cases, and in two examples have repeated it periodically for a time with apparent benefit.

Sweating by hot air or packs is also another direct therapeutic procedure available in certain cases. The means employed, it has seemed to me, are of secondary importance, the diaphoresis being the chief consideration. I do not hesitate to administer pilocarpin in combination with the sweat in cases with good cardiac compensation, and have never seen any harm follow its use.

I shall not dwell on the detail of the dietetic and hygienic management of these cases. These items have received full discussion at many able hands. In outlining the diet therapy of high blood pressure, as much discrimination should be exercised as with any other therapeutic measure. Much greater liberality may be permitted non-nephritic cases than those of obviously nephritic type. It is doubtful, however, whether special forms of diet have ever greatly influenced the progress of events in high blood pressure. Quantity is more important than quality in food selection. Provided renal function is well maintained, there appears no good reason why we should not permit a protein ration based on physiologic needs. The functional capacity of the kidney may be tested out with the phenolsulphonephthalein test. In all my cases of high blood pressure for the past two years, this test has been employed at the beginning of observation for its possible diagnostic assistance, and at intervals while the case remained under observation in order to keep track of renal capacity. It has been asserted by Agnew, Folin and Denis and Seymour that, when the renal response to function testing falls to 40 per cent. or lower, waste nitrogen retention begins in the blood. Accepting this observation as correct, it has been my practice to adopt a comparatively liberal attitude in diet regulation of cases showing a good elimination with the phenolsulphonephthalein test, reserving strict regulation for those cases showing a response of 40 per cent. or lower. So far as I am able to judge, this practice has not yet misled me.

In the routine observation of high blood pressure, it will be found in the main that, for therapeutic purposes, the cases fall into two groups: those in which cardiac symptoms (dyspnea, angina, cardiac asthma, etc.) predominate, and those in which renal symptoms (polyuria, uremic manifestations, retinal developments,

TABLE 4.—AVERAGE PRESSURES IN ELEVEN CASES WITH BROKEN COMPENSATION

Cases with broken compensation	11
Males	9
Females	2
Average age	61
Average systolic blood pressure	206 mm.
Average diastolic blood pressure	127 mm.
Average pulse pressure	79 mm.
Males:	
Average age	52
Average systolic blood pressure	204 mm.
Average diastolic blood pressure	127 mm.
Average pulse pressure	77 mm.
Females:	
Average age	70
Average systolic blood pressure	215 mm.
Average diastolic blood pressure	130 mm.
Average pulse pressure	85 mm.

etc.) mark the case as plainly nephritic in type. The two groups require somewhat different handling. The renal type of case requires much stricter control of diet, greater care for elimination, and vigilant readiness to meet uremia emergencies. Uremia may develop as a steadily deepening chronic intoxication or as a sudden fulminating affair, appearing without warning or possibly precipitated by acute exacerbation of a more or less latent nephritis. Clinical observation alone may fail entirely to warn of the proximity of acute uremic developments. The greatest assistance may be derived from the routine employment of the phenolsulphonephthalein test. What is not apparent clinically may be revealed in the renal function index as secured by this simple test. Used as a periodic means of checking up renal function, it furnishes a basis for security against uremic surprises that cannot be secured in any other way available to the clinician.

When cardiovascular manifestations predominate, our chief concern becomes the preservation of the cardiac reserve. As Landon Brown appropriately puts it, "The patient is living too close to the limits of his cardiac reserve." The effect of persistent overstrain on the cardiac muscle is slow but sure, and, in the end, unless some other lethal termination occurs, we see with a constancy justifying prediction the development of myocardial insufficiency. The ability of the heart muscle to withstand gradually accumulated strain is remarkable, and the inevitable heart failure may be long postponed. Years may elapse, even with a sustained pressure considerably above 200 mm., without serious cardiac mishap. Potentially, from the very outset, every patient with high blood pressure is, however, a cardiac invalid, and actually becomes one if he lives long enough.

TABLE 5.—AVERAGE PRESSURES IN TWENTY-ONE HIGH BLOOD PRESSURE DEATHS

Deaths	21 cases
Heart failure	11 cases
Uremia	6 cases
Cerebral apoplexy	2 cases
Pneumonia	1 case
Suicide	1 case
A. Heart Failure:	
Average systolic pressure	197 mm.
Average diastolic pressure	122 mm.
Average pulse pressure	75 mm.
B. Uremia:	
Average systolic pressure	230 mm.
Average diastolic pressure	148 mm.
Average pulse pressure	82 mm.
C. Cerebral Apoplexy:	
Average systolic pressure	230 mm.
Average diastolic pressure	140 mm.
Average pulse pressure	90 mm.

The most important function of the therapist in high blood pressure is the management of the cardiac phase, and in the later stages when asytole has begun to develop, well-directed medical treatment may afford immense help toward the prolongation of life and efficiency.

Cardiac failure may develop in either of two ways in arterial hypertension, that is, as left ventricular dilatation with falling systolic pressure and diminishing pulse pressure, or as a high pressure stasis with rising systolic pressure and pulse pressure maintained or increased. The former type is characterized by relative mitral insufficiency and broken systemic compensation with edema, the latter by splanchnic stasis, gallop rhythm, medullary dyspnea, often without edema and without heart murmurs.

High pressure stasis calls for free hydragogue catharsis, perhaps bleeding; the type of left ventricular failure demands neither of these measures. They both require digitalis stimulation. Digitalis in the end becomes the staff on which the high blood pressure invalid must lean. I make the statement advisedly that digitalis is the most useful drug that we possess in high blood pressure of whatsoever origin. The reason for this is that, after we have enforced the maximum of hygienic and dietetic control, we can do no more for cardiorenal hypertension, but must wait until the heart begins to fail; then we may prolong life for months and even years by the judicious use of digitalis and its congeners. The fact that the blood pressure is high need not deter us from using digitalis. It acts just as well and even better with a high pressure than with a falling pressure. Indeed, it will lower a rising pressure and raise a falling pressure, provided cardiac embarrassment is the underlying cause.

My experience would lead me to urge that digitalis be employed early at the very appearance of cardiac incompensation. It is a great mistake to reserve its use until full cardiac failure is in progress. We have to remember that we are dealing with an exhausted degenerated heart muscle, and should go to its rescue before it is placed at too great disadvantage. Digitalis early should be the rule, and once its employment has been begun, it should be continued until thorough compensation has been reestablished. I have felt in certain cases that the cardiac status, even after apparent recovery of compensation, was too insecure to warrant discontinuance of support, and have continued digitalis medication as a routine for months and years with the greatest benefit. When compensation is badly broken and venous engorgement severe, the full therapeutic effect of the digitalis series cannot be secured by oral administration. Under such conditions its employment should be intravenous. Many times I have secured prompt and efficient support in this manner after administration by mouth has failed.

Strophanthin in sterile solution by intravenous administration is a highly efficient preparation in the heart failure of high blood pressure. I can testify from many gratifying experiences to its rare value. As a means of picking up a failing ventricle, I know of no equal of this preparation. If the rules that should safeguard the administration of this extremely powerful and toxic drug are carefully observed, it may be used without risk and often with the greatest benefit. One-half cubic centimeter of 1:1,000 solution of strophanthin injected into the elbow vein at appropriate intervals for several doses will often induce cardiac reaction when other measures fail. After its effects become apparent, digitalis may be substituted and the effect continued. Unfortunately, in many cases the myocardium is so completely exhausted that response to any form of stimulation is impossible; but when any power of reaction remains, this preparation will best elicit it.

30 North Michigan Avenue.

The Purview of Medical Practice.—The purviews of medical practice have extended beyond the mere care of the sick. The state has created new fields of activity in contemplating sanitation and regulations in public health, requiring more and more expert training to satisfy the needs of the newer function.—Isadore Dyer, M.D., *New Orleans Med. and Surg. Jour.*

INFANTILE SCURVY

II. A NEW ASPECT OF THE SYMPTOMATOLOGY, PATHOLOGY AND DIET *

ALFRED F. HESS, M.D.
NEW YORK

Infantile scurvy is commonly regarded as a disorder characterized by malnutrition, by typical changes in the structure of the bones, and by hemorrhages in various parts of the body, occurring most frequently in the gums and beneath the periosteum. The descriptions of the pathologic anatomy are remarkable for their singleness of point of view, whether we consult the textbooks on the diseases of children, or special monographs on this subject. In one and all, attention is directed almost solely to the bony lesions, more especially to the alterations in the microscopic appearance of the long bones, which are constant and characteristic of the disease. On further investigation it is found that this circumscribed point of view of the pathology of this disease has been maintained almost constantly since Barlow first placed its pathology on a firm basis over thirty years ago. Barlow[1] also reported an infiltration of the muscles with serum, and "a quantity of blood-stained serum in the pleura" in some of the cases which formed the basis of his first communication. The thoracic and the abdominal organs have consistently been regarded as in no wise involved, and, indeed, whether in older or in more recent descriptions, are almost invariably passed over with scant or no consideration.

As was to be expected, the pathologic anatomy of infantile scurvy has largely dominated the outlines of its symptomatology. In the clinical descriptions we read time and again of anemia and of hemorrhages, the latter appearing most frequently in the gums or beneath the periosteum, or perhaps as petechiae into the skin, or as hematuria. There is naturally some variation from this simple clinical picture; for example, slight edema of the soft parts, and the occasional fracture of the long bones. Such are, however, in general, the objective signs of infantile scurvy, and if we add pain and tenderness, and the general symptoms of malaise, we have a fairly comprehensive picture of the disorder. More recently, the Roentgen ray has added another sign to this category, and once more we find that it is in respect to a lesion of the bones. I refer to the characteristic "white line" of Fraenkel, to be seen frequently at the epiphyseal ends of the long bones in the early stage of this disorder. It is interesting to note that in Fraenkel's monograph,[2] which is devoted to a study of the changes noted by means of the Roentgen ray, there is no mention whatsoever of an examination of the heart or the lungs, and no consideration of their possible involvement in the disease.

In a previous paper[3] on this subject, the alteration in the blood and the blood vessels in infantile scurvy was considered. It was found that the hemorrhages are attributable to a disturbance of the vessel walls rather than to a defect of the factors concerned in the normal coagulation of the blood. The group of infants which formed the basis of the first report had been in the Hebrew Infant Asylum under close observation for many months, and had been fed the usual milk mixtures. The milk given was Grade A pasteurized, which is heated to 145 F. for thirty minutes. The object of the investigation was to ascertain whether milk treated in this way undergoes any essential change, and whether infants could be made to thrive on it even when orange juice was discontinued. It may be remembered that the Commission on Milk Standards, in addition to endorsing pasteurized milk from a bacteriologic standpoint—a position which has justly received general acceptance—states that heating milk to this degree does not impair its nutritive properties. Our experience led us to conclude, on the contrary, that unless some antiscorbutic substance, such as orange juice, was given, a more or less mild form of scurvy developed, which yielded quickly to simple dietetic treatment—changing to raw milk, or once more adding orange juice or the juice of orange peel to the diet. This conclusion has been questioned by some, so that, in view of the importance of the subject and its wide applicability, it seemed highly desirable to pursue the study further and to determine whether signs of scurvy again made their appearance.

Our results, from this point of view, may be summarized by the statement that, in spite of the fact that the milk was of excellent quality, that the infants received food of high caloric value, and that in many instances cereal was also given, mild scorbutic symptoms developed in almost all cases within from two to three months. The purpose of this second paper, however, is not to report these cases in detail, but to present new data noted in the course of this study, which would show not only that infantile scurvy must be regarded as a disorder involving the bones and the blood vessels, but also that there is a considerable variety of other clinical manifestation; furthermore, that this broader symptomatology affords a basis for linking it in its symptomatology and pathology to other "deficiency diseases," for example, beriberi, and finally that this relationship is strengthened by the results obtained with certain dietetic therapy.

In addition to the classical signs of infantile scurvy —the hemorrhages into the gums or beneath the periosteum—a careful examination frequently will reveal involvement of the circulatory system. Most noteworthy of these is *an enlargement of the heart, and more especially the right heart.* This sign can be elicited, when it is fairly marked, by percussion; in several instances we have detected it in this way. In three cases, the signs have been substantiated by means of the Roentgen ray. Roentgenograms of two of these taken by Dr. Charles Gottlieb are reproduced in the accompanying illustrations. The one infant (Fig. 1) was 14 months of age and had been under observation in the institution since he was about 2 months old. He had been on a diet of milk and of cereal, without the addition of orange juice, for about four months. Mild scorbutic symptoms had gradually made their appearance: pallor, stationary weight, peridental hemorrhage, and a few petechiae of the skin and of the conjunctivae. In the course of careful physical examination we were surprised to note the marked increase of cardiac dulness, which extended fully 1½ fingers to the right of the right border of the sternum, and to the left somewhat outside the nipple. The heart sounds were muffled at the apex

* From the Research Laboratory, Department of Health, New York City.

1. Barlow, T.: Medico-Chirurg. Tr., 1883, lxvi, 159.
2. Fraenkel, E.: Fortschr. a. d. Geb. d. Röntgenstrahlen, Supplement 18, 1908.
3. Hess, A. F., and Fish, Mildred: Infantile Scurvy: The Blood, the Blood Vessels and the Diet, Am. Jour. Dis. Child., December, 1914, p. 385.

but clear at the base. The pulse was rapid and regular. Numerous roentgenograms were taken, and all showed approximately the same cardiac enlargement. A fluoroscopic examination was made in order to see whether there was fluid in the pericardial sac, a condition which was once noted postmortem. However, there was no appreciable amount of fluid observed within the pericardium. Figure 2 shows a very similar heart condition.

Definite cardiac enlargement to the right was demonstrated both by clinical and by roentgenographic examination in all three infants. In the majority of cases, however, both percussion and the Roentgen ray showed normal heart outlines. In some of these, the presence of tachycardia would seem to indicate that the circulatory system was not entirely spared. This rapidity of heart action was constant, and in the case of an infant 8 months old was found, on repeated examination, to reach 180 beats or more. In conjunction with this increased frequency of the pulse, an increased respiratory rate was noted.

As I have stated, clinical descriptions omit any mention of involvement of the heart. Barlow states that "there is nothing to note regarding the heart and lungs." Necropsy protocols usually are incomplete and unsatisfactory in this regard; there are some, however, which are significant. In the monograph on this subject by Schoedel and Nauwerck,[4] five careful necropsy protocols are reported. In two instances the hearts were apparently normal. In the others we find the following record, which is passed over without comment:

1. Pericardial fluid somewhat increased, both ventricles moderately dilated, the right somewhat hypertrophic.
2. The heart showed a hypertrophy of the right and left ventricles, as well as dilatation of the right ventricle.
3. The right ventricle is dilated and slightly hypertrophied, the muscles pale and tough.

In this connection the necropsy reports on animals suffering from artificially induced scurvy afford little information. The excellent works of Holst and Froelich[5] on scurvy in guinea-pigs, and that of Hart and Lessing[6] on scurvy in monkeys, do not take any cognizance of the heart. However, the necropsies on infantile scurvy which I have cited suffice to substantiate from a pathologic-anatomic point of view the enlargement of the heart which we determined by means of clinical methods.

As is well known, edema constitutes a not infrequent symptom of infantile scurvy. This manifestation, however, has not been given the prominence which, I believe, it should be accorded. In our experience subcutaneous edema is not only one of the most constant phenomena in the symptomatology and pathology of this disorder, but deserves special consideration because it appears in a peculiar clinical form and frequently is one of the earliest indications of threatening scurvy. As can be well understood from the nature of our investigation, we had a peculiarly favorable opportunity to observe the earliest signs of this disorder. In addition to the somewhat characteristic pallor which has been so often depicted as a warning signal, we noted edema, involving most regularly the eyelids, especially the upper lids. The puffiness was met before any symptoms of hemorrhage could be found, whether bleeding into the gums or red cells in the urine, and persisted when the disorder was disappearing under appropriate dietetic treatment. The edema, however, is far more widespread. Postmortem examinations have clearly demonstrated this fact. Any one who has incised the subcutaneous tissues to reach the long bones must have noted the moist and infiltrated condition of these parts. The reason this pathologic state has played so small a rôle in the symptomatology of infantile scurvy is that the edema differs clinically from that usually encountered; in other words, it does not pit on pressure. This peculiarity is ascribable to the fact that it infiltrates the layers of the integument and the underlying muscle, rather than being diffused in the loose subcutaneous areolar tissue. It is a firm edema, causing some glossiness of the overlying skin, which is rendered difficult to wrinkle or to pinch between the fingers. Indeed, at times one is in doubt whether edema is actually present, until one compares the texture of the tissues with those of a healthy infant of about the same age and weight. This firm edema occurs most frequently over the anterior aspect of the lower end of the leg. The edema, as suggested in the previous paper, is probably due to a nutritional disturbance of the smaller vessels which allows fluid to permeate the walls.

As has been mentioned above, this transudation involves the muscles of the body as well as the subcutaneous tissue. Barlow described an "infiltration of the intercostal muscles." It is probable that when edematous fluid is poured out into the muscles of the thigh, the swelling is not infrequently wrongly diagnosed as due to subperiosteal hemorrhage. This has been our experience. I reproduce (Fig. 3) an instance in which this error occurred. It will be noted that in spite of the manifestly increased diameter of the affected thigh, there is no augmentation in the width of the bone and no typical elevation of the periosteum as is to be seen when hemorrhage has occurred, but that the difference is due solely to an infiltration of the muscular layer.

The consideration of subperiosteal hemorrhage which, as is well known, is accompanied by exquisite pain and tenderness, raised the question as to whether we are correct in ascribing all pain in the extremities to such involvement. It is difficult to answer, as the interpretation of pain in an infant is an unsatisfactory clinical task. It seemed to us after careful study, however, as if in some instances there was a tenderness of the skin or of the muscles, quite dissociated from that of the bones, which might be attributable to an involvement of the nerves. Further investigation was suggestive, although not conclusive, of involvement of the nervous system. The knee reflexes in almost all instances were markedly increased; in one case they were almost absent on repeated examination. Tests of the reaction of the nerves (median) to galvanism were not definite. An examination of the retinas, for which I wish to thank Dr. Julius Wolff and Dr. Barnert, showed edema around the disks in the two cases which were furthest advanced. As far as I can ascertain, no ophthalmoscopic examinations have been made in infantile scurvy, but it will be interesting to learn what retinal examinations in other cases will show. In this connection I may add that it is quite possible that the

4. Schoedel, J., and Nauwerck, C.: Untersuchungen über die Moeller-Barlow'sche Krankheit, Jena, 1900.
5. Holst, A., and Froelich, T.: Ztschr. f. Hyg. u. Infektionskrankh., 1912, lxxii, 1.
6. Hart, C., and Lessing, O.: Der Skorbut der kleinen Kinder, Stuttgart, 1913.

pathogenesis of the cardiac enlargement is an involvement of the vagus. It is difficult to understand the predisposition of the right heart to enlarge unless we associate this with a disturbance of the circulation in the lungs. The frequent occurrence of pneumonia in the course of scurvy adds weight to this view.

The syndrome which I have sketched brings infantile scurvy into actual relationship with some of the

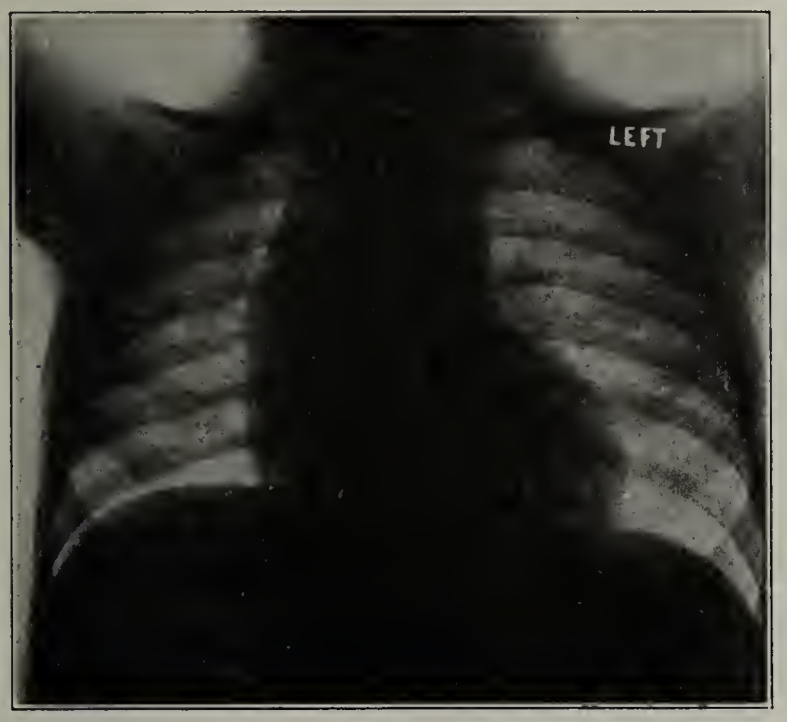


Fig. 1.—Infant (14 months old); mild scurvy. Heart enlarged greatly to the right.

other "deficiency diseases," and more particularly with beriberi. These two diseases are commonly grouped together, merely because they have one factor in common—they can be cured by the addition of a definite food to the diet. As beriberi frequently attacks infants, it is possible to go further and to compare these two diseases in patients of this tender age. We are indebted to Andrews[7] for a comprehensive clinical and pathologic account of the beriberi which is commonly encountered in the Philippines among infants who are nursed by mothers suffering from this ailment. It differs but little from the beriberi in adults described so completely by Vedder.[8] Hemorrhages occur, but are by no means constant. Cardiac dulness is increased, especially to the right, and the heart sounds are muffled. The pulse is rapid, from 130 to 170 or more, and dyspnea is almost always present. At necropsy, hypertrophy of the heart is found; "the wall of the right ventricle equals or exceeds that of the left." Edema is common, the skin having "a tough, leathery feel," and postmortem examination shows that "the subcutaneous fat is present apparently in good amount, grayish white, and very moist;" in many cases a general edematous condition is present. Examination by means of the electric current was unsatisfactory; however, a degeneration of the nerves (vagus, phrenic, intercostal, anterior tibial) was established, although this was "not as extensive as is found in cases of adult beriberi."

We can hardly review this summary of "infantile beriberi" without being struck by the similarity between this disorder and infantile scurvy as I have sketched it. There are some factors which are evidently dissimilar, but the differences are not such as to obscure the evident clinical and pathologic relationship between them. They show, nevertheless, that we are not dealing with one and the same disease, for it is clear that the characteristic symptom· of infantile scurvy is hemorrhage, whereas that of beriberi is nerve degeneration. It is also evident that the edema is much more marked in the latter disorder. It must be borne in mind, however, that in adult beriberi there is a dry as well as a wet form, and also that exceptionally, infantile scurvy leads to the appearance of general edema. I myself have seen an instance of this kind, and others have been reported from time to time. One of the very first cases described in this country (Northrup[9]) showed edema not only of the feet and legs, but also of the scrotum. It should be investigated whether this peculiarity is to be ascribed to the idiosyncrasy of the patient or to the constituents of the diet.

Thus we see that the relationship between infantile scurvy and beriberi, which has rested on the basis of analogy, has also the foundation of symptomatology and pathology. Numerous interesting observations would seem to have rendered probable such intimate kinship. Holst and Froelich[5] noted that guinea-pigs fed on decorticated or highly milled rice developed scurvy and not beriberi; and these authors, as well as Ingier,[10] demonstrated a degeneration of the nerves in some of the animals. In man, Darling[11] reports that "in some African negroes a diet that causes scurvy in one set of men causes neuritis in others." He also showed that in adult scurvy there may be found "right sided hypertrophy and degenerative changes in the vagus and all its branches."[12] The data which I have reported serve to link some of these observations together.

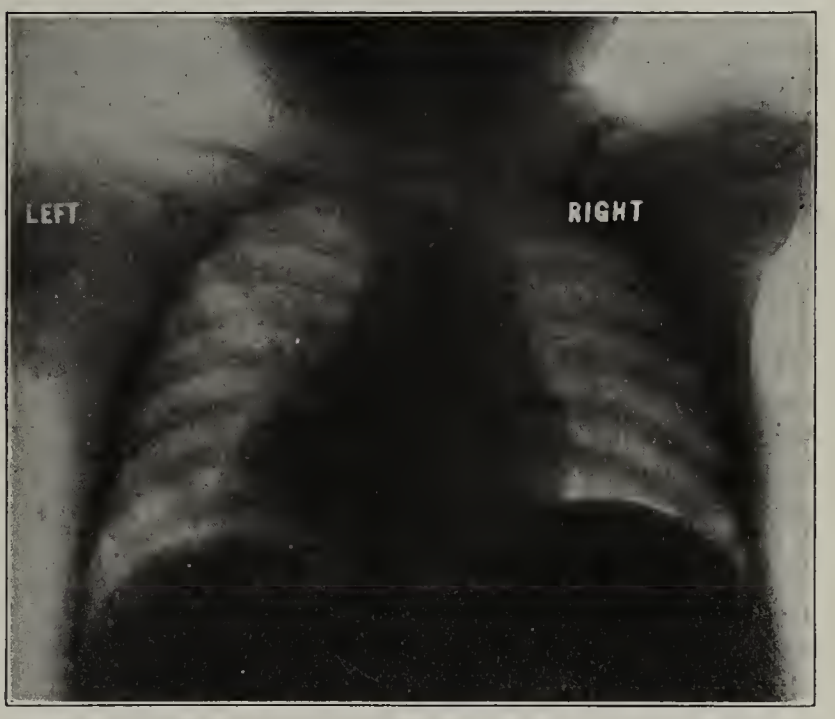


Fig. 2.—Infant (14 months old); mild scurvy. Heart enlarged greatly to the right.

It is evident that infantile scurvy, adult scurvy and beriberi have many factors in common, viewed from

7. Andrews, V. L.: Philippine Jour. Sc., April, 1912, p. 67.
8. Vedder, E. B.: Beriberi, New York, 1913.
9. Northrup, W. P.: Arch Pediat., January, 1892, p. 1.
10. Ingier, A.: Frankfurt. Ztschr. f. Path., 1913, xiv, 1.
11. Darling, S. T.: The Pathologic Affinities of Beriberi and Scurvy, THE JOURNAL A. M. A., Oct. 10, 1914, p. 1290.
12. In these cases the knee reflexes were increased as in our cases of infantile scurvy. These reflexes were likewise exaggerated in a group of about twenty-five men suffering from beriberi, whom I have examined recently at the government quarantine station, with the kind permission of Dr. Teague.

a symptomatic as well as from a pathologic standpoint. A test which I was able to carry out led to the conclusion that the scope of comparison may be enlarged to include the dietetic or therapeutic point of view. Although this aspect of the subject will be reported in detail in a consideration of the relation of infantile scurvy to growth, a few words concerning our results seem pertinent and of interest in this connection. It will be remembered that almost all the infants who developed scurvy were receiving cereal (farina) as well as milk. This farina is the starchy kernel of the wheat, from which the outer layers have been removed. It has been repeatedly shown that beriberi is brought about by a diet of polished rice which has been deprived of its outer layer or pericarp. It has likewise been established that the addition of rice polishings to the food suffices to effect a rapid cure of beriberi in man, or of its counterpart, polyneuritis in chickens. In view of these facts and the clinical similarity between infantile scurvy and beriberi, we decided to substitute in place of the farina a cereal containing the outer layer of the wheat. To this end we obtained middlings, the middle layer of the wheat grain, which may be compared to the pericarp of the rice. A cereal was prepared consisting of two parts of middlings and one part of flour, and was given in place of the farina and in the same amounts. The caloric value of this food is the same as that of farina, and it was taken quite as readily, by most of the babies. No other change whatsoever was made in the diet. In some instances, improvement was immediate and striking; there was a gain in weight for the first time in many weeks, a brightening in the appearance and in the disposition of the infants, and a recession of the typical scorbutic symptoms. This improvement was maintained for some weeks. The effect, however, could not be compared to the miraculous change brought about when orange juice or the juice of orange peel was given. The addition of middlings, which may be designated wheat pericarp, was not able to restore the infants to their natural vigor, even when it was given daily for a month or more. In some instances, especially when only a small amount of middlings was taken, no effect was observed. Judging from these experiences, it would seem as if this layer of the wheat grain possesses a small amount of the essential antiscorbutic substance, the vitamins of Funk,[13] but an insufficient quantity to reestablish an adequate positive balance of the material. That the beneficial effect is certainly not attributable to its high fat content is evident when we reflect that the addition of cod liver oil to the diet failed to bring about the least improvement in our previous study. The future must show whether infants fed on a cereal of this character develop scurvy, even though orange juice is not added to the diet.

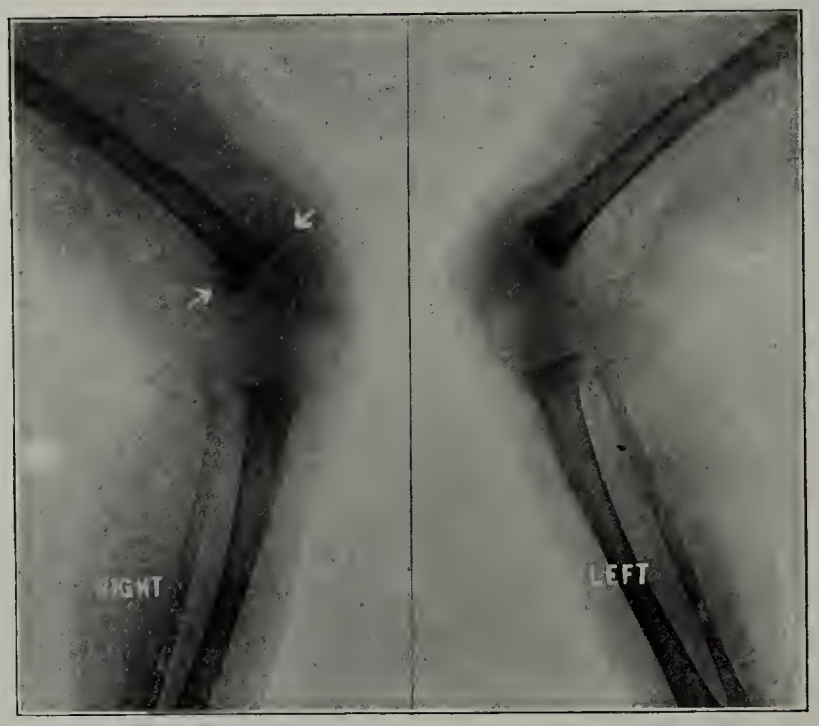


Fig. 3.—Scurvy with swelling of lower end of right thigh, due to infiltration of muscular layer, not to subperiosteal hemorrhage. Arrows indicate small hemorrhage at end of femur.

CONCLUSIONS

The pathology of infantile scurvy, including Barlow's classical account, is almost entirely devoted to a description of the lesion of the bones; little or no mention is made of the heart, the lungs and other internal organs. On the clinical side, attention has been focused on the evidence of hemorrhage—in the gums, beneath the periosteum, in the urine, etc. In the foregoing paper I have approached the subject from a different point of view and attempted to show that both the pathology and the symptomatology have a broader scope and that the heart is not infrequently involved. In several instances, definite cardiac enlargement was ascertained by means of physical signs and Roentgen examination. Necropsies also show that the heart in some cases is hypertrophied and dilated. The examinations made during life, as well as those carried out after death, demonstrated that this enlargement was mainly of the right ventricle.

Another symptom which should be accorded greater significance is edema, which is almost always present to some degree. This occurs early in the course of the disease and involves most frequently the eyelids. It is often manifested as a firm edema over the lower end of the tibia, infiltrating the skin, and is readily overlooked, as it does not pit on pressure. This extravasation, which is due to nutritional disturbance of the smaller vessels, may also infiltrate the muscles. When this occurs in the thigh and causes swelling, it may be mistaken for the typical subperiosteal hemorrhage.

It would also seem probable that the nerves are involved in infantile scurvy. The knee jerks are increased, and there are indications of superficial tenderness of the limbs and neuro-edema of the optic disks.

In the light of this symptomatology and pathology, infantile scurvy assumes actual relationship to beriberi, in which the right heart is also hypertrophied and the nerves invariably involved. This correlation was emphasized still further by a dietetic test modeled after the treatment of beriberi, which, as is well known, is brought about by a diet of polished rice which has been deprived of its pericarp, and is cured by the addition of rice polishings to the diet. In our study, the addition of middlings—the pericarp of the wheat—caused in many instances a prompt amelioration of the symptoms, although it did not suffice to cure the disorder. This indicates the advantage of giving a cereal which contains the outer layers of the grain when the diet includes no other antiscorbutic food.

16 West Eighty-Sixth Street.

13. Funk, C.: Die Vitamine, Wiesbaden, 1914.

FURTHER OBSERVATIONS ON THE FATE OF FREE BONE TRANSPLANTS

W. L. BROWN, M.D.
AND
C. P. BROWN, M.D.
EL PASO, TEXAS

As to the question of permanency of a free graft, there has been considerable confusion. Our conception of permanency is that it should remain as long as the life of the host into which it is transplanted. Consequently, eight months is entirely too short a time to judge of the permanency of a free graft. To be of clinical value, it would almost always be necessary for it to live as long as its host. Davis and Hunnicutt's experiments,[1] recently reported, are quite in consonance with ours and those of Haas[2] and others, that free transplants into the tissues, with or without periosteum, will ultimately be absorbed. They will often make an abortive effort at reproduction for a short time, as shown by those reported by Macewen,[3] most of which were allowed to run only about six weeks.



Fig. 1 (Experiment 1).—One-half of rib, 1½ inches long, without periosteum, planted into thigh muscles, original size.

So far as our experiments are concerned, as shown in our preliminary report, and later on in this article, we have been unable to say that the free transplants are absorbed any more quickly without the periosteum than with it. Just why McWilliams and Albee lay such stress on the periosteum securing blood supply to the graft we do not know, as it is certain that living bone in no way depends on the blood supply received from the periosteum, and, in fact, the vascular connection of the periosteum is very slight. However, McWilliams' experiments, as well as those of others, indicate that the periosteum in free transplants is a protection against absorption, the periosteal-covered transplant probably surviving somewhat longer, and in turn acting as a protection to the clinical transplant from absorption, while circulation is being established from the ends of the living bone. Phemister[4] showed in his experiments that transplants without periosteum in contact at each end with living bone were more inclined to absorption from the surface at the center of the transplant than those that were protected with periosteum, this probably not due to the periosteum reestablishing circulation earlier, but simply protecting the graft from absorption while the circulation was being established from its proper sources, the ends of the living bone.

It is also the opinion of Macewen[5] that the periosteum on a transplant prevented the early reestablishment of the blood supply. Haas[2] believes that "the periosteum protects new-formed bone, and directs its growth." Axhausen[6] thinks that "there is greater probability of the graft living if the periosteum is left on." Lewis[7] states that "cortical bone free of its periosteum, endosteum and marrow may retain its vitality and proliferative powers, when subdivided into small fragments, and replaced in the tissues"; also that "contact with living bone is unnecessary for the growth of these fragments." However, Lewis' experiments were all done on young dogs; many fragments were put back in the cavity line of the original shaft, and were all in contact with one another.

As stated before, experiments seem to indicate that this is quite different from transplanting fragments individually free into the tissues distant from the site where the bone originally belonged, as shown in our Experiments 6, 7, 8, 9, 10, 24 and 25 of our preliminary report,[8] and those to follow in this article. Lewis also showed that fascia covering in a gap in bone "takes up the nutritional and limiting function of the periosteum." We would also be inclined to add to this statement the protecting function of the periosteum, which we consider the most important of all its functions in bone grafting, both to the individual graft and to the protection of the process of union to the living bone, preventing the ingrowth of fibrous tissue, through which the osteoblasts cannot penetrate.

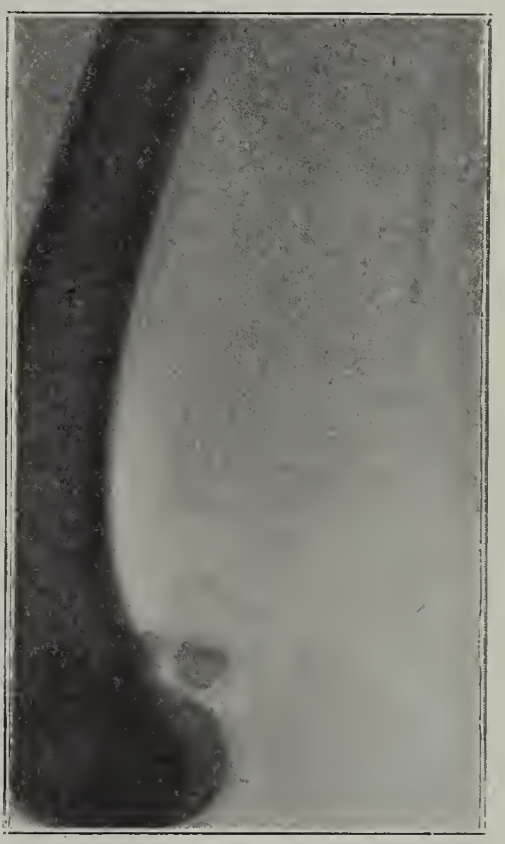


Fig. 2 (Experiment 1).—Seven months and fourteen days after transplantation of half of rib, 1½ inches long, into thigh muscles, nearly absorbed.

While McWilliams[9] and Albee[10] are quite positive that the periosteum on free grafts is an important factor in the reestablishment of circulation and nutrition to the graft, Phemister[4] states that "in free transplants without periosteum, nutrition was more accessible to the bone cells; that free transplants, with periosteum and endosteum, the periosteum remained quite generally inactive."

If establishment of circulation is the all-important factor making for permanency, and the periosteum is the medium through which this occurs, the spine of the scapula should be

1. Davis and Hunnicutt: Bull. Johns Hopkins Hosp., March, 1915.
2. Haas, S. L.: Surg., Gynec. and Obst., 1913, xvii, 164.
3. Macewen: Growth of Bone, Glasgow, University Press.
4. Phemister, D. B.: Surg., Gynec. and Obst., 1914, xix, 303.
5. Macewen: Personally expressed to the authors.
6. Axhausen: Arch. f. klin. Chir., 1911, xciv, 241.
7. Lewis, E. J.: Surg., Gynec. and Obst., 1914, xviii, 572.
8. Brown, W. L., and Brown, C. P.: Surg., Gynec. and Obst., 1913, xvii, 681.
9. McWilliams, C. A.: The Periosteum in Bone Transplantations, THE JOURNAL A. M. A., Jan. 31, 1914, p. 346; Ann. Surg., 1912, lvi, 377; ibid., 1914, lix, 465; Surg., Gynec. and Obst., 1914, xviii, 159.
10. Albee, F. H.: Surg., Gynec. and Obst., 1914, xviii, 699.

the ideal periosteum-covered transplant; but reference to Experiments 7, 8, 9 and 10 of our preliminary report shows that these were uniformly absorbed.

The following experiments in addition to those cited above indicate the general tendency to absorption of free grafts:

PROTOCOLS OF EXPERIMENTS

EXPERIMENT 1 (New No. 4).—Dog, 3 months old, weight 20 pounds; one half of the rib, 1½ inches long without periosteum, was planted into the muscles of the thigh. Figures 1 and 2 show the specimen at the time, and seven months and fourteen days later, probably not more than one-fifth its original circumference, being gradually absorbed.

EXPERIMENT 2 (H X).—Dog of unknown age, but old, weight 16 pounds; 1½ inches of ulna were resected with periosteum, then split into five pieces, the periosteum removed, one piece laid in the omentum and held in place by 00 plain gut; and another placed between the sheath of the right rectus and the internal oblique. Sixty-three days later, no signs of either transplant were revealed by roentgenoscopy. Dog was killed five months and six days from time of operation; no trace could be found of either transplant. The peritoneal cavity was thoroughly searched, but no evidence of the transplant could be found. One inch of the space in the ulna had been filled by new bone growing out from the proximal fragment, with fibrous union between this and distal fragments. In this case there had been reproduced 1 inch of new bone, after the entire periosteum had been removed.

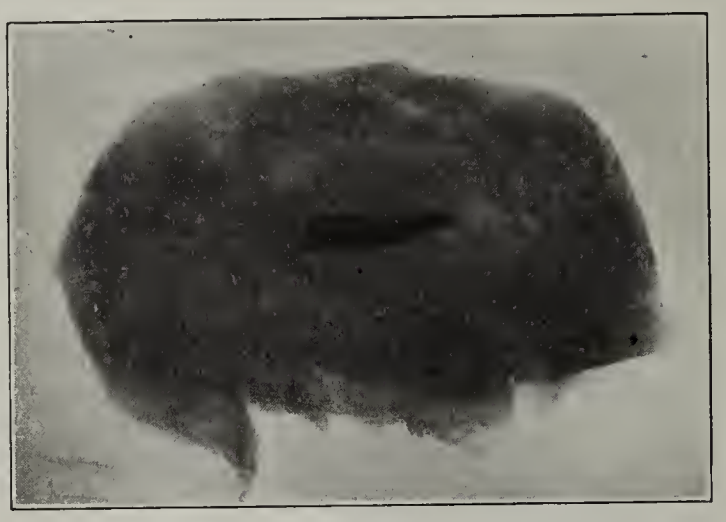


Fig. 3 (Experiment 4).—Forty-seven days after planting piece of scapular spine 1¼ inches long and three-fourths inch wide at widest end, periosteum intact, into muscles of loin. Rapid absorption.

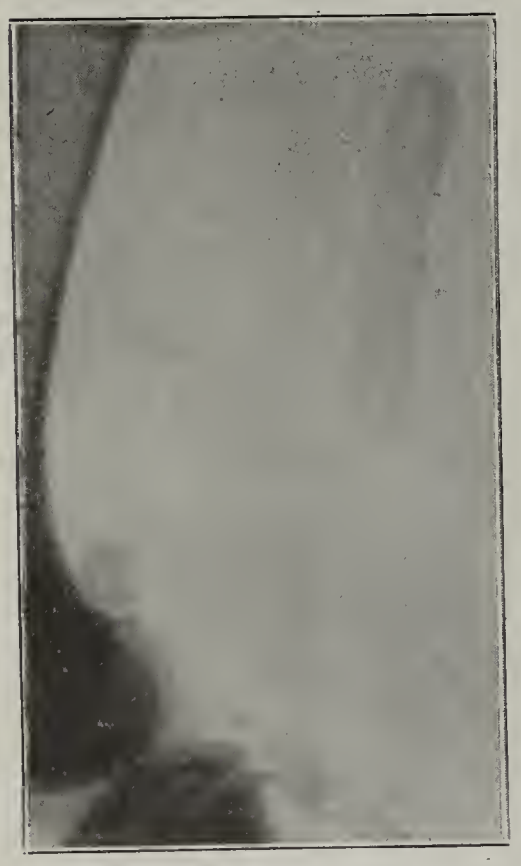


Fig. 4 (Experiment 5).—Half of ulna, with periosteum and endosteum, planted into muscles of left thigh.

EXPERIMENT 3 (Old No. 10). — Dog 4 months old, weight 15 pounds. The spine of the scapula was removed with bone-cutting forceps, after muscles were detached, leaving the periosteum intact. A fragment measuring 2 inches long, 1 inch wide at the wide end and one-sixteenth inch at the narrow end was planted into the muscles of the loin. Seventy-eight days later, it was less than half its original dimensions, ragged, with sharp edges, and thin as writing paper. There was every evidence of rapid absorption.

EXPERIMENT 4 (Old No. 9).—Dog 4 months old, weight 15 pounds. The left spine of the scapula was removed with bone-cutting forceps, the periosteum being left completely intact, and planted into the muscles of the loin. The fragment was 1¼ inches long by three-fourths inch wide at the widest point. The result forty-seven days later is shown in Figure 3; it was half its original size, almost as thin as paper, and was being rapidly absorbed.

These two experiments are only illustrative of a considerable number recorded in our preliminary report referred to above. We have found the spine of the scapula, completely covered with periosteum, completely absorbed in as short a time as thirty-nine days.

EXPERIMENT 5 (New No. 5).—Dog 4 months old, weight 26 pounds; 1½ inches of the right ulna were cut out with all the periosteum; split, one half with periosteum attached, was planted into the muscles of the right thigh, and one half, with periosteum removed, into the muscles of the left thigh. The specimen with periosteum is shown at the time of transplantation in Figure 4, and four months and sixteen days later in Figure 5 showing absorption. The specimen with periosteum was also being rapidly absorbed, apparently no faster than the other, relatively speaking, as it was originally larger.

EXPERIMENT 6 (New No. 1).—Dog 5 years old, weight 24 pounds. Piece of rib 1 inch long, periosteum intact, split in half, leaving the periosteum on one side and cancellous bone on the other. One piece planted into the muscles of each thigh. Eight months and one day later, the piece of bone in the right thigh measured three-fourths inch long and one-fourth its original diameter, smooth all over and no evidence of regeneration. The piece in the left thigh was three-eighths inch long, one edge slightly ragged and sharp, no signs of regeneration, but only one-fourth its original size. The results of one of these transplants is shown in Figure 6.

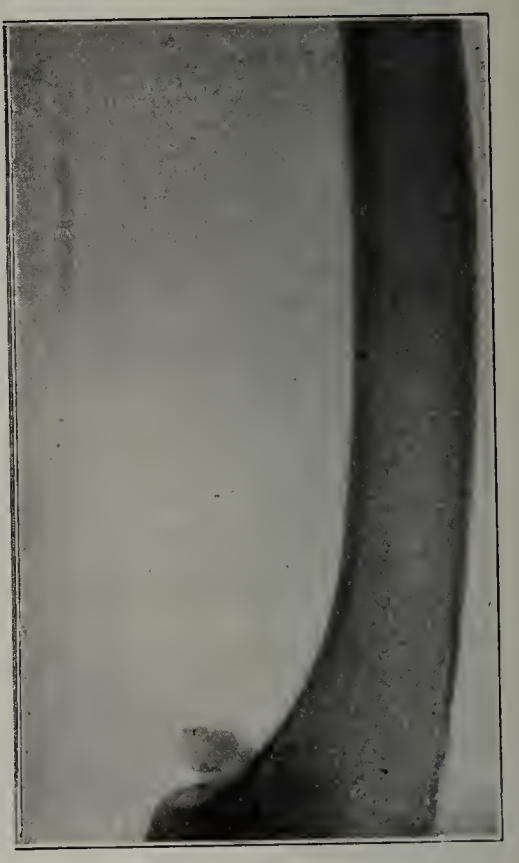


Fig. 5 (Experiment 5).—Four months and sixteen days after transplant, with periosteum; rapidly absorbing.

Bearing further on the question of the reproductive power of the bone and protective function of the periosteum, we report the following experiments in addition to those in our preliminary report:

EXPERIMENT 7 (L X). — Dog 4 months old, weight 12 pounds. The right ulna was bared, and 1 inch resected subperiosteally, each end of the bone capped with four-ply tinfoil, tied in place with 00 catgut; the same experiment was made on the opposite side, except that there were no caps over the ends of the bones. Figure 7 shows the results three months afterward. The ulna in the left side where no caps were used is completely restored, rather larger in diameter than before. The result in the right side where caps were used shows the gap filled in with a small extension of bone from proximal end growing out from the old

bone, just above the cap on the back side, where the cap did not extend high, running down in a periosteal trough to the distal end, there forming a false joint. From the distal fragment of the ulna is also a new growth of bone, not shown in the roentgenogram, extending out almost to the radius; in other words, a spur thrown out from just above the cap. It is very evident in this experiment that the bone grew from the original bones, as can be plainly seen; also, if the periosteum had filled in the gap in the opposite side, it should have done so in this side likewise.



Fig. 6 (Experiment 6).—Eight months and one day after planting one-half rib 1 inch long with periosteum and endosteum intact, into muscles of left thigh. Greatly reduced in size.



Fig. 7 (Experiment 7).—Subperiosteal resection of 1 inch of each ulna, right capped, left not. Left completely restored.

That periosteum removed from the rib or a bone of like anatomic structure where muscle attachments are present will occasionally produce bone, is shown in the following:

EXPERIMENT 8 (New No. 4).—Dog 3 months old. Periosteum removed from the rib, measuring three-fourths by one-half inch, was planted into the right side of the abdominal wall, spread smoothly on internal oblique muscle, and sutured at the four corners with 00 plain catgut. Seven months and fourteen days later, there was a small quadrangular spicule of bone. As the dog was killed at this time, it is impossible to say whether this spicule was absorbing or growing. This is the only instance in which we have ever been able to produce bone from free periosteal transplant, and we are inclined to believe that we carried osteoblasts with it on account of the muscle attachments at each edge, as at the linea aspera.

That ribs will be reproduced also from this upper and lower line of osteoblasts protected by the periosteum is shown in the following:

EXPERIMENT 9 (New No. 3).—Dog 4 months old, weight 13 pounds. The right ninth rib was subperiosteally resected from the cartilage to the spinal junction; there was difficulty in getting it unjointed at the back. The periosteum was easily removed and well defined, except that there was some difficulty at the lower border of the rib, some scraping being required to get it loose. Two months later, the seventh rib on the same side was removed subperiosteally; 2½ inches of the sixth rib were also removed subperiosteally. The periosteum in all cases was closed with 00 plain gut. One year after the original experiment, the ninth rib had been almost entirely reproduced (Fig. 8). The seventh, which had been ten months, was to a great extent reproduced, and the 2½-inch gap in the sixth rib, which also had been ten months, had nearly grown in from each end. These new-formed ribs were very thin, broad and irregular in outline. It seems quite evident in the sixth that the reproduction has been almost entirely from the cut ends of the ribs; the seventh shows by its irregular outline areas in which bone has not been as rapidly reproduced as in other places. The circular area toward the front end of this rib, showing absence of bone, in the roentgenogram, has a thin bridge of bone straight along where the edge of the rib should be, which shows in the prepared specimen and does not in the roentgenogram, rather indicating that the bone was filled in from the part of the periosteum originally on the upper border of the rib.

That rib, and also other bones will reproduce without periosteum, until they are prevented from further growth by ingrowing of fibrous tissue in their path, is shown in Figure 9, and also in our preliminary report, Nos. 20 and 26.

EXPERIMENT 10.—Figure 9 shows the results in Experiment 1, in which 1½ inches of the rib were resected with all the periosteum. Ingrowth of fibrous tissue evidently stopped further growth of the bone after the gap had been reduced to three-fourths inch. We believe that if this had been prevented by the presence of a periosteal trough, this gap would have been completely filled.

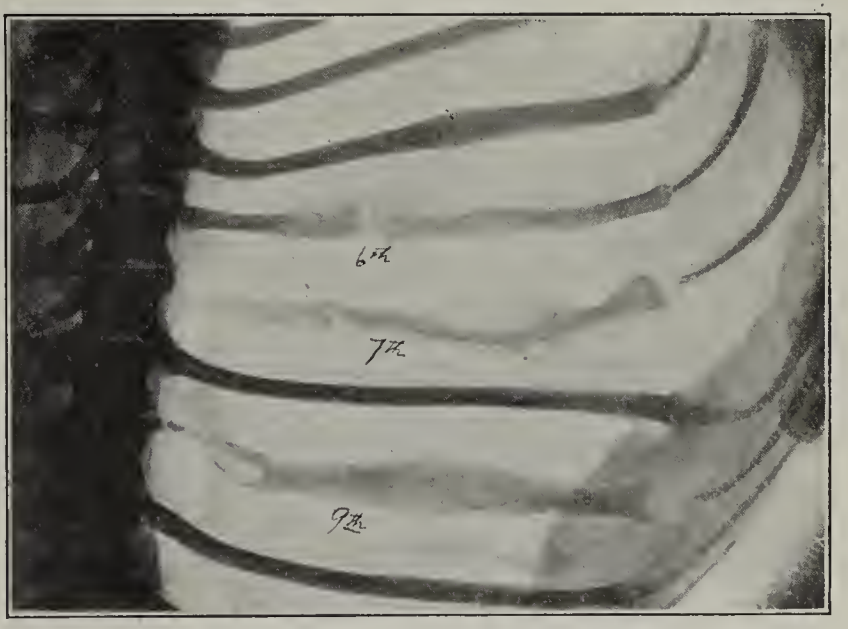


Fig. 8 (Experiment 9).—Ninth rib almost reproduced in one year after subperiosteal resection; seventh nearly reproduced after ten months; 2½ inches of the sixth rib nearly reproduced after ten months.

CONCLUSIONS

1. All of our free transplants, either with or without periosteum, into the muscle, subcutaneous tissue or omentum, were uniformly absorbed if sufficient time were allowed. This occurred regardless of the size

or age of the transplant, the sizes ranging from one-fourth grain to an entire ulna. All of our scapular spines completely covered with periosteum were invariably absorbed.

2. A review of the earlier clinical cases of McWilliams, reported to disprove Murphy's theory[11] that transplants in contact with living osteogenetic bone always become united, indicates that the operations were performed by faulty technic as compared with our present standards. The same also applies to his experiments cited under the same head. They did not have sufficient contact and immobilization to secure primary union.

3. In our experiments with free transplants, those covered with periosteum seemed to be absorbed about as rapidly as those without, though experiments of McWilliams, Phemister, and Davis and Hunnicutt indicate that the periosteum is a protection from absorption to both free grafts and contact grafts.

4. The periosteum is evidently a protection to the process of regeneration and union between the graft and parent bone, preventing the ingrowth of fibrous tissue, exactly as a nerve sheath is a protection to the reparative process in peripheral nerves.

5. From a study of our own experiments and those of others, we do not believe that the same interpretation should be placed on the behavior of the single free transplant, and multiple transplants in contact with one another. The latter seem to have an influence on the life and reproductive capacity of the grafts.

6. We do not believe it has been proved that the periosteum is an important factor in the restoration of circulation in the graft. On the other hand, the indications are that it is a protection to the free graft from the circulation and absorption, and performs the same function for the contact graft, while circulation is being established from the living bone, its regular source of blood supply. As the periosteum has slight vascular connection with the bone, it is hard to understand how it assumes this particular function in the transplant.

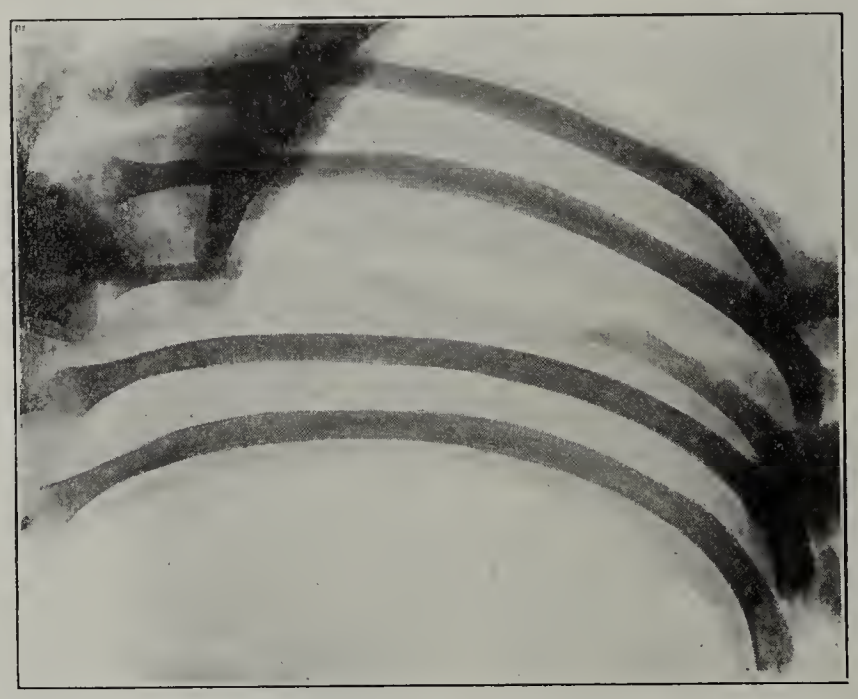


Fig. 9 (Experiment 10).—Gap where 1½ inches of rib with all the periosteum had been removed seven months and fourteen days before. One half of gap filled, principally from distal end of rib. Balance of gap filled with dense fibrous tissue. Periosteal trough would have prevented the latter.

7. We do not believe that a free transplant should be considered as permanent except after several years, or that it lives as long as its host. Otherwise, it would be of no clinical value.

11. Murphy, J. B.: Contribution to the Surgery of Bones, Joints and Tendons, THE JOURNAL A. M. A., April 6, 1912, p. 989.

Toronto's Fight for Health.—Toronto for the past five years has been fighting typhoid fever with milk campaigns, clean water, clean homes, minus flies, clean back yards, clean streets and clean stables. The typhoid deaths per 100,000 per annum have been as follows: 1910, 40.8; 1911, 20.0; 1912, 12.1; 1913, 10.4; 1914, 7.5; 1915 to date, 1.0. The general death rate per 1,000 has been: 1910, 14.0; 1911, 13.4; 1912, 12.8; 1913, 12.9; 1914, 11.2; 1915, 11.3.

OBSERVATIONS ON THE INTRACUTANEOUS REACTION OF SCHICK IN 455 INFANTS AND CHILDREN*

RUDOLPH DURYEA MOFFETT, M.D.
Assistant Visiting Pediatrist, German Hospital and Dispensary, and Metropolitan Hospital
AND
ARTHUR C. CONRAD, M.D.
Resident Physician, Metropolitan Hospital
NEW YORK

During the past year and a half, a great deal of interest has been aroused in an intracutaneous reaction to detect immunity against diphtheria. This method was devised to differentiate those cases which have antitoxin circulating in the blood or a natural immunity from those which have no antitoxin and therefore no immunity against diphtheria. In this country Park and Smith, and von Behring abroad, have suggested the immunization of patients by means of a toxin and antitoxin mixture.

As is well known, the immunity produced in our own bodies is of much longer duration than artificial immunity produced by the injection of horse antitoxin. Immunity conferred by injection of ordinary horse antitoxin is of comparatively short duration. We have found in our study and observation that it lasts only a few weeks, and this conforms to the observation of other investigators in this field of medical research.

In order to estimate the degree of immunity which follows the injection of toxin and antitoxin, it is necessary to determine the amount of antitoxin per cubic centimeter of serum in units. The usual method of investigation is that followed by Römer. This method is complicated and, for ordinary routine hospital examination, unsatisfactory. To overcome this Schick[1] proposed the intracutaneous injection of one fiftieth of the minimal lethal dose for a guinea-pig weighing up to 300 gm., and observed that he obtained at the site of injection a characteristic reaction which has become known as the Schick reaction. He used as a basis for his observations the work of von Behring, who observed that as little as one-thirtieth of a unit of antitoxin per cubic centimeter of serum will protect a person against diphtheria. If one thirtieth of a unit or more antitoxin per cubic centimeter of serum is present, there will be no reaction at the site of injection; but if there is less than one thirtieth of a unit of antitoxin per cubic centimeter of serum, there will be a marked reaction within from thirty-six to forty-eight hours, which is characterized by redness, swelling, itching and slight

* From the Metropolitan Hospital
1. Schick: München. med. Wchnschr., 1913, lx, 2608.

infiltration. This is a positive reaction, and means that the person injected has not sufficient antitoxin to neutralize the toxin injected, while if it is negative, it indicates that there is circulating in the blood sufficient antitoxin to neutralize the toxin injected. The unneutralized toxin is the thing which produces the local reaction.

This observation is of great moment when we consider that there are a large number of individuals



Fig. 1.—Reaction after forty-eight hours, with the characteristic white appearance in the center.

who have a natural immunity and who would give a negative Schick reaction and therefore do not require antitoxin if exposed to this infection. From a financial standpoint, in large communities this is very important, as our observations on this subject will show. Studies on this subject have been made by Park and Zingher,[2] Kolmer,[3] Graef,[4] Weaver[5] and others.[6]

From May 15 until June 15 there came under our observation at the Metropolitan Hospital, New York, 455 infants and children up to 14 years of age. These studies were carried on during this time on these children. The Children's Department at the Metropolitan Hospital consists of a building of 350 beds, given over entirely to the care of infants and children so that the reader will see that of necessity many of the children were in the hospital during this entire period of study. This fact has been a help to us in a careful investigation of this subject, the object of which was (1) to determine whether or not the Schick reaction was of as much benefit as had been reported, (2) to test the efficiency of an antitoxin in immunized patients, (3) to determine the length of time in which this immunization lasted, (4) to aid in the differentiation between throats that were clinically diphtheritic and ordinary cases of tonsillitis, and (5) to determine if the immunity or nonimmunity existed throughout a family. This we were able to observe fifteen times, which will be spoken of later.

The toxin which we used for this study was obtained from Dr. Abraham Zingher of the Research Laboratory of the New York Department of Health. The original diphtheritic toxin was diluted in this way: 0.6 c.c. (minimum lethal dose) of toxin in 9.4 c.c. in 0.5 per cent. phenol solution; and of this primary dilution 1 c.c. was diluted in 99 c.c. of normal saline solution. Of this secondary solution, 0.2 c.c. was injected intracutaneously with a record syringe and a No. 26 platinum iridium needle or a No. 3 steel needle made by Burroughs Wellcome & Co., London.

The usual site of injection was over the forearm after the arm had been cleaned with alcohol. Two-tenths c.c. of a secondary solution of toxin, when injected intracutaneously, produces a small whitish area in the skin. This is absolutely necessary to obtain a proper reaction. The reaction begins to appear within twenty-four hours, and by thirty-six to forty-eight hours the area of injection is of a grayish-red color with considerable induration of the skin and with a slight amount of pain. Our observation leads us to believe that the amount of reaction is rarely less than the size of a 10 cent piece, and if we had a smaller area without infiltration and induration we would consider the reaction negative. After a week the color begins to disappear, and as it does there will be seen a small whitish center to the area of injection which is followed by a slight brownish discoloration of the skin a week or ten days later. With this brown discoloration there is desquamation of the skin.



Fig. 2.—Reaction after two weeks, with a fading redness, but still characteristic white center.

This test was applied in a large number of cases to children suffering from the usual diseases which occur in á large hospital service, and the results of the reaction are given in the accompanying table.

The practical advantage of such a test as the Schick reaction will readily be seen when we cite a case that came under our observation during this period of study. One of our patients had given a positive Schick reaction and five days later developed a membrane on the tonsil and pharynx which was clinically

2. Park, W. H.; Zingher, Abraham, and Serota, H. M.: The Schick Reaction and Its Practical Application, Arch. Pediat., July, 1914.
3. Kolmer, John A., and Moshage, Emily L.: The Schick Toxin Reaction for Immunity in Diphtheria, Am. Jour. Dis. Child., March, 1915, p. 189.
4. Graef, Charles, and Ginsberg, George: Some Observations of the Schick Test, THE JOURNAL A. M. A., April 10, 1915, p. 1205.
5. Weaver, George H., and Maher, Loretta K.: The Diagnostic Value of Intracutaneous Injection of Diphtheria Toxin (Schick Reaction), Jour. Infect. Dis., March, 1915, p. 342.
6. Birnberg, T. L.: The Schick Reaction and Its Practical Application, St. Paul Med. Jour., 1915, xvii, 204. Bundesen, H. N.: Schick Reaction, THE JOURNAL A. M. A., April 10, 1915, p. 1203. Veeder, B. S.: Active Immunization Against Diphtheria by Means of von Behring's Vaccine, and the Diphtheria Toxin Skin Reaction, Am. Jour. Dis. Child., August, 1914, p. 154

diphtheritic. The Schick reaction had been positive; and without waiting for a positive culture, which takes about sixteen hours, we injected antitoxin at once, taking, of course, the usual culture. The next day the laboratory reported a diphtheroid organism from the throat. The child had already had its antitoxin and was beginning to recover from the diphtheria. If we had had to wait for the report of our culture we would have delayed the time of treatment at least

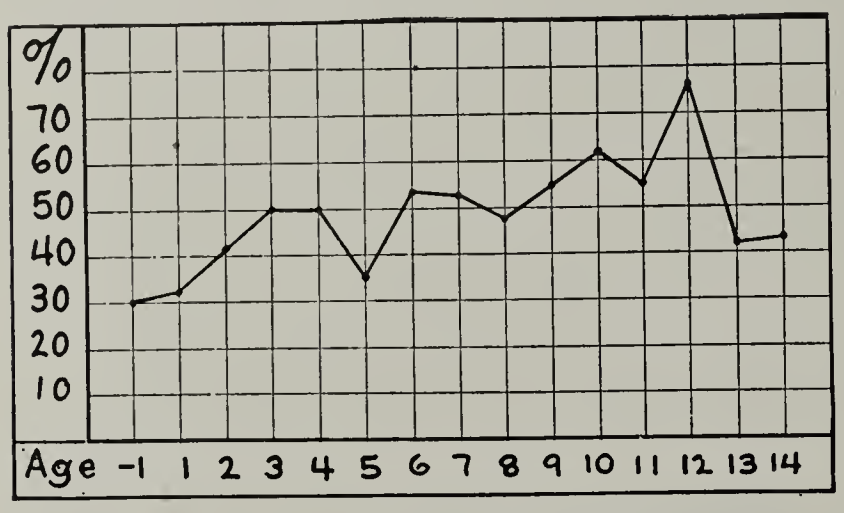


Fig. 3.—Percentages of positive reaction.

sixteen hours, which we believe to be detrimental. Two other children, who had given a negative Schick reaction, developed throats which clinically were diphtheritic, but because of the negative Schick, we did not inject with antitoxin. The regular routine throat culture showed a streptococcus organism, but not the Klebs-Loeffler. Thus, we are able to save considerably in the amount of antitoxin used during an epidemic. All cases giving a negative Schick reaction are not injected with antitoxin.

An interesting observation was made in families in which there were several children in the hospital. If one of the children of a family gave a negative Schick reaction, all of the children in the same family gave negative results. The same thing applied to those families in which one of the children gave a positive reaction, all the others in the same family giving a positive reaction.

We would urge that the Schick reaction, which is not in the form of treatment, but is purely of diagnostic value, be used more extensively in all large cities by the hospital and school physicians, and a permanent record kept in the hospital or in the school, or by the mother, of the nature of the Schick reaction in her child. This would undoubtedly aid a great deal in lessening the rather high mortality which occurs each year in the reporting zone due to diphtheria. If such a reaction was known to exist, the children would be known to be more susceptible and would be injected earlier with the necessary antitoxin, and, we believe, aid the public and the physicians a great deal.

RESULTS OF REACTIONS

Age in Years	Total Tested	Positive	Negative	Per Cent. Positive
Under 1 yr.	20	6	14	30
1	27	9	18	33.3
2	54	23	31	42.6
3	47	24	23	51
4	44	22	22	50
5	28	10	18	35.7
6	42	23	19	54.7
7	41	22	19	53.6
8	25	12	13	48
9	29	16	13	55.1
10	21	13	8	61.9
11	18	10	8	55.5
12	17	13	4	76.4
13	12	5	7	41.6
14	30	13	17	43.3
Total	455	221	234	48.5

Sex	Positive	Negative	Per Cent. Positive
Males	94	105	47.2
Females	127	129	49.6
Total	221	234	48.5

CONCLUSIONS

Our conclusions from this study of 455 cases are as follows:

1. The Schick reaction differentiates doubtful membranes of the throat.
2. It tests the efficiency of antitoxin immunization power.
3. It is of great value in institutional epidemics, in which it lessens the amount of antitoxin used one half, as will be seen by the foregoing figures.
4. It differentiates susceptible from nonsusceptible cases.
5. It shows a striking similarity in reaction in families, and indicates that immunity is a family condition, as shown by fifteen instances under our observation.
6. It lessens the great yearly expenditure for unnecessary antitoxin.

830 Park Avenue—Metropolitan Hospital.

MYOSITIS OSSIFICANS TRAUMATICA*

OSCAR M. SHERE, M.D.
Fellow of the American College of Surgeons
DENVER

The formation of bony tissue within muscle after a single injury cannot be regarded as a recent discovery, nor is it as rare a condition as some may

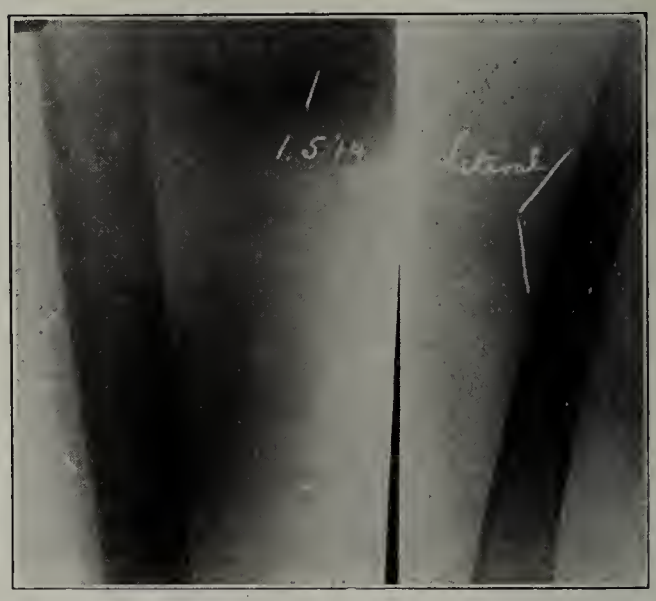


Fig. 1.—About the middle of the left femur is a slightly irregular area of bony structure. This mass is traced on the anteroposterior as well as the lateral view.

be inclined to believe. In reviewing the literature on this subject one is rather surprised to find reports of a great number of cases. The reason, however, for the accepted rarity of this peculiar pathologic condition is to be ascribed to the fact that most of the essays devoted to this subject deal with a great num-

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

ber of distinct clinical processes grouped under one general head, "myositis ossificans." When one makes the attempt to segregate the different forms of this peculiar condition from the literature, one is led into confusion and misunderstanding, being confronted with a single term covering diverse clinical conditions which are as indefinite and mystifying as the pathology of the disease is in itself.

At the outset, therefore, I desire to make this point clear, that in this brief discourse I shall aim to direct attention to that morbid process wherein bony tissue finds lodgment within muscular structures, such process occurring after a single closed injury to the region thus involved. I believe that the term "myositis ossificans traumatica" should embody the foregoing, and no other similar process, though of the same category.

It is only the allotment of a distinct entity to this particular form of the disease that will enable us to bring about a clearer understanding of the etiology, which in turn will insure a more intelligent treatment of the affection, and consequently many an unnecessary amputation will be obviated.

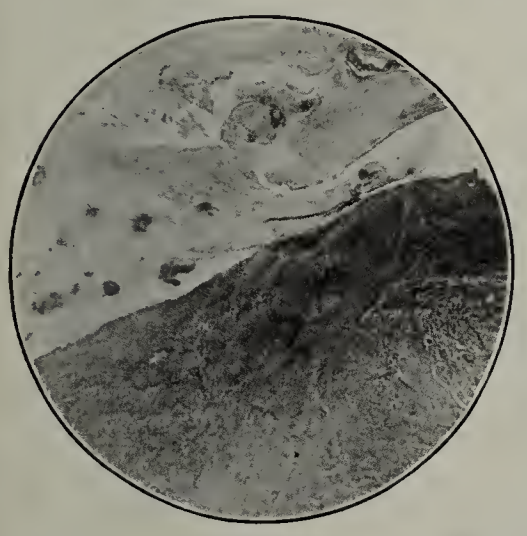


Fig. 2.—Myositis ossificans. This area shows islands and beams of bony structure surrounded by dense fibers of connective tissue which are situated in the midst of the muscle bundles.

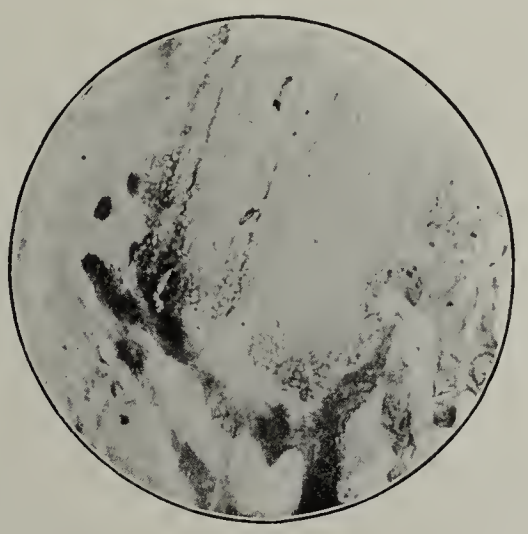


Fig. 3.—Myositis ossificans. This area typifies the process of metaplasia. Note the fibroblasts, cartilage and bony cells.

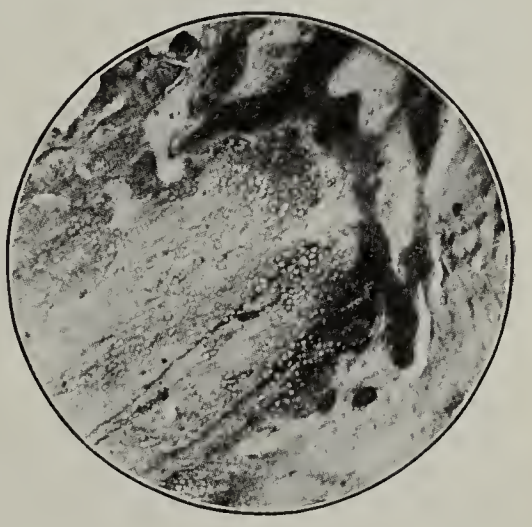


Fig. 4.—Myositis ossificans. Same as Figure 3. It shows the bony tissue more plainly.

Though two other cases have come under my observation, I deem best to introduce the subject by citing this individual case which formed the inspiration of this paper:

History.—A. C., man, aged 51, seen by me Dec. 5, 1913, with negative personal and family history, had always been in excellent health. The day previous, while engaged in unloading freight from a car onto a truck, the end of the latter accidentally struck his right thigh. The thigh, though severely bruised, did not incapacitate him, and he continued his work for several hours. He then walked home, a distance of over 2 miles. The next morning he noticed considerable swelling and ecchymosis, as well as pain which became exaggerated on motion of the extremity. It is at this stage that he first came under my observation, when the diagnosis of a severe contusion to the lateral aspect of the thigh was made. The treatment instituted consisted of rest in bed with elevation of the injured extremity. Hot fomentations had been constantly applied by the patient previous to my visit, and these were ordered to be continued. The patient followed this line of treatment for several days, when the swelling and ecchymosis had nearly disappeared; pain, however, still persisted when an endeavor was made to move the limb. These symptoms continued for about three weeks after the occurrence of the injury, when the patient again consulted me, at which time a careful examination disclosed a swelling of fusiform outline and about 3 inches in length over the external aspect of the middle third of the thigh (Fig. 1). The superjacent skin was still somewhat ecchymotic; otherwise there was no swelling. The "lump" was extremely tender on palpitation. Flexion of the knee beyond one fourth the normal range caused rather severe pain. The patient's general condition, however, remained unimpaired. A roentgenogram was taken the next day by Dr. S. B. Childs, whose report is herewith quoted: About the middle of the left femur on its outer aspect is a slightly irregular area of bony structure. (The margin of this area is traced by dots, as it is impossible to reproduce this shadow so that it may be clearly seen either on a lantern slide or print.) This mass shows distinctly both in the anteroposterior and the lateral view. Diagnosis: Bony growth springing from the shaft of the femur carrying the periosteum ahead of it.

In view of the outlined clinical as well as Roentgen findings, the diagnosis inclined toward periosteal sarcoma with a probability of myositis ossificans. An exploratory operation was advised, to which the patient readily consented.

Operation.—Jan. 7, 1914, about five weeks after the original injury, under ether anesthesia, an incision 6 inches in length was made over the lateral aspect of the thigh; embracing the most prominent part of the tumor. On cutting through the fascia lata and separating bluntly the muscular planes of the vastus lateralis, the handle of the knife encountered masses of bony deposit within that and underlying muscular structures until the thickened periosteum covering the middle portion of the femur was reached. When the latter was incised, the external and anterior surface of the femur was seen to be covered by cancellous bony deposit, not differing in any way from that developed on the surface of the long bones in cases of osteoperiostitis. This deposit was easily scraped off the normal shaft of the bone with a blunt curet. The section of the vastus muscle which was infiltrated with bony tissue was excised. A small rubber tube drain was inserted down to the normal bone. The fascia was sutured with chromicized gut, and the skin suture completed the operation. The drain was left in for twenty-eight days, when the wound was completely healed, no secondary infection having supervened. The entire extremity appearing normal, the patient was permitted to leave his bed and cautiously commence the use of the affected extremity. During the next three months the patient gradually resumed normal life and exercise, and at the end of this period was suffering no disability, except an occasional twinge at the site of operation. He soon afterward resumed his usual vocation, that of a freight stacker, which he follows to this day. The scrapings of bone from the shaft of the femur which were saved, together with the portion of the vastus muscle removed at the operation, were submitted to Dr. Philip Hillkowitz for pathologic diagnosis, who, after a very careful examination, made the following report: Pathologic specimen No. 878. Microscopic examination of sections from tissue removed from

Mr. A. C. reveal islands and beams of bony structure surrounded by dense fibers of connective tissue which are situated in the midst of the muscle bundles. Instead of the connective tissue, areas of cartilage are frequently found near the islands of bone. Occasionally collections of spindle-shaped cells are situated between neighboring beams of bone—cells that resemble if they are not identical with fibroblasts. The picture is that of the pathologic condition seen in so-called myositis ossificans (Figs. 2, 3 and 4).

In reviewing this clinical history, in conjunction with the Roentgen as well as microscopic findings, one cannot help but be impressed with the existing analogy between traumatic myositis ossificans and that of traumatic sarcoma.

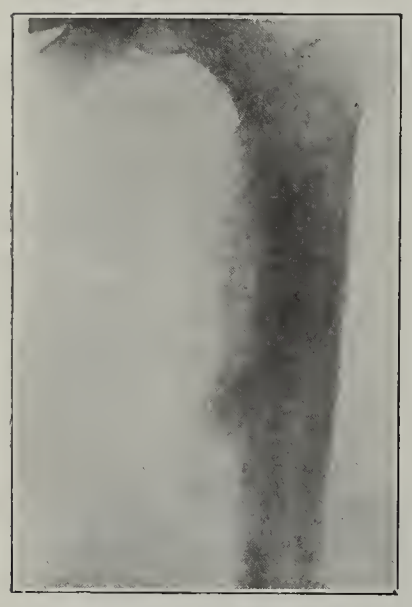


Fig. 5.—Mixed round and spindle cell periosteal sarcoma of the right femur having its origin on the inner side of the femur and extending into the adductor group of muscles. Anteroposterior roentgenogram made before operation. Note the radiating columns of bone sticking straight out from the femur through the tumor-like thick bristles. A roentgenologic feature characteristic of periosteal sarcoma. (From Clinics of John B. Murphy, February, 1915.) Compare with Figure 1.

To begin with, we are bound to recognize that in the two conditions just named we have a new growth of bony tissue which has been stimulated by a closed injury. If we accept White's definition that a neoplasm is "an abnormal mass of cells, tissues or organs . . . resembling those normally present but arranged atypically, which grows at the expense of the organism without subserving any useful function," how are we to proceed to exclude the pathologic process found in myositis ossificans as shown by the foregoing microscopic findings from the category of true neoplasms, and if so how does it differ from osteosarcoma?

The causative factor in both instances is a single closed injury. The continuity between the time of injury and tumor formation is alike in the two conditions. The morbid process arises on the exact site where an injury has previously taken place. In the two instances, the growth is rather rapid, which is also true of its predisposition for the earlier periods of life.

Again, in the literature we find cases reported in which the original diagnosis of myositis ossificans was made by a competent pathologist at the exploratory operation; such cases having been previously diagnosed by expert roentgenologists as belonging to that class, and after a lapse of several months, in some cases two or three years, these patients presented so-called "recurrences," and subsequent operations disclosed these growths to be osteosarcomas.

To emphasize this point still farther, I quote from Coley's article on this subject:

> It is stated that the diagnosis of subperiosteal sarcoma had been made in all three of Finney's cases. One case operated on twice, recurred, necessitating three operations. Amputation at the hip-joint had been recommended and was about to be performed in one case, when first seen by Finney. In another case quoted by Finney (Whitelock) amputation of the thigh was performed under the mistaken idea that the condition was a periosteal sarcoma.

Numerous instances of this kind are reported by other observers, but for the sake of brevity they will be omitted from this paper.

Is there or can there be any doubt in any one's mind, that the two conditions are in all probability related? I have experienced in two cases the perplexing problem in which the roentgenologist as well as the pathologist would not commit themselves as to the true nature of the condition, being undecided whether the process was myositis ossificans or sarcoma. Subsequently, however, these cases proved to be myositis ossificans, the proof consisting in the fact that the patients were cured and were free from recurrences after four and two years, respectively. When we bear in mind that the roentgenogram as well as the microscopic picture of the tissue differ but little in the two conditions, we can hardly blame them for their reluctance in making a positive diagnosis (see Figs. 1 and 4, and compare with Figs. 5 and 6). There are some pathologists who assert that all these cases are sarcomas originally, and that soon after the accident a sarcoma develops in the bruised and strained portion of the periosteum, the sarcoma remaining of very slow growth and almost latent for years, when suddenly it lights up and grows with great rapidity. Against this theory, Coley cites the well-known fact that not infrequently benign tumors of the breast, cysts, cystadenomas or fibromas do undergo malignant degeneration and become carcinoma. Likewise he says, chronic inflammatory conditions often undergo similar degeneration in course of time. Old fractures also offer favorable sites for the development of sarcomas.

While considerable difference of opinion has prevailed and still prevails regarding the histogenesis of cancer in general, and notwithstanding the theory of Ribbert, who holds that in all cases of malignancy we must have an embryonic "cancer nest" present, I am in full accord with Coley's theory, namely, that certain cases of myositis ossificans will under favorable conditions become true sarcomas.

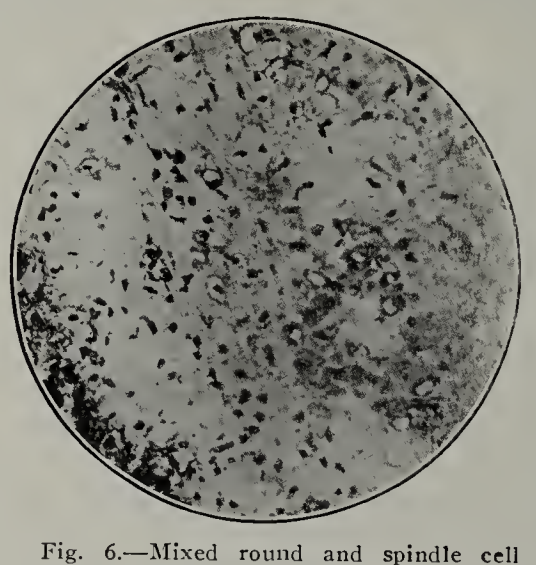


Fig. 6.—Mixed round and spindle cell periosteal sarcoma of the femur. This area shows cartilaginous metaplasia with calcium deposit at the extreme edge. (From Clinics of John B. Murphy, February, 1915.) Compare with Figures 2, 3 and 4.

The question before us, then, is to determine what are the predisposing causes that favor such a transformation. In my endeavor to answer this question, I hope to be able to throw some light on the essential factor in the obscure etiology, namely, trauma of the closed variety.

Before entering, however, into this analysis, permit me to pass in review the chief pathologic characteristics of the structural elements which dominate myositis ossificans as well as that of normal process of repair after injury to periosteum, bone or any structure belonging to the connective tissue variety.

We know that in both processes the cell products are of the connective tissue type; but instead of fibers,

as we are apt to picture to ourselves when speaking of this particular type of tissue, these newly formed structures are largely composed of cells wherein the ground substance is much less abundant in proportion to the cellular elements than in normal or adult tissue of that type. The cells of such metaplasms, if I may be permitted to use this term, resemble closely those found in the developing connective tissue of the embryo, or the granulation tissue of inflammation, in which they are known as fibroblasts. These fibroblasts in time will either become true functionating connective tissue cells or they may undergo various metaplastic changes with the resulting formation of either cartilage or bone. In the repair of a wound we have a fibrosis which consists of an increase of these fibers at the spot where the inflammation existed. This, in fact, constitutes the process of normal repair and absorption of an inflamed area (Adami). If, however, the process of inflammation is not combated, then the same fibroblasts, instead of forming the granulation tissue of a healing wound, may and often will form cartilage or bone.

In consideration of the foregoing facts, it becomes clearly evident that the dominant cell in myositis ossificans is identical with the one found in regenerating tissue following injury. To carry it still farther, we must admit that the same cell also typifies sarcoma.

The significance of these introductory remarks will become apparent when we classify injuries into their proper as well as essential subdivisions, namely, (a) closed and (b) open injuries, or "trauma occulta and trauma aperta."

It is absolutely imperative, when we speak of trauma in relation to myositis ossificans, to emphasize whether the injury is an open or closed one, because the process of repair which subsequently follows, and on which, in my opinion, the genesis of the growth depends, is so vastly different in the two forms named above, although both of them depend on the same cellular element for their growth, as I have clearly shown in the pathologic discourse of this paper.

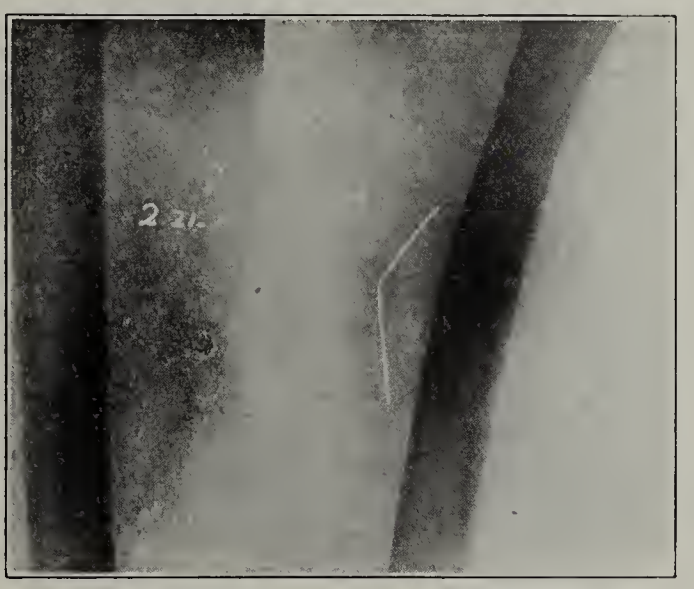


Fig. 7.—The bony material is seen projecting well into the muscular structure in the area enclosed by the bracket.

Is it not rather unique, to say the least, that in over 200 cases of traumatic myositis ossificans which I have collected from the literature, not a single one occurred after an open injury? Is this a mere coincidence or does such an incontrovertible fact furnish us with a probable clue to the solution of this mystifying pathologic process? I am inclined to answer the latter part of this question in the affirmative.

Neither time nor space permits me to even touch on the various theories advanced regarding the pathogenesis of this interesting condition. After a great deal of discussion, the question is as indefinite today as it was in 1740, when the first case of this kind was reported by Freke in the *Philosophical Transactions*. The most generally accepted methods of origin, however, are that (1) a bit of periosteum is torn off at the time of the injury, and, becoming displaced, continues to form bone, or that (2) also as a result of trauma, the fibrous connective tissue or even the muscle fibers themselves undergo retrograde changes which result in bone-like formation. Against the first accepted theory I offer the experimental fact that the periosteum in itself is not osteogenetic. Murphy says that normal periosteum completely detached from bone and transplanted into muscle tissue bed in the same individual may produce a permanent bony deposit, but only if osteoblasts remain attached to the lower layer of the periosteum. He considers the periosteum to be a limiting membrane. Macewen likewise teaches that the function of the periosteum is to limit the distribution of osteoblasts, thus preventing their migration to the soft tissues. The second theory, though more logical, still does not conform to modern teaching, and is not carried out sufficiently in my opinion. I should also venture to assert my doubt in the statement made that the muscle tissue in itself ever undergoes degeneration.

Histologic study, verified by experimental work, has now definitely established that any new growth arises in a minute circumscribed area in which a progressive proliferation of cells takes place. It must also be remembered that the connective tissue of any neoplasm is partly derived from the preexisting connective tissue of the surroundings, and is partly a new formation. In studying the photomicrographs of the tissue removed from my case, we can readily see that the muscle bundles have undergone but little change, and that the components of the newly formed tissue are fibroblasts, cartilage and bony cells (Figs, 2, 3 and 4).

If I have made myself clear in what I have said above, it necessarily follows that, for certain pathologic reasons, when connective tissue structures are traumatized, the proliferation of fibroblasts or osteoblasts, as the case may be, takes place, and when the injury is a closed one this process of proliferation goes on and the new cells by their migration invade every available space in the surrounding and neighboring tissues until farther restrained by some new structure that they may encounter which acts like a limiting membrane. If we apply this pathologic principle to the subject under discussion, we must needs conclude that, given a closed injury to bony structure in a previously healthy individual sufficient to cause a proliferation of osteoblasts, and these in turn encountering no resisting structure to check their distribution, a bony deposit may result in any of the neighboring tissues, be they muscle tendon or fascia; whereas, in the case of an open injury involving the tissues named above, the migration of these fibroblasts toward the site of injury is not impeded. By making fine fibrillary connections with the cells nearby, they ultimately form the granulation tissue of healing wounds.

This, in brief, constitutes the difference in the pathologic sequences following a closed or open injury involving connective tissue structures. To this must be added the well-known fact that the power of regeneration is ordinarily greater in connective tissue cells

than in any other form of cells in the body, and that this activity is greatly enhanced when stimulated by an injury.

The correlation of the data presented above, together with the clinical findings, form the basis of my theory for the causation of myositis ossificans by means of closed trauma, which, if true, will also hold good in those cases in which the supervention of sarcoma takes place.

With the survey of the etiologic character of the lesion to be dealt with, we come to the phase of the subject that is of most concern to the surgeon. What is the most appropriate method of treatment to be instituted in these cases? One cannot review even a small portion of the literature dealing with the treatment without being impressed with the divergent opinion held by a number of writers on this subject; however, the majority of writers favor excision as the method of choice. If my theory is correct, then there is only one way in treating these cases, and that is by the conversion of a closed into an open wound —a treatment adopted in all of my cases and fully described in the first part of this paper. Drainage should be instituted in every case and kept up until the tissues feel normal to the touch. The Roentgen ray will also aid in deciding when to allow the wound to close (Fig. 7). With these precautions, operative procedures will be followed by complete cure without the danger of recurrences (Fig. 8).

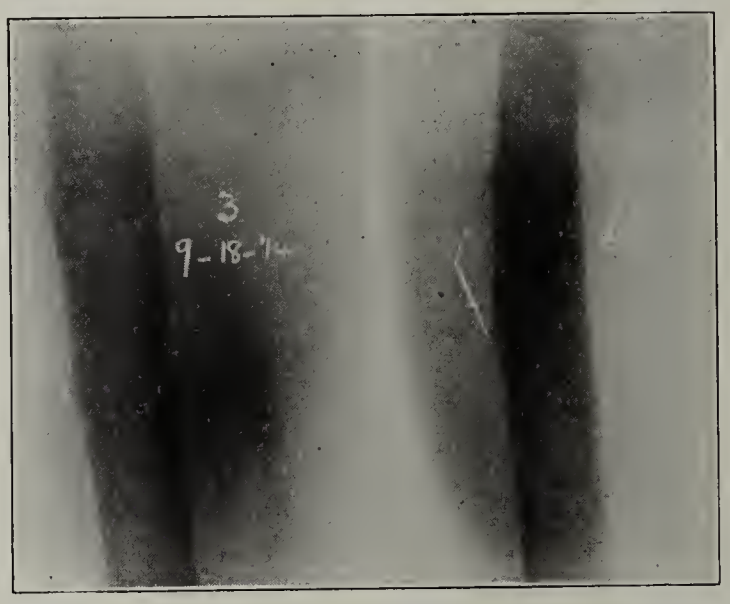


Fig. 8.—This roentgenogram, taken nearly nine months after the operation, shows considerable irregularity of the cortex of the femur in the area included by brackets.

318 Commonwealth Building.

ABSTRACT OF DISCUSSION

Dr. O. F. Lamson, Seattle: Dr. Shere's paper is exceedingly interesting on account of the unusual pathologic conditions described. It seems to me, however, that in his paper he has confined himself to one type only. There are two types—the type which develops from a single severe injury, and the type which follows repeated injury, less severe. An instance of the latter would be injury to the deltoid muscle which soldiers have, also horseback riders, in the muscles of the thigh. In regard to treating these conditions as sarcoma, there is room for discussion. It is true that sarcoma often follows a severe single injury, but the fact remains in those cases operated on which prove to be true myositis ossificans traumatica that there has been no metastasis. There seems to be two different pathologic origins for this particular condition. One where in severe injury the periosteum is torn from the bone and results in the formation of bone in the muscular tissue, and the other where the fibrous tissue results in bone formation. I saw a case in Seattle in which there had been a tearing off of part of the periosteum which resulted in finger-like projections of bone into the muscle. In the treatment of this condition it is important that the patient be observed until there is no further progress in the growth; otherwise there will be a recurrence, and the removal of the growth must be complete. Dr. Shere's statement is that these cases always occur in closed wounds; this is probably due to the fact that in the closed wound where there is considerable hemorrhage there is more fibrous tissue formed from which the osseous change takes place. If this is a factor in the formation of bone in muscle, the early incision into the area with drainage, would be a prophylactic measure of great importance.

Dr. Dean Lewis, Chicago: It is an interesting fact that traumatic myositis ossificans follows posterior dislocations of the elbow so frequently, and occurs after dislocations which have been reduced early. In this type of injury the periosteum is considerably stripped up, and the periosteal injury associated with this dislocation may account for the frequent development of myositis ossificans. The causes of the changes which lead to bone formation are not known. The changes in muscle and fascia which have been used to repair a defect in the ureter are very striking. Strauss has shown that the majority of fascial flaps used to repair defects in ureters become transformed into bone. I do not believe that there is any relationship between myositis ossificans and sarcoma. The diagnosis may be at times somewhat difficult, especially the histologic diagnosis, but in those cases in which a sarcoma has developed, the lesion was probably sarcomatous from the beginning. It is difficult to determine whether or when to operate. In many cases when let alone the bone gradually becomes smaller and may not interfere with function. I believe operation should be deferred in most cases until the bone has been considerably reduced in size. Undoubtedly the blood clot has considerable to do with the formation of the bone. I cannot agree with Dr. Shere in his early operation, for we cannot tell when myositis ossificans will develop. It certainly develops in but a small proportion of cases, and a routine operation would lead to needless surgery.

Dr. Alexius McGlannan, Baltimore: Pathologic new bone formation in the body may be an adaptation or some peculiar reaction to injury. We believe that myositis ossificans is a particular reaction to injury, just as keloid is due to injury to the skin, and therefore we believe it is not wise to operate early in the disease. If we wait in these cases the mass of bone shrinks and often does not require operation. In the early stage it requires a large operation. If operated on during the period when the tissues are forming bone, the traumatism will cause more new bone to form, adding this to what is going on from the original injury.

Dr. O. M. Shere, Denver: I expected some antagonism to my theory of myositis ossificans, as well as to the treatment. The theory was not attacked, for which I am grateful. With reference to the comparatively early operation which I advocate in my paper, I believe I am justified on the grounds that the process appears to me to be a forerunner of sarcoma in a good many cases. In other words, it is presarcomatous. One would remove a mole or a wart from the skin for the reason that some of these growths become malignant in the course of time; the same principle holds true here because of the existing cases wherein sarcoma supervened on undoubted cases of original myositis ossificans. That is why I advise early operation. I cannot see any similarity between keloid and myositis ossificans. As to the rôle of the periosteum mentioned by Dr. Lewis, I can only reiterate what I have stated, namely, that the periosteum in these cases loses its function as a limiting membrane, and that the bony deposit in the affected muscles does not depend on the osteogenetic function which its inner layer may possess. I am only too well aware that it will take a great deal of time before we realize the true value of the distinction between open and closed injuries. The sooner that difference is appreciated by the profession, the better will be our conception of some of the malignant diseases which have thus far been the bugbears of the surgical profession.

TRACHEA POSITION *

GERALD B. WEBB, M.D.
ALEXIUS M. FORSTER, M.D.
AND
G. BURTON GILBERT, M.D.
COLORADO SPRINGS, COLO.

In 1914, in an article on "Artificial Pneumothorax," we noted[1] a case in which a deviation of the trachea had for fifteen years been mistaken by one of us for a cavity at the left lung apex. Palpation of the trachea in the sternoclavicular notch in this man corroborated the Roentgen findings so easily that we have been led to investigate the tracheal position in a series of 100 cases during the routine physical examination of the chest of patients with pulmonary tuberculosis. The accompanying illustration demonstrates the method of procedure.

By applying the thumb in the manner indicated, the trachea can easily be felt and rolled beneath, in the majority of patients; occasionally a very thick neck will not allow the trachea to be so detected.

We have been surprised to find that in most cases of pulmonary tuberculosis, even in the early stages, the trachea is deviated to one side or to the other.

Palpation of the position may also be confirmed by auscultation. Loud tubular breathing and loud whispered sounds can be heard in front and often at the back, far to the side on which the trachea is deviated.

In a number of children whom we have examined, the position of the trachea at the sternoclavicular notch appears to be central. In normal adults it is also usual to find the central position, although exceptions may not be infrequent.

From the frequent deviation which we have observed toward the affected lung in known tuberculous patients, it is quite possible that deviation in apparently normal persons may be a result of an old healed one-sided infection.



Palpation of trachea in case of known decided deviation of trachea to left. Examiner should be seated in front of patient. Deviation to patient's left is best detected by palpation with examiner's left thumb, and vice versa.

The deviation of the heart apex to one side or the other can be observed to corroborate in some cases the deviation of the trachea.

Deviation of the trachea may be due to pleural adhesions together with fibrosis in the lung, or possibly to contraction of the lung roots alone, in which tuberculosis is so often considered to have originated.

Marked deviation may suggest adhesions of the pleura on that side, and such adhesions may forewarn us that the application of pneumothorax to that lung in advanced disease may not prove wholly successful.

We have found frequently that the movement of the trachea to the side of the healthier lung following the application of pneumothorax foretells a successful application of this procedure.

The trachea may be considered possibly as a pendulum, which might swing to the side on which contraction is taking place.

In the observation of the trachea position in 100 cases of pulmonary tuberculosis of all stages, the recognition of the side especially affected proved correct in sixty-nine, doubtful in nineteen, and incorrect in twelve cases.

In forty-four advanced cases of pulmonary tuberculosis, in the observation of the trachea position for deviation toward the lung most involved, the recognition of the side especially involved proved correct in thirty-eight, doubtful in five cases, and incorrect in one case.

In the observation of the trachea position of fifty-six early and moderately advanced cases with the history of occasional pleurisy or the finding of thickened pleurae, the recognition of the side especially effected proved correct in thirty-two cases, doubtful in five cases, and incorrect in one case.

It is usual for physicians engaged in examining for pulmonary tuberculosis to palpate and note the size and consistency of the thyroid gland. Immediately following this examination it is a simple matter to palpate the trachea just below the thyroid isthmus.

We believe from our results to date that the trachea should be palpated and auscultated in the routine examination of our pulmonary patients, and the position observed and noted.

We feel that such deviation may be an aid to the early recognition of pulmonary tuberculosis, and also may be of value in deciding the possibility of successful pneumothorax.

In one patient in whose case a competent Roentgen-ray observer has made the diagnosis of early aneurysm, the deviation of the trachea to the right was corroborated by two of us.[2]

* Read at the meeting of the National Association for the Study and Prevention of Tuberculosis, Seattle, June, 1915.

1. Webb, G. B.; Gilbert, G. B.; James, T. L., and Havens, L. C.: Artificial Pneumothorax, Arch. Int. Med., December, 1914, p. 883.

2. Since this paper was prepared, Dr. George Mannheimer of New York has called our attention to a paper on "Slanting of Rima Glottidis and Deviation of Larynx and Trachea in Diagnosis of Pulmonary Tuberculosis," by G. Baer, Deutsch. med. Wchnschr., Feb. 27, 1908. An abstract of this paper in THE JOURNAL A. M. A., April 4, 1908, p. 1156, reads as follows: "Baer found that the laryngoscope revealed in many cases that the trachea and larynx were dragged to one side by the shriveling process in pulmonary tuberculosis. The rima glottidis was found slanting in 27 per cent. of 200 tuberculous patients examined." Baer's paper is manifestly different from that presented above, although the basis is similar. The method which we have presented is at once more convenient and more reliable.

Evolution and Sex.—At the Second International Conference on Race Betterment, held in San Francisco, Luther Burbank discussed ."Evolution and Variation with the Fundamental Significance of Sex." Mr. Burbank said: Abundant, well balanced nourishment and thorough culture of plants or animals will always produce good results in holding any species or variety up to its best hereditary possibilities, beyond which it cannot carry them, and lacking which, maximum development can never be realized. But a sharp line must always be drawn between the transient results, temporarily attained through favorable environment and the permanent results of selection of the best individuals for continuing the race. Only by constant selection of the best can any race ever be improved.

CASES FROM THE SKIN CLINIC OF LELAND STANFORD JR. UNIVERSITY SCHOOL OF MEDICINE *

HARRY E. ALDERSON, M.D.
SAN FRANCISCO

Case 1 (Serial No. 4266).—Leukoplakia of tongue and palate in an Irish painter, aged 68. The dorsum of the tongue is almost entirely occupied by a very thick hyperkeratosis (Fig. 1). There is a similar process on the hard palate. The lesions have existed for over thirty years. The patient has cerebrospinal syphilis (of the meninges), diabetes mellitus and chronic nephritis. These diagnoses have been established by complete physical and the usual laboratory examinations.



Fig. 1.—Leukoplakia of tongue.

Case 2 (Serial No. 26856).—Tuberculosis verrucosa cutis and epithelioma simulating blastomycosis in a Chinese laundryman, aged 55. For five years a slowly spreading granulating area has existed on the dorsum of the left hand (Fig. 2). The patient has been applying various kinds of Chinese remedies. Occupying most of the dorsum of the left hand there is a well-circumscribed "granulating" mass. Elevated about 3 mm. and slightly detached from it, a similar smaller lesion is over the third metacarpophalangeal knuckle. Scattered thickly through this area are numerous small deeply seated discharging pustules. The resemblance to blastomycosis is very striking. Repeated studies of fresh material, cultures and animal inoculations failed to reveal blastomycetes.

Sections of tissue, taken superficially as well as deeply, showed a well-developed squamous cell epithelioma (Professor Ophüls). Animal inoculations resulted in the development of tuberculosis (guinea-pig). The patient was given Roentgen-ray treatment (Coolidge tube, 4½ inches spark gap, target 10 inches from lesion, 40 M. A. minutes, filtered through 1 mm. aluminum), in May, 1915. He never returned. Our social-service department reported that he had left for China.

Case 3 (Serial No. 11436—11).—Lupus vulgaris of scalp in an Italian woman, aged 68. The history is very indefinite. The patient states that her trouble began in 1904 (?) in a pustule which was surrounded by an inflammatory zone on her scalp. Her health always had been good. It is probable that the lesion existed for years before it was noticed. She presents typical nonulcerating lesions involving almost her entire scalp, forehead and face as far as the middle of the nose, almost the entire right cheek and right ear. The hair of her scalp is entirely absent in the affected areas. When she was first seen, in 1907, the diseased areas were covered with seborrheic crusts with marked infiltration beneath the same. The disease has slowly advanced downward over the face.

Some facts were of special interest. The Moro tuberculin reaction was positive. One injection of Koch's old tuberculin (0.00001) was promptly followed by severe focal as well as local reaction, headache and malaise. She has had Roentgen ray (Coolidge tube), 4½ inches spark gap, target 10 inches from the skin and a 1 mm. aluminum filter interposed.

August 1914, 32 M. A. minutes (followed by pronounced erythema).

October, 1914, 36 M. A. minutes (followed by pronounced erythema).

January, 1915, 26 M. A. minutes (followed by pronounced erythema).

As the radiodermatitis subsides, cicatrization extends in the diseased areas and the lupus foci seem to diminish in number; but still there remain many active lesions and the prognosis seems almost hopeless.

Case 4 (Serial No. 22373).—Epithelioma responding to Roentgen-ray treatment in a Greek laborer, aged 26. In 1907 a small nodule appeared on the right cheek near the nose. This soon ulcerated and advanced in an outward direction, followed behind by healing. Syphilis was excluded. When first seen, the patient presented a thin, depressed scar 2 by 4 cm. extending horizontally under the right lower eyelid, with a deep ulceration (about 12 mm. wide and 12 mm. deep) at its outer termination adjacent to the outer canthus. This deep cavity was the result of the use of a cauterizing agent of unknown nature applied by some physician. There was no adenopathy. Under Roentgen-ray treatment (Coolidge tube) 4½ inches spark gap, target 10 inches from the skin and a 1 mm. aluminum filter interposed, the cavity steadily closed until now it has almost completely healed over. At present there is a deep red erythema due to the last treatment four weeks ago.

The following is a record of the Roentgen therapy:

December, 1914	72 M. A. minutes
January, 1915	30 M. A. minutes
February 1915	36 M. A. minutes
March, 1915	76 M. A. minutes
April, 1915	36 M. A. minutes
May, 1915	30 M. A. minutes

Case 5 (Serial No. 13334).—Alopecia universalis in a boy, aged 12, who was born in California. The disease began in 1909 with several typical patches of alopecia areata.



Fig. 2.—Tuberculosis verrucosa cutis and epithelioma simulating blastomycosis.

Within a year the entire scalp and also the eyebrows and eyelids became completely devoid of hair. The loss of the hair of the eyebrows was preceded by redness and slight swelling there. Off and on small abortive tufts of hair an inch long have grown over the occiput only to fall out in a short while. Under the chin there has remained constantly very fine lanugo hair, but the hair inside the nostrils and ears has been lost. The family history is negative.

Complete neurologic examination by Doctor Schaller revealed no evidence of organic nervous disease, although it was noted that the boy was rather irritable and of a neurotic disposition. He is of average intelligence and appears strong physically. He has adenoids and an enlarged left tonsil. His teeth are irregular, deformed and decayed. The postcervical glands are enlarged and the left epitrochlear gland is palpable.

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

A complete physical examination revealed no other abnormalities. The blood Wassermann reaction is negative. Owing to the difficulty of doing anything with the patient, other blood examinations and other laboratory work (excepting urinalyses) so far have not been possible. However, it is hoped to accomplish this soon.

CASE 6 (Serial No. 16845).—Recurrent crysipelas of the face with concomitant impetigo contagiosa in a girl, aged 13.

During the past year the patient has had four or five repeated attacks of typical impetigo contagiosa, with erysipelas involving the entire right upper half of the face, accompanied by the usual constitutional symptoms. At one time the process was complicated by the development of a right parotid abscess which had to be treated surgically.

Each time the condition has subsided after several injections of polyvalent streptococcus vaccine (50,000,000 dosage) and the usual local treatment. No foci could be found in the sinuses, but there exists a chronic lacunar tonsillitis, and both inferior turbinates are hypertrophied and in contact with the septum. The rôle of the streptococcus in these two affections is very evident here.

CASE 7.—Keratosis palmaris and plantaris hereditaria in two boys, (aged 2 and 4 years respectively) both presenting typical very marked lesions on the palms and soles, which lesions have been present since birth. The mother, several uncles and aunts and grandfather have the same abnormality. The condition is always better in the summer.

240 Stockton Street.

ABSTRACT OF DISCUSSION

DR. GEORGE M. MACKEE, New York: I would advise the use of the Roentgen ray in the case of keratosis plantaris et palmaris. I base this opinion on the fact that several examples of keratosis (ichthyosis, erythrodermia ichthyosiforme congenitale, keratosis palmaris et plantaris, senile keratosis, hyperkeratosis, callositas, etc.) have been cured in this manner in Dr. Fordyce's clinic.

DR. OLIVER S. ORMSBY, Chicago: About fourteen years ago we treated a patient with keratodermia, whose lesions were more extensively developed even than those present in the case demonstrated by Dr. Alderson. Very shortly after birth, in this instance, the palms and soles were almost black in color and the thickening was pronounced. Radiotherapy was employed in moderation, with beneficial results. We feel, however, that this method of treatment should be employed in this disorder with the greatest of care.

DR. JOSEPH ZEISLER, Chicago: An interesting feature of the case of keratosis lies in its hereditary element. The mother who has both hands affected, shows two little boys with the same affection. In a case like this which has come to my notice, I told the father that if he had children the girls would be affected. This is an observation which is not original with me, that hereditary features are transmitted. As regards treatment, I endorse what has been said here as to the effect of the Roentgen rays; but as Dr. Alderson has asked for suggestions, I should ask him to try the internal administration of thymus and watch the effect carefully.

With regard to the case of lupus vulgaris of the scalp, I should like to investigate the history of this disease. It is against my experience to think that this disease should have started so late in life. I should think it has been there for a number of years; and the earliest features, such as nodules, were not noticed. In a case of lupus commencing after 40 years, I should always doubt the diagnosis. I would like to suggest a treatment I have employed recently in an almost identical case of leukoplakia of the tongue and palate. I have often used radium, but it is not entirely satisfactory. I have frozen these patches with carbon dioxid snow to the point of exfoliation, with a good deal of success.

DR. EVERETT S. LAIN, Oklahoma City: As to Roentgen-ray treatment of keratosis, my experience has proved that the slow method does not give good results; but the intensive doses do. I would give this patient intensive doses, or push it to the second point of reaction and then cease treatment.

DR. RICHARD L. SUTTON, Kansas City, Mo.: After trying practically all of the various methods that have been recommended for the treatment of leukoplakia, I have found radium by far the most efficient. An exposure of from twelve to twenty milligram hours is usually sufficient to bring about a cure. Unfortunately, in some instances, as in this one, the areas are very extensive, thus rendering the choice of a suitable plan of treatment a difficult matter.

Alopecia may result from any one of a number of causes. In some instances a general intoxication may give rise to an alopecia which is clinically identical with alopecia universalis. In this particular instance, however, to me the symptoms are suggestive of syphilis, and I should like to ask Dr. Alderson if a serum test has been made. With respect to the treatment of alopecia areata, I have found small doses of hexamethylenamin (gr. 5 to 10 after meals) beneficial. It is probable that while some cases of alopecia areata are due to trauma or to direct ganglionic injury, the majority are due to infection, either of the ganglion or of certain nerve trunks, with a specific microorganism. It is probable that this is the reason why drugs like hexamethylenamin prove efficient.

DR. A. J. MARKLEY, Denver: I have observed a number of cases of leukoplakia in the hands of Dr. Levy of Denver treated by fulguration. The reaction is quite severe but subsides rapidly and is the most satisfactory method that I have so far observed.

DR. HOWARD FOX, New York: My experience is that of nearly every dermatologist, that practically nothing can be done to cure leukoplakia. All that can be done is to have the patient use a bland mouth wash and avoid smoking. I have never had permanent results even from the galvanocautery. I have recently seen a case of leukoplakia temporarily improved by radium (treated by a colleague). When last seen the lesion was slowly returning to its original condition.

DR. ERNEST DWIGHT CHIPMAN, San Francisco: I do not know that Dr. Alderson knew it, but the boy with alopecia had a positive Wassermann and had specific treatment for a considerable period five or six years ago when I first saw him.

ADENOMA OF THE BREAST

JACOB L. BUBIS, M.D.
AND
ALLEN GRAHAM, M.D.
CLEVELAND

Mrs. P., aged 20, primipara, Hebrew, with negative previous and family histories, presented herself for examination, when six months pregnant, and the following observations were made: She was a tall, slim woman, fairly well nourished but somewhat anemic. Abdominal and vaginal examination showed a six months' pregnancy. The breasts were large and pendulous, the lower borders reaching almost to the level of the umbilicus. The nipples were well formed. Along the outer borders of both breasts, but especially the left, definite, separate masses of breast tissue could be outlined, so-called supernumerary breast tissue.

In the upper, outer quadrant near the border of the right breast, a rounded, firm, slightly lobulated tumor, the size of a walnut, was seen. This was freely movable under the skin and over the underlying muscle. The patient complained of very little pain, and stated that she noticed the tumor about three weeks previously.

About three weeks later she noticed another much smaller tumor in the right axilla, and toward the end of pregnancy two other smaller growths could be palpated in the axilla. At times all these growths would increase in size and become painful.

Twenty-four hours after a normal confinement, the breasts became engorged with milk and the larger tumor almost doubled in size. It became very tender and painful, and

showed signs of an acute inflammation. The skin over it also was inflamed. The axillary growths also showed the same reactions, but in a milder degree. Ice was applied and gave much relief.

On the eighth day after the confinement, the tumors were removed under ether anesthesia. They were easily shelled out, as they were not adherent to the skin or underlying

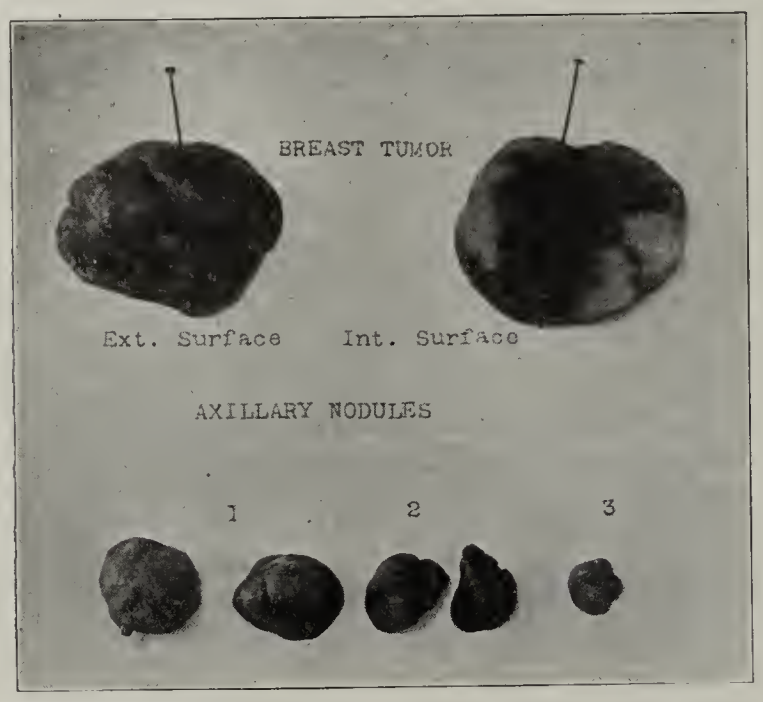


Fig. 1.—Breast tumor and axillary nodules, 9/10 natural size.

muscles. A considerable exudation of a milk-like fluid filled the cavities, showing the intimate association of the tumors with the breast tissue. The ducts were tied and the wounds closed. Four days later the incisions broke down, and considerable milky fluid exuded, causing milk fistulas,

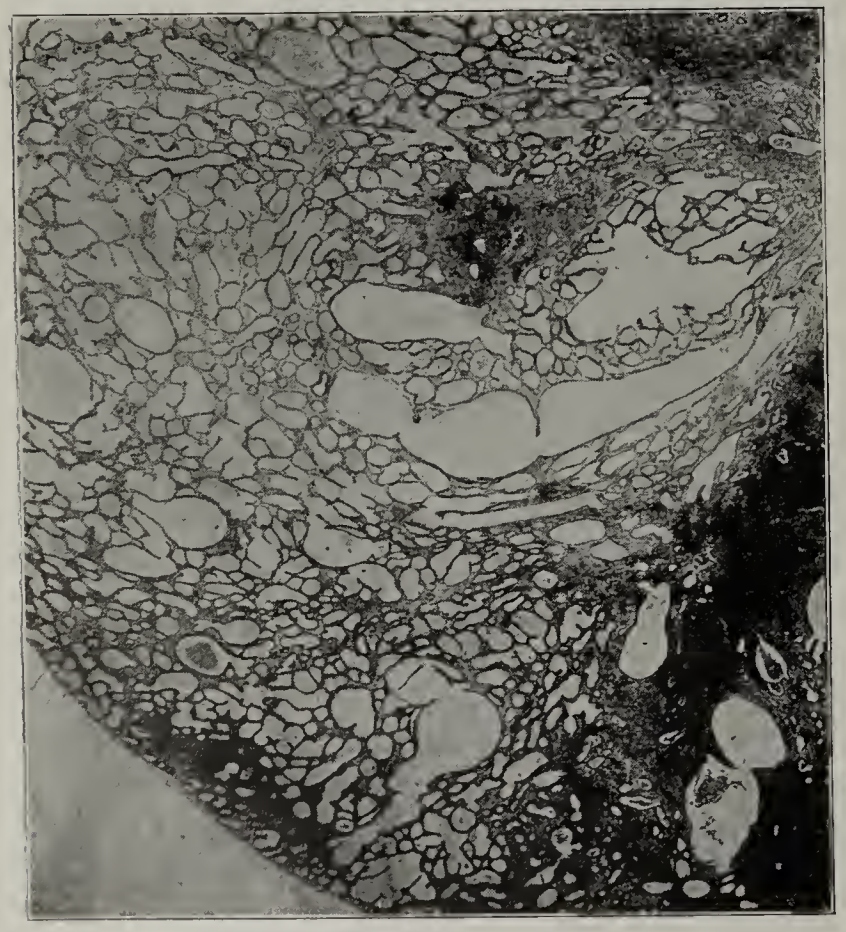


Fig. 2.—Section from axillary nodule No. 2, × 16.

which gradually closed by granulation about a month later. Six months later there were no signs of other growths.

PATHOLOGIC REPORT BY DR. GRAHAM

Specimen, received in liquor formaldehydi, consisted of four pieces of tissue. Nos. 1, 2 and 3 were removed from right midaxillary region; No. 4 from superior margin of right breast. Preserving fluid distinctly cloudy-milk in appearance.

Breast nodule is 4 by 3 by 3 cm. in size; is distinctly encapsulated, coarsely lobulated; capsule thin, glistening, grayish-opaque over most of its surface, with some dark, reddish-purple areas apparent beneath; rather elastic in consistency; cuts easily; considerable milky fluid escapes and may be expressed; cut surface uniform, grayish opaque, decidedly spongy in appearance, faintly and coarsely lobulated; stroma slight; about one half of cut surface is dull, mottled, reddish brown, apparently hemorrhagic with numerous small irregular, opalescent areas, apparently hyaline stroma; in a few places there are whitish granular areas of necrosis.

Axillary nodules, respectively, 18, 15 and 10 mm. in diameter, are thoroughly encapsulated, lobulated; have the same character of capsule consistency and gross appearance as the breast nodule; cut surface also the same, and same milky fluid escapes and may be expressed. No. 1 is more hemor-

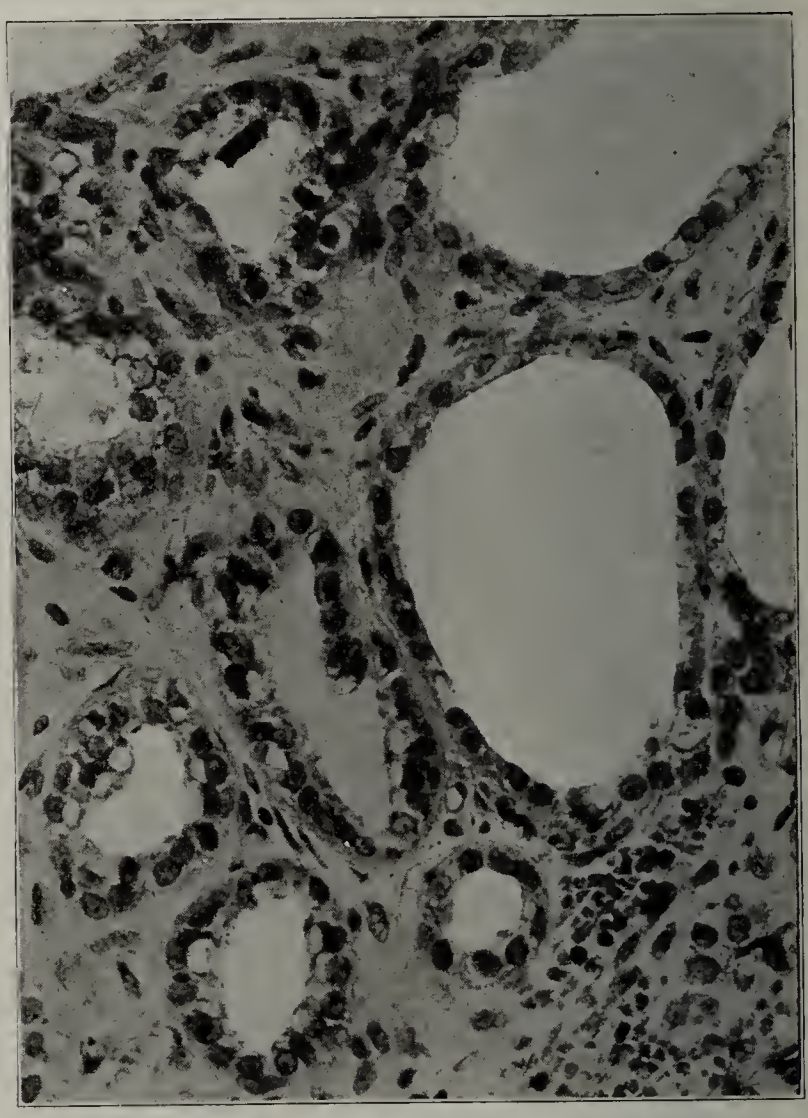


Fig. 3.—Colostrum formation in axillary nodule, × 340.

rhagic and shows more islands of necrosis than Nos. 2 or 3. No. 3 is uncomplicated by hemorrhage or necrosis.

Microscopic Examination.—Sections from axillary nodule No. 2 show a loose, thin, rather cellular fibrous capsule from which a fine, cellular, edematous capillary stroma enters the tumor to form the supporting framework for the very glandular tissue which is the striking part of the specimen. These glands consist of large irregular spaces for the most part lined by a single layer of large pale vacuolated cells with large round or oval vesicular nuclei, having a rich chromatin network and a well-defined basophilic nucleolus; nucleus situated toward the basal end of the cell; the protoplasm is pale, greatly vacuolated and gives the appearance of being filled with coarse fat globules, especially at the free end of the cell. In many of the smaller spaces there is a piling up of cells and filling of the lumina with large pale vacuolated cells, some of which are desquamated and lie free in the lumen. Mitosis not observed. Histologically, the process is exactly comparable to colostrum formation in a lactating breast. In

some areas there is extensive hemorrhage into the stroma, with necrosis of the glandular tissue; in these areas are collections of coarse, granular, brownish pigment free in the stroma and being taken up by the phagocytes. There is no histologic evidence of malignant disease; no lymphoid tissue present.

Sections from the breast nodule, in the well-preserved portions, show the same microscopic characteristics as described above. In addition, sections from the dark hemorrhagic portion show extensive ischemic necrosis, so that the tissue as a whole takes a diffuse eosin stain and the gland cells are hardly distinguishable from the stroma cells. There is considerable diffuse hemorrhage, extensive leukocytic infiltration, with some plasma cells and a few eosinophils. A striking feature is the very scanty stroma in these breast and axillary tumors.

Diagnosis.—Pure adenoma of breast and accessory breast tissue in the axilla with colostrum formation.

COMMENT

This case exemplifies several interesting points in the pathology of the breast:

1. It is an indubitable instance of the presence of accessory breast tissue in the axilla. That the axillary tumors are not to be regarded as metastases from a primary malignant breast tumor is evidenced by the fact that the breast tumor (No. 4) exhibits none of the histologic characteristics of a malignant breast tumor, and more important still by the fact that the axillary nodules are independent, entirely encapsulated, histologically benign lesions, showing not the slightest trace of lymphoid tissue, as would almost certainly be the case were these metastatic growths from a primary malignant tumor of the breast.

2. The character of the individual tumors. All are purely adenomatous in type and quite different histologically from the usual fibro-epithelial breast tumors —fibro-adenoma and intracanalicular fibroma.

3. Each tumor presents the typical cellular changes of colostrum formation as observed in a physiologically active breast in the first week following delivery. It is interesting that the axillary nodules with no apparent connection with the breast proper, as well as the largest tumor, removed from the margin of the breast, show the same colostrum formation. This is a good example of the response of physiologically active cells, though in an anomalous situation, to the physiologic stimulus for the tissue (breast) to which these cells are homologous.

1725 East Eighty-Second Street.

Short-Cut Pyorrhea Cures.—It should be made clear to every one who is interested in this subject, either as patient or dentist, that pyorrhea is not cured by vaccines, tartar solvents, emetin, ethyl bromid spray, succinimid of mercury, pyorrhocide, faith cure, Christian Science or osteopathy. The dentist who relies on vaccine, emetin, or other medicinal agents for the cure of pyorrhea, in the absence of good instrumentation, will reap a harvest of disappointed patients. Used alone, the best that can be expected of any one of these agents is a temporary modification or elimination of one or more of the symptoms. The men who have given us the report of their clinical experiences in the use of the above agents have not laid claim to producing cure through medicinal agents alone, but have failed to place sufficient emphasis on rational surgical treatment and the impression has gone forth that all that is required is a good hypodermic outfit and a definite quantity of the desired remedy and the patient will be immediately placed on the road to health and happiness.—Edgar A. Honey, D.D.S., *Dental Summary*, September, 1915.

GASTRO-INTESTINAL STUDIES

X. AN INVESTIGATION OF THE GASTRIC RESIDUUM IN OVER ONE HUNDRED NORMAL CASES *

CHESTER C. FOWLER, PH.D.
MARTIN E. REHFUSS, M.D.
AND
PHILIP B. HAWK, PH.D.
PHILADELPHIA

Harmer and Dodd[1] have shown, by means of the Roentgen rays, that the complete removal of the gastric residuum with the aid of the usual stomach tube is by no means certain. This finding has been further confirmed by Rehfuss, Bergeim and Hawk,[2] who have succeeded in removing, from the normal fasting stomach, quantities of residuum greatly in excess of that obtainable by the old method. Loeper,[3] Zweig,[4] Kemp,[5] Wolff,[6] Strauss,[7] Riegel,[7] and Soupalt[7] assert that the quantity of residuum in the normal fasting stomach should not exceed 20 c.c., and that there should be no microscopic food residues. Rosin and Schreiber[8] declare that the quantity of residuum is not of much importance, as a pathologic factor. In thirteen samples of normal residues obtained by Rehfuss, Bergeim and Hawk,[2] none were found to be so small in volume as the 20 c.c. suggested by Loeper and others, while five were very near the 60 c.c. limit suggested by Rosin and Schreiber, and four were greatly in excess of this figure. Oettinger[9] says that when the amount of residuum exceeds 150 c.c., food débris or retention is almost constantly observed, and that a diagnosis of stenosis can be made unhesitatingly. However, Rehfuss, Bergeim and Hawk[2] had one case of 180 c.c. of residuum and another of 120 c.c.; yet in neither were any macroscopic food residues found. This absence of macroscopic food residues was true of all the cases examined, although in a few cases fat globules and vegetable fibers were found microscopically.

In regard to the cause of the residuum, it has been suggested by Loeper[3] that there is an increased molecular concentration of the residuum, and that this favors pylorospasm and a consequent retention of material. The presence of bile in a number of the residuums of Rehfuss, Bergeim and Hawk, and the absence of pylorospasm, would not tend to favor this theory. On the contrary, if the closure of the pylorus is due to an acid reflex on the mucous membrane of the duodenum, it is more probable that, in the absence of acid, the pylorus is in a relaxed condition. Sokolow[10] showed that saliva, bile and pan-

---

* From the Department of Physiological Chemistry, of the Jefferson Medical College.

* Because of lack of space, this article is abbreviated in THE JOURNAL by omission of the table of residuum. The complete article appears in the authors' reprint.

1. Harmer, T. W., and Dodd, W. I.: Sources of Error in the Use of the Stomach Tube for Diagnosis, Arch. Int. Med., November, 1913, p. 488.
2. Rehfuss, M. E.; Bergeim, Olaf, and Hawk, P. B.: Gastro-Intestinal Studies, I, The Question of the Residuum Found in the Empty Stomach, THE JOURNAL A. M. A., July 4, 1914, p. 11.
3. Loeper: Leçons de pathologie digestive, Series 2, 1912, pp. 17, 19.
4. Zweig: Magen- und Darmkrankheiten, p. 459.
5. Kemp: Diseases of the Stomach, Intestines and Pancreas, 1912, p. 133.
6. Wolff: Taschenbuch der Magen- und Darmkrankheiten, p. 22.
7. Strauss, Riegel and Soupalt, cited by Loeper.
8. Rosin and Schreiber, cited by Loeper.
9. Oettinger: Arch. d. mal. de l'app. dig., 1910, p. 563.
10. Sokolow: Dissertation, St. Petersburg, 1904 (Babkin: Die Aeussere Sekretion der Verdauungsdrusen, 1914, p. 150).

creatic juice were all capable of causing gastric secretion. Grobbel[11] maintains that saliva is always expelled from the stomach at the close of the meal.

Oettinger[9] suggested that although the bile reaction of the residuum might be negative, still there would be, in some cases, a distinct yellowish or greenish-yellow color. This fact has been further substantiated by the work of Rehfuss, Bergeim and Hawk and by the present contribution. Sartory[12] showed the presence of a yeast in the gastric residuum to which the color was due. He designated it as *Cryptococcus salmoneus*. We have shown, however, that not in all cases is the color due to yeast, as many times a strong bile reaction was demonstrable. Oettinger[9] suggests that, as the acidity of the residuum becomes stronger, the richer in yeasts it becomes, and the poorer in microbes. In our present work, if the color may be taken as an indication of the presence of yeast, it can be said that, as a rule, color appeared more frequently in a high acid concentration and more frequently there was no color in a low acid concentration. Occasionally, however, no color was obtained in high acidities, and strong color in low acidities.

Loeper[3] has suggested the use of the volumes of residuums in relation to the diagnosis of ulcer. However, as has been shown by Rehfuss, Bergeim and Hawk,[2] this is open to great error, and its value is very questionable. Recently Meunier[13] found that the freezing point lowering (cryoscopic index) of the stomach contents was 0.35 degree C. He suggested the use of this fact in the administration of medicaments. He demonstrated that when medicaments were given at a concentration having the same freezing point lowering, they passed through the stomach with maximum rapidity. He concludes that if medicines are given in solutions with a freezing point lowering of 0.35 degree C., the least gastric disturbance will result.

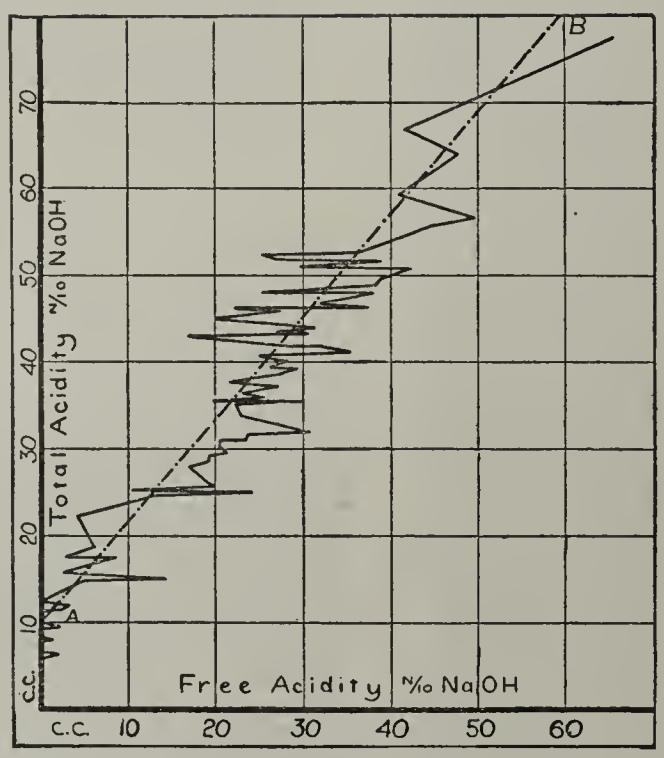


Chart 1.—Relation of total and free acidity of residuums.

In pursuance of the work on the gastric residuum which has already been undertaken in this laboratory,[2] it was decided to make as complete a survey, chemically and physically, of as many residuums as the allotted time would allow. Toward this end, over 100 residuums were collected, and as far as possible, examinations for the following were made: total acidity, free acidity, pepsin, trypsin, cryoscopic index and specific gravity; besides these, the volumes of the residuums recovered and their characteristics were noted. At the present time, a complete analysis of the inorganic constituents of the composite residuums is being made and will be reported in a later paper.

METHODS

Students in attendance at Jefferson Medical College gladly submitted themselves for the experimental work. In every case they were requested to drink no water at any time after their evening meal on the night previous. They presented themselves for the removal of the residuum at 8 o'clock the following morning, and every residuum was removed as near that time as was compatible with the experiment. Each man was given a thorough examination, physically and by questioning, to detect any abnormalities if they existed.

The residuums were removed by means of the modified stomach tube[14] already described in previous publications. The swallowing of the tube was accomplished without the aid of water. It was found that by coating the tube and tip with a thin film of petrolatum, and by placing the tip in the lower part of the pharynx, back of the tongue, the swallowing could be accomplished without much difficulty. Subjects who submitted themselves for the first time sometimes manifested gagging; but others found the swallowing extremely easy. This was especially true of those who took the tube for the second or third time. When the tube had reached the stomach (which was ascertained by measurements), the contents were aspirated from it, while the subject was on his back, stomach and on each side and breathing deeply. The liquid was immediately measured, and its characteristics noted, and it was placed in an Erlenmeyer flask and stoppered. The previously mentioned determinations were then made (as soon as possible), with the exception that in the cases of the cryoscopic index and specific gravity, it was frequently necessary, for want of time, to allow the residuums to stand a day or two. In those cases, the residuums were kept in the refrigerator.

In all the analyses, filtered liquid was used. The filtration was done by carefully fitting qualitative filter papers to funnels and moistening, the first few drops of the filtrate being discarded. Papers fitted thus were found to give a much clearer filtrate than when the liquid was run through a dry paper.

The methods for total acid, free acid[15] and pepsin[16] were those used in this laboratory in previous work.[17] The trypsin was determined by the method of Spencer,[18] recently elaborated in this department. The cryoscopic index was determined by means of the Beckmann apparatus, whereas a pyknometer was employed in the determination of the specific gravity.

AVERAGES ON THE COMPILATION OF THE NORMAL GASTRIC RESIDUUM

1. The average quantity removed in 100 cases was 52.14 c.c., the largest quantity being 160 c.c., and the smallest 23 c.c.

11. Grobbel: Ztschr. f. physiol. Chem., 1914, lxxxix, 1.
12. Sartory: Bull. de la. Soc. de biol., 1906.
13. Meunier: Bull. Soc. pharmacol., xxi, 389.
14. Rehfuss: Am. Jour. Med. Sc., June, 1914.
15. Sahli's Diagnostic Methods, 1913.
16. Mette: See Hawk's Practical Physiological Chemistry, 4th revised ed., pp. 19-20.
17. Rehfuss, M. E.; Bergeim, Olaf, and Hawk, P. B.: Gastro-Intestinal Studies, II, The Fractional Study of Gastric Digestion, with a Description of Normal and Pathologic Curves, THE JOURNAL A. M. A., Sept. 12, 1914, p. 909.
18. Spencer, W. H.: Jour. Biol. Chem., May, 1915.

2. In 67 cases noted, the residuum was in 29 cases (43.2 per cent.) colorless, and in 38 cases (56.8 per cent.) yellow or green.

3. The total acidity recorded in 102 instances averaged 29.9 in terms of tenth-normal sodium hydroxid, with the highest figure at 77.6, and the lowest at 2.4.

4. The free acid averaged 18.50, with figures ranging from 65.8 to 0.

5. In 72 cases, the cryoscopic index was taken, the average of which was —0.470, the extremes being —0.816 and —0.298.

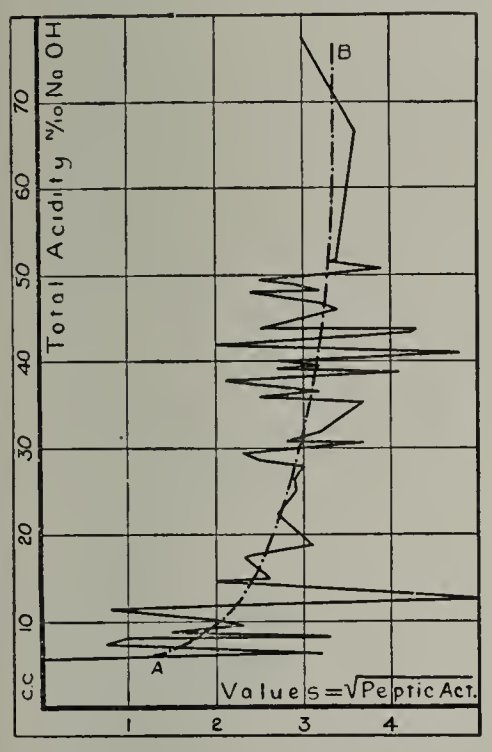


Chart 2.—Relation of pepsin content to total acidity of the residuums.

6. The specific gravity was carefully estimated with the pyknometer, and the average in 69 cases recorded was 1.0056, with the highest figures at 1.010 and lowest at 1.0036.

7. The pepsin concentration as measured by the Mette method was determined in 53 cases, and gave an average of $(2.8)^2$, highest $(5.0)^2$ and lowest $(0.7)^2$.

8. Trypsin was tested for in 26 cases, with an average of 9.1 units; 12 cases gave 16 units, several no reactions. In only 2 cases out of 26 (7.7 per cent.) was there no evidence of trypsin.

9. Microscopic examination revealed on no occasion gross food residues; on several occasions vegetable débris was found, but never meat fibers. Leukocytes, in considerable number, are found almost constantly, and occasionally swallowed material from the throat with bacteria.

COMMENT

The advantages of the method of stomach examination used in this laboratory have already been pointed out.[2] In this investigation we not only have been able to confirm the findings of our former investigation[2] of the gastric residuum, but also have established several facts in this connection which are of great interest.

We have also been able to confirm the falsity of the generally accepted limit of the normal residuum of the empty (?) stomach as 20 c.c. In over 100 normal cases there was always present in the stomach an appreciable residuum, averaging in all of the cases 52.14 c.c. This finding throws an entirely new light on the gastric residuum in the diagnosis of gastric conditions, particularly ulceration.

In over 43 per cent. of our cases the residuum was colorless, and in 56 per cent. yellow or green. The two forms, however, may occur in the same individual. Some instances were observed in which, in spite of the yellow or green coloration, a negative bile reaction was obtained. The explanation of this phenomenon may possibly be found in the work of Sartory,[12] who demonstrated microscopically a yeast in the form of spheroidal cells, the most important of which have been designated under the name of *Cryptococcus salmoneus*. The fact remains, however, that many of these yellow residuums gave a positive bile reaction. In a certain number of cases, there was a distinct separation of a bluish-green precipitate of microscopic spherules, although in all of the cases in which the residuum was saved for any length of time, a flocculation occurred, and if color was originally present in the solution, this was absorbed by the precipitated flocculi. It is probable that the pylorus is relaxed at periods of rest, and as we demonstrated that regurgitation of bile and pancreatic juice, or pancreatic juice separately, can occur, the presence of bile is easily explained. In acidities over 30, twenty-six out of thirty-seven showed bile, while in total acidities over 50, seven out of eight showed the phenomenon. This presence of bile more often in high acidities than in low would seem to indicate that regurgitation of juice takes place from the duodenum to neutralize, in part, these high acidities. This has been confirmed by studies on pathologic cases of hyperacidity. It is interesting to note that this residuum normally is physiologically active.

The question of the origin of the residuum is an important one. The only conclusion that can be reached by these studies is that the gastric residuum is due to a constant secretion of the gastric glands, and that these glands are practically never inactive. This conception is borne out by the more or less definite relationship between the characteristics of the residuum and the subsequent secretory response to the introduction of food into the stomach. Individuals who give a poor secretory response with the Ewald meal have, as a general rule, a residuum of the same character.

Pawlow[19] emphasizes the old idea of the inactivity of the glands, in the following words:

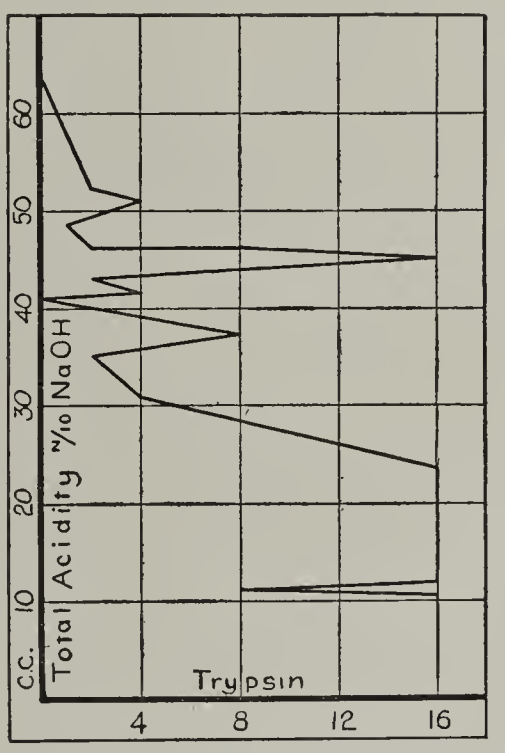


Chart 3.—Relation of trypsin content to total acidity of residuums.

Thus, it was recognized by all authors that the glands only began to secrete when food entered the alimentary canal, and, thanks to the methods now at our command, hardly any physiologists doubt that their activity is strictly dependent upon the taking of food. The isolated miniature stomach, which in fasting animals is perfectly empty, begins to furnish juice within a few minutes after the animal has taken food.

How is it to be explained then, that in the perfectly normal untraumatized stomach, we have a physiologically active secretion, as the foregoing data show? Granting that both the regurgitation of pancreatic juice and the swallowing of saliva cause the stimulation and secretion of gastric secretion, how are we to explain the following finding, in a perfectly normal individual? The subject of Case B 106a, normal in every way, submitted to the passage of the tube on the empty stomach in the morning. Forty-nine c.c. of liquid were removed, and tests showed

19. Pawlow: The Work of the Digestive Glands, p. 23.

that the stomach was empty. Two hours later, during which time the person in question attended a lecture, was free from psychic stimuli, and swallowed no saliva, 29 c.c. were withdrawn, case B 106b. Furthermore, these two secretions were essentially the same in every particular. This result emphasizes the importance of the physiologically continued secretion.

In previous findings,[20] it seemed that distilled water gave a more pronounced flow of digestive juice than tap water. This would lend color to the belief that the stomach contents tend to maintain an equilibrium between themselves and the blood. We have further evidence of this relationship between the flow of gastric secretion and osmotic pressure, which we shall present in a later article.[21] In the present article, we have found, as stated, a definite cryoscopic index below that of the blood. Therefore, it might be assumed that there is a constant flow, or osmosis, of fluid from the blood stream through the mucosa. This idea of the osmosis of this fluid through the mucosa, rather than its being due to a secretion of the glands of the stomach, is supported by the fact that we have been able to show no relationship of the pepsin content of the residuum to its cryoscopic index (Chart 7).

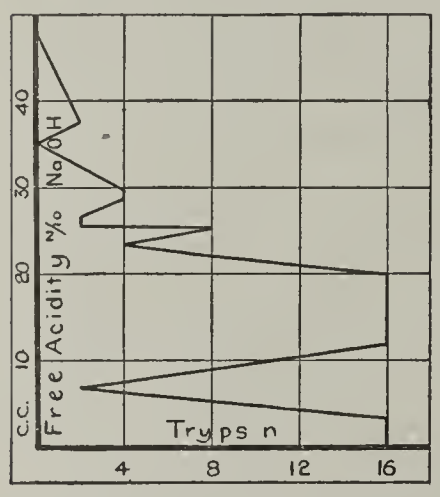


Chart 4.—Relation of trypsin content to the free acidity of the residuums.

Carlson[22] reported the finding on one individual, pathologic to the extent that he had a fistula, that the stomach was never free from a fluid secretion in the morning. We found *in all of our observations on perfectly healthy nontraumatized men a definite secretion in the stomach at all times.*

The relationship between total acidity and free acidity is definitely shown by Chart 1, in which it will be seen that *free acidity is rarely encountered until the total acidity exceeds ten.* In total acidities of over 13.5, there were no cases in which free acidity was not demonstrable. The largest majority of residuums possess total acidities which lie between 25 and 52. A few are found to lie above these values and considerably more below. The average acidities were 29.9, total acidity, and 18.5, free acidity. One point of great clinical importance is the fact that in only one instance in over 100 cases was the total acidity over 70. *This emphasizes the diagnostic value of high acidity when coupled with an increased quantity of residuum.*

Pepsin was quite constantly found, when tested for, in the residuums. From Chart 2, on which the values obtained for the peptic activity of the residuums have been plotted in comparison with the total acidity, it may be seen that *there is a definite relationship between the quantity of pepsin and the total acidity for low acid values.* As these acid values increase, this relationship disappears, until in higher acidities no proportion is apparent. In a former article from this laboratory,[20] some experiments were presented in which it was shown that no constant relationship between pepsin and total acidity was demonstrable. This finding can be explained on the basis that in the experiments cited there were some in which the acidities were of a relatively high value. Aliprandi[23] asserts that there is no strict parallelism between hydrochloric acid and pepsin, for sometimes pepsin may be present in the absence of hydrochloric acid. In none of our cases was hydrochloric acid absent, at least in combined form, when pepsin was present. Gregersen[24] says that there is a relationship between pepsin and total acidity, but not an absolute one. Pawlow, on the other hand, showed, in dogs, that the pepsin secretion was independent of the secretion of hydrochloric acid.

The trypsin content of the residuum is of great interest. It was found to be practically always present in the specimens which were examined for it. This we can explain only by regurgitation of fluid from the duodenum. A certain relationship is to be observed (Chart 3) between trypsin and total acidity; but that this relationship is rather one with the free acidity than with the total acidity is evident on comparison of Charts 3 and 4. The ratio between free acidity and trypsin is an inverse one. This we can explain by the supposition that high acidities encourage closure of the pylorus, and low acidities are accompanied, as stated above, by a certain degree of relaxation, and regurgitation of pancreatic juice. Low trypsin in high acidities may be also explained by the destruction of trypsin in high acidities. These data point to the fact that it is the free acidity of the gastric content which regulates closing of the pylorus, rather than the total acidity.

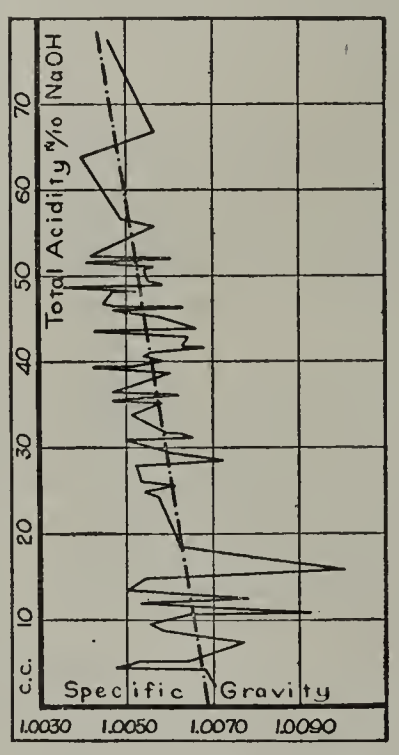


Chart 5.—Relation of the specific gravity to the total acidity of the residuums.

The results of the cryoscopic index are of considerable interest. The average cryoscopic index of the stomach contents, examined by us, was found to be —0.470. This is somewhat lower than the cryoscopic index of the blood (—0.560), as has already been mentioned, The cryoscopic index of the residuums (as a measure of the osmotic pressure) is independent of the total acidity (Chart 6). Aliprandi[23] has shown, in some work presented by him, a variation in the index from —0.280 to —0.723. Our variations were from —0.298 to —0.816. He also asserted that the index bore no relation to the amount of hydrochloric acid present. This we have been able to confirm, as already cited above. Sommerfeld[25] has shown on the gastric juice of a child (the average of eighty-four tests), a cryoscopic index of —0.488, and in the case of a child with

20. Bergeim, Rehfuss and Hawk: Jour. Biol. Chem., 1914, xix, 345.
21. Fowler, Rehfuss and Hawk, to be published.
22. Carlson: Am. Jour. Physiol., 1913, xxxi, 151, etc.
23. Aliprandi: Lavor, riv. chem. micros. clin., i, 230.
24. Gregersen: Arch. f. Verdauungskr., xix, 263.
25. Sommerfeld: Biochem. Ztschr, ix, 352; Arch. f. Kinderh., xlix, 15

a gastric fistula, a value of —0.610. Meunier[13] in one subject found the freezing point lowering to be —0.350. He suggests that this may be of therapeutic importance in the administration of medicaments.

The specific gravity is inversely proportional to the total acidity, as may be seen by consulting Chart 5. This is as one would expect. If the cryoscopic index remains the same as we have previously shown that it does, then in higher acidities, the lighter hydrochloric acid molecules must replace other and *necessarily heavier molecules*. If the cryoscopic index is to remain the same, the total number of dissolved particles (ions and molecules) must remain the same. What these molecules are which are thus thrown out of solution we are at present unable to say; but, perhaps, when the nature of these precipitated molecules is discovered, it may explain certain symptoms which are observed in cases of hyperacidity. This point is under observation in this laboratory at the present time.

The specific gravity indicates that the gastric residuum is one of the lightest fluids of the body, if not the lightest.

CONCLUSIONS

1. We have been able to confirm the finding of our previous investigation, that "the accepted limit of the normal residuum of the empty stomach as 20 c.c. is false." The average volume of the residuum, in over 100 normal cases, in the present investigation was 52.14 c.c. This finding throws considerable question on the value of an increased residuum in the diagnosis of ulcer.

2. The residuum found by us in every case had all of the qualities of a physiologically active secretion.

3. We believe that the gastric glands are never inactive, and cite experiments to demonstrate that even in the absence of normal stimuli (food, psychic, etc.), these secretions appear.

4. There is a definite relationship between the character of the residuum and the character of the gastric secretory response to a stimulus, as a test meal, for instance.

5. From the standpoint of osmotic pressure, there is a constant tendency toward the formation of a secretion in the stomach.

6. Both colorless and bile-colored residuums may be found, and the two may occur in the same individual.

7. The colored residuums appear more frequently in higher acidities and vice versa, a fact which is explained by the greater frequency of regurgitation in the former condition. This regurgitation has for its purpose the partial neutralization of the high acid stomach contents.

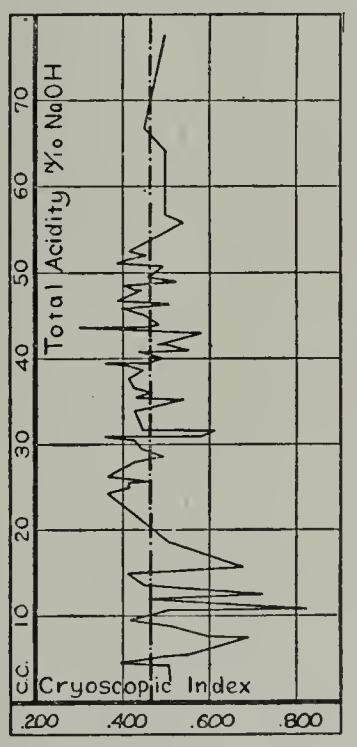


Chart 6.—Relation of the cryoscopic index to total acidity of residuums.

8. Total and free acidity vary directly with one another. It is pointed out that free acidity was rarely encountered until the total acidity exceeded 10. The averages in this series of studies were 29.9, total acidity, and 18.5, free acidity. The value of acid figures over 70, with an increased quantity of residuum, is emphasized as of diagnostic value.

9. There is a definite relationship between the quantity of pepsin and the total acidity for low acid values. As high acid values are approached, this relationship disappears.

10. Trypsin was found almost constantly in the residuum. It is shown to be inversely proportional to the free acidity. This is explained by the more complete closure of the pylorus in high acid conditions, in conjunction with the destructive action of acid on trypsin.

11. The average cryoscopic index of —0.470, as compared to an index of the blood equivalent to —0.560, gives evidence of a tendency for osmosis of material to take place from the blood into the lumen of the stomach.

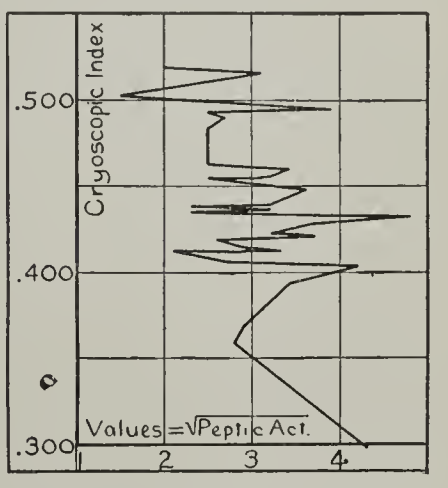


Chart 7.—The relation between pepsin content and cryoscopic index of the residuums.

12. High acidities are shown, by a comparison of the cryoscopic index and specific gravity data, to be accompanied by a throwing out of solution of certain molecules, the character of which is unknown at the present time.

13. The residum is one of the lightest fluids of the body, having an average specific gravity of 1.0056. This point is not without significance.

THE FALLACY OF THE INDISCRIMINATE INTERNAL USE OF BULGARIAN BACILLUS

WITH SOME EVIDENT DANGERS

ORVALL SMILEY, M.D.
INDIANAPOLIS

In a great variety of cases, the indiscriminate and empiric use of the Bulgarian bacillus as a therapeutic agent not only causes distress, but often, also, evil results. If its use is continued it produces a condition approaching acidosis.

An acid-producing organism, when used in internal medication in conditions in which there are anemia, cachexia, and emaciation, only adds more fuel to the fire by further increasing the acidosis which has been already produced.

That acid-forming organisms multiplying in the alimentary tract tend to neutralize the normal alkaline secretion of the intestines is not questioned. When taken by patients suffering from emaciating diseases, they evidently do neutralize it altogether, as will be shown later in the cases to be reported. By reducing the alkalinity of the intestinal secretions these organisms tend to diminish the alkalinity of the blood, thereby aiding in the production of a general acidosis.

When such a case is closely observed after their use the following symptoms may be noted: increased blood pressure, deepened respiration, increased urinary

output, sweating, digestive disturbances, aggravated constipation, and increased nervous irritability. All of these point to an increased acidity or a decreased alkalinity of the blood.

Within the last year I have observed a number of patients suffering from various cachectic conditions who had been given or who had taken Bulgarian bacilli on their own initiative, in whom the condition referred to above was noted. In some of them the symptoms manifested were alarming and distressful.

The following cases will emphasize the statement that extreme caution should be exercised in prescribing these acid-forming organisms:

Case 1.—Mr. J., aged 36, had pulmonary, intestinal, and peritoneal tuberculosis. Bacilli were found in both stool and sputum. His temperature was subnormal, and he felt lethargic, tired and cold. The blood pressure was 126, respiration 20. The bowels were loose, requiring little catharsis, though the patient had some intestinal distress. On the advice of a friend he took Bulgarian bacilli for four days. His blood pressure rose to 138, respiration to 24, temperature to 100, his pulse being full and bounding. He perspired profusely, was very nervous, had a great amount of distress in the bowels, and became extremely constipated. The abdominal distress lasted until large quantities of alkalies were given, when the symptoms subsided.

Case 2.—Mrs. C., aged 54, had carcinoma of the pancreas and stomach with slight diarrhea. The blood pressure was 146, the urinary output scanty, pulse 60 and very weak. Her physician gave her Bulgarian bacilli for four days. The abdominal distress so increased that it had to be controlled with morphin. The blood pressure rose to 164, pulse to 98, full and bounding, the bowels became constipated and required drastic medication with local measures to move them, the urinary output was greatly increased, the patient became very nervous and vomited. Alkalies in liberal quantities both by the bowels and by mouth gave her relief. This woman was very thin and emaciated. The condition of acidosis gave her great distress.

Case 3.—Miss M., aged 33, had pulmonary tuberculosis. Her blood pressure was 96. She was thin and emaciated, the skin being cold and dry. She had some gastro-intestinal disturbance, was slightly constipated and drowsy. The urinary output was scanty. Through the influence of some friends, she took Bulgarian bacilli for three days. She became very nervous, vomited, had severe headaches, the intestinal disturbance became quite severe, and the constipation was aggravated. Blood pressure was 112. There was profuse perspiration. A very noticeable increase occurred in the urinary output. It took several days with liberal doses of alkalies before this patient became comfortable.

I have noted this aggravation of symptoms following the use of Bulgarian bacillus in diabetes, nephritis, cancer, pernicious anemia, tuberculosis, in extremely constipated individuals, and in some aged persons.

In my judgment, Bulgarian bacilli should not be given in any form of tuberculosis, cancer, diabetes, gastric hyperacidity, gastric ulcer, or to very old, infirm, weak, emaciated persons, or those suffering from starvation, fevers, or wasting diseases, or in any form of toxemia, catabolic or chemical. Neither should it be given in cases in which beta-oxybutyric acid together with acetic acid and acetone are excreted in the urine—the condition known as acetonuria. This class of patients will not safely tolerate an additional acid producer, and this is especially true in diabetes.

Patients to whom an anesthetic is to be administered should under no circumstances be given Bulgarian bacilli nor should this organism be given afterward, until all danger of acidosis is past. The conditions mentioned all tend to cause acidosis, which is probably the ultimate cause of death in all of them. Therefore, it is quite apparent that anything that accentuates this condition is dangerous.

The Bulgarian bacillus may be useful in suitable cases, but these are limited and should be selected with exceeding care and caution.

When the entire human organism is in a state of chemical equilibrium, of balance or equipoise, in which the opposing forces (acid and alkali) exactly counterbalance each other, then the ionic equilibrium is such that the acid formed by the Bulgarian bacillus is quite sufficient to swing the chemical pendulum of the entire human organism into the grave and uncertain condition of acidosis.

In all cases in which acidosis is not and cannot be promptly controlled death inevitably results. Why then, in such grave conditions, should that risk be taken with an absolutely empirical medication? Why should we play with the powder when the fuse is lighted?

229 Newton Claypool Building.

FOREIGN BODIES IN THE THROAT

Thomas McSwiney Barrett, M.D., Dixmont, Pa.
Assistant Physician, Dixmont Hospital

The following is the report of a case in which a brass key and a large eye-screw were found, at necropsy, lodged in the larynx and pharynx:

The patient was a male negro, aged 40, deaf and mute, admitted to Dixmont Hospital after having committed murder while under a delusion of persecution. The case was regarded as one of paranoid praecox, as the man had many typical symptoms of that disease. Chronic nephritis, pericarditis and valvular disease of the heart also were present. The Wassermann test was negative. From the time of commitment he worked daily on the hospital farm until three weeks previous to his death, when he became disabled from an attack of rheumatism. While undergoing treatment for this illness, he was seized with what appeared to be an acute gastritis, marked by vomiting after taking nourishment, and died three days later of exhaustion.

Postmortem findings confirmed the presence of the diseases named and, in addition, led to the following discovery:

Lodged in the larynx was a brass key, 2 inches long, its ring end resting on the cords; while in the right anterior corner of the pharynx was found an eye-screw, 1½ inches long, its screw end extending upward about a quarter inch above the lower border of the opening into the larynx. No signs of inflammation were discernible, but the epiglottis showed slight excoriation on its under surface, which may have been due to the pressure of the upper end of the key at time of swallowing. Both articles were wrapped in cloth, much decayed and very foul-smelling. Although evidence is lacking to fix the exact time of the lodgment of these foreign bodies, the nature of the circumstances as well as the appearance of the articles at necropsy, as indicated above, seems to justify the assumption that they had been present in the throat for at least three weeks.

With the exception of the comparatively mild vomiting which occurred only after eating, there were no violent symptoms of coughing, gagging or choking, such as would be likely to accompany the presence of foreign bodies in the throat.

The supposition is that this man, having found these articles while working outside, recognizing their utility for a special purpose he had in view, and fearing to be deprived of them during the search to which all patients submit at bedtime, sought to conceal them in his throat, intending when necessary to recover them by regurgitation.

New Instruments and Suggestions

LOCAL ANESTHESIA IN INTRAVENOUS INJECTIONS

JOHN H. STOKES, A.B., M.D., CHICAGO

At the risk of seeming to offer a trivial suggestion, I wish to call attention to the advantages of inducing local anesthesia as a preliminary to intravenous injections, in which the larger bored needles, such as the 17 and 18 gage, can be used to advantage. The method as introduced by me into the dermatologic clinic of the University Hospital, Ann Arbor, Mich., in the administration of old salvarsan, consists in the injection of 1 or 2 minims of a 2 per cent. cocain solution with a very fine needle, immediately beside the distended vein at the point at which the large needle is to be entered. The injection should not raise a wheal, but should be given more into the subcutis than intradermally. Within a few seconds, anesthesia is sufficiently complete for the operator to make a careful and deliberate entry rather than a haphazard one, without a gesture of protest from the patient. After the larger needle has been pushed through the skin, the skin is drawn over the vein before the latter is entered. In difficult situations, as in the entering of small veins on the back of the hand or wrist, when the cubital, median or other large veins cannot be found, the increased assurance which the method affords the operator, and the cooperation of the patient, often make the difference between success and failure. Potential disadvantages of the method have not materialized in practice. The minim or two of cocain solution does not conceal even a deep vein if given as above, and in no case has the anesthesia induced been sufficient to mask the burning sensation which is the test of drug leakage around the vein. The method has had a thorough trial under the conditions of inpatient observation in the clinic referred to, and no evidences of undesirable sequelae have appeared. The effect on patients is decidedly gratifying. While not essential in every case, it is believed that this refinement in technic has a place in the treatment of nervous individuals and those with "hard arms."

7 West Madison Street.

IRRIGATING NOZZLE FOR CYSTOSCOPY—MODIFICATION OF THE YOUNG URETHROSCOPE —HOLDER FOR FULGURATION WIRES

JOHN W. CHURCHMAN, M. D., NEW HAVEN, CONN.

1. The irrigating nozzle shown in Figure 1 has proved such a help in cystoscopic examination that, despite its simplicity, it seems worthy of description. Previous to its adoption

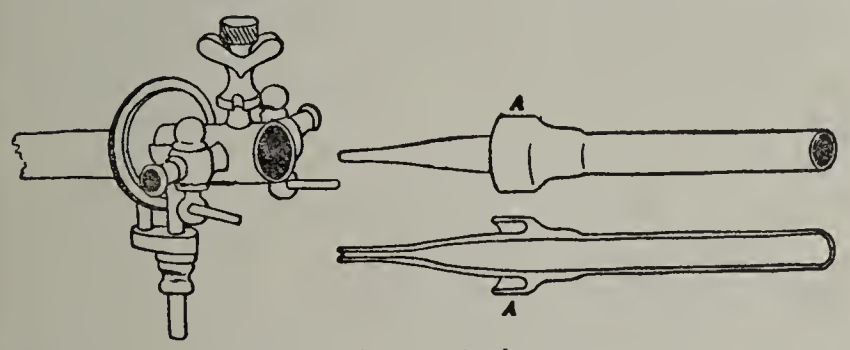


Fig. 1.—Irrigating nozzle for cystoscopy.

I had used, as most surgeons do, an ordinary glass nozzle, and had been much annoyed by the leakage which occurred about the nozzle, owing to the poor fit between it and the cystoscopic tube. No leakage whatever occurs if the nozzle here illustrated is used, for this is absolutely prevented by the metal cuff (*A*) which fits snugly about the outer surface of the cystoscopic tube. Moreover, when it is attached to the cystoscope, the nozzle remains in place without being held, and the examiner's hand is therefore free for other purposes.

2. In using the Young urethroscope I have found the instrument much more serviceable if a set screw (*A*, Fig. 2) be added to the lamp holder, so that the lamp may be set in any position desired. This will be found particularly useful when the instrument is being used in the female, for the urethroscope may then be held in place with one hand, the fingers grasping the light holder which, being tightly screwed to the examining tube with the set screw, acts as a handle to it. Without this set screw, the light holder flops about in most inconvenient fashion, when the female bladder is being examined and the instrument held roughly parallel to the floor.

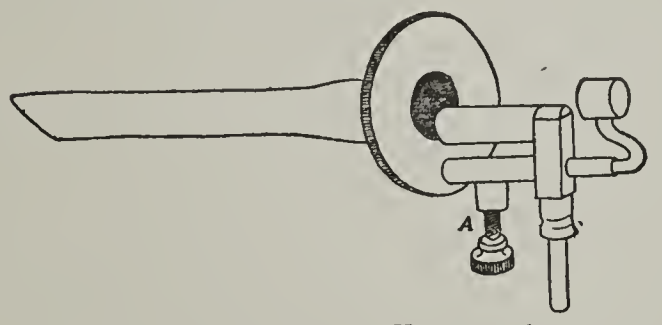


Fig. 2.—Modification of the Young urethroscope.

3. Those who have attempted to fulgurate bladder tumors through a catheterizing cystoscope have doubtless been much annoyed by the tendency of the insulated fulguration wires to curl up and therefore to follow badly the groove and lever guide of the instrument. I have found that if the wires be kept taut when not in use, this difficulty is largely overcome. The instrument here shown (Fig. 3) has been of service in keeping the wires straight. It consists of two pairs of screw clamps (*A* and *B*) on a stiff steel rod. The lower of these clamps is fixed to the rod; the upper clamp

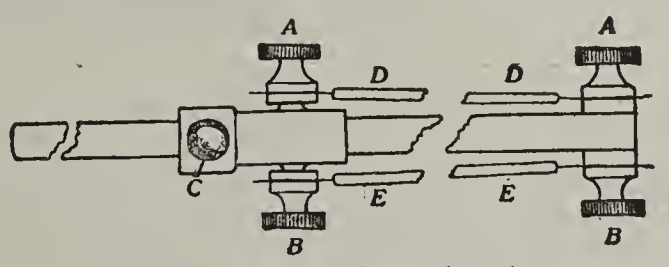


Fig. 3.—Holder for fulguration wires.

may be placed at any point on the rod desired and fastened in position by the set screw *C*. In this way the fulguration wires (*D* and *E*) of any length may be clamped in and kept constantly stretched. In the illustration, only the ends of the instrument are represented; the rod may, of course, be any length desired.

59 College Street.

METHOD OF FINDING TUBERCLE BACILLI IN SPINAL FLUID, AND THE CELL COUNT IN TUBERCULOUS MENINGITIS

JOSEPH ROBY, M.D., ROCHESTER, N. Y.

In the search for tubercle bacilli in the spinal fluid, two or three methods are usually advised:

1. Centrifuging and examining the sediment directly, or examining the sediment after drops superimposed on each other have been allowed to dry.

2. Allowing the fluid to stand without agitating it twenty-four hours and spreading the film which forms on a slide.

The first method has been unsatisfactory so far as I am concerned, and the second method satisfactory when the film can be manipulated correctly; but this has been difficult, and often the fluids are sent quite a distance or carried, and a good film will not form. The last is also the objection made by DuBois and Neal in a summary of their cases in the *American Journal of Diseases of Children* (January, 1915, p. 1). Unlike them, however, we have found the cell count in clear fluids to be of the greatest value and almost pathogno-

monic of tuberculous meningitis, even if the bacilli are not found. We have almost invariably found the cell count in tuberculous meningitis to be between 100 and 300 cells to the cubic millimeter.

If the fluid is sent to us or brought from any distance, we shake it up thoroughly and then draw some up into the white counter, either directly, or by first drawing up to the 1.0 mark with a diluting fluid (0.2 gm. methyl violet, 0.4 c.c. acetic acid and 100 c.c. distilled water), and then to the 11 mark with the cerebrospinal fluid. The cells are then counted in the blood-counting chamber. The balance of the fluid is poured into the sterile glass cylinder to be described, and later the search is made for tubercle bacilli.

The cylinder is used in the following manner:

A glass cylinder 20 mm. in diameter by 60 mm. in height is cleaned and sterilized, together with a glass coverslip 18 mm. in diameter. The coverslip is dropped into the glass cylinder. At the bedside the fluid is received directly into this cylinder (or if sent, as stated above, the fluid is poured into it); then a sterile cork is inserted, and the specimen is left quiet for twenty-four hours after the last disturbing (often it can be examined in a shorter time). The supernatant fluid is then carefully pipetted off, and the film, if one has formed, is allowed to spread itself over the coverslip. If a distinct film has not formed, it seems to work equally well. The coverslip is then removed by a platinum loop and forceps, dried in the air and fixed in a Bunsen flame. The staining is by carbol-fuchsin and heat, care being taken not to decolorize too much with the acid, and the decolorization is completed by 95 per cent. alcohol and counterstained by Löffler's methylene blue.

234 Culver Road.

AN IMPROVED BLOOD CELL COUNTING CHAMBER

C. C. BASS, M.D., NEW ORLEANS
Professor of Experimental Medicine, Tulane University of Louisiana, School of Medicine

The large number of counting chambers that have been devised and recommended would make one hesitate to recommend another one. Several years of experience in hematology and teaching blood counting, however, led me to think that the counting chamber described below has several advantages over those now in use. The general construction was suggested by Bürker's counting chamber, and the ruling is my own device.

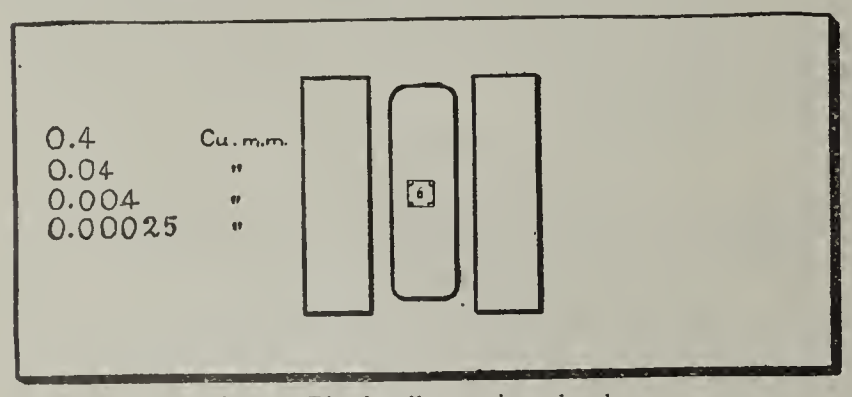


Fig. 1.—Blood cell counting chamber.

A small, oblong counting plate (Fig. 1) is cemented on a heavy object slide 76 by 33 mm. On either side of the counting plate there is cemented on the slide a rectangular glass plate so as to leave a gap of 2 mm. between the edges of the counting plate and the inside edges of these rectangular plates. The latter are exactly 0.1 mm. higher than the counting plate, so that when a cover glass is placed over both there will be a space of 0.1 mm. between it and the counting plate. This open construction facilitates cleaning the apparatus and also making the preparation.

The ruling (Fig. 2) consists of a square of 2 mm. side. This is divided into ten rectangles 0.2 mm. by 2 mm. for counting white cells.

For counting the red cells, there are superimposed on the ruled space, at each corner and in the center, five squares of 0.2 mm. side, each further divided into sixteen small squares of 0.05 mm. side. This superimposed ruling is disregarded when counting the white cells.

This counting chamber is devised to be used in counting either or both white cells and red cells in the same preparation and with the same dilution, which should be 1:100. A large portion of the time required to make a blood count is consumed in making the dilution and the preparation.

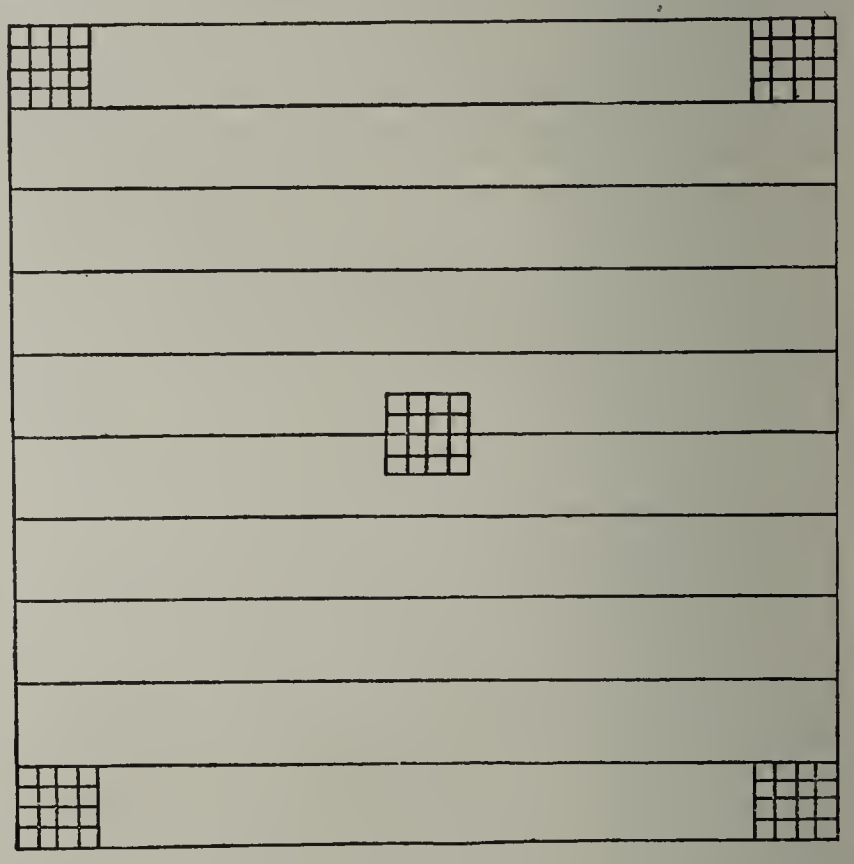


Fig. 2.—Method of ruling.

Therefore, it is an advantage to have to make only one dilution and one preparation for all. Only one pipet is required. It should dilute 1:100.

The calculation for white cells is made by multiplying the number of cells counted in the entire ruled space by 250. For the red cells, the number of cells counted in the five squares is multiplied by 5,000.

The simple ruling is an advantage over the several more complicated rulings. More correct estimates of the red cells can be obtained by counting several areas of the preparation at a distance from each other, than by counting all in a central area, as many of the other counting chambers require. This is especially true when there is, as usual, more or less unequal distribution of the cells on the counting plate.

The long counting plate avoids the necessity of being so exact as to the amount of the blood dilution placed on it, which is necessary with the usual round counting plate.

The apparatus is made by Carl Zeiss and E. Leitz.

SPECIFICATIONS FOR MANUFACTURERS

All long lines are 2 mm.

Each rectangle is 0.2 mm. by 2 mm.

Entire square ruled space contains 4 sq. mm.

Cubic content of entire ruled space 0.1 mm. deep is 0.4 cu.mm.

Each large square is 0.2 by 0.2 mm., and contains 0.004 cu.mm.

Each small square is 0.05 by 0.05 mm., and contains 0.00025 cu.mm.

Cubic content of the five large squares is 0.02 cu.mm.

Ruled rectangular plate, 6 by 20 mm.

Outside rectangular plates, 6 by 22.

Space between plates, 2 mm.

Mount so that rectangles run lengthwise of the object slide.

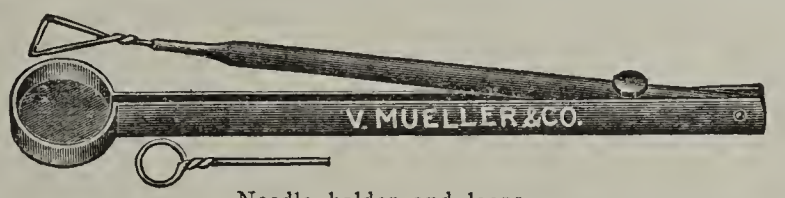
A NEW AND HANDY INOCULATION NEEDLE

Frank M. Wood, M.D., Chicago

In bacteriologic work, the time element is a matter of considerable importance, both for purposes of rapid and accurate diagnosis and in the rapid preparation of autogenous vaccines. In the treatment of many acute infections, especially in sepsis following operation, childbirth or wound infection, it is often very desirable to have an autogenous vaccine prepared over night, when possible. A satisfactory culture is often delayed by the breakage of the old style loop, made with the glass rod and platinum wire. The rod breaks, when carried in the case, and even when flamed, the glass breaks easily, when too quickly heated. The loop may be lost in the midst of an attempt at obtaining flakes from a fluid medium, and the whole process of culture made difficult or even impossible by the loss of the loop when it is most needed. A new unbreakable loop is the thing sought, and the necessity has resulted in the attempt to make one, which has been found to meet the demands.

The loop shown in the illustration is made entirely of brass, nickel plated. It consists of two shanks of equal length, bound together by a hinge at the center, and closes like a knife. The distal end is a brass tube, tapering to a small tip, for the insertion of the platinum loop. The loop is inserted and fastened by merely tapping the soft brass end of the tip with a hammer.

The proximal end is also of brass tubing half round, and receives the distal portion, which folds into it, like the blade into the knife handle. The loop is also protected by a piece of brass shaped to the size and length of the loop. There are two loops for use with the needle holder, a triangular loop, for spreading secretions on the surface of plate cultures, and an ordinary round loop for regular inoculations. The triangular loop is protected by a piece of brass, shaped in a triangular cup flange for the reception of the loop at the proximal end of the needle handle. The ordinary loop is protected by an ordinary round brass cup.



Needle holder and loops.

The instrument may be folded, so that it occupies small space in the hand or pocket case. It is not easily broken, since the needle is protected when closed. It is long when open, so that it may be used in liquids to obtain flakes or shreds from tall bottles or tubes, avoiding the contamination of the handle. It may be flamed up to the middle without fear of breaking the loop, and all contaminating fluids burned away. Lastly, and most important of all, it may be easily mended, should the platinum loop break. A tap with a hammer opens the tip, and the old loop may be reinserted. Another tap with the hammer fastens it, and the loop is as good as new. I offer it to the profession as an aid to rapid bacteriologic diagnosis.

209 South State Street.

RECENT SIMPLIFICATIONS OF THE SYRINGE METHOD OF TRANSFUSION

Lester J. Unger, M.A., M.D., New York

Seven months ago (The Journal, Feb. 13, 1915, p. 582) I described a new method of syringe transfusion. Since that paper was published I have greatly simplified the technic by my experience with forty transfusions.

The chief changes are: 1. Only one record syringe is necessary for a transfusion of whole unmodified blood, regardless of its amount. The trained assistants to clean the syringes are, of course, likewise done away with. 2. One *need not paraffin* the rubber tubing connecting the instrument to the cannulas.

Dr. Charles A. Elsberg, attending surgeon to Mount Sinai Hospital, suggested to me that clotting in the syringe might be prevented if the latter be kept cool by a continuous spray of ether. The cooling of the barrel of the syringe should delay the coagulation time of the thin layer of blood in contact with its walls sufficiently to permit the syringe to be emptied before any clotting occurs. Since by my method of transfusion the blood is in the syringe for only five to ten seconds, no marked reduction of the temperature of its entire volume can occur.

In addition, the cold should counteract the expansion of the piston, produced by friction between it and the glass barrel and by the heat of the blood. By keeping the metal piston contracted, one should be able to use the syringe an indefinite number of times.

Dr. Elsberg, with my assistance and with my apparatus investigated (on dogs) the feasibility of this plan. We found, as we expected, that clotting in the syringe and difficulty in working the piston can be absolutely prevented by means of the ether spray, and that therefore any amount of blood can be transfused with one record syringe. We found, further, that if the spray was stopped until the piston refused to work, a short spraying with ether over the piston made the use of the syringe again possible. By this means, therefore, the great advance was made, that one syringe can be used for the entire transfusion regardless of the amount to be transfused.

I have used this method since April, 1915, in twenty-eight transfusions with excellent results, and several of the surgeons of the hospital have had great satisfaction with the procedure.

It is unnecessary to cover the walls of the rubber connecting tubes of my instrument with paraffin. I have transfused as much as 1,000 c.c. with nonparaffined tubes.

THE PRESENT SIMPLIFIED TECHNIC WITH MY APPARATUS

Fundamentally, my instrument is a stopcock, which alternately connects a syringe for blood to the donor and at the same time a syringe with saline to the recipient; by turning the cock, the syringe with blood is immediately connected to the recipient and the syringe with saline to the donor.

Alongside of the instrument, which has been fixed to a table, the arms of the patient and donor are placed. The tubes leading from the instrument are connected to the cannulas after the latter have been inserted into the recipient's and donor's veins. The operator then inserts a record syringe into the instrument and aspirates blood. When the syringe is filled, the assistant turns the stopcock, and the operator injects the blood. This is continued until the desired amount has been transfused. By means of the ether spray, a stream of ether is played on the barrel of the record syringe while it is being filled with and emptied of blood. The spraying apparatus consists of an 8-ounce bottle (filled with ether) into which is plugged the top of an ordinary throat atomizer. In order to produce a continuous stream of ether, I replace the single rubber bulb of the atomizer with the double bulb of the actual cautery.

The syringe method of transfusion has definite advantages which make it a method of choice when a transfusion of *whole unmodified blood* is desired. The method I have just described is an extremely simple and certain procedure. By it a transfusion of any amount can be very quickly done with *one* record syringe and *one* assistant. Skill and dexterity of the operator, which the older methods presuppose, are unnecessary.

Mount Sinai Hospital, Fifth Avenue and One Hundredth Street.

Heredity and Antisocial Qualities.—A better understanding of heredity leads to a greater tolerance and a wiser method of dealing with those whose inherited qualities are antisocial, whose tendencies are evil.—F. M. Sandwith, *Clinical Journal.*

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading matter

SATURDAY, SEPTEMBER 18, 1915

STUDY OF THE OLDER MEDICAL PERIODICALS

From the files of the earlier medical periodicals, as Sudhoff has pointed out, much of the medical history of the past could be reconstructed. This is particularly true of the English and American medical periodicals of the eighteenth and early nineteenth centuries, which often have the gossipy flavor of those breakfast-table leaflets, the *Spectator* and *Tatler*. In the "Nova et Vetera" columns of the *British Medical Journal,* many interesting data and curiosities of this kind have been gathered here and there, and are very readable. In the last four numbers of the *Dublin Journal of Medical Science* (April-July, 1915), Dr. T. Percy C. Fitzpatrick, registrar of the Royal College of Physicians of Ireland, gives an historical account of the Irish medical periodicals, beginning with the quarterly *Dublin Medical and Physical Essays* of 1808, the two volumes of which constituted the first medical journal published in Ireland. It owed its inception to the fact that, following the passing of the school of physic act (1800) and the rebirth of the School of the College of Surgeons, Dublin became a medical center, attracting outside students, and medical teaching began to be a profitable occupation. A full bibliographic account of the Dublin *Essays* is given, with facsimile title page and an author index, which includes, among other things, Whitley Stokes' original description of pemphigus gangraenosus (ecthyma terebrans), a paper by William Stokes on the effects of antimonial powder in cases of effusion into the head, and an obstetric review by Dewees. The journal being thus devoted to original communications and reviews, the question of medical reform was expressly excluded. It would have been interesting if some of the postmortems, such as the "morbid dissection" of Todd (ii, 80-83), had been analyzed by their historian.

The next periodical, in order of time, was the *Dublin Hospital Reports* (five volumes, 1817-1830), which contains some of the Meath Hospital reports by Graves and Stokes; papers by Robert Adams on heart disease; John Cheyne on apoplexy, with fatty degeneration of the heart, melena, "fatal erethism of the stomach," feigned diseases of soldiers, acholemic jaundice, James' powder in apoplexy and disease of the inguinal lymphatics; Colles on dissection wounds, fracture of the femur, cause of lockjaw in infants (trismus nascentium), varus and rectal disease; Graves on the effect of posture on the pulse; Jacob on a tailed man; Marsh on spasm of the glottis; Percival on an epidemic petechial febricula; Percival on the deleterious effects of green tea; Porter and White on tracheotomies in "cynanche laryngea"; Ridley on "berri-berri" in Ceylon, and ligations of the subclavian by Todd and the external iliac by Wilmot.

In 1817-1828, came the five volumes of *Transactions of the Association of Fellows and Licentiates of the King and Queen's College of Physicians in Ireland,* which contain Beatty on the treatment of ascites by *Pyrola umbellata;* S. Black's dissections of two drunkards; W. Brooke on liver cough; A. Carmichael on dreaming; tracheotomies, excision of the parotid and a hip-joint amputation by R. Carmichael; Corrigan on the motions and sounds of the heart; F. Cuming on peripneumonia in children; Evanson on hydrocephalic fever; D. Falloon on rheumatic heart disease; E. Geoghegan on megacolon (Hirschsprung's disease); Graves on an acid in the stomach and a West Ireland fever; Jacob on ophthalmitis after typhus; R. Reid on oxygen in angina pectoris; M. Ryan on hydrocyanic acid in extreme dyspnea and Stokes on abdominal tumors, cephalic apoplexy, dropsy and apoplexy, and fatal constipation.

The last Irish journal described by Dr. Kirkpatrick is the only one which has survived to date, the *Dublin Journal of Medical Science,* which first appeared, March 1, 1832, as the *Dublin Journal of Medical and Chemical Science.* Its founder was Robert John Kane (1809-1890), a physician who never practiced, but who made some investigations on experimental pathology, and became a well-known chemist. In 1834, on receiving the professorship of natural philosophy in the Royal Dublin Society, Kane turned over his journal to Graves, Stokes and Porter, who also acquired the collaboration of Arthur Jacob, professor of anatomy in the Royal College of Surgeons. In 1836, the journal became the *Dublin Journal of Medical Science,* and in 1842, Graves, Stokes and Porter resigned in favor of John Hamilton and R. L. MacDonnell, the former of whom later became the editor of the *Canadian Medical Journal.* In 1845, Sir William Wilde became editor, published an index of the first twenty-eight volumes, and made the next volume a quarterly (1846). The first number of the latter opened with an exhaustive history of Irish medicine by Wilde, which was followed by his long series of biographies of medical worthies.

In 1849, Wilde turned over the editorship to John Moore Neligan, who was succeeded by George H.

Kidd (1861-1868) and James Little (1869), who made the *Journal* a monthly again (Jan. 1, 1872), associating himself thereafter with John William Moore, who succeeded him as editor. In 1875, the *Irish Hospital Gazette* was incorporated with the *Journal* and in July, 1907, Dr. T. Gillman Moorhead and Sir John Moore became associated as the present editors. "The *Journal*," Dr. Kirkpatrick concludes, "is the mouthpiece of Irish medicine—by it Irish medicine speaks to the world." His study of the medical periodicals of his country makes an interesting contribution to medical history, and the titles of some of the papers listed in his bibliographies will suggest how many things of value are to be found in these old records, and how little is really new under the sun.

INHERITED EFFECTS OF CHRONIC LEAD POISONING

Recently THE JOURNAL discussed the evidence for the belief that chronic lead poisoning, like alcoholism, may produce effects in parents which lead to deleterious consequences in their offspring.[1] A majority of these cases occurred in female lead workers, and it might be supposed that abortions, stillbirths and early deaths of infants in such persons were due as much to the toxic effect of lead during intra-uterine development as to an actual injury to the germ plasm. No lack of instances occurs, however, in which the father was subjected to plumbism, the mother being unaffected directly. The outcome is a history of varied misfortunes: sterility without impotency, stillbirths, and the early deaths of the offspring. Children which survive have been found to be particularly liable to various nervous affections.[2]

Cole and Bachhuber have demonstrated that the offspring of male rabbits poisoned by lead as well as of male fowls similarly poisoned are of distinctly lower vitality than the offspring of normal males. More recently, Weller[3] has made similar studies on guinea-pigs to ascertain whether deleterious effects are really exerted on the germ plasm in the male as well as on the procreative functions of the female, that is, whether blastophthoria occurs in chronic lead poisoning. The animals were mated, lead females with normal males, and lead males with normal females. In order to check the results as efficiently as possible, control matings were made of normal males with normal females under the same feeding and housing conditions as the lead-poisoned pigs, and for the same reason the normal females were bred alternately to lead males and to normal males. The dosage of lead was controlled by frequent weighings in order that the general nutrition should not be seriously impaired. Under comparable conditions of experiment in respect to numbers and environment, nine offspring of lead males died in the first week against two offspring of normal males dying in that time. Eight young of lead females were stillborn against three stillborn from normal females bred to normal males.

The outcome of this interesting investigation indicates that, in chronic lead poisoning in guinea-pigs, there is a definite blastophthoric effect which can best be demonstrated on the male germ plasm. This effect manifests itself in some instances by sterility without loss of sexual activity, by a reduction of 20 per cent. in the average birth weight, by an increased number of deaths in the first week of life, and by a retardation in development so that these pigs remain permanently underweight. The apparent recovery of the germ plasm some time after the administration of lead has been stopped indicates that the deleterious effect must be suffered especially by that portion of the germ plasm which is undergoing maturation, and not by that which is stored in the primary germinal epithelium. Final judgment on this point, however, must be withheld.

1. Far-Reaching Effects of Lead Poisoning, editorial, THE JOURNAL A. M. A., Feb. 20, 1915, p. 666.
2. Adami, J. G.: Predisposition and Immunity, Osler's Modern Medicine, 1907, i, 44.
3. Weller, C. V.: The Blastophthoric Effect of Chronic Lead Poisoning: Breeding Experiments, Preliminary Report, Proc. Soc. Exper. Biol. and Med., 1915, xii, 157.

SCURVY IN MOTHER AND FETUS

The relation between mother and fetus has been studied in many directions, but little attention has been paid to the effect of diets on the fetus. Holst and Frölich[1] produced scurvy in guinea-pigs by keeping them on a diet of oats and water for from ten to twenty-eight days. With this diet, Ingier[2] produced scurvy in pregnant guinea-pigs to determine what changes would occur in the fetus and whether light would be thrown on certain diseases in man, such as rickets and osteomalacia.

Ingier found that pregnant animals are sensitive to this restricted diet; of thirty-three, twelve had dead litters and many mothers died with dead fetuses in the uterus. Seventeen had their young during an early stage of the disease, and four in an advanced stage. Scorbutic changes were present in all of the fetuses, though in widely varying degrees. The young of mothers in which scurvy developed during the latter part of pregnancy were born alive, fully developed, and with only slight bone changes. The young of mothers with scurvy during the greater part of pregnancy were nearly always born dead and showed marked evidences of scurvy, consisting of diminished bone formation, hemorrhages in the bone marrow and fractures and even failure of bone to

1. Holst, A., and Frölich, T.: Ztschr. f. Hyg. u. Infectionskrankh., 1912, lxxii, 1.
2. Ingier, Alexandra: A Study of Barlow's Disease Experimentally Produced in Fetal and New-Born Guinea-Pigs, Jour. Exper. Med., 1915, xxi, 525.

form. Some of these changes were more pronounced in the skeleton of the mother than in the young, which would be expected since damage to the fetus is often less than to the mother. Goldmann[3] demonstrated that during pregnancy certain nutritious substances, as glycogen and fat, pass from the mother to the fetus. Since pregnant animals are affected more readily than nonpregnant animals by defective diet such as used in these experiments, it is probable that the fetus may absorb, as seen in the case of glycogen and fat, a large percentage of food substances necessary to prevent scurvy, with the result that the mother is less able to combat the disease.

Recently it has been suggested that some forms of scurvy are bacterial in origin; whatever the rôle bacteria may play, it has long been known that an unsuitable diet may lead to the development of the disease. In connection with this, Hess[4] has determined several new factors with respect to the lesions and signs of infantile scurvy and its relations to beriberi. Substances that prevent scurvy are present in vegetables and fresh fruit, but just what these are has not been determined. It is thought that they act either directly on the bone-forming elements or on the secretion of internal glands. Insufficiency of a gland of internal secretion in the mother may cause hypertrophy of the same gland in the fetus, for example, the thyroid, and Ingier added various preparations of internal glands which influence bone growth (hypophysis, thymus, parathyroid and thyroid) to the oats and water diet to see if the scurvy could be prevented; but the results were entirely negative. Defibrinated blood from normal guinea-pigs, which we may assume would contain secretions of all of the internal glands, was also without effect when given to animals with scurvy.

With a diet deficient in phosphates, Schmorl[5] produced a disease in dogs which resembles, but which probably is not, scurvy. Ingier added phosphated cod liver oil to the oats-water diet, but this did not check the development of scurvy or alter its course after it had developed, the result indicating that phosphates are not the substances essential for the prevention of scurvy.

The experiments here reviewed briefly do not speak for an etiologic relationship between scurvy and the congenital disease known as osteogenesis imperfecta. This disease, though due to a diminution of osseous development, differs essentially from scurvy and has not been produced by the feeding experiments. There are also fundamental differences between scurvy and rickets and osteomalacia. Scurvy and osteomalacia may occur in pregnancy, and exacerbations of existing osteomalacia may develop during pregnancy, but it is doubtful if the offspring of such mothers have the disease at birth. In these conditions, the fetus apparently through a selective action of the placenta is able to avoid the factors that are injurious to the mother. Disturbance of ductless gland secretion seems to play a rôle here; in osteomalacia the parathyroids seem to be concerned.

In conclusion it may be said that, while Ingier did not succeed in finding the specific substances necessary to prevent scurvy, she did succeed in transmitting the disease from mother to offspring.

3. Goldmann, cited by B. Wolf, in von Meyer and Schwalbe: Studien zur Pathologie der Entwicklung, Jena, 1915, i, 50.

4. Hess, A. F.: Infantile Scurvy, II, A New Aspect of the Symptomatology, Pathology and Diet, The Journal A. M. A., this issue, p. 1003.

5. Schmorl, G.: Arch. f. exper. Path. u. Pharmakol., 1913, lxxiii, 313.

IS STRYCHNIN A "CARDIAC TONIC"?

Clinical evidence sometimes endows drugs with diverse and unexpected properties. In some degree this seems to have been the case with strychnin. Many physicians administer this drug in cardiac emergency, although the pharmacologists have not been able to demonstrate that it increases the output of the heart. It is occasionally true that benefits follow the empiric use of drugs in some cases, although the therapeutic attempt is useless in the majority of them. Doubtless for this reason there is a considerable degree of reserve in the textbooks of pharmacology in condemning any presumably useless practice that has been widespread. Thus, some books state that no essential increase in blood pressure follows the experimental administration of nontoxic doses of strychnin, but admit that, in pathologic conditions attended with abnormally low pressures, beneficial results may possibly follow. The alleged value of strychnin in surgical "shock" has no experimental basis to support it and is, indeed, denied by many competent observers. It is a fact readily demonstrated on animals that cardiac muscle is not only not stimulated, but also decidedly depressed both in amplitude and in rhythm under the influence of strychnin, Greene[1] sums up the situation when he says that the beneficial effects of strychnin on the circulatory system which have been claimed in therapeutic practice must rest wholly on the changes in the reaction delicacy through the central nervous mechanisms. By an increase in the irritability of the cardiac inhibitory and acceleratory centers, normal stimuli may produce more profound and beneficial changes in the musculature of the cardiac apparatus. It must be remembered, however, that even this favorable response to strychnin is somewhat antagonized by the depression of the cardiac muscle tissues.

Inasmuch as the laboratory studies of the action of strychnin show that doses permissible in man can scarcely be of direct use in the treatment of heart disease, the use of the drug as a "cardiac tonic" must be defended, if at all, on the basis of some indirect effect. In the series of articles on practical pharmacology in The Journal,[2] it has been attempted in a mild way to

1. Greene, C. W.: Handbook of Pharmacology, 1914, p. 101.

2. Practical Pharmacology, special article, The Journal A. M. A., Jan. 16, 1915, p. 245.

make allowance for the undemonstrated reputed usefulness of the drug by stating that strychnin may slow the heart through vagus stimulation at times; it may improve the circulation through its actions on the vasomotor and respiratory centers — for one cannot wholly separate the influence of the respiration and circulation — and thus through the circulatory changes it may improve the nutrition of the heart. In a similar way it causes improvement in the voluntary muscles and other tissues of the body when it improves the circulation by increasing muscular activity.

In a review of the facts gathered by clinical observers on this subject, Newburgh[3] quotes evidence which shows that, even though a single dose of strychnin does not benefit persons suffering from heart failure, it is not proved that the prolonged use of the drug may not be a material aid in the relief of broken cardiac compensation. At the Massachusetts General Hospital in Boston, he investigated the possible effect of the administration of large doses of strychnin over a period of several days in persons suffering from chronic heart failure.[4] None of the patients were benefited by the strychnin. The compensation was not improved in the slightest by the drug, but some of the patients subsequently recovered their compensation as the result of digitalis administration. The failure of strychnin to have its reputed effect, therefore, cannot be explained by assuming that the patients under observation were beyond all therapeutic aid. Those who improved under digitalis failed to do so during the strychnin period solely because strychnin does not improve the heart. Newburgh concludes that neither pharmacologic nor clinical evidence justifies the use of strychnin in the treatment of acute or chronic heart failure.

POTASSIUM POISONING IN NEPHRITIS

It has long been known that potassium salts (or, speaking more correctly, potassium ions) have a depressant action on the heart; the demonstration of this has become a commonplace experiment in the pharmacologic laboratory. This poisonous action was first investigated in connection with the frog heart, but has been repeatedly confirmed for the mammalian heart. Just how toxic a potassium salt is for the mammalian heart can be shown only by experiments on the isolated organ; for when such salt is administered by mouth or even intravenously at a slow rate, it is, under ordinary circumstances, removed so rapidly from the circulating blood that unless enormous doses are given, the concentration which would be fatal or markedly toxic to the heart is not reached. With the isolated mammalian heart, however, it has been shown[5] that when the circulating fluid contains 0.085 per cent. of potassium chlorid, the heart rate may be reduced by one third; 0.14 per cent. brings the heart to a standstill. On the basis of the figures given for the total quantity of blood — from 5 to 7 per cent. of the body weight — a man of 70 kg. (about 178 pounds) would contain in the neighborhood of 4,000 c.c. To bring such a volume of blood to a potassium chlorid content of 0.14 per cent., it would be necessary to add only 5.6 gm. of potassium chlorid, or somewhat less, for the blood normally contains some of this salt. In other words, 5 or 6 gm. of potassium chlorid reaching the blood and remaining there would very quickly be fatal.

Bunge long ago called attention to the fact that men partaking largely of a diet of certain vegetables (especially potatoes) may daily absorb 40 or more (even 70) gm. of potassium salts daily; in other words, they may take ten or more times a fatal dose of potassium salts every day. Yet no untoward symptoms have been reported; the explanation is that although the potassium salts reach the blood and so the heart, they are removed from the blood so rapidly that they do not reach the dangerous concentration. It has long been recognized that it is largely through the activity of the kidneys that potassium salts are removed from the body.

In view of these facts it is not surprising that potassium chlorid should prove much more toxic to animals or men with impaired kidney function than to normal individuals. That this is actually the case has been shown by Smillie,[6] who produced nephritis in rabbits by the injection of small doses of uranium nitrate; such rabbits succumbed quickly (often within fifteen minutes) to doses of potassium chlorid three or four times smaller than those which were borne without any symptoms by normal rabbits. The experiments were controlled by nonprotein blood nitrogen retention determinations; the potassium chlorid was excreted, and no symptoms appeared until the nonprotein blood nitrogen had risen to about 100 mg. per hundred c.c., whereas beyond this figure death was quickly produced.

Smillie's experiments were suggested by a case of what seemed to be potassium chlorid poisoning in a nephritic. A woman of 43 with chronic interstitial nephritis and hypertrophy of the heart and showing a poor sodium chlorid excretion took 10 gm. of potassium chlorid; she became cyanotic and markedly depressed, and there were abdominal distress and vomiting, diminution of urine, and two days later marked hemoglobinuria; the latter condition does not seem to have been observed in animal experiments.

These observations help to define more exactly the dangers of potassium, concerning which such unwarranted fears have at times been expressed. They suggest that the large amounts of potassium salts present

3. Newburgh, L. H.: On the Use of Strychnin in Broken Cardiac Compensation, Am. Jour. Med. Sc., 1915, cxlix, 696.

4. This is one of the investigations aided by a grant from the Council on Pharmacy and Chemistry of the American Medical Association.

5. Hald, Tetens: Arch. f. exper. Path. u. Pharmakol., 1905, liii, 227.

6. Smillie, W. G.: Potassium Poisoning in Nephritis, Arch. Int. Med., August, 1915, p. 330.

in some vegetable foods might be dangerous in nephritis. They also serve as a warning against methods of administering drugs which might suddenly raise the potassium content of the blood. In these days, when the intravenous and subdural routes for the administration of powerful drugs are being more and more used, such a word of warning may not be amiss; potassium salts injected as some sodium salts have been might well prove extremely dangerous. As regards the relation of potassium salts to nephritis, it is interesting to recall that this is an old problem in a new form; in the early eighties of the last century the question was much discussed.

TUBERCULOSIS AND IMMUNITY

So much attention has been paid in recent years to the study of tuberculosis, not only from the standpoint of medical science, but also with reference to sociologic and industrial aspects of the widespread prevalence of this disease, that many thoughtful persons are beginning to take a retrospect of the situation. What has been learned? What has been accomplished? What is worth while in our plans for the future of the work? These are questions which deserve careful consideration. Like other fields of medicine, the problems of tuberculosis need to be approached from many sides. A single avenue of investigation is often quite misleading because, despite what it may reveal, it fails to open up the by-ways that lead to important information. Tuberculosis deserves to be considered in its racial and epidemiologic aspects as well as from the pathologist's point of view. Too often, as Baldwin[1] recently remarked in his Harvey Lecture, we encounter confusion and perplexity in the face of the frequent contradictions experienced in tuberculosis from the clinical side. The deceptions and fallacies of laboratory experiments in some instances have also led us astray.

The retrospect of this difficult field by one who has devoted years of patient endeavor to it, as has the assistant director of the Saranac Laboratory for the Study of Tuberculosis,[1] furnishes a helpful guide for the continuance of the campaign against the disease. It indicates the directions in which progress may be attempted and sets the probable limitations to present-day aims and procedures. Some of Baldwin's dicta deserve to be disseminated widely. We know, he remarks, so far as tuberculosis is concerned, that in man no absolute immunity has been observed, meaning by this, effective resistance throughout life. There may be a relative immunity or a heightened resistance, but not a natural immunity to tuberculosis in warm-blooded animals. All civilized races long removed from infection are particularly susceptible. Some of the white races have acquired a certain degree of immunity by inheritance and almost universal infection. Baldwin reminds us that the rapid increase of intercourse between all lands and races facilitates the universal spread of tuberculosis; and it is certain to occur through the medium of numerous bacillus "carriers" in this, as in so many other diseases.

There is no evidence of an experimental nature to show that any form of *active* immunity is transmissible. The variability in resistance exhibited by man must be associated with other factors. The gradual processes of immunization believed by many to be taking place in white races must be resolved into other causes. If progress is being made toward the self-protection of mankind, the resistance attained or presumably attainable must not be confused with the claim that a specific resistant quality is transmitted. No specific natural defenses have been demonstrated.

The outlook as it appeals to Baldwin is not discouraging. The ultimate survival of those who acquire a relative immunity, he writes, will tend to diminish the severity of the disease, but many generations may be required to accomplish this. He believes that the opportunities for infection, now universal in cities, will gradually diminish in civilized lands by lessening the danger from advanced cases and also that from bovine sources. For many years, however, the number of "carriers" will increase, owing to improved care, longer life, and higher standards of living among the people.

One reason for the considerable variation in resistance in some species is the fact that the bacillus has not become adapted to long-continued parasitic existence in them. "Given virgin soil and a race of bacilli already adapted to the species, an initial infection takes place with little hindrance from the nonspecific defensive powers. The further history of such infections depends, in part, at least, upon the amount of specific resistance aroused." [1] In the absence of specific natural defenses, it is well to remember that maturity of tissues, freedom from trauma, normal nutrition, and the absence of intercurrent disease or toxic influences are the important "factors of safety" on the part of the body. In the therapy of tuberculosis, says Baldwin, this principle should be applied: To avoid interference with Nature's powers of resistance when she is attempting to localize the infection with apparent success.

1. Baldwin, E. R.: Immunity in Tuberculosis: with Special Reference to Racial and Clinical Manifestations, Am. Jour. Med. Sc., 1915, cxlix, 822.

Good Breeding and Acquired Characters.—Even if we must believe that acquired characters are not transmissible, there is still no ground to be despondent on the subject, nor to be unduly elated. It is no argument against the necessity of doing our very utmost in the training and education of the race, and of improving the conditions of life to counteract bad breeding. Without the opportunities which health and education give, even an inborn good quality may never have the chance of asserting itself. But we must learn to value good breeding more than we do.—F. M. Sandwith, *Clinical Journal.*

Current Comment

MEDICAL LICENSURE

The responsibility for the licensing of medical practitioners has been left by the national government to the individual states; it is left to the state to establish the only legal barrier possible between the public and the thousands who seek authority to treat human diseases. Some states have provided an efficient guaranty that practitioners given the state's endorsement have secured the essential educational qualifications. In some states, however, the responsibility has been taken up in such a happy-go-lucky manner, and the legislation provided is so contrary to effective legal procedure, that the situation would be laughable, were it not for the serious menace to the public. In some states, laws have been passed, admirable in their composition and excellent in their purpose, only to be invalidated by clauses or by other laws exempting the very persons to whom the law should apply. Invariably, the exemptions are of those unable to comply with the educational requirements of the practice act and against whom the people most need protection — those who have had little or no medical training. The making of such exemptions, either by special clauses in the practice act or by laws providing special boards and lower educational standards, is clearly perverting medical licensure, so that instead of protecting the public against the incompetent, it is providing special privileges for the incompetent, untrained men and women parading as the apostles of some "new and marvelous" form of healing. Legislators have yet to learn that the art of healing is not gained by birth or by inspiration, but by a rigid and prolonged course of training in the fundamentals of medicine. The only way to make medical licensure a real protection of the public is to provide one licensing board in each state with ample power to apply one educational standard alike to all practitioners of the healing art.

ALKALOSIS AS A POSSIBLE PATHOLOGIC FACTOR

At the present time acidosis is being charged with a rather heavy burden of responsibility for all sorts of pathologic manifestations. Sometimes these are attributed to the toxicity of abnormally liberated acid products of metabolism; sometimes it is an upset in the acid-base equilibrium of the organism that is held accountable for the perversions of function noted. It is, of course, easily conceivable that bases should now and then accumulate in undesirable quantities somewhere in the organism and thus initiate undesirable symptoms. Indeed, this possibility becomes more and more significant as the importance of the neutrality regulation of the blood and the body is being emphasized. The possible participation of what may be called alkalosis, by contrast with the reverse condition of acidosis, has been suggested in explanation of the symptoms of parathyroid tetany.[1] The origin of the peculiar muscular manifestations which follow the loss of the parathyroid glands has long been a scientific puzzle. Theories, of course, have not been wanting. It has been assumed, for example, that ordinarily these glands have a detoxicating function. When they are removed, poisons, of either metabolic or exogenous origin, are no longer neutralized, destroyed or prevented from being formed; hence the symptoms that arise. It has also been advocated that parathyroid tetany is the expression of a nervous hyperexcitability due to deficiency of calcium. Injections of calcium salts bring temporary relief; but other procedures quite unrelated to the calcium element do likewise. The toxin theory has become a veritable tangle of conflicting claims and observations. At the Johns Hopkins University, Wilson, Stearns and Janney[1] have found that the introduction of acids into animals relieves parathyroid tetany and that the period of relief is more prolonged than that observed after the introduction of many other of the agents previously tried. This is an experimental fact. The assumption derived from it is that the symptoms are themselves the expression of an alkalosis. This possibility has heretofore received no attention. It is supported by the further fact that alkalies are known to increase the symptoms of tetany. Sodium bicarbonate has been shown to be distinctly harmful, whereas the neutral chlorid of sodium is innocuous. From this it appears that an artificial alkalosis is unusually harmful, while a condition of acidosis produced by acid introduction is beneficial in parathyroid tetany. Even the acidosis developed by prolonged fasting tends to diminish the severity of the symptoms. The investigators quoted point out that the relief of parathyroid tetany by the administration of acids suggests the possibility of a beneficial action due to a variation in the acid-base equilibriums in the body, and offers a new point of view for the study of this and allied conditions.

1. Wilson, D. W.; Stearns, T., and Janney, Jr., J. H.: The Effect of Acid Administration on Parathyroid Tetany, Jour. Biol. Chem., 1915, xxi, 169.

OSTEOPATHS AND THE HARRISON LAW

The Harrison Narcotic Law has now been in force six months, and some of its by-products are becoming apparent. One of the unexpected developments is the attitude of the osteopaths toward the law. Osteopathy, as is generally known, originated in the dreams of a country doctor in Missouri, about a quarter of a century ago. It is based, according to its founder and prophet, on the following propositions: The human body is a machine; disease is due to the dislocation of some structure in the body; the treatment of any abnormal condition is to find the dislocated structure and restore it to its proper position. None of the statements is true as a generalization, yet each one has in it a grain of truth, just enough to enable the ignorant and enthusiastic disciple to make out a case to a receptive listener. But the real reason for the temporary vogue of osteopathy is the accidental fact that this cult arose just at the time when the advance of scientific knowledge regarding disease was demonstrating the falsity of many of our previous ideas regarding drugs and their value. The public,

catching this spirit from the medical profession, began to waver in its allegiance to powders and pills, and so was psychologically receptive to the claim of the osteopath that his "system" was a drugless one, that drugs were not only of no value in the treatment of disease, but also were responsible for most of human ills. In addition to osteopathy, a countless succession of other freak sects made capital out of this "drugless healing" cry. In each state the advocates of osteopathy appeared before the legislature and demanded the passage of a law which would "recognize osteopathy" as a drugless system of treatment, something entirely apart and distinct from the practice of medicine. This was the basis on which they were given separate laws, boards and standards, and this is the only ground on which they could be so recognized. The Harrison law provides for the registration of physicians, as a means of restricting the use of certain drugs to legitimate purposes. In several states the osteopath has demanded the right to register under this law, regulating the use of drugs which, according to his own teachings, he never uses and does not believe in. "For," he says, "am I not a physician with all the rights and privileges of one?" To the ordinary mind, it would seem clear that the osteopath either is or is not a physician. If he is, then he is subject to the provisions of the Medical Practice Act, and should be required to conform to its educational requirements. If he is not, then he is not qualified to register as a physician or to perform any of the legal functions of a physician, least of all the dispensing or prescribing of powerful drugs, the use of which is directly opposed to osteopathic teachings.

ABSORPTION FROM THE STOMACH

Although one might expect, from purely gross anatomic considerations, that the stomach is an organ of absorption precisely like the intestine, which forms a continuance of its structure, physiologic evidence fails to support such a view. Even water is retained without absorption in the stomach when something interferes with the passage of fluid further along the gastrointestinal canal. Alcohol, however, can find its way quite readily through the barrier of the gastric membranes, and it is possible that some substances soluble in alcohol can reach the blood stream in company with this substance, yet fail of ready gastric absorption when present in a watery solution. It may be that the experimental findings heretofore reported are in part dependent on the conditions of investigation which have prevailed. For example, it has been stated that almost all of the amino-acids—easily absorbed substances—which are administered by mouth can be recovered from a duodenal fistula, thus indicating that they traverse the stomach without being absorbed.[1] Apparently contradictory to this is the statement that, after ligation of the pylorus, evidences of amino-acid absorption from the stomach may be obtained. Perhaps the variance here expressed is merely an indication that under exceptional conditions, such as prolonged stay in the stomach, substances which would ordinarily be passed along the alimentary tract to the intestine find their way through the gastric wall in the course of unusual detention in contact with it. If soluble substances are, at best, absorbed through the stomach wall with slowness and difficulty, there is little likelihood that the less soluble foodstuffs, such as fats, can reach the circulation in this way. A number of investigators have recently published observations of a histologic character from which they conclude that ingested fat does pass through the stomach wall. Mendel and Baumann[2] have tested this contention in a variety of ways, notably by examining the blood and the thoracic lymph for evidences of absorbed fat when the latter substance was introduced into the ligated stomach. When the pylorus is patent, the fat content of the blood soon increases in notable amount after a meal rich in fat. So long as no fat reaches the intestinal membrane, however, the Yale investigators contend that the absorption and transport of fat through the gastric wall are apparently nil or exceedingly slow and small in amount; for, with methods that are reasonably delicate, no detectable quantities of fat could be shown to be absorbed by way either of the blood or of the lymph streams. Absorption is not a primary or prominent function of the stomach.

1. Abderhalden, London and Prym: Ztschr. f. physiol. Chem., 1907, liii, 326.

THE PHOSPHORUS CONTENT OF BLOOD SERUM

Thanks to the development of suitable analytic procedures, particularly the so-called micro methods which enable one to make quantitative estimations with small amounts of blood such as can readily be withdrawn from any patient with ease, the chemistry of the blood serum has attained a clinical significance in a new sense. The readers of The Journal have become familiar with the statements based on the quantitative determination of sugar and of various types of nonprotein nitrogen in the blood. Figures obtained for the content of uric acid and urea in the circulating blood are used as diagnostic aids; for example, to determine whether a case of joint disease is gout or arthritis.[3] Compounds other than those containing nitrogen have become included in the list of the readily estimated blood constituents. Cholesterol, for example, has attracted attention, particularly in its possible relation to phenomena of hemolysis. More recently, the soluble phosphorus compounds of the serum have received attention. At the Harriman Research Laboratory of the Roosevelt Hospital, New York, Greenwald[4] has shown that these may be divided into three classes: (1) lipoid, (2) forms probably inorganic in nature, and (3) protein-phosphorus derivatives. The last are present only in small quantities in the blood, and are presumably negligible in amount in the serum. The amount of lipoid phosphorus, though varying

2. Mendel, L. B., and Baumann, E. J.: The Question of Fat Absorption from the Mammalian Stomach, Jour. Biol. Chem., 1915, xxii, 165.

3. Folin, Otto, and Denis, Willey: The Diagnostic Value of Uric Acid Determinations in Blood, Arch. Int. Med., July, 1915, p. 33.

4. Greenwald, I.: The Estimation of Lipoid and Acid-Soluble Phosphorus in Small Amounts of Serum, Jour. Biol. Chem., 1915, xxi, 27.

widely in different normal individuals, is comparatively constant for the same person. It does not appear to be increased during the absorption of fats which are commonly accompanied by lipoids. The inorganic type of phosphorus compounds, on the other hand, is doubtless largely dependent on the character of the diet and the stage of digestion after meals. In amount it varies in normal individuals between 2 and 6 mg. per hundred c.c. of serum, the content of the lipoid phosphorus ranging from 7 to 13 mg. for the same group of persons. In nephritis, on the other hand, in which the retention of nonprotein nitrogen has been demonstrated again and again, there is evidence, in the newest data from the Harriman Laboratory, of retention likewise of inorganic phosphate, and also, in some cases, a certain increase in the amount of lipoid phosphorus in the serum. They do not always parallel each other.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALASKA

Correction.—An error occurred in a news item from Alaska, on page 630 of THE JOURNAL of August 13. It should read, that Dr. Earle M. Bevis, Juneau, has been appointed assistant commissioner of health for the First Judicial District of Alaska, and Drs. Harry C. DeVigne, Juneau, and Benjamin L. Myers, Ketchikan, have been appointed members of the Alaska Board of Medical Examiners from the same district. ——The address of Dr. Curtis W. Welch is Candle and not Council, as erroneously stated.

CALIFORNIA

Japanese Leper Discovered.—Members of the Sacramento Board of Health took into custody, on August 24, a Japanese who is suffering from tubercular leprosy. He is detained at the Sacramento County Hospital.

Jury Reduces Fees.—The claim of $25,000 presented by Dr. Herman J. Schlageter of San Francisco, against the estate of the late Mr. Charles G. Lathrop, San Jose, was reduced to $10,000, by the jury, August 27. The claim was for medical service rendered for two years preceding the death of Mr. Lathrop and the opinion of experts as to a reasonable charge for services rendered varied from $10,000 to $50,000.

Personal.—Dr. J. P. Jackson, Los Angeles, is reported to be seriously ill at his old home in Muscatine, on account of an infection of the right hand.——Dr. Harold Kniest Faber, formerly connected with the Rockefeller Institute for Medical Research, New York, has been appointed assistant professor of pediatrics in the Leland Stanford Junior University, School of Medicine, San Francisco.——Dr. F. W. Lynch, assistant professor of obstetrics and gynecology at Rush Medical School, has accepted a call to become professor of obstetrics and gynecology in the University of California Medical School, as successor to Prof. J. M. Slemons, who has resigned to accept a call to Yale Medical School.——Dr. Wilbur A. Sawyer has been appointed member and secretary of the California State Board of Health. For the past five years he has been director of the state hygiene laboratory at the University of California and recently also lecturer in hygiene and preventive medicine in the University of California Medical School. As secretary of the California State Board of Health he will have charge of the bureaus of administration, tuberculosis, vital statistics, and registration of nurses, maintained at the state capitol, Sacramento; and of the bureau of food and drugs, the state hygienic laboratory, and the newly established bureau of sanitary engineering, maintained by the state at the University of California. Among his developments of the work of the state hygienic laboratory have been the making and distribution of Pasteur antirabic virus, and of an improved serum for immunization against typhoid, prepared in accordance with the Gay-Claypole method, and the establishment of a department for Wassermann and other tests for specific diseases. Dr. Sawyer was chairman of a committee of the University of California faculty which last year brought about the establishment of a six-year course in preventive medicine leading to the degree of Graduate in Public Health.

COLORADO

Sanitary Rules for the Home.—Dr. Frank R. Coffman, City Health Commissioner of Denver, has issued a set of instructions for housewives regarding home sanitation.

To Abolish Police Surgeon.—The commissioner of safety of Denver announced at a conference of city commissioners that at the next regular meeting of the council, he would introduce an ordinance to abolish the office of police surgeon.

Personal.—Dr. William W. Kenney, Denver, is reported to be critically ill as the result of poison taken by mistake. ——Dr. Lloyd E. Kindall, Pueblo, has been elected as surgeon-superintendent of the Lincoln County Miners' Hospital, Sheridan, Wyo.——Dr. Luther J. Weldon, city physician of Denver, has resigned.

FLORIDA

Physicians at Small Salaries Wanted.—The mayor of Jacksonville, in a report made to the city council, August 21, stated that the city was now too large for one city physician and suggested that at least three be employed, two white and one colored.

Personal.—Drs. James E. Douglass and Willie J. Vinson, Tarpon Springs, have been appointed local surgeons for the Tampa and Gulf Coast Railway.——Dr. Sarah Lucretia Robb, Gainesville, who has been ill in St. Luke's Hospital, Jacksonville, is reported to be convalescent.

Instruction for Midwives.—A course of instruction for midwives was given by the city health department, beginning August 4. After the course of instruction is over an examination is to be held and permits to practice will be issued to those who pass the examination.

Enforcement of Health Laws Demanded.—The state health officer has addressed a letter to solicitors of the circuit of county criminal courts, to sheriffs and county superintendents of public instruction, directing attention to the passage of the public health laws enacted by the legislature of 1915, with especial reference to the provision of adequate sanitary privies and the screening against flies.

Regulations for School Inspection.—At a called meeting of the state board of health, August 30, rules and regulations regarding the work of medical inspectors of public schools in the state were adopted. The purpose of the meeting was to agree on the best means to enforce the act without burdening the state board with the great additional expense involved, and for which no provision was made by the legislature.

Hospital Notes.—The Pensacola Hospital, which has been erected by the Sisters of Charity at a cost of $400,000, was opened for public inspection, August 27, and received its first patients on September 1. The hospital scheme was initiated about a year and a half ago. The building is of stone, brick and reenforced concrete construction, four and five stories in height, is as nearly fireproof as is possible and has a thoroughly modern equipment.——The nurses home for the Gordon Keller Memorial Hospital, Tampa, has been completed at a cost of $8,000, and will be occupied as soon as means can be obtained for equipping the building.——The property on East Rich Avenue, De Land, occupied by the De Land Hospital, has been sold to a resident of Tarentum, Pa., who expects to occupy the building as a winter home.——Plans for a new hospital building and a building for colored students, at the State School for the Deaf and Blind, St. Augustine, have been accepted by the State Board of Control, and contracts for about $30,000 for the construction of this new building have been let.

ILLINOIS

Foot and Mouth Disease.—On September 8, Governor Dunne issued a proclamation urging that no picnics or political or social gatherings be held in rural communities or country towns within a radius of 25 miles of farms now under quarantine for foot and mouth disease.——It is alleged by the Department of Agriculture that the disease has been carried by pigeons from farm to farm in quarantined parts of the state, and that it has also been spread by the common custom of boarding neighbors' cattle.——Augusta and St. Mary's townships in Hancock County and Birmingham township in Schuyler County have been added to the quarantined district.——The disease has broken out in the prize Guernsey herd of cattle belonging to Mrs. Scott Durand at Crabtree Farm, near Lake Bluff, and sixty-one head, valued at $61,000, have been ordered killed.

Chicago

Personal.—Dr. James W. Walker is in charge of a voluntary aid detachment hospital for wounded soldiers in Kent, England.

INDIANA

Sanatorium Company Dissolves.—Announcement is made by the Secretary of State that the Frankfort Tuberculosis Association, Frankfort, has dissolved.

Sanitary Survey.—Drs. H. F. Smith and J. Craven of the U. S. P. H. S. have recently reached Indianapolis in the course of a sanitary survey of the Ohio Valley water shed, the survey being made with especial reference to typhoid fever.

Loan to Board of Health.—A temporary loan of $72,000 for the city health department of Indianapolis, to be devoted to health board and recreation work, has been negotiated by the city controller. The loan is for three months and the rate of interest, 3 per cent. and 5 per cent.

Physicians Combine.—Drs. Simon J. Young, Gerald H. Stoner, Harry B. Hayward, Edgar H. Powell, George R. Douglas and Robley D. Blount, all of Valparaiso, have associated themselves together and have rented the remodeled second floor of the Bondy Building as offices.

Disease Prevention Day.—Governor Ralston has issued a proclamation designating Friday, October 1, as Disease Prevention Day and urges that on this day such exercises be given in the public schools, and such action be taken by the various municipalities and civil and other organizations as will emphasize the joint responsibility of all citizens thereof.

Personal.—Dr. Ira W. Ellis, Newcastle, who fell a short time ago fracturing his hip, is reported to be in a critical condition.——Dr. John B. Weaver, after fifty-seven years of active practice in Mt. Vernon and Evansville, has retired from active practice and will reside with his son in Nashville, Tenn.——Dr. Theodore B. Templin, city physician of Gary, is reported to be seriously ill in Mercy Hospital with appendicitis.——Dr. Joshua Simon, Rome City, fractured his right forearm August 9, while cranking his automobile.

IOWA

Doctors' Building for Clinton.—Drs. David S. Fairchild, Sr. and Jr., Dr. Henry J. Heusinkveld, Jr., and other physicians of Clinton, expect to have joint offices in the new Wilson Building, which is to be arranged especially for physicians' uses.

Personal.—Dr. William A. Guild has just returned to Des Moines after a year in Paris.——Dr. Claud E. Aborn, Clinton, suffered a fracture of the leg in a collision between an automobile and an interurban car at Sterling, Ill., August 21.——Dr. John E. Luckey, Vinton, was thrown through the windshield of his automobile in a collision with another car, August 19, and sustained severe cuts and bruises.——Dr. Charles H. Cogswell, Cedar Rapids, for nearly fifty years a practitioner of medicine, celebrated his semicentennial as a Free Mason, August 14, and on this occasion was presented with a gold headed cane.

Vaccination.—Davenport had an epidemic of smallpox lasting many months, which is practically just ended. On the opening of the public schools September 1 more than fifty children were excluded on account of noncompliance with the rule of the health department that they must be satisfactorily vaccinated before entering the schools. Over 7,000 pupils registered, 1,200 of whom were enrolled in the high school. The parochial schools also have several thousand pupils. Some opposition to the vaccination rule was manifested, some parents declaring that they would take the matter to the courts, in the face of the expensive epidemic of smallpox which the city had just gone through. Dr. Joseph R. Ferrell, school physician, has issued a notice to the public school patrons that vaccination will be done free.

KENTUCKY

Inspection of Clinics.—Surg. John McMullen, U. S. P. H. S., Lexington, has recently made a tour of inspection of mountain clinics and hospitals where trachoma and other communicable diseases are being treated. Dr. McMullen has been requested to establish a clinic for trachoma in Bell County.

County Health Survey.—A health survey of Bell County has demonstrated that in less than one third of the schools, fifty-one cases of trachoma exist among the schoolchildren. In the schools thus far examined, there have also been twenty-five cases of tuberculosis and thirty cases of pellagra.——As the result of an investigation made in twenty-four counties of the state, 1,280 cases of trachoma have been found in 18,016 individuals examined.

Dustless Streets and Health.—Louisville has been making an experiment in oiling its macadam streets with the idea that the absence of dust from such streets not only conduces to the comfort and cleanliness of the homes thereon, but that there would be a distinct gain in the general health from the absence of dust and the germs of disease carried thereby. In proof that keeping down dust has had some effect in this direction, it is said that during July there was not a case of diphtheria or scarlet fever reported, whereas during May and June, before the oiling was commenced, there were thirty-three cases of these two diseases.

Personal.—Dr. Charles H. Todd, Owensboro, was the guest of honor at a banquet given by physicians of Owensboro and Daviess County in celebration of the semicentennial of Dr. Todd's advent in Owensboro.——Dr. N. Lewis Bosworth, Lexington, has been elected medical director of the Central Life Insurance Company.—Dr. Thomas H. Kelly, Covington, has been appointed assistant to the Forschheimer chair of internal medicine of the University of Ohio, Cincinnati.——Dr. Louis Kaelin, Louisville, who has been seriously ill with rheumatism for several weeks, is reported to be improving.

Hospital Notes.—At the November election, the voters of McCracken County will decide whether or not the Jackson Hill Sanatorium shall be conducted as a county institution.——Dr. Harvey R. Henry, Winchester, has leased the Birch Building in Winchester and after remodeling it will open it as a private hospital.—The contracts for building the additional room at Bethany Hospital, Winchester, have been awarded and on the completion of this work there will be room for twelve patients in the institution.——At a meeting of the Paris Commercial Club, August 13, it was decided to raise funds for the building of an annex, for the use of colored patients, to the Massie Hospital.——Dr. Wilgus Bach, Jackson, is building a three-story modern hospital, to be completed about September 15, and to accommodate about forty patients.

July Work of the Tuberculosis Commission.—During July, the state tuberculosis commission gave its moving picture exhibit in Campbell County and as a result of the interest, the county commissioners are considering the feasibility of uniting with Kenton County in building a tuberculosis hospital. Nurses representing the commission have worked in Breckenridge, Bell, Union, Menifee and Boyle counties. One nurse has spent two weeks in interesting physicians, clergymen, teachers and public officials in Floyd, Lawrence, Johnson and Pike counties, in the establishment of visiting nurses work for consumptives. The county superintendent of schools of Mason County represented the commission before ten teachers' institutes, at which she showed the need of improving sanitation and of the employment of visiting nurses for schools as a means of preventing tuberculosis.

LOUISIANA

Awards Tulane.—A bronze medal has been awarded to the museum of anatomy of Tulane University, and Dr. Edmond Souchon, New Orleans, for their exhibit on Dissections.

Site for Sanatorium Purchased.—The state board of health has purchased 623 acres of land about 10 miles south of Alexandria. The land will be cleared as soon as possible and buildings will be erected for a state sanatorium for tuberculosis.

Physicians Occupational Tax Opposed.—The Louisiana State Medical Association is urging the abolition of the occupational tax on physicians and is advising members of affiliated medical societies to nominate and elect, if possible, candidates who will pledge themselves to vote for the abolition of the license tax on physicians.

Seeks Site for North Louisiana Pellagra Hospital.—Dr. Oscar Dowling, state health officer, is touring north Louisiana that he may determine the number and location of cases of pellagra in that portion of the state, take steps for treating the disease and establish such hospitals as may be deemed necessary. It is estimated that there are more than 3,600 cases of pellagra in Louisiana.

Personal.—Dr. George H. Tichenor, Jr., New Orleans, has been appointed surgeon in chief on the staff of the Commander in Chief of the Sons of Confederate Veterans.——Dr. Henry B. White, New Orleans, resigned as a member of the state board of health and has assumed his duties as medical inspector of the board.——Dr. Mayer A. Newhauser, New Orleans, for several years field agent of the state board of health, has resigned.——Dr. Willoughby E. Kittridge has been elected a member of the Napoleonville Board of Health.——At the trial of Dr. E. Otis Edgerton, Crichton, charged with shooting and killing Mrs. J. W. Lang, the grand jury returned a verdict of "no true bill."

MARYLAND

Typhus at Bay View.—Dr. Nathan R. Gorter, Baltimore, Commissioner of Health, is investigating the circumstances which caused the failure of the authorities at Bay View and the attending physician to report a case of typhus fever to the health department.

Strike in Hospital.—A series of internal dissensions between the management of the Maryland General Hospital and the general staff, which commenced with a hunger strike, ended in the resignation of a body of the resident staff to take effect in the near future unless the matters in dispute are adjusted before a definite date.

Personal.—Dr. Samuel D. Shannon has been appointed chief of the resident staff of the Maryland General Hospital, succeeding Dr. William B. Blanchard, resigned.——Dr. Herbert C. Blake, Baltimore, was operated on for the removal of tonsils and adenoids, at the Maryland General Hospital, August 28.——Dr. Clarence E. Downes, health warden for the eleventh ward of Baltimore, resigned, to take effect September 1, to accept a position in the U. S. P. H. S.

New House Staff at Johns Hopkins.—A substantial innovation has been made with the formation of an independent staff for the private wards, medical. Dr. Clyde G. Guthrie, assistant to Dr. Paul W. Clough, resident physician, has been made private ward resident, with Dr. F. Janney Smith and Dr. John H. King as assistant residents. Drs. Nathaniel H. Brush and Ernest S. Dubray are also assigned under Dr. Guthrie. This new arrangement allows the private wards staff to give their whole time to private ward cases and also allows the men assigned to the public wards to give their full time to the wards.

MASSACHUSETTS

Presentation of Bust of S. Weir Mitchell.—Mr. and Mrs. Walter D. Ladd have presented to the Jesup Memorial Library, in Bar Harbor, a bronze bust of the late Dr. S. Weir Mitchell. The bust is the work of William Ordway Partridge.

Selection of School Doctors.—The civil service commission of Boston announces an examination to be held September 23 for the establishment of an eligible list of doctors from which thirty-five to forty appointments will be made as school physicians. The salary for each physician is approximately $500. Dr. W. H. Devine of South Boston has been appointed director of school physicians, nurses and military drilling. His salary will be about $1,500. Forty-six nurses are also to be appointed.

Personal.—Dr. Thomas B. Shea, Boston, has been appointed chief of the medical division of the department of health with an increase in salary from $3,000 to $5,000. Dr. Patrick H. Mulloney, formerly a member of the Boston Board of Health, has been appointed a deputy health commissioner. Dr. Francis H. Slack, formerly secretary of the board of health, has been made deputy in the bacteriologic department.——Dr. Walter F. Cobb, Cape Girardeau, Mo., has been appointed head of the school hygiene and physical development department of Holyoke.——Dr. Elisha H. Cohoon, Howard, R. I., has succeeded Dr. Elmer E. Southard as administrative head of the Boston State Psychopathic Hospital. Dr. Southard remains as director and in charge of the scientific researches of the institution.——Dr. Edward H. Nichols, head of the Harvard surgical unit in France, has returned from abroad. The base hospital at which he was stationed was located at Dannes-Camier, fifteen miles from Boulogne.——Dr. Richard Pearson Strong is returning to this country to resume his position as professor of tropical medicine in Harvard Medical School.

MICHIGAN

Meeting of the Michigan State Medical Association.—At the annual meeting of the Michigan State Medical Association, held September 1 and 2, the following officers were elected: president, Dr. A. W. Hornbogen, Marquette; secretary and treasurer, Dr. F. C. Warnshuis, Grand Rapids; delegate to American Medical Association, Dr. A. I. Lawbaugh, Calumet. Houghton was selected as the next meeting place. At the suggestion of Dr. Stanley G. Miner, a committee was appointed on the surveillance and inspection of public eating places. This committee was composed of the following members: Drs. L. J. Goux, Detroit; J. R. Rogers, Grand Rapids, and J. E. Gleason, Detroit.

MINNESOTA

Hospital for Indians to Open.—It is expected that the new hospital for Chippewa Indians in Minnesota, located at Redlake, Minn., will be ready for occupancy by October 15. The capacity is twenty-five beds. The service will be general, although especial attention will be given to eye, ear, nose and throat work, there being a large amount of this class of work among the Minnesota Chippewas. Trachoma has been especially prevalent, and while its incidence has been largely reduced in the boarding schools by energetic work on the part of the agency physician, the older Indians in the homes have not had the proper facilities to combat the disease. The new hospital will greatly assist the relief of this condition.

MONTANA

Personal.—Dr. and Mrs. Wilder P. Ellis, Helena, sailed from New York, August 26, for Urumiah, West Persia.——Dr. William H. Allen, Joliet, is slowly recovering from a serious illness caused by bee stings.

Spotted Fever.—Thirty-five cases of Rocky Mountain spotted fever with seven deaths were registered in Montana during the present summer. Cases were reported from the following counties: Big Horn, 1; Carbon, 3; Custer, 8; Cascade, 1 (imported from Idaho); Dawson, 6; Fallon, 2; Gallatin, 2; Missoula, 4; Ravalli, 3 (one imported from Idaho); Rosebud, 5. Deaths occurred as follows: Big Horn, 1; Fallon, 1; Missoula, 3; Ravalli, 2. The disease has heretofore been thought to be more prevalent in Western Montana. The report of the state board of health, however, shows that more cases were reported from Eastern Montana, though they were milder in character. Surgeon Lunsford D. Fricks, Washington, D. C., of the Public Health Service, with his assistants and with the cooperation of the state board of health, has been conducting cultural experiments with the virus, and although nothing definite has been determined, it is believed some progress has been made. Advances in the therapy of the diseases will, it is believed, follow the successful cultivation of the virus.

NEBRASKA

New Hospital for University.—Plans have been approved by the Board of Regents of the State University for a new hospital in connection with the College of Medicine at 42d and Harney streets, Omaha. The building is to be five stories in height and will have six wards of sixteen beds each, three receiving rooms, six groups of isolation rooms of three beds each, and the necessary operating rooms, operating amphitheater, and rooms for administration and service.——The free medical dispensary of the University of Nebraska Medi-

cal College cared for 6,801 patients during the first seven months of the year.

NEW YORK

Personal.—Dr. William C. Bissell, formerly director of the bacteriologic laboratories of the city of Buffalo, has been reappointed as state medical examiner, and will have special supervision of the subjects of hygiene and sanitation.

Convalescent Home Dedicated.—The Federation of Rumanian Jews of America dedicated their new convalescent home at Grand View on the Hudson on September 6 with impressive ceremonies. The home will be superintended by the federation and thirty-five affiliated societies and will offer accommodations for 200 convalescents.

Courses in Public Health.—Pursuant to the recommendations of the public health commission that medical colleges in New York state introduce courses in sanitary science leading to a degree which ultimately might be required of all health officers, three such courses have been developed at New York University. One of the courses will consist of field work, laboratory work, lectures and conferences, and will cover six weeks. The course leading to the degree of Doctor of Public Health begins with a six-weeks course and continues with optional work for a further six months to complete the first year. The second year is devoted to original work and the writing of a thesis. There will also be an extension course covering 300 hours of home reading and written examinations with a final week in the laboratories of the university. The extension course begins October 1. The other course began on July 15.

New York City

Personal.—Dr. Louis Brooks and Dr. Joseph King sailed for Europe with the first contingent of the American Physicians' Expedition Committee, which is under the charge of Dr. Herman Fischer, on the Scandinavian-American liner *Oscar II*, on September 8.

Physical Examination of Food Handlers.—For some time past the department of health has required bakers and peddlers to submit to a physical examination in order to prevent those having infectious diseases from engaging in these occupations. With a view to extending such examinations to others engaged in occupations requiring the handling of food the physical examination of cooks, waiters and other food handlers in hotels and restaurants will be enforced in the district No. 3, the principal hotel district of the city. In time it is hoped to extend the work to the hotels and restaurants throughout the city. This order will eventually affect 90,000 cooks, waiters and dishwashers in this city. The health officials in the 2,000 persons so far examined have found two cases which gave positive typhoid reactions and eight who gave suspicious reactions. Other infectious diseases were found in 1 per cent. of those examined.

NORTH CAROLINA

Damages for Soil Pollution.—Damages to extent of $3,000 was awarded in Guilford County Superior Court against the city of High Point, N. C., in favor of a nearby farmer on whose land the city sewer was emptied.

Erection of New Hospital Begun.—Work on the new hospital at Piedmont Heights, a suburb of Burlington, has begun. When completed it will represent a $25,000 investment and will be fully equipped for general medical and surgical work. Dr. J. Rainey Parker, recently of Goldsboro, will be surgeon in charge.

PENNSYLVANIA

Personal.—Dr. William H. Krickbaum, Danville, a member of the staff of the State Hospital for the Insane, has been infected with typhoid contracted in the epidemic that has broken out in that institution. It was reported, September 11, that 115 of the inmates of the hospital were infected and that thirty cases had appeared in the town of Hospital. Arrangements are being made to utilize the new Leisinger Memorial Hospital to treat these patients.

Typhoid Spreading in Danville.—Three new cases of typhoid fever developed September 6, at Danville, at the State Hospital for the Insane, bringing the total there up to seventy-eight. Of these fourteen are attendants and one is a nurse. The remainder are inmates. The number of deaths stands at three. The authorities were encouraged today by the discovery of what is believed to be the source of contagion at the hospital. It has been ascertained that an assistant chef in the hospital kitchen, at present ill with the disease, had the fever in a walking form three weeks prior to leaving his duties. It is thought that during that time he spread the fever to the other employees and to the inmates through the food he handled.

Philadelphia

Arraign Violators of the "Housing Act."—Eight proprietors of tenement houses were arraigned in the city hall police court, September 8, charged with violations of the housing act of June 11, by conducting their places without licenses. In those cases in which continuances were allowed, it was stated that the reconstruction work required by the division of housing and sanitation of the bureau of health to fit the tenements to meet the requirements of the new law were under way, either by the tenants or the landlords.

Hotel Cooks and Waiters Must Have Director Ziegler's "O. K."—Employees of hotels and restaurants will be subjected to medical inspection by the corps of medical inspectors of the bureau of health as quickly as the work can be carried out, to enforce the provisions of the act prohibiting the employment in public places of cooks, waiting maids, kitchen help, chambermaids or other house servants who suffer from contagious disease. The act calls for the protection of public health and was a salutary measure that should appeal to employers. The act embraces not only hotels and restaurants, but dining cars and all public eating places.

Thorough Sanitary Survey to Be Made of City Schools.—An exhaustive study of sanitary conditions in the public school system, with special attention to the immediate needs of those buildings in which the health of pupils is menaced by faulty ventilation and insufficient floor space, will be conducted by the department of superintendence. Prof. Albert H. Raub, associate superintendent of schools, will be in charge of the investigation, and he will have the cooperation of school medical inspectors. The work of the medical department, coupled with the new course in practical hygiene to be introduced in the elementary schools about September 16, will go far toward obviating dangers from defective buildings.

Alterations and Additions to Hospitals.—Alterations and additions to the City Mission for Consumptives at Chestnut Hill, the contract having just been awarded, are to cost $12,000.——Alterations to the Orthopedic Hospital, Summer and Seventeenth streets, now under way, will cost $2,000.——An addition to the nurses' home at the Jewish Hospital, Old York Road and Olney Avenue, is now being planned by architects.——Carl-Beth, the country seat of the late Charles O. Kruger, is now part of the Abington Hospital buildings, under lease. Located in a beautiful park that faces the hospital, it will be used as a nurses' training school and home. ——Builders are estimating on alterations and a second story $3,700 brick addition, 10 by 9 feet, to the Polyclinic Hospital, Lombard and Nineteenth streets.

Philadelphia, the Postgraduate Center.—A plan to correlate the medical teaching facilities of Philadelphia for postgraduate study purposes is now given publicity. One hundred of the city's medical leaders have formed themselves into an association with the temporary title of the Co-Operative Association for Post-Graduate Teaching of Medicine in Philadelphia. The chairman is Dr. David Riesman. Dr. George P. Müller is temporary secretary. This association will investigate the resources for postgraduate teaching that exist in Philadelphia, so arrange hours as to enable the graduate student to spend each day in constant clinical study or laboratory work in a number of institutions. To accomplish this there is to be established a central office, in charge of a permanent secretary, where rosters of courses would be made, all information listed, so that a prospective student would find everything prepared in advance for him.

CANADA

Canadian Members of Parliament at the Front.—Dr. D. B. Neely, M. P., Humboldt, Sask., has joined the seventy-eighth regiment as medical officer. This makes eight members of the Canadian Parliament enlisted, three being members of the Canadian medical profession: the two others are Hon. Dr. Beland, a prisoner in Germany, and Dr. David E. Warnock who is in charge of imperial remount work.

Personal.—Dr. W. P. Jones, Chatham, N. B., who has been in England and France the past two months, has returned home.——Lieut.-Col. Herbert A. Bruce, M.D., Toronto, who has been attached to the Duchess of Connaught Hospital, England, the past two or three months, is now attached to No. 2 Canadian Hospital at Le Trefort, France.——Dr.

Charles J. Hastings, M. O. H., Toronto, has been elected first vice president of the American Public Health Association.

Toronto Leads Fight Against Consumption.—At the concluding session of the Canadian Public Health Association held in Toronto on September 4, Miss Eunice Dyke, chief nurse in charge of tuberculosis work in connection with the health department of Toronto, stated that more than double the number of deaths from consumption had been reported last year than cases of consumption reported in the province of Ontario during the same period. The law requires all physicians to report every case but the doctors had in many instances failed to comply with the law. In Toronto, however, every case is immediately reported and dealt with by the authorities. The following officers were elected: Hon. president, Dr. Peter H. Bryce, Ottawa; president, Dr. Chas. J. Hastings, M. O. H., Toronto; vice president, Dr. J. D. Page, superintendent of Immigration Hospital, Quebec City; general secretary, Dr. Duncan M. Anderson, Toronto; treasurer, Dr. George D. Porter, Toronto.

Fine Organization of Canadian A. M. C.—Major Charles E. Doherty, M.D., superintendent of the New Westminster Hospital for the Insane, British Columbia, called at Ottawa on September 9 on his way west to British Columbia. Major Doherty has been brought back from hospital work in London, England, by the Canadian government to organize the work of looking after the invalided Canadians who are returning to Canada, either to convalesce before returning to the war or to be discharged on pension after their cases have been passed on by the medical boards. There are now about 3,000 of these in Great Britain and most of them will be back in Canada before Christmas; a few hundreds have already arrived. Major Doherty, who will be attached to militia headquarters at Ottawa, has gone to visit Winnipeg and other militia districts as far west as Victoria, B. C. He speaks in the highest praise of the Canadian medical services in England and France which is being maintained under the direction of Surgeon-General G. Carleton Jones. Both the French and the British staff officers had very highly praised the work of General Jones. There are now between 1,400 and 1,500 Canadians attached to the overseas army medical corps. There are about 5,000 Canadian hospital beds in France and another 5,000 in England. More doctors from Canada are needed by the war office, and twice the present number of Canadians now attached to the R. A. M. C. could be used. Major Doherty stated in an interview that in the fighting at Ypres more than 5,000 men were passed through the Canadian field hospitals in seventy-two hours, and the work was handled by six doctors with the utmost efficiency and despatch. At the present time Canada has five field ambulances, three base hospitals, one stationary hospital and two casualty clearing hospitals in France. He says there should be no let up to the supply of bandages, socks, clothing, tobacco, etc., being sent forward by the women of Canada and others.

GENERAL

Meeting of Railway Surgeons.—The ninth annual meeting of the Minneapolis & St. Paul and Sault Ste. Marie railway surgeons was held in Hotel Radison, Minneapolis, September 7 and 8.

New England Tuberculosis Conference.—The second annual New England Tuberculosis Conference will be held in Springfield, Mass., October 22 and 23, under the auspices of the National Association for the Study and Prevention of Tuberculosis. The subjects for the various sessions are as follows: 1. Programs of antituberculosis work. 2. Red Cross seal sales methods. 3. Industry and tuberculosis. 4. Methods of antituberculosis work. 5. The diagnosis of incipient cases of pulmonary tuberculosis.

Central States Conference on Social Hygiene.—The first Central States Conference on Social Hygiene will convene in Chicago, October 25 and 26, in the Congress Hotel. The general features of the social hygiene movement, the moral and educational features, the medical and public health aspects, and the legal and administrative phases, will be discussed. An advisory committee which has been selected is led by President Abram W. Harris of Northwestern University. The secretary may be addressed at 1949 Peoples Gas Building, Chicago.

Correspondence Course for Medical Reserve Corps.—In order to provide a system of instruction in field duties for officers of the medical reserve corps on the inactive list, a correspondence course, somewhat similar in character to that prescribed for medical officers of the organized militia, is to be inaugurated at the army field service and correspondence schools for medical officers. The course, which is to be comprehensive, graded, and progressive, will extend over a period of four years. Members of the medical reserve corps are being urged to enroll themselves for this course.

Meeting of American Public Health Association.—The forty-third annual meeting of the American Public Health Association and the fifteenth annual conference of the Sanitary Officers of the State of New York met in Rochester, N. Y., September 6. Over 1,800 health officers and sanitary experts were present. At the opening session an address was delivered by Major-General Gorgas, who described the work in the Canal Zone; an address was also delivered by Dr. O. M. Leiser of New York on the "patent medicine" evil. Dr. Herman M. Biggs, state commissioner of health, presided. At the first day session, September 7, a symposium on the subject of pure milk was held with the following speakers: Dr. W. H. Park, New York; Lucius P. Brown, New York; Dr. Linsly R. Williams New York; Prof. H. W. Conn, Wesleyan University; Drs. H. D. Pease and C. E. North, New York. There were also reports on cold storage and morbidity statistics. At the second open meeting Governor Whitman of New York and Mayor Edgerton of Rochester spoke; also Professor Sedgwick, president of the association. Dr. John F. Anderson, U. S. Public Health Service of Washington, D. C., was elected president.

Second Pan American Scientific Congress.—The Second Pan American Scientific Congress will meet in Washington, D. C., December 27, 1915, and adjourn January 8, 1916. In the official announcement of the Congress it is said that its purpose is to bring about a better understanding of the ways in which the several American republics can work to the advancement of science, the increase of culture, and the promotion of trade, commerce and mutual helpfulness. It is hoped that our foremost scientists, learned societies and educational institutions will cooperate to insure the success of the Congress. The Congress will be divided into nine sections, which, with their chairmen, are as follows: Anthropology, Mr. William H. Holmes; Astronomy, Meteorology and Seismology, Mr. Robert S. Woodward; Conservation of Natural Resources, Mr. George M. Rommel; Education, Mr. P. P. Claxton; Engineering, Gen. W. H. Bixby; International Law, Public Law, and Jurisprudence, Mr. James Brown Scott; Mining and Metallurgy, Economic Geology and Applied Chemistry, Mr. Hennen Jennings; Public Health and Medical Sciences, Gen. William C. Gorgas; Transportation, Commerce, Finance and Taxation, Mr. L. S. Rowe. The sections will be divided into subsections, forty-five in all, each with its special committee and program. There will also be joint sessions of the sections, and meetings in connection with the meetings of other associations, a number of which have accepted the invitation to hold their meetings in Washington at the time of the Congress. Official delegates, representatives of universities, institutes, societies and scientific bodies of the countries represented, persons invited by the executive committee, with the approval of the countries represented, and all writers of papers will be considered members of the Congress. There will be no membership fee. Special Pan American topics will be discussed in a series of conferences, and in the medical section subjects of vital Pan American interest in the field of infectious and nutritional diseases, vital statistics, sanitation, etc., will be presented. Anaphylaxis, protozoa and cancer will be among these subjects. The first Congress was held in Santiago, Chile, in December, 1908, and January, 1909. John Barrett, LL.D., is Secretary General and Glen Levin Swiggett, Assistant, with headquarters at the Pan American Union, Washington, D. C., from whom further information may be obtained concerning the Congress.

WAR NOTES

Cholera in Turkish Army.—According to advices received at Athens, Asiatic cholera is raging in the Turkish army. A request for additional nurses and cholera experts is said to have been sent to Berlin by the German officers of the Ottoman army.

Munich Art Museum a War Hospital.—The famous National Art Museum at Munich and the new custom house have been transformed into hospitals for wounded and crippled soldiers. The museum is used exclusively as an orthopedic hospital.

Exchange of Medical Officers and of Disabled Prisoners Between the Germans and French.—The *Medizinische Klinik*

states that the second party of exchanged prisoners has reached Germany by way of Constance. It included several hundred medical men, attendants and bearers for the sick, with fifteen officers and 700 privates.

Deaths Abroad.—J. B. de Lacerda, a scientist of Brazil, director of the National Museum and chief of the university laboratory for research on physiology, died recently at an advanced age. He published numerous works on yellow fever, beriberi, cobra venom, etc., and was the official delegate from Brazil to many international scientific congresses.

Hospital Journal for the Crippled.—Under the editorship of Dr. Pfeiffer, a journal has been founded which aims to supply necessary information to the crippled and disabled soldiers. It is called the *Lazarettzeitung für Kriegsbeschädigten,* and is published under the auspices of an organization at Hamburg which aims to improve condition of those injured in war.

Prophylaxis of Cholera at Breslau.—As a case of cholera was discovered on a river boat at Breslau, the authorities have ordered all bathing and swimming establishments and bathing beaches closed. The use of unboiled water is forbidden for any purpose, even for washing clothes. Any infringement of the regulations will be punished by a prison term to a maximum of one year.

German Medical Journals and the Censor.—The editor of the *Deutsche medizinische Wochenschrift* requests all contributors to its columns to have their communications passed on by the proper military or medical authorities before they are sent in for publication, as the military censoring of medical journals is to be made still stricter. A recent decree on the subject states that this step is taken because communications have been published which contained untrue and inaccurate statements, and were adapted to breed uneasiness among the populace and to be exploited in the enemies' countries to the detriment of the Germany army.

PARIS LETTER

Paris, Aug. 26, 1915.

The War

THE AMERICAN RELIEF CLEARING HOUSE

The assistant secretary of state of the medical service has just sent to the regional directors of that service a letter informing them that the American Relief Clearing House, which I mentioned in a previous letter (The Journal, Aug. 28, 1915, p. 813), wishes to send delegates to make a first hand study of the best method of distribution of the donations made in the United States for the benefit of the sick and wounded of our armies. He has given Messrs. Walter Abbott, James R. Barbour, H. O. Beatty, Charles Carrol, J. Ridgeley Carter, H. Herman Harjes, J. J. Hoff, James H. Hyde, Charly Knight, M. P. Peixotto, Charles R. Scott and Whitney Warren letters accrediting them to the medical heads of the hospitals in the territory for the purpose of conferring with the latter for this purpose. In this connection he pays a compliment to the "greatly appreciated services" of the Comité central des Secours Américains, which is under the patronage of the heads of the governments of the allied countries and under the honorary presidency of the Hon. Myron E. Herrick, former ambassador of the United States to France, and of the Hon. Robert Bacon, who has succeeded him.

IMPROVEMENTS DESIRABLE IN THE MEDICAL SERVICE

I mentioned in a previous letter (The Journal, Sept. 4, 1915, p. 891) an interesting study on the medical service published by M. André Maginot, former assistant secretary of war. Maginot has just published a second article on the same subject, emphasizing a serious defect in the medical service, in that each officer tries to give the impression of that economy which is too apt to be confused with good administration. Not daring to apply to the government, whose function and duty it is to supply the needs of its services, administrative heads are reduced to the necessity of soliciting private generosity to supply absolute necessaries. There are hospitals in which important services like those of mechanotherapy and roentgenography could not be supplied except by the aid of private persons, and in which surgical services were not able to operate without the aid of generous donors. It may be desirable that our patients and our hospitals should benefit by private generosity; it is quite natural that such generosity should be encouraged, but it is not right to rely on it as a normal resource for supplying not only luxuries and superfluities, but also absolutely indispensable supplies. It is the duty of the medical service to furnish antiseptics, gauze, boxes of dressings, autoclaves, and necessary surgical instruments and apparatus; this should not be left for private persons to do. That private persons should aid the government is laudable; that they should take over its functions is inadmissible. The only means of putting an end to this condition of things would be to give a little more autonomy to the medical superintendents of our hospitals. So long as the superintendents are compelled to apply to their regional directors to obtain an instrument costing a few francs, the evil has no remedy. Such centralization may not be excessively inconvenient in times of peace, but at present, when one director has sometimes a hundred or a hundred and fifty hospitals under his orders, how can it be expected that he will not be overwhelmed by the mass of demands made on him? Almost inevitably he comes to look with favor on those who demand the least of him, and to make those who demand the most (which often is only what is necessary) feel that they are importunate. "Your requests are justified in principle," recently wrote a regional director to one of his superintendents, "but they are becoming too numerous; the minister may become tired of them." There is no reason for surprise if under such conditions the medical staff hesitates to demand what it needs.

What is necessary is to free the superintendents from their present obligation to requisition everything from the superior authority. They ought to be given the privilege of making purchases on their own responsibility up to a certain sum. Each hospital ought to have at its disposal a sum proportioned to the number of beds to be thus expended. Our physicians then would not hesitate to make outlay for indispensable objects. The hospitals, the patients and the public finances would gain by such measures.

PSEUDOTETANIC COMPLICATIONS OF WOUNDS OF WAR

At a recent session of the Académie de médecine, Dr. René Le Fort of Lille reported three cases of serious painful spasmodic complications simulating tetanus, which deserve to be known. The three patients suffered from lesions of the nerves complicated by the presence of foreign bodies. In the first patient, the thigh and the leg were contractured in hyperextension; in the second and third, the thigh and the leg were in hyperflexion; in all three, there was equinism of the foot, with varus in the second and third cases. All the patients had had injections of antitetanic serum. In all three cases the complications improved a few days after the removal of the foreign body; they remained localized in the lower limbs and the pelvic muscles. They were terminated by recovery. In the third patient, however, they had previously attained an intensity which threatened the patient's life.

VIENNA LETTER

Vienna, Aug. 16, 1915.

The War

THE SANITARY CONDITION OF VIENNA

The war with its unusual and unexpected consequences has of course brought to every community the risk of the importation of epidemics and infectious diseases to an alarming degree. Nevertheless, Vienna has so far been lucky enough to control every outbreak very early. Naturally, the movement of troops from the battlefield has brought numerous cases into the city, but the military authorities have proved that they are equal to the task. As a matter of fact, our prophylactic measures have been a complete success. Smallpox was introduced by the civil population, that is, the fugitives from Galicia, at the commencement of the war a year ago, but typhoid, dysentery and exanthematic typhoid did not occur in the civil population to a degree worth mentioning. Of smallpox, however, about 400 cases were reported with a mortality of 6 per cent., and every now and then a case is still brought to the notice of the authorities. Vaccination was instituted promptly; it was practically compulsory, and about 99 per cent. of all inhabitants of Vienna may be regarded now as vaccinated or revaccinated. In the army, of course, every soldier is vaccinated. Last fall, cholera was rather frequent among the troops stationed on the Russian frontier. Extensive vaccination against this disease, as well as strict control of the water supply, resulted in an instantaneous suppression of the epidemic. The experience of the army medical corps tends to prove that the protection afforded by the injection of 1 or 2 c.c. of the anticholera vaccine lasts between five and twelve weeks. Injections repeated at intervals of from five to eight days, from three to five times, seem to be the best. The most effective treatment consists in cardiac stimulants, hypodermoclysis, and tincture of iodin by mouth, through which

means the mortality can be considerably lowered. The population of the country in which the fighting has taken place, however, has suffered severely from cholera, owing to the lack of sanitary arrangements. Especially where the Russian forces stayed for a considerable time, the large percentage of Cossacks and other troops of a low sanitary standard proved a source of infection; and sexual diseases abound there among the female part of the population. Luckily, the Austrian army had little to suffer in this respect, and in Vienna there has been an actual decline in the number of patients in the dermatologic clinics. Typhoid and dysentery, which at present are not infrequent in the population of the places in which there have been battles, were kept away from Vienna. The mortality in this city, which averaged 17 per thousand five years ago, and had gone down to 15 per thousand in 1913, has not risen during war time. This is no doubt due to the strict hygienic measures instituted by our board of health, and to the extensive help given when mothers with infants applied for it. Though it appears paradoxical, the war with its severe nervous strain, its heavy burden on the mode of living, the high prices for food and the mental excitement has made us harder, stronger and healthier. Infant mortality has gone down about 10 per cent. within the last twelve months, and the regular epidemics of measles, scarlet fever and diphtheria which reign during autumn and winter in this city have been mild. Thus, Vienna entered on the second year of the war with very good prospects.

NUTRITION DURING THE WAR

Owing to the nearly complete suspension of the importation of articles of food into this country, the problem of nutrition was of paramount importance. The authorities at once confiscated all supplies of wheat, grain, maize and all flour, and also the new harvest was seized by the state. The quantities of these articles of food were so divided up among the people that Austria-Hungary was able to guarantee for every person within its boundaries, including the fighting forces, a quantity of 280 gm. (a little over 9 ounces) of bread, or 200 gm. (6½ ounces) of flour per day up till the end of 1915, without using the harvest of 1915. To attain this end, the flour was handed over to the consumers only in a mixture which contained about 70 per cent. wheat and 30 per cent. maize flour. Lately, since the rich harvest of this year was brought in, the composition of flour has been improved gradually until at present fine white flour bread without any admixture can be made and obtained. The cutting down of the daily supply of bread flour along with the low quality of the bread, as compared with the bread of former days, has resulted in a marked drop in the consumption of the article, so that the visible quantities of flour would last for a much longer period than they were expected to. The "heavy" bread, which the population had to eat during about five months, has had the most surprising result. The large number of persons suffering from obstipation has nearly disappeared. People soon discovered this wholesome effect of the "war bread." Flatulence, so often produced by eating too "light bread" also vanished. The increased functioning of the bowels has done away with so many conditions due to sluggish action of the bowels that the general condition of the health of the population has improved in a marked degree. Also the consumption of meat has gone down by at least 40 per cent., owing to the high prices of this article. A kilogram costs from $1 to $1.50. This has produced a welcome effect: people see they can get on well with a small quantity of meat, and this in its turn causes a diminution of the intestinal putrefaction.

This war is an excellent instructor of nations and peoples. What thousands of medical men could not achieve the war has easily brought about: simplicity of life, abstinence, and wholesome mode of living. It proves that national health is compatible with less eating than the civilized world was used to. Of course, there is not the least idea of hunger or famine in Austria-Hungary. People eat less meat, but more fruit and vegetables, especially potatoes, and maize. These articles are present in abundance; the beet root is in excellent condition, and fruit is as cheap as can be wished. Only eggs are relatively expensive, from 2½ to 3 cents each. Tea, chocolate, coffee, rice and butter are just a trifle dearer than in normal times.

THE PROBLEM OF ARTIFICIAL LIMBS

The mutilations caused by modern fighting are much more extensive and more frequent than in former "inhuman" wars. Numerous soldiers, in numbers which in former days would have been regarded a large army, are now crippled, and a movement has sprung up in the central European countries to supply these poor victims with substitutes for their lost limbs. In this country Professors von Eiselsberg and Spitzy are at the head of this movement. They first of all collected a large percentage of the cases needing such apparatus, and a regular limb factory has been established in one of our surgical clinics, where upward of forty skilled men are busily engaged in the production of artificial limbs. Didactic demonstrations of the possibility of using such limbs are given to the unfortunate soldiers. There is a demonstration of a man who lost both arms and both feet in an accident, and now by means of four artificial limbs is able to do all the work he used to do before the mishap, and he teaches also the soldiers and encourages them to practice. Great care is taken to assure perfect fit, easy application and reliability with simplicity of all these limbs. Public attention, being once drawn to this problem, soon manifested its interest in it by substantial gifts, so that the soldiers need hardly pay anything for their new limbs. Already one may see field laborers who do not work less than their normal brethren, working with tools held in artificial hands, while of course the stumps of legs are minor troubles. Only cases of frostbite of the foot or hands, so frequently sequels of the frightful fighting for weeks and weeks in deep snow in the Carpathian Mountains, are a little troublesome, more so than the surgical cripplings by gunshot or the cold blade.

BERLIN LETTER

BERLIN, Aug. 17, 1915.

Personal

August 15, the celebrated gynecologist, Prof. W. A. Freund, celebrated his sixtieth anniversary as a practitioner of medicine. Since his retirement from the University of Strasburg Freund has not been in active practice. He is still in good physical and mental condition.

Professor Magnus of Utrecht declined to accept the directorship of the pharmacologic institute in Halle.

Prof. M. Rothmann of Berlin died August 12, aged 47. After serving several years as Albert Fränkel's assistant at the Urban Hospital, he associated himself with the physiologic institute connected with the veterinary school and there, under the direction of Hermann Munk, he began experimental researches into the physiology of the central nervous system. He achieved some remarkable results, particularly with reference to the localization of individual brain functions. He kept his famous "dog without a cerebrum" alive for three years. He also published a large number of clinical observations on the diseases of the nervous system. His many studies of monkeys created the desire to study these animals as nearly as possible in their natural way of living. With the aid of several funds he succeeded in building an anthropoid station in Teneriffa. The results of the observations made there were reported recently by Rothmann and proved of great value in the conduct of the present war. As a result of overwork and the severe mental shock incident to the death on the field of battle of his son, this strong man succumbed after two days' illness to an attack of pneumonia.

The War

The appearance of several cases of cholera among soldiers returning home from the front and several civilians in the Oder district has led the authorities to increase their efforts at prevention of the spread of this disease. Every known measure is being resorted to, especially in regard to water sanitation, and the steps previously taken in the Weichsel district, which proved so successful, are now being duplicated in the east. Therefore it is expected that cholera will not assume any alarming proportions. Similar precautions are being taken with reference to other infectious diseases and the results thus far have been good, although several cases of typhus, dysentery, meningitis and typhoid have occurred both in the east and in the west, but nowhere is there any danger of an epidemic. Cases of these diseases are, in fact, restricted almost entirely to the soldiers. M. Dessoir of Berlin, the well-known psychologist, has received permission from the military authorities to conduct psychologic studies in the eastern war zone. Particular attention will be directed by the professor to the various forms of psychasthenia, the influence of psychologic differences of age, heredity, etc.

To lower the infant mortality, the Kaiserin Auguste Viktoria Hospital has established a traveling exhibit for infant welfare in Brussels. The exhibition will embrace every-

thing connected with buildings, statistics, pregnancy, puerperium, birth, development and care of infants, natural and artificial diet, diseases of infants and the care of mothers and infants.

The Kaiser Wilhelm Institute for the Study of the Physiology and Pathology of the Workingman

This institute has now begun its work. Researches will be made in the physiology, pathology and hygiene of labor (work), the mental and physical welfare of the workingman. The relationship of labor to the age of the workingman, the sex, the race, nourishment, environment, clothing, etc., will be investigated. The physiologic chemistry department will investigate particularly the physiology of nutrition in order to determine the influence of food on the working capacity of the workingman and the influence of alcohol on muscle energy. The statistical division will approach the question from another point of view including a study of food and food elements, animal as well as vegetable, the size of a family as bearing on the nutrition, the difference in eating in the city and in the country among the poor and among the rich. The psychologic division will investigate the influence of labor in its relationship to psychathenia, etc. The work done by others in similar fields will place these studies on a definite basis. The well-known Taylor system has done much to further these studies; for instance, it is known that severe physical labor causes the blood to leave the viscera and appear in increased quantity in the extremities. Physical tire, on the other hand, produces the opposite. Therefore deleterious effects may be prevented by regulating the work either by frequent periods of rest or by changing the kind of work so that other muscle groups may be brought into play. Valuable results have been obtained from the work done in this institute and have led to the adoption of "scientific management" of work. The interests of capital are not considered in this investigation. It is solely a question of the interests of labor. It is very difficult, indeed, to draw a line between the pathology and physiology of work. May one speak of the pathology of work when the workingman is disturbed by noise as in a boiler shop, or may one only speak of the pathology of work when the workingman becomes ill as the result of his work? It is the aim of the institute to investigate all the phases of this question thoroughly so that the results may prove beneficial to the workingman as well as to his employer. Tuberculosis will come in for a large share of study, especially with regard to the etiologic relationship of poor housing conditions in the cause and spread of tuberculosis. The alcohol question, female and child labor, etc., will be investigated.

Marriages

Captain Edgar W. Miller, M.C., U. S. A., Texas City, Texas, to Miss Orman Faye Smith, of Flatbush, N. Y., August 14.

Walter Gresham Sexton, M.D., Marshfield, Wis., to Miss Ethel Hartley Morgan, of Roland Park, Baltimore, September 1.

Jessie S. Newkirk, M.D., Kansas City, Kan., and Mr. A. R. Knight of St. Louis, at Olathe, Kan., Sept. 25, 1913.

Edwin Paul Kolb, M.D., to Miss Helma Louise Frederick, both of Ray Brook, N. Y., at Utica, N. Y., August 28.

Roscius Irving Downs, M.D., Riverside, N. J., to Miss Mabel Hassard Curtiss of Ansonia, Conn., August 21.

Myron L. Cooley, M.D., Waterbury, Conn., to Miss Julia M. Birkenmayer of New York City, August 30.

John Andrews Evert, M.D., Brainerd, Minn., to Miss Pearl A. Nash of Pipestone, Minn., August 28.

John Everett Cartland, M.D., Canton, Me., to Miss Genevieve Ella Dwinal of Auburn, Me., August 26.

Clarence Tyler Roome, M.D., Evanston, Ill., to Miss Elizabeth Todd of Westfield, N. J., September 8.

Frank W. Hilscher, M.D., to Miss Dessie Carlson Gochenour, both of Spokane, Wash., August 14.

Alice Dodge Williams, M.D., and Marie Albert Guénard, Baron DuVivier, both of Chicago, September 4.

William Arrasmith, M.D., to Miss Jean Minnich, both of Palmer, Neb., August 25.

Deaths

Nelson Walton Wilson, M.D. University of Buffalo, N. Y., 1898; aged 50; a Fellow of the American Medical Association; Acting Assistant Surgeon, U. S. Army from 1898 to 1900; acting professor of genito-urinary diseases in his alma mater in 1904 and 1905; genito-urinary surgeon to the Emergency Hospital, Buffalo; and assistant genito-urinary surgeon in the Buffalo General Hospital; surgeon in charge of the Emergency Hospital at the Pan-American Exposition when President McKinley was shot; died suddenly in the Republic Theatre, New York City, August 30.

Frederic Campbell Gillen, M.D. University of Michigan, Ann Arbor, 1893; aged 44; formerly a Fellow of the American Medical Association; a member of the Wisconsin State Medical Society and a member of the faculty of the dental department of Marquette University; while conducting chemical experiments in the yard of his home in Milwaukee, September 2, was injured by an explosion, and died soon after.

William Sutphen Combs, M.D. College of Physicians and Surgeons in the City of New York, 1866; aged 73; surgeon of the Thirty-Eighth New Jersey Volunteer Infantry during the Civil War; for one term a member of the Board of Trustees of the State Home for Epileptics, Skillmans, N. J.; died at his home in Freehold, N. J., August 15.

Philip Arthur Reppert, M.D. Rush Medical College, 1903; aged 55; lecturer on anatomy and surgery in the Burlington and Mercy Hospital training schools for nurses, Burlington, Iowa; formerly professor of preventive medicine in the University Medical College of Kansas City, Mo.; died at his home in Burlington, August 29.

George P. S. Brown, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1877; St. Louis College of Physicians and Surgeons, 1890; aged 62; a member of the Missouri State Medical Association; for thirty-eight years a practitioner of Christian County, Mo.; died at his home in Nixa, August 26, from gallstone disease.

Nathaniel White Lynde, M.D. College of Physicians and Surgeons in the City of New York, 1887; aged 56; at one time assistant physician to the Inebriate's Home for Kings County, N. Y.; formerly a member of the Medical Society of the State of New York; died in the Astor Sanatorium, New York City, September 3.

James Charles Fahey, M.D. University of Vermont, Burlington, 1891; aged 48; a Fellow of the American Medical Association; surgeon to the Cooley-Dickenson Hospital, Northampton, Mass.; city physician of Northampton from 1896 to 1900; was found dead from epilepsy in his room in Northampton, August 24.

Charles F. Reiff (license, Ohio, 1897); aged 70; formerly a Fellow of the American Medical Association; for more than thirty years superintendent of the water works office and chief of the fire department of Fremont, Ohio, and for fifteen years city physician; died at his home in Fremont, September 2.

Swan Burnett Woody, M.D. Vanderbilt University, Nashville, Tenn., 1893; aged 49; a member of the Medical Society of the State of North Carolina; for many years a practitioner of Asheville, N. C.; died at his home near Spring Creek, N. C., August 28, after an operation for appendicitis.

John H. Sweet (license, Rhode Island, 1895); aged 65; said to have been the last of the Sweet family of "bone-setters"; so well known in New England years ago; died at the home of his son in Newport, R. I.; August 31, after an operation for the relief of disease of the intestines.

Samuel Wood Dana, M.D. College of Physicians and Surgeons in the City of New York, 1858; aged 87; a Fellow of the New York Academy of Medicine and for more than fifty years an active practitioner of New York City; died at his home in New York, September 1.

John Emmett Thompson, M.D. Western Reserve University, Cleveland, Ohio, 1888; aged 56; of Oakland, Calif.; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of California; died in Berkeley, Calif., about August 29.

Albert David James, M.D. Miami Medical College, Cincinnati, 1880; aged 58; for fifteen years president of the Board of Pension Examiners of Morrow County, Ohio; and a practitioner of Mt. Gilead; died at his home in Columbus, August 29, from cerebral hemorrhage.

William Harrison Rosser, M.D. State University of Iowa, Iowa City, 1861; aged 78; assistant surgeon of the Forty-Sixth Iowa Volunteer Infantry during the Civil War; a life-long resident of Davis County, Ia.; died at the home of his daughter in Troy, Iowa, August 12.

Louis B. Arceneaux, M.D. Tulane University, New Orleans, 1891; aged 46; a Fellow of the American Medical Association; a practitioner and druggist and president of the Board of Health of Church Point, La.; died in a sanatorium in Chicago, September 4.

Isaac G. Gee, M.D. Eclectic Medical Institute, Cincinnati, 1865; aged 74; first vice president of the Third National Bank, Mt. Vernon, Ill., and president of the Waltonville Bank, and an extensive land owner; died at his home in Mt. Vernon, September 2.

David M. Buley, M.D. University of Louisville, Ky., 1889; for many years a practitioner of Vincennes, Ind.; formerly a member of the Indiana State Medical Association; died at his home in Crandell, Ind., August 25, from cerebral hemorrhage.

Andrew J. Richardson, M.D. Starling Medical College, Columbus, Ohio, 1869; aged 87; for fifty years a practitioner of Union County, Ohio; died at the home of his daughter, in Somerville, Ohio, August 23, from senile debility.

James Fletcher McDougald, M.D. Howard University, Washington, D. C., 1895; a colored practitioner and druggist of Atlanta; physician to the McVicar Hospital; died while being taken to the Grady Hospital, Atlanta, August 28.

Comfort Edson Peck, M.D. University of Buffalo, 1873; Bellevue Hospital Medical School, 1879; aged 69; for thirty years vice president of the Bowman Dairy Company, Chicago; died at his home in Highland Park, Ill., September 2.

James G. Kincaid, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1904; aged 45; for two terms mayor of Pine Park, Ga.; died at his home in Pine Park, Ga., August 27, from cerebral hemorrhage.

William P. Marshall, M.D. Ohio Medical University, Columbus, Ohio, 1894; aged 71; for many years a practitioner of Long Point, Ill., and later of Oklahoma City; died at his home in the latter city, July 31.

James Harvey Witherspoon, M.D. Medical College of the State of South Carolina, Charleston, 1866; aged 76; for several years a practitioner of Rock Hill, S. C.; died at his home in York, S. C., August 20.

Daniel B. Mory, M.D. Medical College of Ohio, Cincinnati, 1882; aged 54; formerly a practitioner of Wilmington, Ohio, and Joliet, Ill.; died at his home in Springfield, Ohio, August 28.

Charles H. Copp, M.D. Hahnemann Medical College, Chicago, 1882; aged 60; formerly a practitioner of Atchison, Kan.; died at his home near Rosalia, Kan., August 11, from dropsy.

Wallace A. Carter (license Arkansas, 1903), also a druggist; aged 84; for more than sixty years a resident of Ozark, Ark.; died at his home in Ozark, August 21.

George Ross Blickensderfer, M.D. Barnes Medical College, St. Louis, 1896; aged 44; of Maud, Okla.; dropped dead on a street in that city, August 8.

Jesse W. Lane, M.D. Vanderbilt University, Nashville, Tenn., 1886; aged 59; of Fayette, Ala.; died in an infirmary in Birmingham, Ala., August 17.

Richard Coulson, M.D. Tufts Medical College, Boston, 1903; aged 39; died at his home in Tucumcari, N. M., August 24, from heart disease.

John Kinnier Crawford, M.D. Jefferson Medical College, 1894; aged 48; died at his home in Philadelphia, August 1, from chronic nephritis.

Ambrose A. Hill, M.D. New York Homeopathic Medical College, New York City, 1866; died at his home in Merritt, Fla., August 21.

Frank Austin Bowman, M.D. Cooper Medical College, San Francisco, 1892; aged 62; died at his home in San Francisco, August 17.

Saxon Dillard, M.D. Hospital College of Medicine, Louisville, Ky., 1876; aged 61; died at his home in Haynesville, La., August 23.

Thomas D. Ross, M.D. Detroit College of Medicine and Surgery, 1888; died at his home in San Luis Obispo, Calif., August 13.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

ARTICLES REFUSED RECOGNITION

Report of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's actions on articles refused recognition which were not deemed of sufficient importance to require lengthy reports:

Filudine

Filudine is said to be prepared by J. L. Chatelain, Paris, and is sold in this country by Geo. J. Wallau, Inc., New York. It is offered as a remedy for "biliary insufficiency," "hepatic insufficiency," "intestinal dyspepsia," "all affections of the liver (diabetes, cirrhosis, cancer, etc.)," "malaria," "obesity" and "tuberculosis."

No quantitative information is furnished as to the composition of the preparation and there are noteworthy discrepancies in the various statements regarding the ingredients. In one number of "Treatment," a self-styled "Review" of medical literature (actually devoted to advertising the preparations sold by Wallau), we are told that

> "This product [Filudine] is a more concentrated and potent extract of the liver, with which is combined an extract of the spleen. The liver and the spleen are so intimately interdependent, that the addition of a splenary extract to the liver extract is a signal improvement from which a synergistic action results. Thiarféine is also added, as it helps somewhat to combat the anaemia from which all diabetics suffer more or less."

Thiarféine is said to be

> "Thiomethylarsinate of Caffein, a new salt discovered by M. Chatelain."

Another circular, which gives an imposing formula for "thiarféine" or "thiomethylarsinate of caffein," states that

> "Sulphurated methylarsinate is an arsenical preparation devoid of all toxicity on account of the intimate joining of its composing parts."

And that

> "Filudine can never be contraindicated . . ."

A statement of composition in a later number of "Treatment," however, says that biliary extracts are components, in addition to the liver and spleen extracts. Moreover, thiarféine, the "new salt discovered by M. Chatelain," is no longer "thio-methyl arsinate," but "thio-cinnamate of caffein"; and a new formula is furnished for it.

We are told that

> "Methyl-arsinate cannot be used in cases where fever is present. . ."
> "M. Chatelain at first studied the action of thiomethylarsinate; clinical and physiological experimentation led him, however, to adopt thio-cinnamate of caffeine, of greater activity and with no contraindications."

Nevertheless the same absence of contraindications was urged in favor of Filudine when it was said to contain the now discarded thio-methylarsinate of caffein.

The following are some of the unwarranted and even absurd claims:

> "Filudine restores the liver's functions. It is to the liver what digitalis is to the heart; it overcomes the insufficiency and stimulates the debilitated organ."
> In malaria "it is the only true specific when associated with quinine."
> "Filudine is . . . the ideal medication for tuberculosis, conforming as it does with the most recent researches in the therapeusis of this affection."
> "We will not go as far as to say that Opotherapy *completely restores* unhealthy livers, for although the lesions of the hepatic parenchyma may be obliterated by regeneration, the lesions of the connective tissues are permanent, and may be observed at the postmortem examination. The new cells however do not present the same unhealthy conditions as those of the former diseased gland which they have replaced, and

the liver can therefore function normally, so that the patient lives on; and he is satisfied with that."

"Therefore, while regenerating the liver with Filudine, we cleanse it and combat its congested state with Urodonal. We cause it to produce urea from the excess of uric acid which it contains."

"By the judicious and harmonious combination of the beneficial effects of Filudine and Urodonal, physicians not only possess the means of treating by rational methods Cirrhosis of the Liver in its various forms (which is one of the most terrible diseases which can afflict anyone) but what is still better, *they can cure it.*"

"The liver of a person suffering from obesity being incapable of fulfilling its functions in regard to the fatty tissues, the rational and up-to-date method of treatment is therefore to restore to the system, in the form of Filudine, the liver extracts which are lacking."

Filudine is a mixture of semisecret composition. The therapeutic claims are manifestly unwarranted. The name is not indicative of the composition, whatever that may be, and no rational excuse is offered for the combination of liver and spleen extracts (with or without bile extracts) with "thio-methyl arsinate" or "thio-cinnamate" of caffein.

The Council therefore held Filudine ineligible for New and Nonofficial Remedies.

Globeol

Globeol is prepared by J. L. Chatelain, Paris, and sold in this country by Geo. J. Wallau, Inc., New York. It is advertised in a pamphlet also exploiting Urodonal, Jubol and Filudine. It is open to the same objections as these preparations—incomplete statement of composition, pseudoscientific statements of its actions and absurdly exaggerated statements of its value.

Globeol is thus described in a pamphlet:

"Globeol is the total extract of the red globules with the exception of its outer portion, and is obtained by powerful centrifugalization of the blood mixed with 20 parts of isotonic liquid, and subjected to several successive refrigerations in vacuum. . . .

"The blood used is obtained from young and healthy horses, after they fasted and rested on the previous day. The serum is put aside and desiccated in vacuum at a low temperature. The dry serum obtained in the shape of an amber yellow powder, is mixed with Globeol. In it are to be found in their full activity such bodies as precipitins, agglutinins and antitoxin, as well as internal secretions of organs arousing certain glandular synergies.

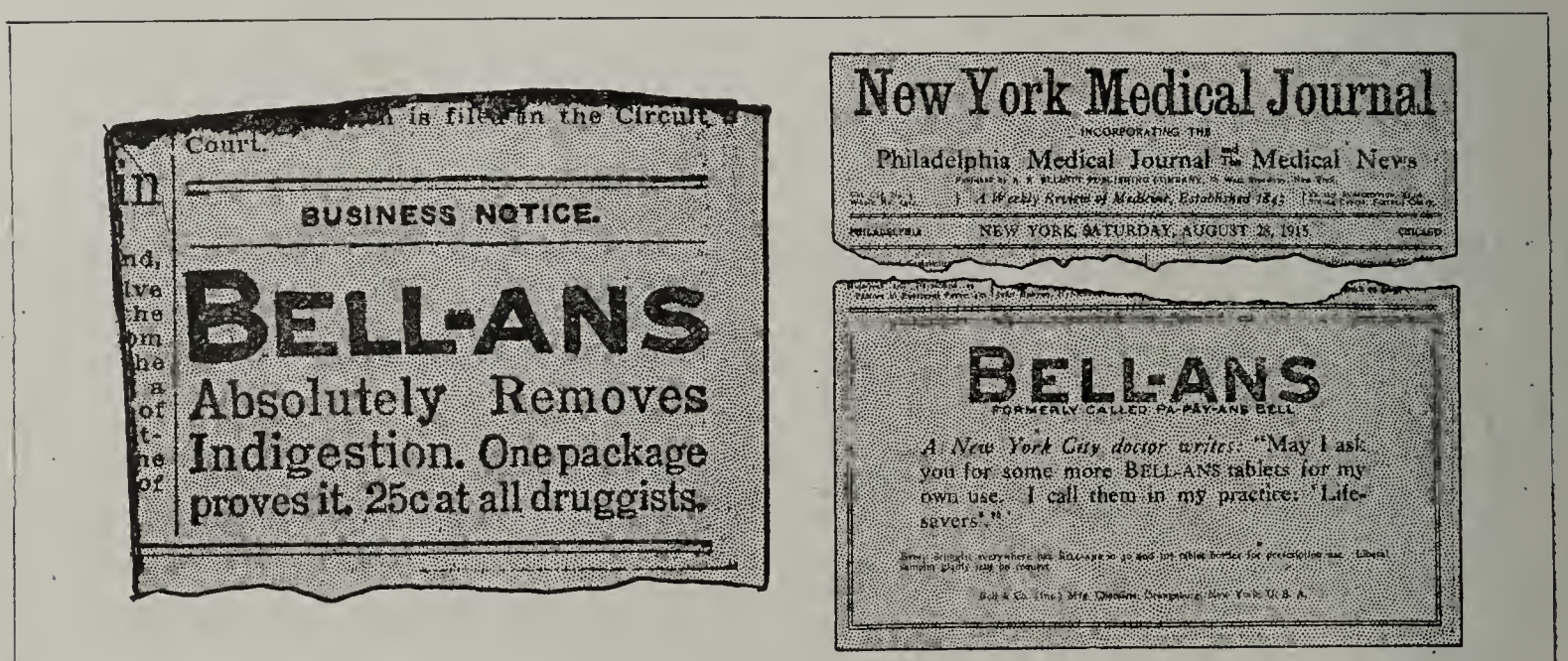
"Moreover, the action of Globeol has been strengthened by the presence of colloidal iron and colloidal manganese (which supply the deficiency in mineral salts) and also by the addition of a very small quantity of quassia as a means of preparing the digestive organs for the absorption of more food."

When the description is divested of obscuring verbiage, Globeol appears to be evaporated horse blood, mixed with small quantities of colloid (dialyzed?) iron and manganese, and a dash of quassia. No information is given as to the quantities of these ingredients.

A mixture of this kind should act like a simple hematinic. Since every physician knows the value and limitations of the hematinics, and has a wide choice of standard and efficient articles, there is no necessity of employing a complex substance of unknown composition unless it has some real advantage. Accordingly, the superstitious awe of the blood as a most particular juice is invoked, and this is apparently illuminated by such terms as "protoplasmic pulp"; "blood ferments in their active state (oxydases, catalases, stimulins, etc.)": "precipitins, agglutinins and antitoxin, as well as internal secretions of organs arousing certain glandular synergies"; "living ferments"; "energising substances of cellular activity"; "phagocytic microbes"; "vitalized" iron manganese; "positive chemotaxis"—in brief, "opotherapy of the blood by means of its active ferments"; but the exploiters forget to mention that these various "ins" and ferments, as well as the hemoglobin and proteins, are broken down in the digestive tract and never reach the blood. Most fortunately; for if they did so, the Globeol would certainly play havoc with the patient.

It is difficult to preserve patience when such dense ignorance is shown in the "literature" that presumes to instruct the profession.

The therapeutic claims and testimonials may be dismissed by citing a few illustrations, plainly in conflict with Rule 6:



TWO REASONS FOR THE PERPETUATION OF THE "GREAT AMERICAN FRAUD"

"These ingredients, when introduced in the blood, impart to it renewed strength, and augment the patient's vitality. He feels as if he were resuscitating."

"Microbes secrete poisons which are very dangerous, and the human organism endeavors to combat these poisons by natural means. The faculty is however very much impaired in the case of debilitated, run-down or over-worked persons. Globeol, by introducing anti-toxins into the blood, combats the noxious microbes of affinity called "Positive Chemotaxis," besides stirring up the protective faculties of the tissues by favouring the formation of their own anti-noxious elements. This action is further increased by the presence of colloid minerals, which, as is perfectly well known, are endowed with a well determined anti-toxic faculty."

"It is a remedy for anemia and chlorosis, and a sovereign cure in all cases of organic decomposition arising from any cause whatsoever, whether it be overwork, too rapid growth, convalescence, scrofula, tuberculosis, ataxia, cancer, diabetes, cerebral anemia (anemia of the brain), malaria, general and nervous debility, etc."

"The invasion of the system by the tuberculous poison, that is, by the toxins which the bacillus of Koch produces, is overcome by means of the anti-toxic ferments in the red corpuscles which are contained in globeol in a state of activity, and which render inert the toxic action of the microbes."

"Physicians who have tested the value of Globeol, agree in saying that all healthy individuals should take a course of Globeol in spring and autumn as a preventive, in order to stimulate the production of blood, strengthen the system, and by invigorating it, enable it to resist the attacks of disease."

"Neurasthenia cannot resist Globeol, and I have seen numerous cases of rapid and permanent cure."

The Council declared Globeol ineligible to N. N. R. because it conflicts with Rules 1, 6, 8 and 10.

VERLIE GATLIN'S WRINKLE REMOVER

One of the Biel Group of Medical Frauds

The "Verlie Gatlin Beauty and Wrinkle Treatment" was a Denver mail-order concern owned and conducted by one Conrad E. Biel. Biel and his wife have also been engaged in other fraudulent schemes such as "obesity cures," "flesh builders," "weak men tablets," "cures for baldness," etc. According to the advertisements, the Verlie Gatlin treatment:

"Will banish wrinkles and face lines; will restore complexion; will remove superfluous hair from face, hands, arms or neck; will develop the bust and restore fallen or sunken breasts; will remove facial blemishes."

Biel appealed to the vanity and cupidity of silly women in this way:

"Learn how to regain your lost youthfulness and lovely complexion, how to make yourself Beautiful, lovable, envied by all."

Biel advertised—under the name "Verlie Gatlin"—that he would send free to all that wrote the "wonderful secret" of



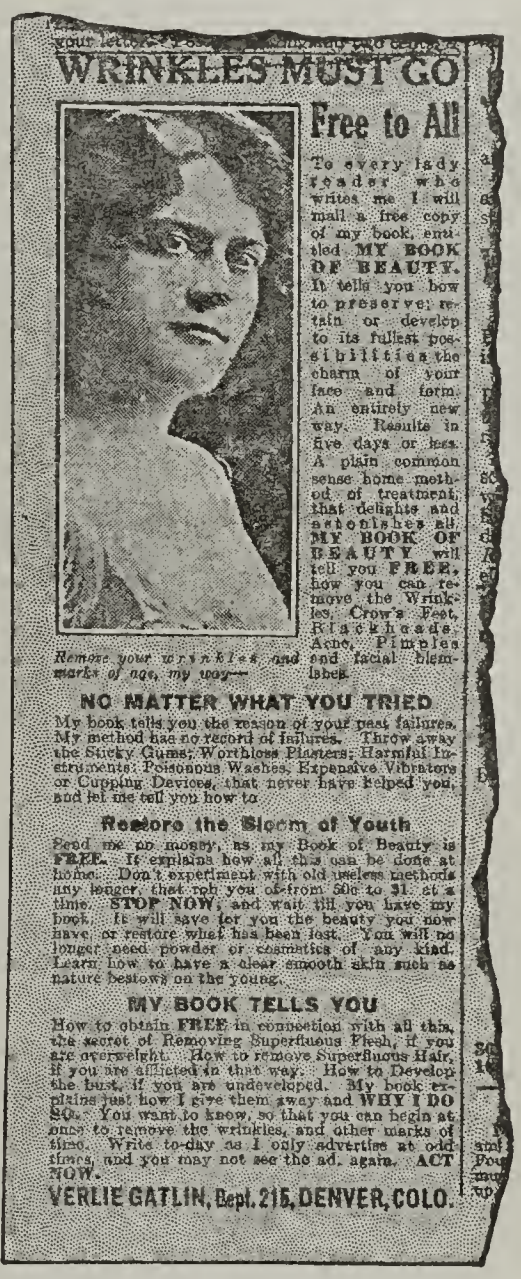
The Biel concern not only "removed wrinkles," it also "cured" leanness, fatness, "weakness" and baldness!

the "Verlie Gatlin Treatment." Those who answered the advertisement received not the "secret" but a more elaborate advertisement in the form of a booklet. It contained an alleged history of the "discovery" of the remedy by Verlie Gatlin, and was illustrated with pictures purporting to show Verlie's appearance before and after using the "treatment." The booklet and other circular matter sent out represented that the Verlie Gatlin treatment was different from all other preparations on the market sold for the same purpose and that it was practically infallible, so that any one who purchased it and used it without success might obtain a refund of the purchase price. Special emphasis was laid on the claim that the buyer was taking no risk because of the guarantee that the money would be refunded if the "treatment" did not accomplish all that was claimed for it within fifteen days.

The concern was investigated by the federal authorities with the result that the solicitor for the Postoffice Department recommended that a fraud order be issued against Biel and the Verlie Gatlin concern because the scheme was one "for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises." The solicitor's memorandum to the Postmaster-General, after setting forth the facts just described, continues:

"The evidence shows that the treatment so sold consists of a powder and a cleansing and emolient cream and a complexion mask to be worn during sleep. The ingredients of the powder and creams are well known and the whole method is one that is generally known and commonly used for the purposes for which prescribed. For this treatment Mr. Biel obtains remittances of five dollars ($5). That the treatment has not the efficacy pretended is shown by correspondence had by the inspector with persons who had used it. . . ."

"The main inducement by which this treatment is sold is the refund guarantee. The evidence shows that this guarantee is not kept in good faith. When a communication is received by Biel, in which the writer alleges that she purchased the treatment and was not satisfied therewith, it is his practice to advise the writer that her complaint will be given prompt attention and then to fail to make any further reply to the communication unless the purchaser is persistent and writes again. In that event, it is the practice of Biel to ask the purchaser to state in what particulars the treatment was unsatisfactory and unless this information is forthcoming he fails to pay further attention to the complaint. Other letters from the purchaser are met with dilatory communications of the same nature; and the complaints in the case show that it is not the intention of Biel to make any refund except in cases where threats are made to report the matter to the Postoffice Department or to take other drastic action."



A typical Verlie Gatlin advertisement.

VERLIE A FIGURE-HEAD

Although all the advertising matter, either definitely or inferentially, stated that Verlie Gatlin was the "discoverer" of the "treatment," and while all of the circular letters sent out were signed "Verlie Gatlin" and the printed return envelopes sent to prospective victims were addressed to "Miss Verlie Gatlin (Personal)" investigation showed that Verlie Gatlin had practically nothing to do with the business. To quote further from the solicitor's memorandum:

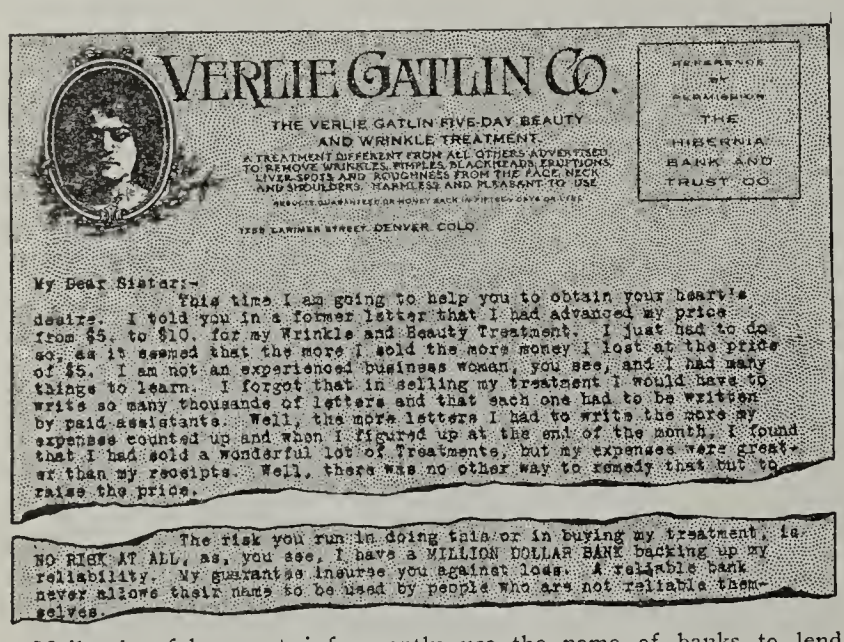
"The evidence shows further that this treatment was not discovered by Verlie Gatlin and was never used in good faith by her. The whole enterprise is one of Biel's conception, Verlie Gatlin, who is now Mrs. Virgil E. Truitt, having no other connection with the company than to lend her maiden name to its promotion and to permit Biel to use her photographs in the exploitation of this treatment, under a contract which was entered into by her and Biel, after she had responded to an advertisement for a woman to pose for pictures to be used in advertising. Under this contract, she was to be paid $25 for the use of her photograph and 2 per cent. of the net profits of the business.

"The photographs used in the advertising matter of the company were so taken as to make it appear as though Mrs. Truitt were quite homely before using the treatment and beautiful thereafter, when in fact her appearance was the same when she posed for each photograph. The intent with which this scheme was devised is indicated by the fact that Mr. Biel had Mrs. Truitt use this treatment one night in order that she might truthfully say that it had been used by her."

The solicitor's report closes as follows:

"On Oct. 14, 1914, Biel was indicted by the Federal Grand Jury at Denver, Colo., on the charge of using the mails in the furtherance of a scheme to defraud in connection with this business, and is now held under bond awaiting trial. The postmaster at Denver, reports that this concern and party are receiving daily an average of forty letters.

"I find that this is a scheme for obtaining money by means of false and fraudulent pretenses, representations and



VERLIE GATLIN CO.

THE VERLIE GATLIN FIVE-DAY BEAUTY AND WRINKLE TREATMENT

A TREATMENT DIFFERENT FROM ALL OTHERS ADVERTISED TO REMOVE WRINKLES, PIMPLES, BLACKHEADS, ERUPTIONS, LIVER-SPOTS AND ROUGHNESS FROM THE FACE, NECK AND SHOULDERS. HARMLESS AND PLEASANT TO USE

PERMISSION THE HIBERNIA BANK AND TRUST CO

1755 LARIMER STREET, DENVER, COLO.

My Dear Sister:-

This time I am going to help you to obtain your heart's desire. I told you in a former letter that I had advanced my price from $5. to $10. for my Wrinkle and Beauty Treatment. I just had to do so, as it seemed that the more I sold the more money I lost at the price of $5. I am not an experienced business woman, you see, and I had many things to learn. I forgot that in selling my treatment I would have to write so many thousands of letters and that each one had to be written by paid assistants. Well, the more letters I had to write the more my expenses counted up and when I figured up at the end of the month, I found that I had sold a wonderful lot of Treatments, but my expenses were greater than my receipts. Well, there was no other way to remedy that but to raise the price.

The risk you run in doing this or in buying my treatment, is NO RISK AT ALL, as, you see, I have a MILLION DOLLAR BANK backing up my reliability. My guarantee insures you against loss. A reliable bank never allows their name to be used by people who are not reliable themselves.

Mail-order fakers not infrequently use the name of banks to lend an air of respectability to their fraudulent business. Above is a reproduction (greatly reduced) of a typical form-letter sent out by the Verlie Gatlin concern. Notice that the letterhead states that the Verlie Gatlin Company has permission to use as a reference the Hibernia Bank and Trust Company; notice also the statement in the lower paragraph.

promises, in violation of Sections 3929 and 4041 of the Revised Statutes as amended, and therefore recommend that a fraud order be issued against Verlie Gatlin and Verlie Gatlin Company at 1755 Larimer Street, Denver, Colo."

The fraud order was issued Jan. 2, 1915.

Correspondence

The Horowitz-Beebe Cancer Cure—A Disclaimer

To the Editor:—The following statement of facts in The Journal is imperative because of the unwarranted use of my name in the exploitation in a popular lay periodical of a preparation for the treatment of inoperable cancer.

Some nine weeks ago I was informed by Dr. S. P. Beebe of New York City that he had a preparation to which the name of "Autolysin" had been given which in his opinion was of benefit in the treatment of inoperable malignancy. He stated that it was his desire to have men who have made a special study of clinical cancer work with the material, so that he might more quickly and more definitely arrive at conclusions concerning its ultimate value.

Believing that anything that offers aid to the sufferer from inoperable cancer should be given a fair trial, if it originates from a competent authority, I was glad to cooperate in testing out the merits of this preparation and, after starting its use, wrote to Dr. J. Wallace Beveridge, an associate of Dr. Beebe's, a letter in which I described the class of cases in which I had begun their treatment. This letter was a personal communication from one physician to another and at the end of the description of each case a few comments were made concerning any change in the patient's condition either observed or thought to have been observed.

Entirely unknown to me, this letter was quoted in the article in the magazine above referred to, and was so abstracted as to make it appear to be a testimonial. Inasmuch as my letter was written within one week after beginning trial of "Autolysin" and only to show the class of cases in which it was being employed, its use in this manner was deliberately misleading.

Again, inasmuch as my letter was a personal one from myself to Dr. Beveridge, its use must have occurred with the knowledge of someone of their office force.

Because of the unjustifiable use of my name in connection with this unwarranted and unethical exploitation, I will deem it a great favor if you will give space to the above.

J. Walter Vaughan, M.D., Detroit.

Our First Vital Statistics Law

To the Editor:—I think many of your readers will be interested in the following quotations of sections from Locke's "Fundamental Constitutions," which was the famous constitution prepared by the celebrated philosopher and student of government for the new colony of North Carolina in 1669. It is unquestionably the first effort made to make the collection of vital statistics a constitutional obligation on the part of a state to its people.

J. Howell Way, M.D., Waynesville, N. C.

84th. There shall be a Registry in every Signiory, Barony and Colony, wherein shall be recorded all the births, marriages and deaths that shall happen within the respective Signiories, Baronies and Colonies.

85th. No man shall be Register of a Colony that hath not above fifty acres of freehold within the said colony.

86th. The time of every one's age, that is born in Carolina, shall be reckoned from the day that his birth is entered in the registry, and not before.

87th. No marriages shall be lawful, whatever contract and ceremony they have used, till both the parties mutually own it, before the Register of the place where they were married, and register it, with the names of the father and mother of each party.

88th. No man shall administer the goods, or have a right to them, or enter upon the estate of any person deceased, till his death be registered in the respective registry.

89th. He that does not enter in the respective registry, the birth or death of any person that is born, or dies, in his house or ground, shall pay to said Register one shilling per week for each such neglect, reckoning from the time of each birth, or death respectively, to the time of entering it in the register.

90th. In like manner, the births, marriages, and deaths of the Lords, Proprietors, Landgraves and Casiques, shall be registered in the Chamberlain's Court.—(See Colonial Records of N. C., Vol. 1, p. 201.)

The So-Called New Antiseptic

To the Editor:—Your editorial in The Journal, Sept. 4, 1915, speaks of the "so-called new antiseptic" produced by a watery mixture of the commercial chlorid of lime with sodium carbonate. Your limitation "so-called" is correctly used, for I and other surgeons of the New York and Roosevelt hospitals can testify to the germicidal use of this mixture as far back as 1894. This preparation was suggested by Mr. Rauschenburg, the apothecary of the New York Hospital, and was used entirely for hand and operative area disinfection for many years, and was continued as a hand disinfectant even after rubber gloves came into vogue to guard against infection by the punctures or tears to which such protectors are liable. For the operative area it held good until about 1900, when tincture of iodin was first employed for this purpose at the Roosevelt Hospital for all laparotomies and joint operations. In the hand disinfection by the chlorin mixture, the culture test of nail scrapings showed 95 per cent. of germ-free results.

Robert F. Weir, M.D., New York.

[Comment.—The mixture indicated by Dr. Weir is evidently the Labarraque solution mentioned in the editorial. This solution has been used for many years, as Labarraque lived from 1777 to 1850. The novel feature of the preparation elaborated by Dr. Dakin is the acidity secured by adding boric acid in excess to the Labarraque mixture.—Ed.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PRESERVING PATHOLOGIC SPECIMENS

To the Editor:—What is the best method of preserving pathologic specimens so they will retain the appearance shown at the time of removal? Please give formulas for preparing the solutions used.

C. A. RIEMCKE, M.D., Selab, Wash.

ANSWER.—Of the usual methods of preserving pathologic specimens, in 10 per cent. dilution of liquor formaldehydi, in alcohol, or in Kaiserling's fluid, the last-named is the most satisfactory. Even this method often fails to retain faithfully the natural color and appearance of the fresh specimen. This much desired effect is, however, fully obtained by a simple modification of Kaiserling's method, advocated by Flint and Kellner (A New Preservative for Pick-Kaiserling specimens, THE JOURNAL, April 27, 1912, p. 1277), and sufficiently tested in the best laboratories to guarantee its unfailingly good qualities.

The specimens are trimmed and dissected to get them into good shape, and placed into:

Solution 1—

Formaldehyd	200 c.c.
Water	1,000 c.c.
Potassium nitrate	15 gm.
Potassium acetate	30 gm.

In this they are left for from three to ten days, according to the size of the specimen. To prevent flattening, cotton may be placed on the bottom.

Solution 2—

80 per cent. alcohol for from one to six hours to restore color.

Solution 3—

Glycerin	50 per cent.
Water	50 per cent.

Solution 4—

Glycerin (100 per cent.) until the specimen sinks.

Solution 5—

Liquid petrolatum, light or heavy. The former is the better grade.

It is advisable to use stock jars for both the glycerin and the oil immersion, and to transfer the specimen into the permanent jar containing liquid petrolatum after the glycerin is removed. To allow the latter to fall to the bottom, the specimen is supported by some device, such as a wire net or wool glass. The liquid petrolatum does not deteriorate, and may be used over and over again. After six months the jar may be cloudy, while the liquid petrolatum is absolutely clear, and needs only to be cleaned.

Specimens so preserved appear as they were when removed from the body. Although lacking to some degree the advantage of the liquid petrolatum, the Kaiserling method still enjoys continued use. The procedure is as follows: Steps 1 and 2 are the same as in the method given above. The specimen is then placed in the preserving fluid.

Potassium acetate	200 gm.
Glycerin	400 c.c.
Water	2,000 c.c.

Camphor, thymol or phenol (1 per cent.) added to this solution will prevent the growth of molds. It is advisable to avoid exposure to light during the process of fixation, and in keeping of the specimens.

Cysts, if small, may be placed with their content undisturbed into 10 per cent. dilution of liquor formaldehydi; if large, some of the fluid is aspirated and replaced by enough of the full strength liquor formaldehydi to make a 10 per cent. solution of the cystic fluid.

Fresh brains are hardened for from two to three weeks in:

Formaldehyd	20 per cent.
Saturated solution of sodium chlorid	25 per cent.
Water	55 per cent.

To prevent flattening, cotton is placed on the bottom of the jar. The brain is then transferred into 10 per cent. dilution. of liquor formaldehydi.

Day (An Improved Method of Mounting Museum Specimens, *Tr. Chicago Path. Soc.*, 1913, ix, 106) has given an excellent method of mounting specimens under watch glasses in Kaiserling's fluid. Such mounts are permanent, occupy a small space and are easy to handle and transport.

Bones are left in standing water, when by autolysis the organic constituents and the bone marrow are removed. They are washed in running water, scraped and thoroughly cleaned, and thereupon subjected to the action of benzin vapor, in order to remove the fat and whiten the bone.

A special apparatus is to be used in this process to prevent any danger from fire. The benzin is best distilled in steam. The bones are finally dried in the sun.

LACTOBACILLINE PREPARATIONS OF THE FRANCO-AMERICAN FERMENT COMPANY

To the Editor:—Please inform me concerning the use of the Bulgarian bacillus preparations sold by the Franco-American Ferment Company as a remedy for diabetes.

L. G. RICE, M.D., Albuquerque, N. M.

ANSWER.—Riesman says, referring to a favorable report by Horowitz on the use of Bulgarian bacillus preparations for this purpose:

Lactic acid bacilli have been recommended for nearly every ill that flesh is heir to, including diabetes. The drug manufacturers have not been slow in seizing the psychological moment and putting upon the market innumerable preparations containing various strains of these bacilli. Quite recently the Bulgarian bacillus has been proposed as a remedy for diabetes, but so far no scientific study of the subject has appeared; moreover, it is *a priori* unlikely that it will have any special virtue in the curing of the disease.

About two years ago the Lactobacilline preparations of the Franco-American Ferment Company were admitted to New and Nonofficial Remedies after this company had withdrawn practically all of its unsatisfactory advertising matter. Recently the Council has voted to dismiss this firm's preparations from New and Nonofficial Remedies, adopting the following report:

The Franco-American Ferment Company has advised the Council on Pharmacy and Chemistry that, in advertising its products, it will no longer conform to the rules of the Council. This is evident. The Franco-American Ferment Company has distributed circulars in which the public is informed that autointoxication is the cause of innumerable ills ranging all the way from arteriosclerosis, rheumatism and gout to chronic headache, odorous perspiration, nervous disorders and melancholia; that the Bulgarian bacillus "is a wonderful corrective or remedy" for all these conditions, and that the Lactobacilline products are the only preparations of Bulgarian bacillus "to be had in America which bear his [Professor Metchnikoff's] personal endorsement"—by inference, the only reliable products. In view of the action of the Franco-American Ferment Company, and of the tendency of their advertising to cause the public to exaggerate slight ailments into alarming conditions, the Council has voted that the several Lactobacilline products of this concern be deleted from New and Nonofficial Remedies.

LITERATURE ON RADIOACTIVE WATERS

To the Editor:—Please give a list of articles on the use of radioactive waters for drinking and bathing purposes.

C. W. LIEB, M.D., Watkins, N. Y.

ANSWER.—The following list of references to articles published during and since 1911 may be referred to:

Hirz, F.: Subcutaneous Injection of Natural Radio-Active Mineral Water, *München. med. Wchnschr.*, Jan. 10, 1911.
Kionka, H.: Radioactivity of Mineral Waters, *Deutsch. med. Wchnschr.*, April 27, 1911; abstr., THE JOURNAL, June 3, 1911, p. 1693.
Nenadovics: Radio-Active Mineral Water in Internal Disease, *Therap. Monatsh.*, June, 1911.
Burnham, A. C.: Radioactive Waters in Treatment of Gout, *Med. Rec.*, New York, Jan. 30, 1912.
Lowe, T. P.: Radium Emanation in Mineral Waters, *Brit. Med. Jour.*, April 20, 1912; *Lancet*, London, April 20, 1912; abstr., THE JOURNAL, May 18, 1912, p. 1545.
Lazarus, P.: Radium Emanation of Radio-Active Waters, *Med. Klin.*, July 14, 1912.
Kisch, E. H.: Overestimation of Radio-Activity as the Potent Element in Mineral Waters, *Med. Klin.*, May 11, 1913.
Field, C. E.: Efficiency of Radio-Active Waters for Control of Faulty Elimination, *Med. Rec.*, New York, March 6, 1915.
Tracy, S. G.: Recent Applications of Radium Emanations and Radium Water, *New York Med. Jour.*, March 27, 1915.

VON LEUBE TREATMENT OF GASTRIC ULCER

To the Editor:—Please describe von Leube's treatment of gastric ulcer.

J. W. SHUMAN, M.D., Sioux City, Iowa.

ANSWER.—The von Leube ulcer treatment lays emphasis on diet, on saline laxatives, and the application of heat to the epigastrium.

One tablespoonful of the saline laxative is dissolved in 1 pint of warm water. The patient drinks 125 c.c. of this each ten minutes until all is taken. Then in half an hour breakfast

is eaten. If one or two watery discharges do not result, the dosage of the salt should be regulated accordingly.

Special methods are recommended in applying heat to the epigastrium. Mustard poultices are used, but the constant changing of the poultice may be avoided by using an electric pad. This method of treatment is gradually discontinued after from twelve to fourteen days. Blisters are no indication for stopping it.

During the first thirteen or fourteen days of treatment, the following diet is prescribed: 1½ quarts of milk, 200 gm. of zwieback and 1 pint of meat solution, this given as six feedings of 250 c.c. each, the first at 7 a. m. and the last feeding at 6 p. m. The meat solution is prepared by digesting beef with a strong acid solution of pepsin in hermetically sealed vessels at higher than body temperature. One pint contains one-half pound of beef. To this may be added, if the patient desires, a small quantity of beef extract and table salt. It gives 1,800 calories of heat per day, and if rest in bed is enforced, is sufficient to maintain the body weight.

After the fourteenth day the patient is allowed up, and is given a light diet of pigeon, chicken, purée of potatoes, thicker soups, wheat bread, etc. Eight days later the return to coarser foods is gradually effected. All foods are given lukewarm.

Patients with bleeding ulcers are given absolute rest in bed for two or three weeks. For the first three days they take nothing by mouth, but are given two daily nutrient enemas, each containing 250 gm. of milk, two or three eggs and a pinch of salt. On the fourth day the feedings are commenced as above. A Priessnitz compress is kept on the epigastrium. This is the treatment in brief. It has not been generally adopted.

AXILLARY HAIRS AND PERSPIRATION

To the Editor:—Recently there have been advertised razors for shaving axillary hairs. This has given rise to numerous questions on the subject:

1. Why are there hairs in the axilla?
2. Will it do any harm to remove these hairs?
3. When a woman insists that she will remove the hairs from the axilla, which will be the best way to do it: with a razor or by using a depilatory?
4. Is it advisable to use any of the preparations now on the market which tend to stop perspiration under the arms?
5. What harm will come of stopping perspiration which normally comes under the arms?

R. H. Hunt, M.D., Bartlett Springs, Calif.

Answer.—1. Axillary hairs are probably a vestige of a former hairy coat. The axillary hairs grow at puberty, as do the pubic hairs, and the beard in man.

2. There is no harm in removing the hair, except the slight irritation which may occur, and the coarser growth which will subsequently develop.

3. There is no objection to removing the hair with a depilatory, provided its use does not produce dermatitis. The razor seems less open to this objection.

4. There is no objection to using applications to stop perspiration, except that those which are effective are frequently irritating and cause dermatitis. Very few of them are at all effective.

5. No harm comes from stopping the perspiration under the arms; that is, there is no damage in the failure of this limited excretion of sweat.

HEALTH OF PHYSICIANS

To the Editor:—I wish to get facts and statistics concerning the doctor's health. Can you suggest any information along this line as to diseases and causes of deaths of physicians?

C. A. Haff, M.D., Northampton, Pa.

Answer.—For several years The Journal has listed a summary of the deaths of physicians in the United States, with an analysis of the cause of death. This appears in the editorial pages either in the first or second number of January of each year, for 1913, 1914 and 1915, in the issues for January 4, January 10 and January 2, respectively. References to other articles follow:

Physicians and the Nervous Life, editorial, The Journal, Aug. 31, 1912, p. 727.
Tuberculous Morbidity Among Physicians and Nurses, Berlin Letter, The Journal, July 5, 1913, p. 50.
Simms, B. B.: Drugging Habit of Busy Practitioner, *South. Med. Jour.*, November, 1913.
Dublin, L. I.: Incidence of Tuberculosis Among Physicians and Nurses, *Jour. Outdoor Life*, June, 1914.
Vierordt, H.: Causes of Death of Prominent Physicians of History, *Med. Klin.*, May 9, 1915.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arizona: Phoenix, October 5-6. Sec., Dr. John Wix Thomas, 200 National Bank of Arizona Bldg., Phoenix.

Colorado: Denver, October 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

District of Columbia: Washington, October 12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Georgia: Atlanta, October 12. Sec., Dr. C. T. Nolan, Marietta.

Idaho: Wallace, October 5. Sec., Dr. C. A. Dettmen, Burke.

Illinois: Chicago, October 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

Iowa: Des Moines, October 19-21. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

Kansas: Topeka, October 12-14. Sec., Dr. H. A. Dykes, Lebanon.

Michigan: Lansing, October 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

Minnesota: Minneapolis, October 5-8. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

Mississippi: Jackson, October 26-27. Sec., Dr. E. H. Galloway, Jackson.

Missouri: Kansas City, September 28-30. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

Montana: Helena, October 5. Sec., Dr. William C. Riddell, Helena.

New Jersey: Trenton, October 19-20. Sec., Dr. G. H. Norton, 429 E. State St., Trenton.

New York: Albany, Buffalo, New York, Syracuse, October 5-8. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

Oklahoma: Oklahoma City, October 12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

Porto Rico: San Juan, October 4. Sec., Dr. Quevedo Baez, Allen St., San Juan.

Rhode Island: Providence, October 7-8. Sec., Dr. Gardner T. Swarts, State House, Providence.

Utah: Salt Lake City, October 4-5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Wyoming: Laramie, October 13-15. Sec., Dr. H. E. McCollum, Laramie.

Addenda to the Educational Number

Further information received shows that the University of Cincinnati College of Medicine should be included in the first column of page 705 of The Journal, Aug. 21, 1915 (the Educational Number), among the medical colleges which are requiring for admission two years of collegiate work, in addition to a four-year high school education.

The University of Alberta, Faculty of Medicine, Edmonton, Alta., offers the first three years of the five-year (not "four-year," as given on page 716) medical course, including the premedical science year.

Queen's University Faculty of Medicine, Kingston, Ont., according to its announcement for 1915-1916 (page 15) continues to give an M.B. degree after a four-year course, the first of which is devoted mostly to the premedical sciences. This is equal to only three years of strictly medical work as measured by the medical courses given in the medical colleges of the United States. It is also stated that the fifth year (fourth medical) may be spent by the student as an intern in an approved hospital. The hospital intern year, in medical colleges in the United States, follows the completion of four full years of medical study, not counting the year or years devoted to the premedical sciences.

Mississippi June Report

Dr. E. H. Galloway, secretary of the Mississippi State Board of Health, reports the written examination held at Jackson, June 15-16, 1915. The total number of subjects examined in was 8; total number of questions asked, 64; percentage required to pass, 75. The total number of candidates examined was 58, of whom 46 passed and 12 failed. One candidate was licensed through reciprocity. The following colleges were represented:

	PASSED	Year Grad.	Per Cent.
College			
Atlanta Medical College	(1914) 79.5; (1915)	77, 81, 81,	84
Chicago College of Medicine and Surgery	(1914)	78, 78	

University of Louisville	(1915)	86
Tulane University of Louisiana	(1915)	75, 75, 78, 79, 79, 80, 80, 81, 83, 83, 85, 86, 89, 90
Johns Hopkins University	(1915)	85
Jefferson Medical College	(1914)	85.9
Lincoln Memorial University	(1915)	80.8
Meharry Medical College	(1913) 76, 77; (1915)	79
University of Tennessee	(1914) 76, 78, 84; (1915)	78, 78, 80, 80, 80, 80.5, 81, 83, 84, 85
Vanderbilt University	(1914)	75
University of Virginia	(1915)	85, 86, 87

FAILED

Birmingham Medical College	(1914)	64
Atlanta Medical College	(1915)	70
University of Illinois	(1913)	72
Meharry Med. Coll.	(1912) 62; (1913) 63; (1914) 61; (1915)	66, 73.6
Memphis Hospital Medical College	(1902) 54; (1912)*	
University of Tennessee	(1914)	60 †

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Memphis Hospital Medical College	(1910)	Arkansas

* Left the examination room on seeing questions.

† Did not complete the examination on account of sickness.

Pennsylvania June Report

Mr. N. C. Schaeffer, secretary of the Bureau of Medical Education and Licensure of Pennsylvania, reports the written examination held at Philadelphia and Pittsburgh, June 1-3, 1915. The total number of subjects examined in was 5; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 233, of whom 209 passed and 24 failed. Two candidates were licensed by bedside examination and 11 through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Total No. Licensed
George Washington University	(1914)	1
Chicago College of Medicine and Surgery	(1914)	1
College of Phys. and Surgs., Baltimore	(1912, 1) (1914, 4)	5
Johns Hopkins University	(1911, 1) (1914, 4)	5
University of Maryland	(1911, 1) (1914, 1)	2
Harvard University	(1909) (1913)	2
Univ. of Michigan, Homeo. Med. School	(1914)	1
St. Louis University	(1914)	1
Long Island College Hospital	(1912)	1
University of Buffalo	(1914)	1
Eclectic Medical College, Cincinnati	(1914)	1
Hahnemann Med. Coll. and Hosp., Philadelphia	(1914)	5
Jefferson Medical College	(1912, 1) (1913, 3) (1914, 46)	50
Medico-Chirurgical Coll. of Phila.	(1913, 1) (1914, 40)	41
Temple University	(1914)	11
University of Pennsylvania	(1912, 1) (1913, 3) (1914, 28)	32
University of Pittsburgh	(1914)	41
Woman's Med. Coll. of Pennsylvania	(1913, 1) (1914, 3)	4
University of Virginia	(1914)	1

FAILED

Chicago College of Med. and Surg.	(1914)	68.7, 70.7, 72.8
University of Louisville	(1911) 60.3; (1912)	51.8
College of Physicians and Surgeons, Baltimore	(1914)	72.3
Johns Hopkins University	(1914)	73.6
Maryland Medical College	(1912) 64.6; (1913)	62.4
Harvard University	(1912)	72.2
Tufts College Medical School	(1912)	73
Jefferson Medical College	(1913) 74.4; (1914)	54, 69.1, 71.8, 73.8
Medico-Chirurgical College of Philadelphia	(1914)	71, 72
Temple University	(1913) 64.6, 73.6; (1914)	66.2, 73.6
University of Pittsburgh	(1914)	69.8, 73

BEDSIDE EXAMINATION

Dartmouth Medical School	(1893)	1
Albany Medical College	(1897)	1

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Indiana University	(1910)	Indiana
Johns Hopkins University	(1902)	Maryland
Harvard University	(1907)	New Hamp.
University of Michigan Medical School	(1913)	Michigan
University of the City of New York	(1892)	W. Virginia
Jefferson Medical College	(1902) New Jersey; (1912, 2)	Missouri; N. Carolina
Medico-Chirurgical College of Philadelphia	(1912)	Vermont
Woman's Medical College of Pennsylvania	(1910)	Maryland
University of Virginia	(1907)	Virginia

Book Notices

SYPHILIS AS A MODERN PROBLEM. By William Allen Pusey, M.D., Professor of Dermatology in the University of Illinois. Price, cloth, 50 cents; paper, 25 cents. Pp. 129. Chicago: American Medical Association, 1915.

This book is a monograph reprinted from the Commemoration Volume issued by the American Medical Association "as a tribute to the medical sciences which made possible the building of the Panama Canal and the Panama Pacific Exposition."

The publication of this discussion of the present status of one of the so-called three great plagues—syphilis, tuberculosis and cancer—is opportune. Two decades ago tuberculosis, the fellow of syphilis in this triad of diseases, was as little understood by the everyday man as syphilis is today. In the comparatively brief interval of twenty years, a campaign of education and organized propaganda for the combating of consumption has transformed the situation. The forces of intelligent public opinion and of public and private funds, and the power of disinterested men and women have brought into being a great system of physical and educational aids for the tuberculous which have begun to realize their full possibilities. Against cancer our ignorance limits our capacity for effective control. Yet even in the case of cancer there are large endowments for study, and a consistent campaign for the better education of the public is under way.

Against syphilis, on the other hand, little or no social headway has been made. The confounding of the sanitary aspects of a communicable disease with questions of morals, and the effects of a traditional prudery have stifled advance in the social control of this disease. The United States is conspicuous in this backwardness. In strange contrast with this situation, medical knowledge of syphilis has advanced in the last decade with unparalleled rapidity. At the present time it is safe to rank the strategic position in regard to its sanitary control as equal to that for the control of malaria and yellow fever. In one direction, medicine holds syphilis in the hollow of its hand; two generations of intelligent attack could see it reduced to the status of a sporadic infection. In the other direction, the unwillingness to act of the public, on whom help depends, has prevented all organized effort for the control of this disease. Syphilis is a sanitary problem, that it must and will be solved by society sooner or later is inevitable. Its importance cannot be exaggerated! It breeds misery and perpetuates it. It is a source of public cost, a drain on human efficiency, and a stumbling block in the progress of mortality and decency whose all-pervading influence is appreciated only by those who work with it all the time. Into this situation, Dr. Pusey's book projects itself with a peculiar force. It considers syphilis from the standpoint of its effect on society; not as a disease which medicine is called on to treat. The whole subject is broadly sketched: its course and its pathology are given in sufficient detail to allow the reader to get a mental picture of the disease. Preceding this there are three chapters on the history of syphilis, the most complete statement of this subject in English, which furnishes a unique historical perspective. The rest of the book concerns the study of the general problems of syphilis; the prognosis of syphilis; syphilis and marriage; the etiology of syphilis, and the prophylaxis of syphilis. In these chapters, such subjects as the relative frequency of tabes and paresis, the effect of syphilis on length of life, the time when the syphilitic may marry, the prevalence of syphilis, its comparative frequency in men and women, the question as to whether or not syphilis is on the increase, and syphilis and prostitution are considered. The whole book is a foundation for the last chapter—the prophylaxis of syphilis. Here the author shows how syphilology has finally arrived at a point where the prevention of syphilis is practicable by sanitary measures. He points out what these measures are, and so furnishes the strongest argument for the inauguration of an organized sanitary attack on this disease.

The work is eminently sane and without sensationalism or exaggeration. It does not affront with needless horrors, nor is it written in the spellbinding style of campaign literature. The book is fitted to serve as a guide to a sustained and effective interest in the problem on the part of intelligent readers. It is not a medical textbook, nor is it a primer. It is intended for the intelligent lay reader, but it may be read with equal profit by the intelligent physician. It considers syphilis from a detached point of view, from which point the physician ordinarily does not think of it. It is filled with facts which are carried through to legitimate conclusions, and from which are deduced practical suggestions, and is worthy of the thoughtful consideration of intelligent men and women.

Outlines of Internal Medicine for the Use of Nurses. By Clifford Bailey Farr, A.M., M.D., Instructor in Medicine, University of Pennsylvania. Cloth. Price, $2 net. Pp. 408, with 76 illustrations. Philadelphia: Lea & Febiger, 1915.

This textbook is designed by the author to serve as a basis for the courses in medicine now being given in most training schools for nurses. It is also intended to serve as a reference work. Though internal medicine is specified in the title, the book deals with practically everything except surgical ailments. The author has been successful in giving the important points that the nurse should know without encroaching on the physician's sphere. The book is far superior to most works on practice of medicine for nurses. A nurse does not practice medicine; a well-trained nurse "never makes a diagnosis and never prescribes," facts of which most writers of textbooks for nurses appear to be ignorant.

Miscellany

Creating an Efficient Health Department

Springfield, Ohio, has the commission-manager form of municipal government. Dr. J. R. McDowell, in the *Ohio Public Health Journal* for July, describes the organization and operation of the health department, of which he has been made director, under this form of government. The usual board of health has been abolished, and the responsibility placed in the director. This, as McDowell believes, has removed the great stumbling blocks in the way of efficient health administration—boards of estimable leading citizens who are also dyed-in-the-wool politicians and who hand out health department "plums" with a string tied to them; boards composed of well-qualified physicians who cannot agree on any policy, or city councils which may leave the health department stranded high and dry for want of sufficient funds. The new government body provides budgets for each department, which means an equitable distribution of the revenues; the health department, which heretofore fared badly, now gets its fair share. Each commissioner is on a full-time basis which, McDowell says, is the greatest step toward efficiency. The full-time health officer is not handicapped by personal interest in his patients or by the fear of losing some good family. To him all physicians are on an equal footing. Another great advantage making for efficiency is that he has an incentive to prepare himself for the work. Salaries are not at present what they should be, but he believes that conditions in this respect will become satisfactory when the people realize the value of such health officers, and when men with a D.P.H. demand what is right and just for their services. The personnel of the department of Springfield (a city of about 50,000) consists of the director, assistant director, clerk, plumbing inspector, public health nurse and a Ford. A veterinarian dairy and food inspector and a school nurse were to be added, and private organizations contemplated employing a nurse for tuberculosis work and one for infant welfare work, all of whom were to be under the control of the health department. A laboratory has been provided in which all the usual examinations, bacteriologic, etc., are made; there is one free tuberculosis dispensary, and there is close cooperation with the dispensary at the city hospital and with the Associated Charities Clearing House, which is located in the city hall. A most satisfactory feature of the health organization which, McDowell says, could not be carried out so well under any other form of government, is the sanitary division, which makes use of the police patrolmen, who do nearly all of the sanitary work on orders from the health department through the city manager's office. The patrolman patrols not only the front streets, but also the back alleys and the back yards, and thus makes himself more efficient both as a guardian of the safety of the city and as a guardian of its health. This develops in the patrolman a sense of responsibility for the sanitary condition of his beat, and brings to attention many conditions which formerly would have been overlooked. At first the patrolmen were given fifteen-minute talks at roll call on the statutes and ordinances covering nuisances and other sanitary matters. All complaints are investigated and notices served by the patrolmen, who, McDowell says, are of as good intelligence as the average sanitary inspector. The plan has worked well.

Trachoma

Dr. J. W. Kerr, in *Public Health Reports*, August 20, gives a history of the fight against trachoma in the United States. Investigations inaugurated in 1897 in the immigration service led to the declaration by the surgeon-general that trachoma was a "dangerous contagious" disease, and during the past seventeen years all arriving aliens have been carefully examined for trachoma with a view to the exclusion of those infected. During that period, 11,966,897 immigrants were examined, and 22,984 trachoma cases were found. Official and nonofficial inspections and examinations abroad and at home reduced the number of cases in immigrants from 4 per cent. prior to in 1897 to 2 per cent. Canada followed the example of the United States, and also instituted an inspection service. Within the last few years, many cases of trachoma have been found in the United States not originating in the immigration service. Investigations along this line by McMullen and others of the Public Health Service in the Appalachian Mountains, in Kentucky, West Virginia, Virginia and the Carolinas, showed many trachoma cases among the inhabitants, and also among the Indians on various Indian reservations, in Oklahoma, Minnesota and other states. Among 192,788 white and colored persons examined to April 30, 1915, there were found 3,619 cases of trachoma, and among the 39,231 Indians examined to Dec. 30, 1912, 8,940 cases. Among the requirements set forth by Kerr for the improvement of trachoma conditions are the elimination of foci of the disease, and the improvement of community sanitation. It is said that trachoma is largely a disease of insanitary surroundings, and their abolishment will depend in a great measure on improving the social and economic conditions in infected communities. In bringing about these improvements, the education of children in individual prophylaxis is essential. Treatment is individual and surgical, and must be begun in a hospital. In the way of prophylaxis in the Appalachian Mountain region, five hospitals have been established, three in Kentucky, one in Virginia and another in West Virginia. In the three hospitals in Kentucky, available to the people in 10,000 square miles of territory, to May 1, 1915, 1,437 cases of trachoma had been treated, with a total of 18,860 treatments, and 1,823 operations performed. A fair proportion of the cases have been already cured, it is said, and over a thousand foci of infection eradicated. Educational bulletins regarding the prevention of trachoma have been sent to over 12,000 households, 120 public health lectures have been given, and visits for purposes of instruction were made to 677 homes. The work of eradication is expected to take years, but eventually it will yield to scientific treatment, and the benefit of the instruction, in the prevention of other diseases, will be great.

Medicolegal

Responsibility in Personal Injury Case for Malpractice of Surgeon

(*Texas & Pacific Railway Co. vs. Hill* (*U. S.*), *35 Sup. Ct. R. 575*)

The Supreme Court of the United States, in affirming a judgment in favor of plaintiff Hill, against the railway company, for damages for personal injuries sustained in a collision of trains, holds that the various contentions concerning the want of liability on the part of the defendant as the result of any asserted malpractice on the part of the surgeon or surgeons who operated on the plaintiff, were devoid of all merit. The court says that the correctness of this conclusion was adequately demonstrated by a consideration of the text of the charge given to the jury on the subject. In substance the charge, with clearness of statement, excluded all liability on the part of the defendant for any injury resulting from the intervening malpractice of the surgeon or surgeons, if such was found to exist, if the plaintiff had failed to exercise reasonable care in the selection of a competent surgeon or surgeons, and had in any respect fallen below the standard which reasonable prudence would have exacted, not only in the employment of a reasonably competent surgeon, but in following his advice concerning the necessity of the operation to relieve from the consequences of the injury suffered from the collision, if in fact such injury was found to have been suffered.

Frenzy from Chloral—Physician's Prescription as Defense to Crime—Opinions Derived from Medical Books

(*United States vs. Perkins* (*U. S.*), *221 Fed. R. 109*)

The United States District Court, Eastern District of South Carolina, denies a motion by the defendant for a new trial after his conviction of manslaughter. The court holds that it was properly left to the jury to say which was more reasonable, beyond a resonable doubt, that the defendant had been rendered so frenzied by a dose of 15 grains of chloral that he became thereupon in the condition of mind which made him kill one and nearly kill two more of his fellow passengers, or that out of impatience, petulance, self-will, a desire to escape pain, or previous accustomed self-subjection to the drug, he took so large a dose (enormously beyond his physician's directions) that he voluntarily brought on a frenzied state of intoxication. He testified with extraordinary coolness and clearness as to what occurred. He said he took first one dose of the chloral (15 grains), then immediately (the medical evidence not showing that there is any immediate action in the case of chloral taken through the mouth) under the impulse of his sensations drank the whole of the 480 grains of chloral and then lost all consciousness and memory.

The issue was fairly put to the jury to determine whether or not the intoxicated frenzy in this case proceeded from the voluntary act of the defendant. The jury found that it did; that the intoxication was caused by his voluntary act. A whole shipload of crew and passengers had been imperiled; an innocent party had been put to death; two others were wounded, one being the captain of the ship on whom the safety of all others might depend. All this took place in a crowded drawingroom on a steamer filled with women, who might also have been assassinated. The evidence was quite sufficient to justify the inference beyond a reasonable doubt that the prisoner had voluntarily, while in a perfect condition of sanity and reasonableness, from caprice, petulance, disgust or a simple desire to relieve himself from pain, disregarded the orders of his physician and intoxicated himself to a degree that eventuated so fatally. The verdict, therefore, should not be disturbed.

The prescription of the physician obeyed in good faith is a complete protection for responsibility for the results thereby caused. But, as the jury was charged, it must be obeyed in good faith. His prescription cannot be used as a pretense or excuse when not obeyed. The consequences would be too dreadful. Modern medicine deals in drugs too potent in their effects when taken in excessive doses to permit men to shield themselves under the pretense of a physician's prescription which they have disobeyed. It would offer too great an opportunity for revenge, spite and malice to seek gratification under the madness of an artificial frenzy and then claim immunity because of wilful error in the disobedience of the instructions as to the dose.

The state of South Carolina has passed a statute permitting medical books to be read in civil and criminal cases in the state courts; but it is well settled that such statutes have no application to criminal cases in the federal courts. And the statement made in a medical book, if admissible in evidence in that form, does not become admissible because it is read out of the presence of a jury and its statements then repeated by rote before the jury. Therefore the statements of the physicians in this case, so far as they were opinions based on and the repetition of statements contained in medical books, were subject to the same objections as the books themselves on any consideration of the weight that should be given to such testimony. The difficulty in the medical opinion in this case was one that affects most medical expert testimony and has contributed largely to bring it into its present undeserved disrepute. It is the habit of the so-called experts, and especially the medical expert, to make general statements based on insufficient data—to argue from the particular to the general, and not from the general to the particular.

Contract of Board of Health with Member Also Town Physician to Attend Case of Smallpox

(*Lesieur vs. Inhabitants of Rumford* (*Me.*), *93 Atl. R. 838*)

The Supreme Judicial Court of Maine overrules exceptions to a nonsuit of the plaintiff ordered in this action for services performed in attending a smallpox patient who was placed in quarantine. The claim of the defendant that the plaintiff was not entitled to recover because it was his duty to perform the services sued for in his capacity as "town physician," the court says, was not sustainable under the evidence. The plaintiff's contract with the town as town physician was to take care "of the town paupers" so far as they required medical aid. There was no evidence that the patient was a pauper at the time he became infected with this contagious disease, and the statute expressly provides that persons who become needy and are assisted with necessary food, medicine, etc., while in quarantine on account of a contagious disease, shall not be considered paupers, or be subject to disfranchisement for that cause, unless such persons are already paupers as defined by the revised statutes.

But it appeared that the plaintiff was one of the three members of the board of health of Rumford at the time the contract between him and the board was made, and while the services thereunder were being performed, and for that reason the defendant contended that the contract was illegal and unenforceable. Does such a contract so contravene public policy that it should not be enforced? The court holds that it does, holds that the contract in question so far contravened public policy that it ought not to be upheld and enforced through the administration of the law. In making the provisions prescribed by statute for the care of a person placed in quarantine, the members of the board of health act in a fiduciary capacity. Their contracts therefor impose on others the burden of paying the expenses thereby incurred. They are public officers, clothed by the legislature with power to incur expenses for others to pay. The law requires of them perfect fidelity in the exercise of that power, and whatever has a tendency to prevent their exercise of such fidelity is contrary to the policy of the law, and should not be recognized as lawful and enforceable through the administration of the law. It was suggested by the plaintiff that in making the contract in question there was no dishonesty, fraud, or concealment on the part of the board or himself; that he acted openly and avowedly for himself; and that the other two members represented all others interested in the contract. But the court thinks that did not answer the requirements of the law. In making provision for the care of the patient, it was

the plaintiff's duty as a member of the board of health to act for others and for their interests, and not for himself and for his interests. Still the court's conclusion that the express agreement made between the plaintiff and the board of health of which he was a member had no binding force as a contract and was not enforceable through the administration of the law, because in violation of public policy, should not be taken to imply that he might not be entitled to recover what he was reasonably entitled to for the services performed of which the defendant had the benefit, disregarding the contract, on which he relied solely in this action.

Society Proceedings

COMING MEETINGS

American Academy of Ophth. and Oto-Laryn., Chicago, Oct. 5-7.
American Association of Railway Surgeons, Chicago, Oct. 13-15.
American Roentgen Ray Society, Atlantic City, Sept. 22-25.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Indiana State Medical Association, Indianapolis, Sept. 23-24.
Kentucky State Medical Association, Louisville, Sept. 21-23.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
Missouri Valley Medical Society, Des Moines, Sept. 23-24.
Pennsylvania State Medical Society, Philadelphia, Sept. 20-23.
Utah State Medical Association, Salt Lake City, Sept. 28-29.
Virginia State Medical Society, Richmond, Oct. 26-28.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

MICHIGAN STATE MEDICAL SOCIETY

Fiftieth Annual Meeting, held at Grand Rapids, Sept. 1 and 2, 1915

The president, DR. REUBEN PETERSON, Ann Arbor, in the chair

Roentgenography and Removal of Foreign Bodies in the Air Passages

DR. P. M. HICKEY, Detroit: The facts obtained from roentgenographic examination of suspected cases of foreign bodies in the air passages and in the upper gastro-intestinal tract may be classed under two divisions: first, the inferences to be drawn from shadows cast by the foreign body itself when present, and, second, the deductions from the changes in the surrounding tissues as the result of the foreign body's influence on them. Bearing these two classes of facts in mind, we conclude that all suspected cases of foreign body should be rayed as a routine measure. As many of these foreign body cases occur in children, especially in young children, it is very important that the time of exposure for the Roentgen plate be as short as possible. It is also advantageous to make use of the fluoroscope now that its use has been surrounded with precautions, so as to make it a reasonably safe procedure. We should remember that very small foreign bodies and very slight changes in the tissues may be inconspicuous on the fluoroscopic screen. The nearer instantaneous the exposure can be made, the better will be the detail of the plate provided that sufficient current be used to give enough exposure. Not only should anteroposterior plates be made, but also lateral and oblique plates. The importance of this rule should not be underestimated. Regarding the extraction of foreign bodies, I would not be disposed to lay down any arbitrary rules. Many of these cases are unique, each one requires a careful consideration of the circumstances, and many conditions often present themselves which test to the utmost the patience and ingenuity of the operator.

I wish to emphasize one point which has been brought out by Dr. Chevalier Jackson, namely, that anesthesia is a dangerous feature in these cases. It is much better in the ordinary esophageal foreign body case to wrap the child securely in a sheet, as in preparation for intubation, and remove the obstruction without general anesthesia. This rule also applies to the removal of foreign bodies from the bronchi. While it is difficult to introduce the bronchoscope without anesthesia in a young child, after the instrument has been introduced no further anesthesia should be given. In many cases the bronchoscope can easily be introduced without any general anesthesia. The maintenance of the cough reflex during the operation is a matter of importance in the prevention of aspiration pneumonia. Another point in this particular is the tendency of children to develop acidosis after prolonged anesthesia. In many of these cases the search for the foreign body may have to be prolonged over a considerable period of time, and if during this long period the child is constantly inhaling ether, the circumstances seem very favorable for acidosis.

DISCUSSION

DR. R. B. CANFIELD, Ann Arbor: I agree with Dr. Hickey that, when possible, it is wise not to use anesthesia. In the majority of my cases, the foreign body has been removed under local anesthesia. It is safer to have the larynx thoroughly cocainized, whether a general anesthetic is used or not. Granting that there is greater danger of aspiration pneumonia, I have never seen a case of ether pneumonia in my foreign body work. It is the rule, so far as I can remember at this moment, that the chest signs clear up immediately after the foreign body is removed. The danger of acidosis must be borne in mind, but since we have been using the suspension apparatus in conjunction with the bronchoscope, we have located our foreign bodies with greater ease and rapidity. The only serious accidents I have experienced have been in cases in which an incomplete anesthesia was in operation. Too little stress has been laid on the importance of the laryngeal reflex. The laryngeal reflex may cause death. It seems much safer to resort to deep anesthesia, complete relaxation of the chest, getting rid of the danger of the laryngeal reflex by an additional cocainization of the larynx, than to use no anesthetic.

DR. B. R. SHURLY, Detroit: A wonderful change has been made by the evolution of the Roentgen ray, but the value of the clinical diagnosis, and the value of auscultation and percussion, must not be thrown aside absolutely. As to anesthesia, I think the rule absolutely applies that when it is possible to manage the child without anesthesia, it is certainly preferable to do so, and undoubtedly that can be done with practically all esophagus cases, and with many of the bronchoscopy cases. Local anesthesia will often help. When no general anesthetic is used, we undoubtedly have less secretion, although that can be controlled very nicely many times with the use of atropin, and removed with the suction apparatus. The question of instrumentation is one which is also a matter of personal choice and training. The whole problem of the removal of foreign bodies is a matter of individuality, and very often the ingenuity of the operator is the all-important thing for the particular case.

DR. P. M. HICKEY, Detroit: With regard to the question of anesthesia, I think that is to be governed entirely by how long you will have to keep the child under it. It is usually fairly easy to see a foreign body after you introduce the tube, and I have not had much trouble in introducing the tube. Young children do not tolerate severe operations, and the whole technic of operations on children under 2 years should be safeguarded in every possible way. But if we do find it necessary to use general anesthesia for the introduction of the bronchoscope, the amount of anesthetic given should be limited. Another point worthy of emphasis is the value of the expectant line of treatment. When the foreign bodies are not causing symptoms, the chances are much better with expectant treatment in many cases.

Ocular Evidences of Vicarious Menstruation

DR. J. E. GLEASON, Detroit: It is unusual to see evidences of vicarious menstruation manifested on the part of the eye. In my case there existed complete suppression of the menses over an extended period, a corresponding periodicity in the observance of the ocular symptoms, and the local manifestation in an otherwise normal eye. The treatment has been the use of iron and ovarian extract, 5 grains, three times daily. The result of the first month's treatment was that for the first time the patient had both eyes injected at the same time, the amaurosis was especially prominent, and the vasomotor

symptoms were especially distressing. The last two months the injection has appeared as usual, but other symptoms, especially the headache, seem to have been very much relieved.

DISCUSSION

DR. L. J. GOUX, Detroit: About a month ago I operated on a woman, aged 55, for cataract. The corneal wound was healed and everything progressing satisfactorily, until one morning, about a week after the operation, the whole anterior chamber was filled with blood, and she had only light perception. On investigation, I found that her menstruation had stopped when she was about 20 years of age, and she had not menstruated since that time. This condition is rare, and is something which we are not particularly alert to. It is very important, because we do not know what the ultimate result will be in such cases. In my case there is still sufficient blood there to make me think that the woman is still having hemorrhage.

DR. JOHN D. HUIZINGA, Grand Rapids: About two or three years ago a young lady of 18, who had been menstruating for three or four years, came to me for suppression of the menses. I treated her for two or three months with the usual general treatment. At the regular time of menstruation she had very much depreciated vision. Ophthalmoscopic examination revealed several hemorrhages in both retinas. The menstruation was reestablished shortly, but her vision was very much depreciated permanently.

Spasmophilic Convulsions in Infancy: Their Differentiation and Treatment

DR. CLIFFORD G. GRULEE, Chicago: This type of convulsion is the most common found in infancy. Characteristic of it is the tendency to repeated convulsions within a short period of time, accompanied by laryngeal stridor. Increased electrical irritability is very diagnostic. This type of convulsion must be differentiated from five other forms: terminal, symptomatic, uremic, those due to intracranial conditions, and epileptic. In the epileptic type, it is to be differentiated by its frequency of occurrence, the time of its occurrence, and the increased electrical irritability. In regard to etiology, while gastrointestinal disturbance may play a large part as an immediate cause, there seems to be a spasmophilic state as the basis of this condition. The spasmophilic state may be produced by disturbance of the calcium metabolism or a disturbance of the parathyroid secretion, or both. Sedatives are used for the immediate control of the condition. Of these, the most useful is perhaps chloral hydrate. In the specific treatment, calcium lactate by mouth, and magnesium sulphate subcutaneously may be used. The dietetic treatment consists of carbohydrate diet from twenty-four to forty-eight hours, followed by a whey-free diet, the whey being increased gradually. Cod liver oil is added in small doses. One must avoid the giving of excessive alkalies in this condition.

Observations on Tonsillectomy Some Years After Operation

DR. B. R. SHURLY, Detroit: I consider the removal of tonsils and adenoids, when thoroughly done, as the most satisfactory procedure that falls to the lot of the nose and throat surgeon. The results speak for themselves. The prophylactic value to the young child in the prevention of nasopharyngeal catarrh and catarrhal deafness of adults, and in later life, cannot be estimated. The influence of tonsillectomy on focal infection subsequently prevented is immeasurable.

Heart Disease in Children

DR. WALTER J. WILSON, JR., Detroit: In the Children's Free Hospital, of Detroit, in 1914, eighteen heart cases were observed out of a total of 406 medical cases, a little short of 5 per cent. That we have underrated their frequency and importance is apparent when we consider the etiology of heart disease in general, for it is at this period when the infections are especially prominent, such as tonsillitis, scarlet fever, diphtheria, measles, etc., and seeds are often sown at this time which grow into valvular insufficiency and myocardial degeneration in later years. When there is a persistent slight elevation of the child's temperature, with an increase in the normal pulse rate, the presence of systolic murmur, usually mitral, occasionally a diastolic murmur, replacing the aortic sound, especially when there are signs of decompensation, shown by a swollen tender liver, and fine crackling râles at the bases of the lungs, the diagnosis can be made readily. When the picture is incomplete, one should always think of middle ear disease, nephritis and tuberculosis, and exclude them before making the diagnosis of endocarditis exclusively, although they may occur as complications the one of the other. Murmurs may be significant or not, according to the accompanying conditions. Heart block is not infrequent in children, occurring even in infants, and manifests the same characteristics as in adults. The prognosis in any true case of endocarditis or myocarditis must always be a guarded one. The general principles of treatment are the same as for adults: in the period of compensation, absolute rest, lying flat on the back in bed, unless orthopnea is present; a small dose of opium to relieve dyspnea; a saline to deplete the bowels, and restriction of the fluid intake to limit the work of the heart. In cases in which immediate aetion is necessary, a small dose of strophanthin hypodermically may be used. The tincture of digitalis for continuous digitalis medication is the remedy of choice. During the period of infection, an ice-bag is used over the heart with a flannel intervening. The salicylates in heavy doses are combined with sodium bicarbonate, the latter being used in the proportion of 2:1 of the former. In severe cases in adults 20 grains every two hours of sodium salicylate is used, the doses for children being scaled down to suit the age. This heavy dosage is used for three days, and is then usually halved for three days more, and thereafter one-fourth the initial dose is used. These methods usually suffice, but in selected cases vaccines and serums may be used to advantage.

(*To be continued*)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

September, CL, No. 3, pp. 313-468

1 *Paralytic and Other Persistent Sequelae of Migraine. J. R. Hunt, New York.
2 Roentgen Ray in Gastro-Intestinal Affections. C. D. Aaron, Detroit.
3 *Late Results of Cardiorrhaphy; Report of Case Three Years after Operation. E. H. Pool and M. A. Ramirez, New York.
4 *Removal by Caffein of Some Digitalis Arrhythmias. W. M. Barton, Washington, D. C.
5 *Brain Syphilis. E. M. Auer, Philadelphia.
6 *Permanent Partial Compression of Both Common Carotids in Epilepsy; Report of Eight Operations. J. R. Eastman, Indianapolis.
7 Statistics of Age Mortality Based on Number of Persons Alive at Each Age. C. M. Montgomery, Philadelphia.
8 *Presence of Tubercle Bacilli in Blood of Tuberculous Patients. L. Kessel, New York.
9 Prurigo Nodularis and Lichenification with Tumor Formation. C. M. Williams, New York.
10 Study of Gastric Sediments and Their Interpretation. B. B. V. Lyon, Philadelphia.
11 Influence of Athletic Training on Blood Pressure. W. S. Middleton, Madison, Wis.
12 *Administration of Glucose Solutions as Prophylactic against Postoperative Shock. A. C. Burnham, New York.

1. Abstracted in THE JOURNAL, June 12, 1915, p. 2012.

3. **Results of Cardiorrhaphy.**—The operation in this case was reported three years ago. The wound involved the left margin of the heart somewhat posteriorly; it was about one-half inch in length, transverse on the long axis of the heart, and approximately 1½ inches above the apex. Five stitches were inserted and tied before the bleeding was completely controlled. All visible blood was then removed and the pericardium closed with interrupted catgut stitches. There was considerable tension between the edges of the pericardial wound, which caused some gaping between the stitches in the lower mesial part. The flap was replaced and chromic stitches used to repair muscles and fascia. The

operation took about thirty minutes. Now there is a systolic impulse diffused over an area about 4 cm. in diameter and with its maximum intensity about the center of this area at a point 8 cm. to the left of the midline in the fifth interspace. A slight diastolic retraction can also be seen over this area. Tactile fremitus is normal over entire chest. The cardiac impulse is left with maximum intensity in the fifth interspace 8 cm. to the left of the middle line with patient in upright position; with patient lying on the right side it is felt 6.5 cm. from the midline, and with patient lying on the left side 11 cm. from the midline. No thrill felt.

Pulmonary resonance is normal over the entire chest. The right border of the heart percusses 1 cm. to the right of the right border of the sternum; the left border percusses 11 cm. to the left of the midline. Respiratory sounds are normal over entire chest. No adventitious sounds are present. The first heart sound is heard with maximum intensity in the fifth interspace 8 cm. to the left of the midline. A soft blowing systolic murmur is heard with maximum intensity in the fifth interspace 8 cm. to the left of the midline and is transmitted for about 4 cm. to the left and 2 cm. to the right of the point of maximum intensity. No other murmurs heard. No friction rubs present. Muscular quality of heart sounds is good. The pulmonic second sound is slightly accentuated. The pulse is 70, regular in force, volume and rate. The blood pressure while at rest is: left arm, 110 systolic, 60 diastolic; right arm, 112 systolic, 60 diastolic. After active exercise with chest weights for five minutes the pulse rate is increased to 75 beats per minute, the blood pressure remaining the same: left arm, 112 systolic, 60 diastolic; right arm, 112 systolic, 60 diastolic. After resting for five minutes the pulse rate is 70 per minute and the blood pressure 110 systolic, 60 diastolic in both arms. The heart work (Sahli sphygmobolometer) is: 11.2 gm. cm. of Hg left arm; 12.4 gm. cm. of Hg right arm. No abnormal venous or arterial pulsations visible; no visible capillary pulsations, no cyanosis, edema, nor pallor. The physical examination presents nothing further that is worthy of note.

4. **Use of Caffein in Digitalis Arrhythmias.**—All the irregularities of the heart beat which are brought about by digitalis, Barton states, tend to be removed by caffein. Although, in many cases, digitalis arrhythmia will spontaneously disappear when the drug is stopped, instances arise, unfortunately too common, in which, after prolonged digitalis administration, the conductive system is so depressed that serious results may arise. Under these circumstances the administration of caffein will be of service and therefore strongly indicated. The action appears to be due to the increase in irritability of the conduction system produced by the caffein, which antagonizes and finally overcomes the depressing effects which digitalis exerts on the auriculoventricular bundle.

5. **Brain Syphilis.**—In an examination of the pathologic material of fifty-three cases, including tabes, taboparesis, general paralysis of the insane, syphilis and syphilitic meningitis, Auer was impressed by the similarity of the pictures. In all he found, to a greater or less extent, an infiltration of the meninges and the sheaths of the smaller vessels of the central nervous system by mononuclear lymphocytes and plasma cells, and further, this infiltration in general paresis did not confine itself to the vessel sheaths or in cerebral syphilis to the surface of the central nervous system.

6. **Compression of Carotids in Epilepsy.**—In six cases of general epilepsy Eastman compressed both common carotids in two cases, the plan followed being in most respects that adopted by Momburg. Silver wire, 1 mm. in thickness was passed under each common carotid, a short loop was cut off, and the ends were twisted until the temporal pulse on each side became so slight as to be just perceptible. A catgut strand was tied to the twisted ends of the wire and left hanging out of the wound to be used as a guide in case threatening cerebral symptoms should require immediate removal of the wire. In both cases the result, although gratifying so far as the effect on the frequency and character of the attacks is concerned, left much to be desired. One patient though distinctly benefited, has had, since the operation, attacks of petit mal, on the average, one and one-half times a week. During the last month he has had but two attacks. Previous to operation the attacks occurred several times daily and were of severer form. In the second case, of a young girl, there has been a slight increase in the length of the interval between the attacks, and the character of the epilepsy has been changed, for the time at least, from grand mal to mild petit mal.

A third case was one of petit mal in a man, aged 35 years, the other a case of grand mal of the severest character and of long standing in a woman, aged 46 years. The man of 35 with petit mal was apparently somewhat improved, in that the interval between attacks was more than doubled in length. The severity of the attack was reduced. The result in a case with grand mal in a woman of 46 was a complete failure. In the fifth case the patient had suffered daily severe attacks following a blow on the head over the upper rolandic area on the right side. A decompression had been made without benefit. In the period of seven weeks elapsing since the carotids were compressed he had had no attacks whatever. The sixth patient had suffered attacks of grand mal at intervals of nine days for one year with almost continuous headaches. During the last few months prior to operation the attacks had increased in severity and frequency.

8. **Tubercle Bacilli in Blood of Tuberculous.**—A number of different methods were employed by Kessel to determine whether tubercle bacilli are present in the circulation of patients with advanced pulmonary tuberculosis. Blood withdrawn from thirty-eight patients was inoculated intraperitoneally into guinea-pigs. Necropsies and microscopic sections two to three months later failed to reveal any evidence of tuberculosis. Microscopic examination of the blood withdrawn from ten patients yielded negative results. The many sources of error in the microscopic examination of blood for tubercle bacilli have been pointed out. The blood of seven patients previously subjected to a tuberculin injection was inoculated intraperitoneally into guinea-pigs. Necropsies and microscopic sections failed to reveal any evidence of tuberculosis. In three patients who had previously received a tuberculin injection, blood was withdrawn and after removal of the serum was inoculated intraperitoneally into guinea-pigs. One of the pigs developed an extensive tuberculosis. An attempt made to grow the tubercle bacilli directly from the blood proved unsuccessful.

12. **Glucose Solutions as Prophylactic in Shock.**—Burnham advises that glucose solution be given as a routine after every operation in which one has reason to fear more than the ordinary amount of postanesthetic shock; it should be given as a routine in every case in which postoperative oral feeding may be difficult or insufficient for a considerable period after operation; it should be given as an emergency measure either before or after operation for the relief of an existing or threatened acidosis.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

July, III, No. 1, pp. 1-64

13 Importance of Tropical Diseases to American Practitioner, as Illustrated by Their Occurrence in United States. C. F. Craig, U. S. Army.
14 Two Years' Investigation in Peru of Verruga and Its Insect Transmission. C. H. T. Townsend, Washington, D. C.
15 Is Sprue a Moniliasis of Digestive Tract? B. K. Ashford, U. S. Army.
16 Barbados in British West Indies. J. F. Siler, U. S. Army.

Arizona Medical Journal, Phoenix

August, III, No. 7, pp. 4-14

17 Occupational Injuries, Especially of Visual and Hearing Organs, Their Relation to Employers' Liability Act and Workman's Compensation Act. A. Martin, Phoenix.
18 Life, Growth and Reproduction of Bone. W. L. Brown and C. P. Brown, El Paso, Texas.

Boston Medical and Surgical Journal

September 2, CLXXIII, No. 10, pp. 337-374

19 Scope of Public Health Service. W. C. Hanson, Belmont.
20 Operative Treatment of Fractures. C. L. Scudder, Boston.

21 *Endocarditis in Children; Its Prophylaxis and Treatment in Outpatient Department. R. S. Eustis, Boston.
22 Social Problems Involved in Treatment of Children with Heart Disease. C. M. Welsh, Boston.
23 *Tonsillectomy as Therapeutic Measure in Treatment of Chorea and Endocarditis. J. H. Young, Newton.

21. **Endocarditis in Children.**—This is a preliminary report of a special heart clinic which has been conducted in the children's room at the Massachusetts General Hospital in the attempt to solve two problems in the treatment of early or suspected endocarditis in children. The first is whether the strict rest in bed for weeks or months, can be carried out from an outpatient department; second, whether this prolonged period of rest is worth while. A total of 60 patients have been treated, 23 have been discharged during nine months, leaving 37 patients still under supervision. Thirty-two of the 60 patients, or 53.3 per cent. were choreic at the time of admission, and 10 more gave a history of choreic attacks in the past, making a total of 42 cases, or 70 per cent., in which chorea played a part. Nine cases, 15 per cent., were rheumatic on admission and 19 more gave a history of joint or muscle involvement in the past that was interpreted as of rheumatic origin, making a total of 28 cases, 46.6 per cent., which were classed as rheumatic. Thirteen cases, or 21.6 per cent., gave a history of both rheumatism and chorea, and in two of these both diseases were active while the patient was under observation. In only one patient was there no evidence of either rheumatism or of chorea. Seventy-five per cent. of patients came through their attack without acute endocarditis, 13 per cent. more are still in the suspicious class, and only 12 per cent. have received permanent cardiac damage.

23. **Tonsillectomy as Therapeutic Measure.**—Of the fifty-four cases reported by Young, 21 had a tonsillectomy performed either before the patients first came under observation, or while under observation, and it is with the end results in these cases that this paper deals. In all but three of the 21 cases, tonsillectomy was done in the outpatient department of the Massachusetts General Hospital. In two patients, operated on outside the hospital, the condition of the tonsils before operation is not known; in the other patients the tonsils were described as "considerably enlarged." In 11 cases the tonsils were described as "large," "enlarged," "prominent" or "prominent and ragged." In 4 cases as "slightly +," "moderate," "slightly enlarged and inflamed" or "moderately enlarged." In one "buried," in one "not visible" and in one "small." Of the 21 cases 6 gave a history of previous tonsillitis. Five patients gave a history of previous arthritis; since tonsillectomy 3 patients have been free from arthritis, while 2 patients have had subsequent attacks, one two months, the other twenty-seven months, after operation. A history of chorea previous to operation was given in 9 cases. After the removal of the tonsils 8 of these patients had from one to four attacks of chorea. There were 4 patients who have had from one to four attacks of chorea since the removal of the tonsils with no history of previous attacks.

Of the 21 cases, 12 patients were known to have a definite endocarditis before tonsillectomy. One patient had an acute arthritis with a questionable endocarditis when first seen, no history of chorea or tonsillitis. Of the remaining 8 cases it is impossible to positively prove the absence of endocarditis before operation. At the present time 17 patients show a chronic endocarditis, and of these 12 were known to have had endocarditis before operation. Three patients have had a fresh endocarditis or an acute exacerbation of a chronic endocarditis since operation, and in two patients the diagnosis is probable but not certain. Of these five cases, endocarditis was definitely known to be present before operation in two patients. One known and one suspected patient with acute endocarditis now have normal hearts. Since operation one patient has been discharged from the ward with the diagnosis of subacute endocarditis. The present condition of 3 patients is unknown. Of the remaining 18 patients, 12 are well, 2 have no endocarditis, 10 still have an endocardial murmur, and, with one exception, show slight cardiac hypertrophy. The occurrence of chorea after tonsillectomy in 12 out of 21 cases strongly suggests, however, that removal of the tonsils does not offer the protection against chorea, and the always present possibility of endocarditis, that many have heretofore believed.

Bulletin of Johns Hopkins Hospital, Baltimore

September, XXVI, No. 295, pp. 309-340

24 Lesions Produced by Arsenic and Their Bearing on Problem of Specific Arsenic Therapy. W. H. Brown, New York.
25 Miliary Blastomycotic Retrogressive Lymphangitis of Epicardium. E. R. LeCount, Chicago.
26 Occasional Feature in Pathology of Splenomegaly. T. P. Sprunt, Baltimore.
27 Michael Servetus: Discoverer of Pulmonary Circulation. J. C. Hemmeter, Baltimore.
28 Psychoses of High Imbecile. H. J. Berkley, Baltimore.
29 *Dermoid Cyst Showing Unusual Features. J. S. Willock, Baltimore.
30 Mechanism of Lobar in Spontaneous Evolution. H. A. Stephenson, San Francisco.

29. **Dermoid Cyst Showing Unusual Features.**—Willock reports the case of a negro, aged 40, who presented just to the left of the center of the forehead a small round tumor about 7 mm. in diameter, which clinically presented all the features of an ordinary sebaceous cyst. It had been present four years and showed the usual comedo-like opening. It was smooth, freely movable over the deeper structures, and had shown no recent rapid increase in size. Some months previous to the appearance of the tumor, a long lanugo hair had developed at the point, which later was shown to be the site of the comedo-like opening of the cyst. The cyst was removed. The most striking feature presented by the cyst was the large number of modified hair follicles which sprang from all parts of its wall. The hair follicles began as short, thick pedicles, which quickly branched into short finger-like processes, many of which contained lanugo hairs. These hair-containing follicles branch and at times two or more hairs are contained in a single follicle. Springing from these hair follicles and at times directly from the cyst wall are other finger-like processes which do not contain hair, nor have they a lumen, although their cellular elements resemble in every way the cells of the hair-containing follicles. No definite sebaceous glands were present.

Cleveland Medical Journal

July, XIV, No. 7, pp. 483-532

31 Some Conditions Affecting Toxic Dose of Ouabain (Strophanthin). T. Sollmann, Cleveland.
32 Case of Rheumatic Endocarditis Complicated by Multiple Emboli and Thrombosis, in which Blood Flow Determinations Were Carried Out; Necropsy Findings. R. W. Scott and G. N. Stewart, Cleveland.
33 Luetin Reaction. H. Feil, Cleveland.
34 Early Incision of Breast Abscesses during Lactation. J. L. Bubis, Cleveland.
35 Removal of Open Safety Pin, Point Up, from Left Bronchus of Seven-Year-Old Child. S. H. Large, Cleveland.

Journal of Abnormal Psychology, Boston

August-September, X, No. 3, pp. 153-224

36 Constructive Delusions. J. T. MacCurdy and W. L. Treadway, New York.
37 Socrates in Light of Modern Psychopathology. M. J. Karpas, New York.
38 Psychoneuroses Among Primitive Tribes. I. H. Coriat, Boston.
39 Two Interesting Cases of Illusion of Perception. G. F. Arps, Columbus.

Journal of Experimental Medicine, Lancaster, Pa.

September, XXII, No. 3, pp. 269-388

40 *Action of Ethylhydrocuprein (Optochin) on Pneumococci and Other Micro-Organisms in Vitro. H. F. Moore, New York.
41 *Effect of Irritation on Permeability of Meninges for Salvarsan. E. Stillman and H. F. Swift, New York.
42 Changes in Electrocardiograms Accompanying Experimental Changes in Rabbits' Hearts. F. R. Fraser, New York.
43 Bacteriologic and Clinical Studies of an Epidemic of Koch-Weeks Bacillus Conjunctivitis Associated with Cell Inclusion Conjunctivitis. H. Noguchi and M. Cohen, New York.
44 *Metabolism in Dog Before and After Removal of Spleen. S. Goldschmidt and R. M. Pearce, Philadelphia.
45 Studies in Liver and Kidney Function in Experimental Phosphorus and Chloroform Poisoning. E. K. Marshall, Jr., and L. G. Rowntree, Baltimore.

46 Intoxication of Splenectomized Mice by Feeding Fresh Spleen and Other Organs. P. A. Lewis and A. G. Margot, Philadelphia.
47 *Function of Spleen in Experimental Infection of Albino Mice with Bacillus Tuberculosis. P. A. Lewis and A. G. Margot, Philadelphia.
48 *Numerical Laws Governing Rate of Excretion of Urea and Chlorids in Man. Influence of Pathologic Conditions and of Drugs Excretion. F. C. McLean, New York.

40. **Action of Ethylhydrocuprein on Pneumococci.**—The results of Moore's study agree, in the main with those of other workers. He has not had such a large percentage of cures as is claimed by Morganroth, namely, 90 to 100 per cent.; nor has he seen any definite protective action of ethylhydrocuprein in vivo with an amount of infection greater than 1,000 times the minimum lethal dose of a highly virulent strain. Moreover, the greater the virulence of the strain (by passage through mice) the greater was the difficulty in protecting against increasing multiples of the minimum lethal dose. Of 85 mice infected with 100 times the minimum lethal dose or less, and treated, 15 mice, or 17.6 per cent. died of pneumococcal septicemia; 13 mice, or 15.2 per cent., died of toxicity of the drug or some obscure cause, the heart's blood being sterile at necropsy (the corresponding controls invariably died of pneumococcal septicemia), 56 mice, or 66.8 per cent., survived. Of these 85 treated mice, 69, or 81 per cent., either recovered or died of causes other than pneumococcal septicemia; such, for example, as the toxicity of the drug.

41. **Effect of Irritation on Meninges.**—In the experiments done by Stillman and Swift the subdural injection of normal salt solution, normal serum, serum salvarsanized in vivo or weak solutions of cyanid of mercury does not demonstrably increase the permeability of the spinal cord or brain for salvarsan which is circulating in the blood at the time of the subdural injection.

44. **Studies of Metabolism in Dog.**—Four dogs were subjected to metabolism studies by Goldschmidt and Pearce before splenectomy and at intervals of three days to three months after splenectomy. In three of the four animals the removal of the spleen was not followed by any disturbances of nitrogen metabolism, fat utilization, or iron elimination. Two of these animals showed no anemia, and the third only a slight reduction in hemoglobin and number of red cells. A fourth animal, studied ten days and three months after splenectomy, developed eventually a definitely progressive anemia of moderate severity. This animal showed a slight loss of weight, a slight disturbance of nitrogen balance, and of creatin-creatinin partition, with a marked increase in the elimination of iron. The authors conclude therefore that the spleen has no important influence on metabolism, and that the disturbance occurring in one of their dogs were due to the coexisting anemia and not to the absence of the spleen.

47. **Function of Spleen in Experimental Infection.**—Experiments are reported by Lewis and Margot which show that in all probability the increased resistance to tuberculous infection which is imparted to mice by the removal of the spleen is a consequence of the loss of a function of the organ. This function can be restored by feeding of fresh spleen. The authors attribute these changes to the removal and restoration, as the case may be, of a particular substance for which the designation tuberculosplenatin is suggested. This substance is assumed to be related to the spleen as epinephrin is related to the epinephrin gland. It is peculiar to the organ but not to the species. It is not found in other organs of the body so far as their observations have extended. The absence of the substance from the lymphatic glands seems of especial importance in this connection.

48. **Laws Governing Rate of Excretion in Man.**—Relatively increased concentration of chlorids in the plasma, McLean claims, occurs in certain conditions, especially in certain forms of cardiac and renal disease. Under certain conditions, notably in fevers or in diabetes, or as the action of diuretics (digitalis), the chlorid threshold may be temporarily or permanently lowered. This may result in a decrease in the concentration of chlorids in the plasma to a point lower than the lowest point which is seen in normals. Failure to excrete chlorids in pneumonia is associated with a lowered concentration of chlorids in the plasma. Excretion begins at the time this concentration increases. Edema is usually accompanied by a relatively increased concentration of chlorids in the plasma. The relations ordinarily return to the normal state when edema disappears. Chlorid and urea functions may be quite independent of one another.

Journal of Sociologic Medicine, Easton, Pa.

August, XVI, No. 4, pp. 197-252

49 Health Protection of Sailor in Merchant Marine. R. M. Woodward, San Francisco.
50 Sociologic Experiment in Treatment of Tuberculous Working Women. P. K. Brown, San Francisco.

Journal-Lancet, Minneapolis

August 15, XXXV, No. 16, pp. 429-462

51 Indian Medical Service. P. F. Rice, Cannon Ball, N. D.
52 Primary Melanosarcoma of Ovary. G. G. Cottam, Sioux Falls, S. D.
53 *Case of Splenic Anemia, Including Early Splenectomy and Necropsy Two Years Later. T. S. Roberts, Minneapolis.
54 Plea for Conservatism in Nasal and Tonsillar Operations. C. Williams, St. Paul.
55 *Pathology of Pernicious Anemia. M. Barron, St. Paul.

53. **Case of Splenic Anemia.**—An analysis of Roberts' case presents several features worthy of mention. There is nothing in the history of the patient suggestive of the etiology of the disease. There was a marked leukocytosis soon after operation, which in this case persisted and increased to the end. The average number of white cells in eight counts before operation was 4,925; the lowest, 2,700; highest, 6,500. The average of twelve counts after operation was 15,985; lowest 9,000; highest 25,000. There was throughout a rather unusually high hemoglobin percentage, the general average being 62 per cent., the average color index was 8; highest, omitting one of 2.2 and one of 1.4 occurring soon after sharp hemorrhages, was 1; lowest, 0.6. A notable irregularity in the shape and size of the red cells was always present, and during the last year became pronounced. Gastric and intestinal hemorrhages occurred only after the removal of the spleen. There was no jaundice or pigmentation of the skin even during the Banti's stage. There were several periods of improvement, two especially prolonged and pronounced, suggesting recovery; but there was no corresponding improvement in the condition of the blood. Splenectomy, even though done early, did not arrest the disease or modify its course in any way. The clinical diagnosis of uncomplicated splenic anemia was apparently confirmed by the necropsy. The only other important pathologic condition was a moderate grade of parenchymatous nephritis; but this did not seem sufficient to account for the death of the patient, and, moreover, the progress of the case to the end was like that of splenic anemia, not nephritis.

55. **Pathology of Pernicious Anemia.**—The blood picture in a case of pernicious anemia in which splenectomy was performed was studied by Barron both before and after operation. Blood examination up to five weeks before operation showed hemoglobin about 35 per cent.; red blood cells, 2,000,000; hemoglobin index, about 1; white blood cells, 3,500; marked anisocytosis; slight poikilocytosis; polychromatophilia and granular degeneration; practically no normoblasts, no megaloblasts; no "Howell-Jolly" bodies. The patient's condition grew progressively worse under medical treatment, and splenectomy was performed. The hemoglobin, which was around 25 per cent. at the time of operation, rose gradually until it reached 48 per cent. fifteen weeks later. The red blood cells arose from 1,300,000 to 1,900,000. The leukocyte count soon rose to normal, and remained about normal. The shape and size of the red cells gradually improved; polychromatophilia and granular degeneration remained about the same. Normoblasts increased until at one time there were 1,400 per cm. A few megaloblasts appeared but later disappeared. The most noticeable and pronounced change, however, was in the appearance of the "Jolly" bodies soon after the splenectomy. These nuclear remnants not only persisted, but increased to enormous numbers, in the blood. Unfortunately, a perinephritic abscess developed about three and one-half months after the opera-

tion, and this seemed to check the improvement. The patient died about a month later.

Kansas Medical Society Journal, Topeka

August, XV, No. 8, pp. 235-266

56 Medical School and State. J. Sundwall, Lawrence.
57 Shock, Its Nature and Prevention. G. E. Coghill, Lawrence.
58 Case of Apoplexy. W. S. Lindsay, Topeka.

Lancet-Clinic, Cincinnati

August 21, CXIV, No. 8, pp. 161-180

59 Report and Clinical Demonstration of Case of Fracture of Twelfth Dorsal and First Lumbar Vertebra, Laminectomy and Results. W. T. Willien, Terre Haute, Ind.
60 Scope and Function of Medical Department. C. F. Coffin, Indianapolis.
61 Intestinal Stasis. N. Mutch, London, England.

August 28, No. 9, pp. 181-200

62 Senile Dementia or Chronic Cortical Atrophy. R. Ingram, Cincinnati.
63 Rabies in Indiana. W. Shimer, Indianapolis.
64 Scope and Function of Medical Department. C. F. Coffin, Indianapolis.

Medical Record, New York

September 4, LXXXVIII, No. 10, pp. 383-424

65 Human Prostate Gland in Youth. O. S. Lowsley, New York.
66 Roentgen-Ray Treatment of Exophthalmic Goiter. C. A. Simpson, Washington, D. C.
67 Cerebellar Symptomatology. M. S. Woodbury, Clifton Springs.
68 Volumetric Determination of Sulphates in Urine. A. Knauer, Bonn, Germany, and B. Horowitz, New York.
69 Pain and Its Significance. J. H. Dempster, Detroit.
70 Complement Fixation in Chicken Sarcoma. C. H. Bailey, New York.

Michigan State Medical Society Journal

August, XIV, No. 8, pp. 391-452

71 Mechanism of Urinary Obstruction in Relation to Variations in Renal Functions. H. W. Plaggemeyer, Detroit.
72 Peripheral Nerve Diseases and Their Treatment. E. Beutele, Detroit.
73 Treatment of Asthma and Hay Fever by Active Immunization. R. S. Morrish, Flint.
74 Infections of Hands. W. T. Dodge, Big Rapids.
75 Clinical Examination of Feces. C. B. Lockwood, Detroit.
76 Abdominal Injuries. G. H. Palmerlee, Detroit.

New Orleans Medical and Surgical Journal

September, LXVIII, No. 3, pp. 145-214

77 *Intravenous Injection of Diphtheria Antitoxin. E. M. Dupaquier, New Orleans.
78 Combined Application of Percy Cauterization and Internal Iliac Ligation in Treatment of Cervical Cancer. M. J. Gelpi, New Orleans.
79 Emetin Error. J. J. Sarrazin, New Orleans.
80 Pellagra in United States. E. M. Perdue, Kansas City, Mo.
81 Cysticercus Cellulose of Hog. W. H. Dalrymple, Baton Rouge.
82 Method to Lessen Perineal and Extensive Vaginal Tears During Childbirth. P. J. Carter, New Orleans.
83 Asthmatic Attacks and Inhalation of Flour Dust. E. A. Bertucci, New Orleans.
84 Etiology and Pathology of Gallstones. J. A. Lanford, New Orleans.
85 Diagnosis of Gallbladder Disease. J. B. Elliott, Jr., New Orleans.
86 Treatment of Gallstone. O. Lerch, New Orleans.
87 Surgical Treatment of Gallbladder Diseases. F. W. Parham, New Orleans.
88 *Experimental Ligation of Splenic Arteries in Dogs. S. C. Jamison, New Orleans.

77. **Diphtheria Antitoxin Intravenously Injected.**—Of the thirty-two cases of diphtheria reported by Dupaquier, in which the patients were injected intravenously with diphtheria antitoxin, twenty-one were of a severe type. Of these twenty-one patients, eight died, seven from complications which had already set in, before admission to the service, one patient with laryngeal diphtheria being almost moribund; and second, a child having paralysis of palate, pulmonary tuberculosis and toxic nephritis. The eighth death occurred April 11, 1915, three hours after the injection. Barring this single fatal termination, the results and symptoms observed were encouraging, indicating a marked advance on the former treatment. The temperature dropped to normal from twelve to twenty-four hours more quickly and did not rise again. The membranes disappeared quickly as seen in six out of ten laryngeal patients, not intubated, recovering; and of the four intubation cases, only one patient died; a good showing. In all cases distressing symptoms abated markedly sooner. Complications developed in only one case after injection, lobular pneumonia, with recovery of patient. Paralysis of the palate was seen only in one case (intubation case); the patient recovered. Convalescence was shorter, and the feeling of well-being came back sooner, even in severe cases. Throat was cleared from the bacilli much sooner, on an average, within twenty days.

The number of carriers was lessened. In addition to these advantages the method proved a great saving of serum as compared with the intramuscular administration; for, most cases received only the initial dose, 10,000 units, while only in three cases was the dose repeated once. Dupaquier suggests first, that the serum for intravenous injection be made of a greater dilution, if possible a high dilution of dry globulins, not a concentrated solution, and clear, not cloudy. Second, that it be warmed and administered at the temperature of the body. Third, that the gravity method and not the hand-syringe "push method" be used. The injection should not be made at once, in those entering the hospital walking, or after exertions of some kind, as in the two instances Dupaquier reports. Rest, a rest of at least one hour in bed, except in severe laryngeal cases of emergency, should be observed before the serum is injected. Dupaquier believes that the striking serum reactions are not a contraindication to the intravenous administration of diphtheria antitoxin, and that when the technic is perfected the intravenous administration of antitoxin will be the routine method of treating diphtheria.

88. **Experimental Ligation of Splenic Arteries in Dogs.**—Ten dogs were operated on by Jamison. The spleen pedicle was firmly ligated, both the veins and the arteries being included in the ligatures. Two dogs died of shock and hemorrhage within a few hours; four dogs lived over one week and less than three; the remaining four lived over four months, in apparent perfect health, and were finally killed in the course of other experiments. Of the four dogs which lived over a week and less than three, necrosis of the spleen was demonstrated at necropsy in three of them, and in the other, an enormous central abscess of the spleen was found. Cultures of the pus from this abscess failed to show a growth on Loeffler's blood serum or agar, and no organisms could be demonstrated in stained smears.

Of the four dogs that survived, two were laparotomized some four months after the first operation and atrophied spleens removed. Both of these dogs recovered from the second operation without incident. One dog died five months after operation; in this case the spleen was atrophied, and no evidence could be found that its condition had contributed to death; the liver was found infected with coccidia and affected with advanced cirrhosis; filarial worms were found in the heart; the latter probably produced the dog's death. It is evident, then, that mere ligation of the splenic pedicle is extremely unsatisfactory, although successful in 50 per cent. of the cases, and that it would be entirely unjustifiable to subject a human patient to such a risk. Two dogs were experimented with late in January. The same steps were followed as above, except that large veins to the spleen were carefully isolated and not included in the ligatures. Both dogs died within ten days, and necrosis of the spleen was demonstrated at necropsy, showing that patency of the veins did not hinder the necrosis.

In looking over the necropsy records and certain specimens preserved from the experiments, Jamison found that in cases in which the dogs recovered the spleen was absolutely covered by the omentum, but that in cases in which the dogs developed necrosis of the spleen the omentum had apparently failed to envelop it. It was further observed that in one dog which survived three weeks after operation, the omentum had enveloped over half of the spleen, and that this part of the organ showed atrophy, while that part uncovered by omentum showed necrosis.

In the next experiments the abdomen was opened in the usual manner, and the splenic pedicle ligated, the arteries and veins being included in the ligatures, but the spleen was then covered by the great omentum, and the abdomen closed.

Up to date five dogs have been treated in this manner and have recovered without incident. It was evident that in the four dogs that recovered from mere ligation of the pedicle, a severe crisis had been passed during the ten days following operation; this was not the case with the last five, which showed no evidence of any trouble more than would follow any simple laparotomy. In those cases in which the spleen was covered by omentum, the degree of atrophy was greater than that following simple ligation, and came about in a shorter time, about three weeks, as well as could be determined.

New York Medical Journal

August 28, CII, No. 9, pp. 433-484

89 Bone Graft Wedge. F. H. Albee, New York.
90 Pituitary Tumor with Improvement after Puncture of Corpus Callosum. W. M. Leszynsky, New York.
91 Greek Physicians at Persian Court. W. B. Konkle, Montoursville, Pa.
92 Initial Strain in Weak Foot. P. W. Roberts, New York.
93 Uterine Fibroids. G. E. Shoemaker, Philadelphia.
94 Gonorrhea in Male. H. Schoenrich, Baltimore.
95 Fractures. J. F. X. Jones, Philadelphia.
96 Midwives and Physicians as Factors in Puerperal Fever. N. Kavinoky, Buffalo.
97 Vaccine Therapy in Dermatology. A. Strickler, Philadelphia.
98 Acetonuria and Carbohydrate Starvation. S. H. Blodgett, Boston.
99 Laryngeal Tuberculosis. A. S. Kaufman, Philadelphia.
100 John Bunyan, Hypochondriac. H. D. King, New Orleans.

September 4, No. 10, pp. 485-540

101 What Do Newer Methods of Treatment Offer Patient with Malignant Disease of Uterus? J. G. Clark, Philadelphia.
102 Teaching of Medicine. A. H. Wright, Toronto, Canada.
103 Helpful Sign in Diagnosing Latent Syphilis. I. W. Voorhees, New York.
104 Pruritus—For Example. W. P. Cunningham, New York.
105 God Man or Jehovah Complex. B. Glueck, Washington, D. C.
106 Fistula Ani. J. F. Saphir, New York.
107 Importance of Immunizing Nurses and Hospital Attaches against Typhoid. E. H. Funk, Philadelphia.
108 Rachitis. W. L. Rost, New York.
109 Diastolic Pressure. L. M. Warfield, Milwaukee, Wis.
110 Clinical Medicine and Public. M. Schulman, New York.
111 Case of Squamous Cell Carcinoma of Larynx. L. J. Goldbach, Baltimore.
112 Occupation as Etiologic Factor in Disease. N. Schwartz, New York.

Oklahoma State Medical Association Journal, Muskogee

July, VIII, No. 2, pp. 57-90

113 Cancer of Uterus. J. Overton, Tulsa.
114 Pathologic Breast and Its Treatment. F. Y. Cronk, Guthrie.
115 Early Diagnosis of Cancer of Stomach. C. J. Fishman, Oklahoma City.
116 Diagnosis and Management of Gastric Ulcer. A. W. White, Oklahoma City.
117 Surgical Aspects of Chronic Gastric and Duodenal Ulcer. H. Reed, Oklahoma City.

Philippine Journal of Science, Manila

May, X, No. 3, pp. 177-245

118 Malaria in Philippine Islands. M. A. Barber, A. Raquel, A. Guzman and A. P. Rosa, Manila.

Surgery, Gynecology and Obstetrics, Chicago

September, XXI, No. 3, pp. 269-402

119 *Reconstruction of Common Bile Duct. A. J. Walton, London.
120 Gunshot Wounds of Larynx. L. Boehler, Innsbruck, Austria.
121 Military Surgery. T. Tuffier, Paris.
122 Cause of Tubal Pregnancy and Fate of Inclosed Ovum. F. P. Mall, Baltimore.
123 *Pylorus; Its Musculature. P. E. Truesdale, Fall River, Mass.
124 Diagnosis of Intrathoracic Neoplasms by Exploratory Puncture. H. Dayton, New York.
125 Osteomyelitis of Lower Jaw; Its Proper Trreatment, Including Bone Grafting, Showing Necessity of Associating Dental Surgeon with General Surgeon. H. S. Dunning, C. A. McWilliams and V. E. Mitchell, New York.
126 *Clinical Aspect of Disease of Extraperitoneal Appendix Vermiformis; Report of Cases. A. Strauss, Cleveland.
127 Rôle of Fat Deposition in Cure of Abdominal Ptosis, Intestinal Stasis, and General Asthenic State. N. W. Jones, Portland, Ore.
128 Elephantiasis. L. L. Hill, Montgomery, Ala.
129 Relation between Degree of Menstrual Reaction in Endometrium and Clinical Character of Menstruation. E. Novak, Baltimore.
130 Primary Carcinoma of Appendix; Report of Three Cases. L. B. Meyer, New York.
131 *Simplified Method of Blood Transfusion; Report of Six Cases of Pernicious Anemia Treated by Massive Blood Transfusion and Splenectomy. N. M. Percy, Chicago.
132 *Autoplastic Repair of Recent Fractures. C. Davison and F. D. Smith, Chicago.
133 Efficiency of Coolidge Roentgen Ray Tube and Rationale of Radiotherapy in Treatment of Malignant Tumors. I. Levin, New York.
134 Nitrous Oxid in Labor. N. S. Heaney, Chicago.
135 Intestinal Obstruction Consecutive on Posterior Retrocolic Gastro-Enterostomy. A. V. Moschcowitz and A. O. Wilensky, New York.
136 Pseudofracture of Sesamoid Bones of Big Toe. W. W. Boardman, San Francisco.
137 *Closure of Right Rectus Incision. C. R. Robins, Richmond, Va.

119. **Reconstruction of Common Bile Duct.**—Walton cites a case in which the common duct ended abruptly about a quarter of an inch below the junction of the cystic duct. Below this the duct could not be recognized, being replaced by scar tissue. A flap was cut out of the duodenum and turned downward. A tube was inserted into the end of the common duct and sutured in place with twenty-day chromic catgut. The opening in the duodenum was sutured in its upper part, leaving only an opening sufficient to admit the tube. The tube was inserted into this opening, the duodenum being drawn up as close as possible to the cut end of the duct with a catgut suture. The flap of duodenal tissue was now sutured around the rubber tube so as to make a new bile duct, catgut sutures being used. A small drainage tube was inserted down to the junction. Three weeks later there was no leakage of bile from the wound, the stools were well colored with bile and the drainage tube was removed from the wound. One month after the operation the rubber tube was passed per rectum and the wound was quite dry.

123. **Pylorus; Its Musculature.**—Fifteen specimens were examined by Truesdale. He concludes that hypertrophy of the musculature of the pylorus, especially the pyloric sphincter, is found in the presence of gastric and duodenal ulcer. The hypertrophied muscle is a factor in obstructing the pylorus. Atrophy of the musculature of the pylorus is a sequence of gastro-enterostomy. Progressive atrophy of the pyloric muscle often defeats the success of gastro-enterostomy. These changes in the musculature are the result of varying periods of excessive function and of extended rest. Truesdale suggests that hypertrophy of the pyloric sphincter muscle may be of congenital origin.

126. **Extraperitoneal Appendix Vermiformis.**—The five cases analyzed by Strauss show that extraperitoneal position of the appendix is not uncommon and that the operator must be on the alert not to miss an extraperitoneal appendix and consider that it has sloughed away or that there was none. Disease of an extraperitoneal appendix may give a straightforward picture of appendicitis, or it may simulate perinephritic abscess or psoas abscess. It may cause a subhepatic abscess or a fecal fistula. Fetid pus obtained from an abscess incised in the right lumbar region should suggest to the operator a diseased extraperitoneal appendix as the etiologic factor.

131. **Simplified Method of Blood Transfusion.**—The tube used by Percy is a modification of the Brown tube. It consists of a glass cylinder 4 cm. in diameter, with a cannula leading from one end, the other end being drawn out into a tube about 1 cm. in diameter to which a Y connection is made. To one arm of the Y, a rubber tube is attached for suction to aid in filling the tube, and to the other arm a rubber bulb is connected to aid in injecting the blood. The tube differs from the Brown tube in that there is no side tube coming off from the cylinder, and the upper end of the cylinder, instead of being closed with a large cork, is drawn out into a tube for the Y connections. The cannula part of the tube is so constructed that it can be inserted directly into the vein of the donor and then the recipient.

132. **Autoplastic Repair of Recent Fractures.**—Davison and Smith claim that autoplastic treatment of recent simple fractures is indicated in cases in which nonoperative methods are inefficient. The transplant, in the medullary canal, in recent fractures of the shaft of long bones, supports the line of fracture, lives and grafts to the compact bone of the fragments. The transplant in cancellous tissue, when supported

by contact with compact bone grafts to the compact bone and infiltrates the spongy bone with new bone, supporting the line of fracture. The transplant eventually undergoes modification and absorption, as functional demand for support at line of fracture ceases.

137. **Closure of Right Rectus Incision.**—In Robins' method a straight Ochsner forceps is applied at each end of the incision and three on each side which grasp firmly the peritoneum and the posterior sheath of the rectus. Traction is made evenly on all the forceps by the assistant's holding them in his hand or by threading the rings of the forceps on another pair of forceps held horizontally. A continuous mattress suture is passed back and forth across the wound, in each case taking out all the slack in the stitch but never making any tension. If tension is made on any loop singly it may pull out. After the stitch has been placed for the entire length of the wound in this manner and while upward traction is made on the attached forceps, the suture is drawn taut by pulling on the end, while the assistant detaches the forceps that have been used for making traction upward. The wound is then closed in the usual manner.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, London

July, IX, No. 3, pp. 349-433

1 Bionomics of Glossina Palpalis in Sierra Leone; Its Pupal Habitats. W. Yorke and B. Blacklock.
2 Food of Glossina Palpalis in Cape Lighthouse Peninsula, Sierra Leone. W. Yorke and B. Blacklock.
3* Cultivation of Leprosy Bacillus. H. Fraser and W. Fletcher.
4 Reservoir of Human Trypanosome in Sierra Leone. W. Yorke and B. Blacklock.
5 Spirocheta Bronchialis, Castellani, 1907; Spirochetes of Human Mouth. H. B. Fantham.
6 Certain Animal Parasites of Domestic Stock in Sierra Leone. W. Yorke and B. Blacklock.
7 Etiology of Juxta-Articular Subcutaneous Nodules. J. B. Davey.
8 Ankylostomiasis in Dogs in Sierra Leone. W. Yorke and B. Blacklock.
9 Studies in Blackwater Fever. Case of Quartan Malaria Associated with Blackwater Fever. J. W. W. Stephens.

3. **Cultivation of Leprosy Bacillus.**—Fraser and Fletcher excised material from patients in fifty-two nonulcerating nodular cases of leprosy, a number far in excess of that recorded by any other worker, and employed the mediums of every claimant to success, but have not substantiated the claims of any of them. Their work has been carried out over a period of three and a half years. The only conclusions which that work permits are that the leprosy bacillus has not been cultivated and that the diphtheroids and other organisms are merely contaminators. There is no evidence that the acid-fast bacillus of Kedrowsky is the leprosy bacillus.

Bristol Medico-Chirurgical Journal, London

June, XXXIII, No. 128, pp. 73-128

10 Cotton-Seed Dermatitis and Its Cause, Pediculoides Ventricosus. J. A. Nixon.
11 Neuritis; Its Definition and Successful Treatment. N. Davies.
12 Women Doctors with Army in Field. H. B. Hanson.
13 Clinical Examination of Stools. G. H.-H. Almond.

Glasgow Medical Journal

August, LXXXIV, No. 2, pp. 81-159

14* Hematuria, Symptom; Its Causes and Diagnosis. D. Newman.
15* Ganglioneuroma of Sphenomaxillary Fossa. J. S. Dunn.
16 Trachoma. L. Buchanan.
17 Extra-Uterine Gestation with Intra-Uterine Pregnancy, Operation, Uterine Pregnancy Proceeding to Term. W. D. Macfarlane.
18 Simple Peptic Ulcer and Malignant Disease of Stomach. W. MacLennan.

14. **Hematuria Causes and Diagnosis.**—Three cases are reported by Newman. 1. Renal varix, hematuria, kidney enlarged and movable, no Roentgen-ray shadow, shoots of blood from left ureter. Nephrorrhaphy without improvement, resection, cure. 2. Symptomless hematuria during fifteen months, small at first, afterward large in amount. No symptoms pointing to origin of bleeding except cystoscopic appearances. Blood from right kidney increased on handling organ. Papilloma in pelvis, resection of papilla and tumor, good results. 3. Aneurysm of renal artery occupying the renal pelvis. Hematuria at first slight, afterward severe. No pain, plugging of left ureter with clot, severe hemorrhage, lumbar nephrectomy, cure.

15. **Sphenomaxillary Fossa.**—The patient from whom the tumor was removed in Dunn's case was a boy, aged 3 years, who had previously been quite healthy. A swelling was first noted, three weeks before operation, on the right temple, just behind the frontal process of the right malar bone. It was apparently of the size of a marble, and had a cystic feeling. At the operation it was found that the tumor was entirely covered by the temporal muscle, and when the latter was withdrawn it was seen to be encapsuled. When removal was attempted it was found that the tumor lay directly on the bare bone of the wing of the sphenoid, there being no intervening periosteum. A prolongation was found to extend downward into the sphenomaxillary fossa. The contents resembled gray matter of the brain. Microscopically the fibrous parts of the tumor represented a tumor of nerve-cells in which ganglion-cells, sheath-cells, and axis-cylinders were typically represented.

Journal of Obstetrics and Gynecology of British Empire, London

February, XXVII, No. 2, pp. 49-104

19* Alexander-Adams Operation and Its Results. D. G. Madill.
20 New Obstetric Forceps; "Forceps Fennica." S. E. Wichmann.
21 Breast Feeding; Some Functional Requirements of Gland and of Infant. H. K. Waller.

19. **Alexander-Adams Operation.**—Although over 200 patients have had this operation performed in the Rotunda Hospital during the past four years, there has been only one death, and that, Madill says, from causes entirely unconnected with the operation. Of forty-seven patients from whom replies to a questionnaire were received thirty-four had curettage and the Alexander operation performed; nine had curettage, amputation of cervix, and Alexander operation; and four had curettage, amputation of cervix, perineorrhaphy, and the Alexander operation. Of the thirty-four patients, twenty-eight replied that their periods are now regular every month, and are not excessive; three said that they came on every three weeks, and sometimes every fortnight; two said that the periods were still irregular and scanty (in these two cases the uterus was of the infantile variety); and one made no comment at all on her periods. That is to say, excluding the two cases of infantile uterus, twenty-eight out of thirty-two, or 87 per cent., reported themselves as being normal in their period since the operation; and four had curettage, amputation of cervix, perineorrhaphy, and the Alexander operation. Of the thirty- said that they had it slightly still, but a good deal less; and in two cases there was no change.

Menstrual pain was a symptom in only about twenty cases; four said they still have some pain; one said the pain was no better; and in the remaining cases there was no pain, or it was so slight as to be negligible. Intermenstrual pain was a cause of complaint in 90 per cent. of all the cases; in some patients the main symptom, pain in the back and left side. Twenty-six out of the thirty-four stated that they were now free from this pain, that is, over 75 per cent., the remainder either ignoring the question, or else reporting that there was no change. As to constipation, only nineteen out of the forty-seven reporting themselves as improved in this respect. Madill found almost no abnormal symptoms referable to the bladder, only one single patient having complained of anything disagreeable in that way, and her complaint was pain on micturition for a fortnight after the operation, but the pain had been low down at the urethral orifice. In only two cases out of the thirty-four was the general health not improved, the others, 96 per cent., emphatically stated that they felt much better and stronger, an excellent result for any operation.

Practitioner, London

August, XCV, No. 2, pp. 145-280

22 Effects of Cleft Palate Operations on Dental Arch. H. Blakeway.
23 Three Cases of Traumatic Subdural Hemorrhage. L. B. Rawling.
24 Use and Abuse of Purgatives. H. J. Campbell.
25 Joint Troubles Arising from Nerve Diseases. J. S. McArdle.
26 Interpretation of Opaque Meal Shadows in Diseases of Stomach. J. A. Codd.
27 Treatment of Fibroids by Roentgen Rays. F. L. Provis.
28* Ordinary and Atypical Migraine in Their Relation to Ocular Defects. G. F. C. Wallis.
29 Neurasthenia; Its Causes and Treatment. I. G. Cobb.
30 Recent Public Health Work. J. Priestley.
31 Some Practical Points in Therapeutics of Internal Secretion Extracts. T. B. Scott.
32 Case of Erythema Nodosum. D. Whyte.

28. **Migraine and Ocular Defects.**—Wallis gives the following summary of cases; 1. Boy suffering from severe periodic vomiting after meals unassociated with headache, and rarely with nausea; drowsiness, emaciation, and prostration marked. Cyclical vomiting is closely resembled. Complete relief by glasses, correcting slight compound hypermetropic astigmatism. 2. Migraine in an adult presenting most of the typical textbook symptoms; slight mixed astigmatism and presbyopia. Complete relief by glasses. 3. Migraine in a young girl; hemicrania and sickness, but no optical sensations. Hypermetropic astigmatism. Correcting lenses lessened greatly the severity and the frequency of the headache, and entirely relieved the sickness and the nausea. 4. Migraine in young lady, in whom attacks are replaced by nausea and momentary giddiness, and slight sickness; entire absence of headache or other phenomena. Father and (paternal) grandmother affected by classical migraine. Myopic astigmatism and hyperphoria; complete relief by correcting these.

Archives de Médecine des Enfants, Paris

June, XVIII, No. 6, pp. 293-348

33 *Rubeola in Children; One Hundred and Thirty-Two Cases. J. Comby.
34 Acute Encephalitis with Spirochetes in Lesions in Young Child with Inherited Syphilis. Péhu and Gardère.

July, No. 7, pp. 349-404

35 *Splenectomy in Treatment of Kala-Azar in Children. J. S. de Souza.
36 Pigmented Urticaria in Infant. J. Comby.
37 General Paralysis in Boy of 12. C. Leroux and M. Weinzweig.
38 Courses in Domestic Science. (Les écoles ménagères.) J. Comby.

33. **Rubeola in Children.**—Comby found the incubation period unusually long in his 132 cases. It ranged often up to sixteen or twenty days. The eruption is usually the first symptom to attract attention. There is little fever, and this disappears in from one to three days. The mucosa is not involved and there is no oculonasal catarrh. The eruption is irregular and capricious, but the glands in the neck, axillae or groin were enlarged more or less in seventy of the 132 cases. Differentiation is usually easy except in the scarlatinal type of rubeola.

35. **Splenectomy in Children.**—De Souza removed the spleen in four cases for kala-azar and once for splenic anemia, all in children. The blood findings gradually returned more or less to normal, so that the splenectomy answered its purpose, confirming the importance of the spleen as a factor in leishmaniosis. The child is prepared for the operation by giving calcium chlorid for four or five days, and a few hours beforehand is given an injection of horse serum. None of De Souza's seven little patients died after the splenectomy, while he has lost several adult patients under similar conditions.

Berliner klinische Wochenschrift

August 2, LII, No. 31, pp. 805-828

39 Etiology of Typhus. (Zur Aetiologie des Fleckfiebers.) F. Proescher (Pittsburgh).
40 *New Fracture after Apparent Healing of Fracture from Projectile. (Refrakturen bei anscheinend ausgeheilten Knochenschussverletzungen.) E. Holländer.
41 Treatment of Gunshot and Shell Fractures. (Schussfrakturen.) W. Pincus.
42 Changes of Shape of Trypanosoma Brucei in Plasma Medium. R. Erdmann.

40. **New Fracture after Healing of Bone Fractured by Projectile.**—Holländer reports five cases in which after the fractured bone and the wound had apparently healed completely, some insignificant cause fractured it anew at the same point or near by. Some infectious process must be responsible for this, possibly to be traced to some small sequester, or the effects of the primary injury to the bone are felt over a longer stretch than was realized at first.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 31, XLV, No. 31, pp. 961-992

43 Appendicitis in General Practice. H. Näf.

Deutsches Archiv für klinische Medizin, Leipzig

CXVII, No. 3, pp. 175-360, Last indexed April 3, p. 1199

44 Practical Value of Refractometry of the Blood Serum. E. Reiss.
45 Clinical and Experimental Study of the Innervation of the Sweat Glands. (Schweissdrüsen.) H. Dieden.
46 Leukocyte-Attracting Action of Lymph. (Die Leukocyten anlockende Wirkung von art- und körpereigenen Sekreten und Gewebesäften.) H. Dold.
47 Pathogenesis and Clinical Study of Hemochromatosis. O. Roth.
48 Eruption in Course of Epidemic Meningococcus Meningitis. (Genickstarre.) G. B. Gruber.
49 *Tartar Emetic in Treatment of Internal Leishmaniosis. G. Di Cristina and G. Caronia.
50 Intestinal Disease and Prophylaxis in the Active Army. (Ueber Darmkatarrh, fieberhaften Darmkatarrh, Typhus, Ruhr und Mischinfektionen.) Arneth.
51 Clinical Study of Infantilism. G. Quadri.

49. **Antimony and Potassium Tartrate in Leishmaniosis.**—This article was summarized in these columns, March 13, 1915, p. 952, when it appeared in an Italian journal. Di Cristina and Caronia now have a record of eleven cases, and they comment on the prompt recovery in six and the evident progress toward recovery of the other patients except two who have succumbed to intercurrent diseases.

Deutsche medizinische Wochenschrift, Berlin

August 5, XLI, No. 32, pp. 937-964

52 *Vaccine Therapy of Typhoid Still in Experimental Stage. L. v. Liebermann.
53 Percussion of Not Much Aid in Early Diagnosis of Tuberculous Apical Lesions. (Bedeutung der Perkussion für die Diagnose der Lungenspitzentuberkulose mit bes. Berücksichtigung der Bestimmung der Krönigschen Spitzenfelder.) A. Schneider.
54 Pedunculated Flaps for Plastic Operations, especially after Amputations. F. Franke.
55 *Superheated Air in Gynecology. (Zur Heissluftthcrapie.) H. Walther.
56 Transportation after Wounds of the Skull. (Schädelverletzungen aus Leichtkrankenzügen und den Transport Schädelverletzter.) H. Canon.
57 How Long Should Treatment of Crippled Soldiers Be Kept Up? (Bis wann dürfen und sollen Kriegsbeschädigte behandelt werden?) Blind.

52. **Vaccine Therapy of Typhoid.**—This communication is a report presented by the national board of health in Hungary to the minister of the interior on the question of introducing vaccine therapy into the typhoid hospitals. It says that physicians in Hungary have reported a favorable influence from vaccine therapy in about 40 or 50 per cent. of the cases in which it has been used, but the injections have to be made intravenously to be really effectual. This fact and the comparatively small number of trials of vaccine therapy on record to date render it inadvisable to sponsor this treatment as a routine measure.

55. **Superheated Air in Gynecology.**—Walther's experience has convinced him that superheated air is destined to an important position in treatment of chronic pelvic trouble. Gynecology to date has neglected to utilize properly Bier's hyperemia treatment and has lost thereby. With the exception of a few refractory cases, he obtained excellent results in chronic parametritis and perimetritis with all their consequences, in old gonorrheal affections and in dysmenorrhea from functional ovarian disturbance—and this group, he declares, is larger than generally recognized. In eight or ten cases conception seemed to have been favored by the hyperemia thus induced in the ovaries. Hot air treatment might well be given a trial, he adds, in treatment of sterility. The effect was always prompt in amenorrhea except when it was due to anomalies in development. He gives the superheated air a trial in all cases of amenorrhea with infantile uterus and has had excellent results. Chronic bladder disturbances, especially those secondary to displace-

ment of the uterus, and also irritable bladder were favorably modified, the pain always subsiding. He never ventures this treatment in acute gynecologic affections nor in the febrile subacute; tuberculous abdominal processes he also regards as contraindicating this treatment, likewise fever from any cause. He has found it useful in curing subjective disturbances after appendectomy or vague pain from old chronic peritonitis.

In some cases he found that tumors became palpable under the superheated air when before they had been masked by a general tumefaction. When, in a puzzling case, fever develops under the hot air treatment, operative measures are called for and the operation is facilitated by the greater movability of the organs. He has found electric lights the most convenient form of applying the heat, but warns that success depends on an exact diagnosis, on positive exclusion of complications, having the treatment applied by the physician himself or by a trained person under his supervision, and having the patient in the hospital, never as an out-patient. During the last few years he has been impressed with the advantages of covering the abdominal walls and thighs with a warmed moist sheet. The absorbent action of the heat seems to be increased by this while the unpleasant action of the heat on the skin is done away with. It acts like a compress. He usually starts with 60 or 70 C. and gradually increases this in the following sittings to 100 C. These temperatures were always borne well.

Deutsche Zeitschrift für Chirurgie, Leipzig

May, CXXXIII, No. 3, pp. 233-328

58 *Cryptogenous Peritonitis; Eleven Cases. H. F. Brunzel.
59 Plastic Operations on the Cheek. (Meloplastik.) E. Schepelmann.
60 *Diagnosis of Horse-Shoe Kidney. (Hufeisenniere.) G. Marzynski.
61 Gunshot Wounds in the Roentgen Picture. Hagedorn.

June, No. 4, pp. 329-424

62 *Diagnostic Significance of Displacement of the Pylorus in Different Positions. A. Wydler.
63 Substances which Stimulate Growth of Connective Tissue. (Stoffe die das Wachstum des Bindegewebes anregen.) Rost and R. Werner.
64 Isolated, Perforating Rupture of the Mesentery from Contusion. J. Dubs.
65 Embolism in Arteries of the Greater Circulation after Fracture. (Paradoxe Embolie bei Fraktur.) N. Paus.
66 Abscess in Spleen of Woman of 38. N. Paus.
67 *Partial Recovery of Vision after Removal of Hypophysis Tumor. E. Schepelmann.
68 First Treatment of Fractures of the Long Bones in War. (Zur Behandlung der Extremitätenschussbrüche im Felde.) F. Weissgerber.

58. **Cryptogenous Peritonitis.**—Brunzel gives the details of ten cases of peritonitis in which it was impossible to trace the inflammation to a local source. Six patients were children from 3 to 16 years old, the others, three men and one woman, all under 44. In seven the pneumococcus seemed to be solely responsible, staphylococci in one, and both together in another case. There was a history of gastro-intestinal disturbance in every instance, and two of the patients had been having acute tonsillitis. In one case the primary and sole focus to be discovered was in the arm and hence the peritonitis could have been only of blood-borne origin. Only two of the patients recovered, a boy of 12 and a young man. The others succumbed in spite of operative measures. In an additional group of three cases of what seemed to be appendicitis the appendix was found apparently normal. They all recovered. The grave prognosis with cryptogenous peritonitis is due to the fact that there is no primary focus to be evacuated and healed.

60. **Diagnosis of Horse-Shoe Kidney.**—Marzynski remarks that this deformity is proving to be more common than was formerly supposed. It has been found to date on an average once in 555 necropsies. He has encountered it in seven cadavers, and found that the horse-shoe kidney was always located lower down than the normal kidneys, and farther forward, and the larger parts can be felt nearer the median line. The pelvis also can be palpated on the anterior wall of the two halves of the kidney. The ureters are also abnormally short. The lower margin of the two halves of the single kidney converges downward instead of the upward and inward slope of the lower margin of the normal separate kidneys.

62. **Displacement of the Pylorus with Change of Position.**—The pylorus region is most movable in normal conditions. If it does not change its position when the patient lies and stands in turn, this is presumptive evidence of malignant disease. Roentgenoscopy should therefore be applied both reclining and standing.

67. **Hypophysis Tumors.**—In Schepelmann's case a woman of 55 had a number of teeth pulled to relieve what she supposed was toothache, but the pains persisted and grew worse, localized mainly in the left temple and jaw. Gradually other symptoms came on suggesting a hypophysis tumor and the woman became totally blind, the headache continuous and agonizing. He removed the hypophysis by Eiselsberg's modification of Schloffer's operation, through the nose, and all pain was permanently arrested. Vision returned in satisfactory measure in three months.

Medizinische Klinik, Berlin

August 1, XI, No. 31, pp. 849-876

69 *Neuroses among the Wounded. (Soll man wieder "traumatische Neurose" bei Kriegsverletzten diagnostiziern?) M. Nonne.
70 *Dropsy and Anemia on Exclusive Potato Diet. (Die Hungerkrankheit.) O. Strauss.
71 *Behavior of Regenerating Nerves. (Methode, den Erfolg einer Nervennaht frühzeitig zu beurteilen.) P. Hoffmann.
72 Hypofunctioning of the Thyroid. (Zur Klinik infantiler Hypothyreose.) L. R. v. Korczynski. Concluded in No. 32.
73 Gunshot and Shell Wounds of the Lungs and Their Complications. M. Bockhorn.
74 *Ophthalmic Hemicrania. (Anaphylaktische Erscheinungen im Symptomenbilde der Hemicranie.) F. Rohrer.
75 Orthopedic Treatment of Pain in the Feet. (Plattfuss, Metatarsalgie, Fussgeschwulst.) H. Spitzy and A. Hartwich.

69. **Traumatic Neuroses in War.**—Nonne remarks that the hysteria acquired in the trenches is often accompanied by vasomotor phenomena. Also that the syndrome compounded of symptoms of hysteria, neurasthenia and hypochondria plus vasomotor anomalies may occur without trauma, and hence it should not be labeled traumatic neurosis, as many are inclined to call it. The sudden and complete recovery in many instances under suggestion also discredits the assumption of anatomic changes in the central nervous system as the origin of the syndrome. The most frequent cause for its development is explosion of a grenade, and the emotional shock is the main factor.

70. **"Hunger Sickness."**—Strauss has encountered in Poland a large number of cases presenting symptoms suggesting advanced heart disease and ascites plus renal dropsy. The lids are puffed up as in the severest forms of kidney disease, but the urine is free from albumin or casts and the heart findings are normal. There is also a tendency to anemia, but the hemoglobin percentage is within low normal range. Complicating scorbutus and Werlhof's disease are common, as also all kinds of diseases. Those presenting the above syndrome are apathetic and succumb to it in time unless treatment is promptly applied. This consists merely of proper food. With better nourishment and improved hygienic environment the edema subsides and strength returns. In the regions where this syndrome is prevalent, the inhabitants for many months have had nothing to eat but potatoes, and often these have been frozen or rotten. Potatoes grown on damp soil are even less nutritious than otherwise. A one-sided potato diet is unable to protect against the dangers of inanition, and the experiences with this syndrome encountered so frequently now in Poland supply a living proof of the statements of the physiologists in regard to the danger of going below a certain minimum of albumin in the diet.

71. **Progress of Regeneration of Nerves.** — Hoffmann describes the exact technic for testing the effect of suturing a nerve by percussing the regenerating sensory fibers of the nerve below the suture to elicit a sensation in the region of sensory paralysis. This test has shown the promptness of the regeneration in some cases. In one instance the regen-

erated stretch was 17 cm. long and as this occurred in seventy-five days, this represents 0.225 cm. a day. The sensation is like that in a limb that has "gone to sleep." A single tap does not elicit it but the newly regenerated nerve is readily affected by summation of stimuli. Pressure with the thumb may also elicit the sensation but this is less reliable.

74. **Symptoms of Anaphylaxis in Migraine.**—Rohrer reports the case of a young physician who has kept a detailed graphic record of the attacks of ophthalmic hemicrania which he has been having since the age of 9, although the intensity has diminished during the last ten years. The features of the case exclude apparently vasomotor phenomena as the cause of the trouble, but suggest that in one hemisphere of the brain there is a localized production of reaction bodies. These combine with some toxin circulating in the blood, and anaphylaxis is thereby induced. The assumption is thus that hemicrania is the result of some toxic influence acting on some predisposition on the part of the organism, the combination inducing the phenomena of anaphylaxis. Among the arguments advanced to sustain this assumption are that so many of the symptoms of a "sick headache" are like those of anaphylactic shock, and, further, that anaphylaxis seems to be handed on to the offspring only by the mother animal. Statistics of sick headache display this same preponderance of maternal transmission. It would be interesting to learn whether injection of serum from a person during an attack of migraine would bring on an attack in those subject to it.

Münchener medizinische Wochenschrift, Munich

August 3, LXII, No. 31, pp. 1037-1072

76 *Bacteriology and Prophylaxis of Epidemic Meningitis. R. Klinger and F. Fourman.
77 *Indicanemia. G. Haas.
78 *Unfavorable Experience with "Open Puncture of the Pleura." W. Stepp.
79 *High Frequency Current May Soften Cicatricial Tissue. (Gedämpfte Hochfrequenzströme als narbenerweichendes Mittel.) F. Becker.
80 Flask for Estimating Urea and Sugar Content of Urine. (Der einfachste Apparat zur quantitativen Bestimmung des Harnzuckers und Harnstoffs.) R. Weiss.
81 Tangent Wounds of the Thorax Walls. H. Burckhardt and F. Landois.
82 Atypical Multiple Sclerosis and Syphilitic Spinal Affections in the Active Army. H. Curschmann.
83 Treatment of Gunshot and Shell Fractures of Upper Arm. C. Goebel.
84 Metal Shield for Covering Exposed Brain; Skin Sutured over Shield. (Schädelwunden.) R. Blegvad.
85 Moist Dressings. (Der feuchte Verband.) O. Langemak.
86 *Nourishing Beverage. (Nährgetrank für Schwerverwundete im Feldlazarett.) W. Peyer.
87 Pitch for Treating Infected Wounds. (Pix liquida zur Behandlung infizierter Wunden.) C. D. Kessiakoff.
88 Improvised Orthopedic Apparatus. E. v. Redwitz and Welty.
89 Woven Wicker Splints. (Flechtwerkschienen für Stutzverbände.) Kessler.
90 Directions in Regard to Potable Water on a Campaign. (Merkblatt über Wasserversorgung im Felde.) H. Serger.
91 Urochromogen Reaction not Pathognomonic in Typhoid. Mülhens.
92 Hernia in Soldiers. (Die Hernien der Linea alba im Kriege.) Rumpf.

76. **Prophylaxis of Epidemic Meningitis.**—Klinger and Fourman relate that the bacteriologic findings in epidemic meningitis and the large number of healthy carriers render strict isolation impossible for any but the sick. They think that meningococci are like pneumococci in that, while comparatively prevalent, yet they only rarely induce the special disease. They warn against arousing antagonism by overzeal, and state that the simple preventive measures they applied proved effectual, namely, improving the conditions as to hygiene, reducing the crowding of the sleeping rooms, enforcing cleanliness, ample nourishment, keeping the men in the open air, changing barracks for the different troops, but, above all, watching that none of the men get overfatigued or chilled, and thus predisposed to yield more readily to the infection.

77. **Indicanemia.**—Haas states that he has found indican constantly in the blood of healthy persons; hence its mere presence has no pathologic significance. Abnormally high indican content may warn of impending insufficiency of the kidneys. Jolles' test for quantitative determination of indican in the urine is proving equally instructive for the blood, he says, as it is far more sensitive than any other test for indican in the blood and urine.

78. **Open Puncture of the Pleura.**—Stepp relates the history of a case in which he applied Schmidt's technic (described in these columns August 21, p. 750). The results were serious; pneumothorax developed and the symptoms were alarming for a time. The patient had bilateral pleurisy with effusion and pericarditis. The serious symptoms from the pneumothorax were not relieved until most of the air was aspirated out.

79. **Electricity Softens Scar Tissue.**—Becker reports nineteen cases to illustrate the way in which cicatricial tissue softens up and stretches under the high frequency current.

86. **Nourishing Beverage.**—A drink that can be used hot or cold and contains nearly 1,500 calories to the liter, is made with 45 gm. yolk of egg (3 yolks); 50 gm. butter; 50-100 gm. dextrinized flour or zwieback; 50 gm. sugar; 400 gm. milk; 200 gm. water; 5 gm. salt; and 200 gm. port wine. The flour is mixed with cold water and boiled in the milk for five or ten minutes. The butter is added and the yolks, beaten with water. After boiling up several times the sugar is added and, when half cooled, the wine. He has the drink made by a pharmacist and the hospital patients all like it. By leaving out the butter and using the smaller quantity of flour, the liter represents 960 calories; with the butter 1,300.

Therapeutische Monatshefte, Berlin

July, XXIX, No. 7, pp. 357-420

93 *Treatment of Dyspepsia in Infants. L. Langstein.
94 *Uterine Cancer. (Therapie des Gebärmutterkrebses.) W. Weibel.
95 Foreign Secret Proprietaries and Nostrums. (Die Geheimmittel des feindlichen Auslandes.) Kantor.
96 Combined Treatment of Tetanus with Magnesium Sulphate and Various Narcotics. B. v. Issekutz.
97 Substitutes for the Ordinary Food Albumins. (Bemerkungen über Ersatzmittel der gebräuchlichen Nahrungseiweisse, insbes. über Blut.) C. von Noorden.
98 Experiences in a Hospital in the Home Zone. E. Melchior.
99 Case that Sustains the Nontoxicity of Adalin. (Beitrag zur Ungiftigkeit des Adalins.) O. Schiftan.

93. **Dyspepsia in Infants.**—This is a chapter out of Langstein's recently published work on infant feeding and infant metabolism. He says that even when the child with dyspepsia is put on breast milk, the weight continues to decline and the child to look sick during the course of two, three or four days. The weight drops off the faster, the larger the proportion of carbohydrate and whey in the food the child had been getting previously. The loss is seldom over 300 or 400 gm. If the sickness lasts over three or four days, further steps must be taken to check the fermentations, and preparations of albumin may be added to the breast milk. If the infant has been getting artificial food, nothing but water must be allowed for twelve to twenty-four hours; then food mixtures can be given, remembering that the sugar and whey are what keep up the fermentations, hence they should be kept down to the minimum. He suggests four forms of food, diluted milk with dextrin malt, rice or oatmeal, not allowing over 1 or 2 per cent. of the carbohydrate; gruel, with from 1 to 3 per cent. flour, to choke out the fermentation. This is suitable only for older infants. The third type is diluted milk enriched with albumin, with little or no carbohydrate. The fourth type includes albumin milk; buttermilk without sugar but enriched with some form of flour or with cream; half-and-half kefir, or, best of all, albumin milk. After twenty-four hours of tea diet, one of the above mixtures is given, to a total of 200 or 300 gm. in the course of the five or six feedings. In two or three days the weight begins to increase. The child should not be kept on the starvation ration longer than twelve or twenty-four hours. He describes in detail the normal course on each of the above four types of feeding.

When the dyspepsia is of infectious origin it becomes exceptionally important to restrict the diet to check fermentations, and ward off or cure vomiting or anorexia.

Vomiting is a reliable symptom of infectious dyspepsia, and it may require some sedative to reduce the hyperesthesia of the gastric mucosa that is keeping up the vomiting, which in itself testifies to the infectious nature of the trouble. The best means to combat it, he declares, is a sedative to reduce the hyperesthesia of the gastric mucosa, such as novocain, 0.001 gm. at a time, four or five times a day before feeding. Rinsing out the stomach once or twice is also useful. Anorexia is more a sign of a neuropathic constitution than of the dyspepsia. If it persists, the child should be fed forcibly. Feeding through a tube is a harmless and useful procedure which the physician has no need to dread. It can be repeated three or four times a day, giving water still more frequently. If the child refuses water, it is best instilled in the rectum. With dyspepsia ex infectione, a return to the previous diet is generally possible earlier than with the alimentary form of dyspepsia, that is, in two or three weeks.

94. **Uterine Cancer.**—Weibel reports from Wertheim's service at Vienna 120 cases of primary uterine cancer treated by radiotherapy including 36 in which both radium and the Roentgen rays were applied. In all the operable cases the cancer is removed; 120 such patients were given prophylactic exposures afterward. In the primary cases the outcome of the radiotherapy was excellent. The tumors disappeared altogether or subsided notably. Infiltrations around the uterus often proved surprisingly refractory. Weibel's concluding word is "to the same extent as radiotherapy is promising with a primary tumor, so is the outlook poor with deep-seated recurrence."

Zeitschrift für Geburtshülfe und Gynäkologie, Stuttgart

June, LXXVII, No. 2, pp. 279-536. Last indexed July 10, p. 207

100 Influence of Ovaries on Growth of Uterus in the Fetus and Child, and Importance of Age Period at Time of Castration. (Einfluss des Eierstocks auf das Wachstum des Uterus.) A. Mayer.
101 Cystic Colloid Malignant Tumor in the Ovary; Two Cases. (Struma ovarii.) G. L. Moench.
102 Primary Cancer of Vermiform Appendix. W. Lahm.
103 *Malignant Myoma of the Uterus. W. Lahm.
104 *Creatinin Test of Functioning of Diseased Kidneys in the Pregnant. (Funktionsprüfung erkrankter Nieren bei bestehender Schwangerschaft zur Entscheidung der Frage der künstlichen Unterbrechung.) M. Orlovius.
105 Studies of the Dynamics of the Pulse in the Pregnant and Parturient : Energometry. W. Bigler.
106 Case of Cervical Placenta. G. Tiegel.
107 *Retroflexion of the Uterus. E. A. van Teutem.
108 Associated Cancer in Uterus and Ovary. (Kombination der bösartigen Geschwülste des Uterus und des Eierstockes.) E. Bassani.
109 Histology of the Uterine Mucosa. S. Aschheim.

103. **Malignant Uterine Myomas.**—In the case reported by Lahm the myoma had grown not only into the ovarian vein of the broad ligament but also into the lymphatics in the uterus wall and left ovary. The anatomic structure was apparently benign except for a hint of sarcomatous growth.

104. **Tests of Functional Capacity of the Kidneys in the Pregnant and Parturient.**—Orlovius extols the harmlessness and various advantages of the creatinin test to determine the functional capacity of diseased kidneys, especially in the pregnant. The creatinin content of the urine is determined every sixth hour during one day, and the next day the woman ingests 1.5 gm. creatinin in 200 c.c. of sweetened water. The urine is then tested anew for the creatinin content at six-hour intervals. He here reports the findings in three nonpregnant controls; in ten pregnant healthy controls, and in six pregnant women with symptoms of serious kidney trouble. The data in each case are tabulated and this test elimination of creatinin is thus shown to be instructive as an index of the work the kidneys are able to do, and thus settle the question as to whether it is wise to allow the pregnancy to go on to term.

107. **Retroflexion of the Uterus.**—Van Teutem lists a number of minor points which, taken together, suggest possible retroflexion of the uterus, which, by the way, was mentioned in Hippocrates' writings. It undoubtedly has pathologic importance. In women who have borne children it usually induces pains generally in the abdomen on one or both sides, with profuse, frequent and irregular menses and leukorrhea. Less frequently it entails dysmenorrhea and leads to abortion, frequent and painful micturition and pain at defecation. Occasionally it may entail pains in one or both legs. In nulliparas the disturbance generally is in the form of pains in the abdomen on one or both sides, dysmenorrhea, profuse, frequent and irregular menses and leukorrhea. Less frequently it entails frequent and painful micturition and pains at defecation; still rarer are pains in one or both legs. Sterility is the typical symptom of congenital retroflexion. Retroflexion without symptoms occurs only exceptionally. The results of the Alexander-Adams operation and of pessary treatment are about the same in regard to symptoms; conception occurred later in 54 per cent. of the 235 women whose retroflexion was corrected by a pessary, and in 45.6 per cent. of the 217 operated on by the Alexander-Adams technic. The latter was applied principally to virgins and nulliparas. The advantages of active measures are shown anew by the fact that among 177 women whose retroflexion was not corrected, 74 per cent. still complain of their symptoms, and only 26 per cent. call themselves cured.

Zeitschrift für Kinderheilkunde, Berlin

May, XII, No. 6, pp. 369-440

110 Growth of the Prematurely Born in the First Months. (Wachstum der Frühgeburten in den ersten Lebensmonaten.) A. Reiche.
111 Congenital Syphilis in the Prematurely Born. (Lues congenita bei Frühgeburten.) A. Reiche.
112 Acidity of Infant Stomach. (Acidität des Säuglingsmagens.) R. Hess.

Zeitschrift für klinische Medizin, Berlin

LXXXI, Nos. 5-6, pp. 355-496. Last indexed June 12, p. 2028

113 Polyuria with Experimental Subacute Toxic Nephritis. (Wesen der experimentellen Ausschwemmungsnephritis—Pohl—nach Uranvergiftung.) L. Dunner.
114 *Diagnosis from the Blood Findings of Metastatic Tumors in the Bone Marrow. (Zur Diagnostik der metastatischen Knochenmarkstumoren aus dem Blutbefund.) J. von Roznowski.
115 Soldier's Heart. (Herzbefunde bei Kriegsteilnehmern.) C. Maase and H. Zondek.
116 Mechanism of Development of Paroxysmal Tachycardia. S. La Franca.
117 *Experiences with Tumor Autolysates in Treatment of Malignant Neoplasms. R. Bauer, R. Latzel and E. Wessely.
118 Vaccine Therapy of Typhoid. G. Holler.
119 Case of Adhesive Mediastinopericarditis. D. de V. Reilingh.
120 *Connection between Chronic Bronchitis, Asthma and Gout. (Lungenerkrankungen bei Gicht.) A. Mayer.

114. **Blood Findings with Metastatic Tumor in the Bone Marrow.**—Roznowski concludes, from the four cases he reports, that the appearance of myelocytes in considerable proportions in the blood in cachexia, especially in the secondary anemia of those known to have cancer, should suggest metastasis in the bone marrow. It is possible, however, for the blood picture to be approximately normal even under these conditions. As a rule there are large numbers of normoblasts, sometimes also megaloblasts, with or without leukocytosis, and these findings point to metastases even in the absence of other symptoms.

117. **Treatment of Cancer with Autolysates.**—This work issues from the second university medical clinic at Vienna, in charge of Ortner. The autolysates were made by chopping the tumor tissue, leaving it in physiologic salt solution for three days in the refrigerator, one part tumor tissue to four or five parts saline. The suspension was then pasteurized at about 56 C. and brought to a specific gravity of about 1.009. The doses injected intravenously ranged from 2 to 20 c.c. Subcutaneous doses were correspondingly larger. Every effort was made to ensure asepsis in the preparation of the autolysate so that no antiseptic need be added. It is a limpid yellow fluid with a neutral or slightly acid reaction. A few drops of a 0.5 per cent. solution of sodium hydroxid (*Sodalösung*) are then added to make it weakly alkaline, and it is heated anew for an hour to 52 C. The autolysate is then distributed in vials representing each one dose, the mouth is fused, and the vials are kept on ice.

The cancer material used was mostly from mammary cancers; in only one case of sarcoma, one of breast cancer and one of a hypernephroma, the suspension was made from the patient's own tumor.

The history of nonoperative measures in treatment of malignant disease is reviewed for comparison, especially the previous history of autolysates to date. The metabolic findings are tabulated from two of the cases here reported, the data including the period before, during and following the autolysate treatment. The blood and urine never showed any signs of hemolysis from the treatment, and the benefit derived—although necessarily modest in these advanced cases—certainly justifies further trials of autolysates according to the judgment of Bauer and his co-workers. They add that there is much to sustain the hope that passive immunization might be realized by this means. This is suggested in particular by the Abderhalden reaction becoming positive afterward. The influence of subcutaneous autolysate treatment was particularly marked in a case of lymphatic leukemia. This throws light not only on treatment but on the etiology of this disease. The cancer patients treated were in an inoperable stage or had just been operated on. Five cases are reported in detail to demonstrate the character of the improvement. No symptoms suggesting anaphylaxis developed in any instance but there was a stormy reaction in some cases. It occurred only with the first or second injection, the following ones not eliciting appreciable symptoms. In one case of mammary cancer for instance, the first injection of 2.5 c.c. was followed merely by a slight rise in temperature, but the second, with 5 c.c., caused chills, tachycardia, local and abdominal pain, and sent the temperature up to 38.3 C. The following injections showed scarcely any reaction; eight were given in all. Some of the symptoms of the reaction suggested that there might be acute hyperemia in the tissues or organ involved.

120. **Gout of the Air Passages.**—Mayer has been examining forty patients with chronic bronchial catarrh or asthma or both, but without any history of gout, seeking to discover signs of the gouty diathesis. He does not regard lumps suggesting tophi as conclusive, for many such lumps are free from urates, and he found one once which proved to be a fibroma.

Derangement of the purin metabolism he regards as the true sign of gout, and this was pronounced in four of the eight with tophi. In the other four with tophi the purin metabolism seemed to be normal. On the other hand, derangement of the purin metabolism was pronounced in five who had no signs of tophi and no "cracking" of joints. The exacerbation of the bronchitis followed influences exactly similar to those known to bring on attacks of gout in the predisposed. These exacerbations resembled the clinical picture of bronchial asthma but differed from this in that neither Charcot-Leyden crystals nor increased numbers of eosinophil leukocytes could be discovered. During the exacerbation the elimination of uric acid in the two cases tested behaved exactly the same as in true gout, the waves of elimination rising and falling as in true gout but never reaching such extremes as in the latter. There was further a history of true gout in the family in nearly every case, with numerous diabetics, and the children all showed signs of the exudative diathesis. There seems little doubt as to the close connection between this "lung gout" and the exudative diathesis. Deposits of urates have never been found in the lungs, to his knowledge, but this, he thinks, is because the lung tissue has evidently very little affinity for uric acid.

The practical conclusion is that chronic bronchial catarrh and asthma should be treated as if for genuine gout, and everything possible done to facilitate the breaking up and elimination of uric acid. Alkaline mineral waters have proved particularly useful in his experience. He adds that it is possible that radium therapy—which seems to be doing good service in true gout—might find here a new province to conquer.

Zeitschrift fur Urologie, Berlin

IX, No. 6, pp. 201-240

121 History of Development of Diagnosis from the Urine. (Zur Entwicklung der klinischen Harndiagnostik in chemischer und mikroskopischer Beziehung.) E. Ebstein. To be continued.

122 Notes of a Urologist with the Active Army. (Die deutsche Urologie im Weltkriege.) H. Lohnstein. Commenced in No. 5.

Zentralblatt für Chirurgie, Leipzig

August 7, XLII, No. 32, pp. 569-592

123 *Additional Proof of Prophylactic Efficacy of Iodin. (Erdinfektion und Antiseptik. Hauptergebnisse einer experimentellen Untersuchung.) C. Brunner.

124 Fascia Implant as Substitute for Fascia Sheath. (Ersatz intermuskulärer Fascienscheiden durch frei transplantierte Fascie.) W. Burk.

123. **Iodin Treatment of Wounds.**—Brunner has been imitating Friedrich's experimental work with contaminated wounds, that is, infecting wounds with dirt or stair sweepings. His findings confirmed the latter's assertions that the infection of the wound remains a strictly local process for six or eight hours. Not until later than this does the infection spread beyond the primary focus. During this interval it may be possible to arrest the infection before it spreads farther, and Brunner reports extensive experimental research in this line to discover the substance best adapted to kill all the germs while they are still localized in the focus. The experiments were made on guinea-pigs, 100 in all. They testified that tincture of iodin is the most effectual for warding off infection, including tetanus. Prophylactic instillation in the first aid proved effectual even when there was a delay of thirty hours before the wound was cleaned and definitely dressed. This occurred even when the wound was sutured, while many of the control animals developed fatal tetanus.

All the evidence testifies to the effectual action of tincture of iodin applied within the first five hours at least. When the wound is mechanically cleaned and rinsed out with hydrogen peroxid and treated with tincture of iodin, then Friedrich's interval can be long surpassed with safety. It is evident that the iodin elicits a defensive reaction in addition to its antimycotic power. In Lebsche's latest (unpublished) research a deep wound in muscle tissue was infected with dirt containing anthrax germs. It was then treated with tincture of iodin or iodin-alcohol (1 per cent. iodin; 70 per cent. alcohol) and two thirds of the guinea-pigs were saved by it from otherwise certain death. In the other third the general infection was retarded for a day. Most of Brunner's experiments were made with instillation of merely 15 or 20 drops of the iodin-alcohol.

Zentralblatt für Gynäkologie, Leipzig

August 7, XXXIX, No. 32, pp. 557-570

125 *Acute Puerperal Total Inversion. T. Jaschke.

125. **Acute Puerperal Inversion.**—Jaschke remarks that in most of the 600 puerperal cases of acute inversion of the uterus on record, unusual relaxation of the uterus and traction on the still adherent placenta were evidently responsible for the mishap. In the case reported he painted the vulva with tincture of iodin and then pushed the fundus of the uterus upward with his fingers forming a cone, not releasing the pressure until the uterus had been reduced to place and been tamponed around the hand. Before this, the fundus sagged anew at each attempt to withdraw the fingers. While the fundus was thus supported by the fingers, the uterus was massaged from without and a slight contraction was evident. A little ergot preparation was given at the same time. The tamponing of the uterus was aided by the hand still in its cavity, and when the uterus and vagina had thus been packed, counterpressure was applied from without by a roller pressure bandage. No saline or other stimulants were given, aside from 2 c.c. camphor at the beginning of the intervention to keep the heart action good. There were no symptoms of shock, and the bleeding from the uterus had stopped almost entirely as it became inverted.

Zentralblatt für innere Medizin, Leipzig

August 7, XXXVI, No. 32, pp. 501-516

126 *Water Accumulating in Mouth from Antiperistalsis. (Wasser im Munde, Wasserspeien, Wasserkolk.) F. Schilling.

126. **Accumulation of Water in the Mouth.**—Schilling reports six cases in which the patients complained of water coming up into the mouth, at times, after a brief period of discomfort in the stomach or abdomen. Occasionally there may be nausea, but usually this tasteless fluid accumulates in the mouth without other symptoms. He ascribes it to irritation from drugs or to chronic inflammation of the throat, esophagus or stomach. One of his patients had had nervous dyspepsia with this up-coming of water two or three times a day. She had been toothless for several years, and he has noticed that loss of the molars frequently entails in the course of time this up-coming of water. Defective teeth entail disturbances in throat, esophagus and stomach. Esophagitis was evident in one case; the water came up in this case evenings and nights. One man with chronic achylia experiences pain over the stomach and bowel as his mouth fills with the water, and he feels nauseated. No relics of food were found in the fluid in this case, but he always feels nauseated at the same time. The phenomenon is distinct from what is generally known as regurgitation. Another patient, at the menopause, has chronic gastritis, and often has to clear her throat and spit out a mouthful of fluid three or four times in succession. The same follows sometimes the swallowing of food. In still another case a man with gastric hypersecretion and hyperacidity one time had a fluid gush from his mouth, which seemed to be nothing but duodenal juice. The hyperacid gastric secretion had evidently irritated the duodenum and caused the gush which passed on through the stomach up into the mouth. In all the other cases the water was practically tasteless, the specific gravity from 1,006 to 1,014, the reaction alkaline.

Policlinico, Rome

August 8, XXII, No. 32, pp. 1057-1088

127 Preparation of Anticholera Vaccine. D. Ottolenghi.
128 *Obesity and Life Insurance. J. Romanelli.
129 Malta Fever in Southern Italy; Two Cases. L. Tonnini.

August, Medical Section, No. 8, pp. 341-388

130 *Vaccine Therapy of Typhoid Fever. F. Boselli.
131 *Ferments in the Blood and Urine in Nephritis. (Sui fermenti presenti nelle orine in vari stati patologici.) A. Lorenzini.
132 *Differentiation between Exudates and Transudates. B. Maiolo. Commenced in No. 7.

128. **Obesity and Life Insurance.**—Romanelli relates that one Italian life insurance company during 1913 and 1914 rejected 308 applicants on account of obesity; 36 per cent. were rejected on account of the obesity alone, over 21 per cent. for glucosuria, 10 per cent. for nephritis; 7.18 per cent. for albuminuria; 5.84 per cent. for heart disease, and 5.19 per cent. for arteriosclerosis. As long ago as the seventeenth century, Bacone commented on the early mortality when obesity develops in the young. Romanelli remarks that women are more predisposed to obesity than men on account of their more sedentary life and also from reasons connected with the organs of reproduction. Certain modes of life and lack of exercise contribute to the development of obesity and this in turn brings a distaste for exercise, so that a vicious circle is soon set up, bringing in its train disturbed metabolism, but above all arteriosclerosis, particularly of the heart and kidneys, while the abdominal fat interferes with the movements of the diaphragm—all rendering the obese poor risks.

130. **Vaccine Therapy of Typhoid.**—Boselli gives the details of treatment in seventeen cases with vaccines of various origins. None of the patients showed benefit from this treatment. The mortality was 20 per cent. and 15 per cent. of the patients had relapses.

131. **Ferments in the Blood and Urine in Nephritis.**—Lorenzini's long study of this subject takes up each of the ferments in turn, discussing their proportions in the blood and urine in the healthy and in patients with nephritis. One practical conclusion is that pathologic albuminuria is associated with marked reduction of the lipase in the urine, while the proportion in the blood serum is abnormally high. Generally speaking, all the ferments normally present in the urine appear in reduced amounts in nephritis and especially in severe chronic nephritis. At the same time larger proportions are found in the blood serum, indicating that the ferments in the urine are derived in part at least from the blood.

132. **Differentiation of Exudates and Transudates.**—Maiolo has been applying on an extensive scale the tests for this purpose devised by Montz, Rivalta, Barberio and Gangi. He found the Rivalta and Barberio tests delicate and reliable, while they are extremely simple. Pronounced negative findings with either demonstrate the fluid to be a transudate, while marked positive findings speak unmistakably in favor of an exudate. The fluid secreted by a cancer responds as an exudate. The cerebrospinal fluid gives a constantly negative response to both tests. (Rivalta's acetic-acid technic was described in THE JOURNAL, July 9, 1910, p. 178. A drop of the fluid to be examined is dropped into a glass containing 100 c.c. of water with which 2 drops of acetic acid have been mixed. The drop of organic fluid leaves a little trail like smoke as it sinks down through the water in case of positive findings. Rivalta declares that if the serum gives a positive reaction with much diluted acetic acid, this is an index of the ability of the organism to produce globulins. In health the index is about 1:250. In pneumonia it ranges from 1:400 to 1:2,500. This seroreaction may thus aid in estimation of the probable outcome.)

Russkiy Vrach, Petrograd

XIV, No. 14, pp. 313-336

133 Phobias and Their Treatment. V. M. Bechterew.
134 Pathology and Therapeutics in the Medical Course. A. I. Kakovsky.
135 *The Chemistry of the Stomach: Hyperacidity. S. G. Mintz.
136 Localization of Projectiles in the Tissues with the Apparatus of Lanzevich. N. V. Bruhl.

No. 15, pp. 337-360

137 Wounds of the Lungs. N. A. Bogoraz.
138 *Abolition of Drunkenness among the Russians; the Moral and Physical Uplift. V. M. Bechterew.
139 *Prohibition and Delirium Tremens in Petrograd. S. A. Novoselsky.
140 *Wright's Vaccines. A. N. Antonovsky. Commenced in No. 14.
141 *Radium Treatment of Cancer of the Uterus. T. A. Dobbert.
142 The Plague in Chakhirlakh (Southern Province). M. S. Milman.

No. 16, pp. 361-384

143 Relations between the Visceral Organs. B. P. Balkin.
144 *Wounds of the Abdomen during the Present War. E. P. Franzke and V. A. Gusinin.
145 Recovery in Five out of Six Cases of Tetanus under Magnesium Sulphate. S. T. Derujinsky.
146 *Etiology of Phlegmonous Gastritis. A. L. Vasilevsky.

135 **Research on Gastric Hyperacidity.**—THE JOURNAL described Feb. 10, 1912, p. 447, Mintz' beef extract test breakfast which he regards as a great improvement over the ordinary test breakfasts in current use. This bouillon is homogeneous, stimulates the glands of the stomach to their maximal functioning, independently of psychic factors, while it permits exact estimation of the absolute and relative acidity and of the quantities of gastric juice secreted. With this test bouillon he was able to demonstrate that the stomach possesses a remarkable faculty of keeping the absolute acidity at the same level. He calls this the *Nivellir* or "leveling" property of the stomach. His research has apparently demonstrated that the absolute acidity of the gastric juice, which normally ranges from 5.18 to 4.56 per thousand, abruptly declines when the amount of gastric juice begins to increase above 50 per cent. of the entire volume of the gastric contents. The absolute acidity drops to 3.7 per thousand and below; at the same time the relative acidity of the stomach contents tends to retain its status quo. If such a decline of the acidity did not result, it is clear that with the reduction of the amount of the bouillon which is all the time flowing out into the duodenum, the acidity of the stomach content would have to progressively increase and finally reach abnormally high amounts because the gastric juice, on one hand, is constantly passing out with the bouillon into the intestines, and, on the other hand, more is continuously pouring out of the glands. Even when the food remains in the stomach, the so-called secretion from secretagogues in the food occurs.

With derangement of this mechanism for self-regulation of the acidity of the stomach content, the curve of the

acidity of the stomach content may rise, and may reach a very high figure. In his first article he cited two cases of this secretory anomaly. Since then he has encountered a number of such cases. He regards them as of great clinical interest because this irregularity in secretion was found constantly in his cases of duodenal ulcer. His conclusions from his total series of cases are (1) that the test bouillon shows that the excessive hyperacidity of the stomach contents depends exclusively on the so-called leveling property of the stomach. (2) Because of this self-adjusting mechanism, this digestive hypersecretion does not usually show the increased acidity of the stomach contents; (3) with the Boas-Ewald test breakfast, the increased acidity may be due to derangement of the leveling faculty as well as to increase in the gastric secretion or exaggeration of the motor functioning of the stomach, or both. In regard to the last two factors, the acidity is due not so much to the chemistry of the stomach, as to the peculiarities of the test breakfast of Boas-Ewald, especially the fact that it has such an insignificant stimulating action on the secretion of gastric juice.

(4) Knowledge of the leveling property of the stomach easily explains numerous clinical facts which contradict the prevailing theories as to the hyperacidity of the gastric juice, and that its composition is unchangeable. The leveling faculty of the stomach may thus explain the comparatively low acidity of the pure stomach juice taken from patients with constant hypersecretion.

138. **Prohibition in Russia.**—Bechterew points out the economical, moral and physical advantages which the prohibition of the sales of any kind of alcoholic beverages is liable to bring. During the first eight months of the prohibition in force the number of arrests and convictions considerably decreased, while during the seven months previous to the enactment of the law putting an end to the sale of vodka, the number of jail inmates had increased to 12,000. In Moscow the number of petty thefts and robberies was reduced to 40 per cent., and of other crimes by 64 to 74 per cent. In Petrograd and other cities prostitution is also considerably on the decrease. The favorable influence of the prohibition on future generations it is impossible to estimate at present.

139. **Prohibition and Delirium Tremens in Petrograd.**—Novoselsky has been studying the statistics in reference to the recent deaths from alcoholism. Soon after the prohibition of the sale of liquor was enforced, the number of deaths in Petrograd became during the first four months considerably smaller, decreasing by 50 per cent. and for some months even lower. During the last three months, however, it has risen again to the former standard, or even higher, which fact he ascribes to the drinking of denatured alcohol, furniture polish and other substitutes for vodka. Therefore, he says, the effects of prohibition are not decisive, and the assumption is premature that with prohibition in force the undesirable complications of alcohol, such as delirium tremens, etc., must necessarily spontaneously disappear.

140. **Wright's Vaccines.**—Antonovsky has been successfully using Wright's vaccine in the treatment of streptococcus and staphylococcus infection, such as otitis media, empyema, puerperal fever, etc. The dose was less than the 0.5 c.c. recommended by Wright because of the weakened general condition of the patients. Antonovsky used only a diluted (1:10) vaccine, of which he injected 0.25 to 4 c.c. The intervals between injections should not exceed eight or nine days, and must not be less than two days. He recommends these injections for prophylactic purposes before an operation is undertaken or during the transportation of the wounded.

141. **Radium Treatment of Cancer of the Uterus.**—Dobbert treated with radium all kinds of carcinomatous lesions of the pelvic organs, operable and inoperable, and comes to the conclusion that good results can be obtained "with proper technic and patience" in those cases in which the cancer is accessible to the direct action of radium. In such cases the ulcerated area can be brought to a complete cure. Therefore, only operable cases can give good results. Eight recovered of the twelve patients in this group. The deeper the lesion the less hopeful is the outlook. Two operable cases became inoperable during the radium treatment. Dobbert prefers to operate if there are no complications or contraindications, though he thinks that a previous radium treatment is liable to increase the chances for ultimate recovery. In eleven inoperable cases of carcinoma of the pelvic organs the radium treatment arrested in seven the further progress of the disease, but for a short time only. He does not use more than 50 mg. every five or six days, for twenty-four hours. After the third or fourth application a white coating is observed, and then the treatment is interrupted until the coating clears away, which may take several weeks or months. The radium is placed in the previously dilated uterine cervix; the dilatation helps the draining of the uterus and discharge of pus. There was no rise in temperature even under the twenty-four hours application of radium.

144. **Abdominal Wounds in War.**—Of 5,200 wounded that came under Franzke's care in one of Warsaw's Red Cross hospitals, only 1 per cent. were wounded in the abdomen, either by rifle (38 cases) or by shrapnel (21 cases). The shrapnel wounds proved to be much more dangerous; 44 per cent. died, all except one from peritonitis. The intestinal wounds proved to be the most dangerous (65 per cent. mortality), bladder wounds occupying the second place. Conservative treatment, especially with superheated air to the abdomen when peritonitis developed, gave a considerably smaller mortality than operative measures. Operation is to be recommended during the first few hours following the wound; the mortality then was but 16 per cent.; twelve hours later the mortality was 60 per cent., and after twenty-four hours, 70 per cent. Such early operations are impossible during the war, as the patients arrive from the battlefield too late. Therefore, he recommends to abstain from transportation of such seriously wounded patients to city hospitals, and advises to carry them to the nearest house or any habitable point and have the operation done immediately. Gusinin advocates the conservative method of treatment of abdominal wounds. Only recent cases were operated on, with very sad results. The cause of the serious peritoneal complications was the simultaneous lesions of several abdominal organs, mostly the intestines. He advocates draining in infected abdominal wounds.

146. **Phlegmonous Gastritis.**—This, according to Vasilevsky, is a secondary complication during some general infection, such as erysipelas or typhoid. In his case the erysipelas spread to the mucosa of the mouth, pharynx, esophagus and stomach. Necropsy showed lesions resembling those of typhoid in the intestines, and pus all over the mucosa with infiltration of the submucosa. The stomach contents contained much pus. Bacteriologic examination showed streptococci.

Hospitalstidende, Copenhagen

August 11, LVIII, No. 32, pp. 793-816

147 Ether during Natural Delivery. (Om Anvendelsen af Aether som Anæstheticum ved den naturlige Fødsel.) H. L. Christensen.

Hygiea, Stockholm

LXXVII, No. 14, pp. 769-832

148 Retroperitoneal Sarcoma; Two Cases. G. Petren.
149 Retroperitoneal Perforation of Duodenal Ulcer: Recovery. G. Petren.
150 Pitchfork Injury of Bladder and Intestine; Recovery. G. Petren.

Ugeskrift for Læger, Copenhagen

August 12, LXXVII, No. 32, pp. 1307-1336

151 *Folding Obstetric Table; Portable Part Screwed to Stout Table. (Et nyt Fødselsleje.) H. Tvedegaard.
152 *Historical Sketch of Obstetric Tables. (Lidt om vort transportable Fødselslejes tidligere Historie.) E. Ingerslev.

151-152. **Obstetric Table.**—Tvedegaard gives an illustrated description of an adjustable seat, back and leg rest contrivance which can be screwed firm on any large table, while it folds up into small compass to be carried about. Ingerslev gives a historical sketch of such aids in confinement. Tvedegaard's table leaves ample space for the obstetrician while it does away with the necessity for assistants.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 13 CHICAGO, ILLINOIS SEPTEMBER 25, 1915

GASTRIC ULCER *

WILLIAM J. MAYO, M.D.

ROCHESTER, MINN.

Ulcer of the stomach is a more serious condition than ulcer of the duodenum but fortunately is less frequent, our statistics showing twenty-seven of the stomach to seventy-three of the duodenum. Gastric ulcer is the more serious because of the resulting deformities which permanently cripple the stomach and, when extensive, interfere with gastric digestion and motility. The mechanical condition can be relieved by operation, but the physiologic function of the stomach is often more or less permanently impaired. In ulcer of the duodenum, the gastric motor and secretory functions are not disturbed, and in the presence of gastro-enterostomy, are continued in an efficient manner.

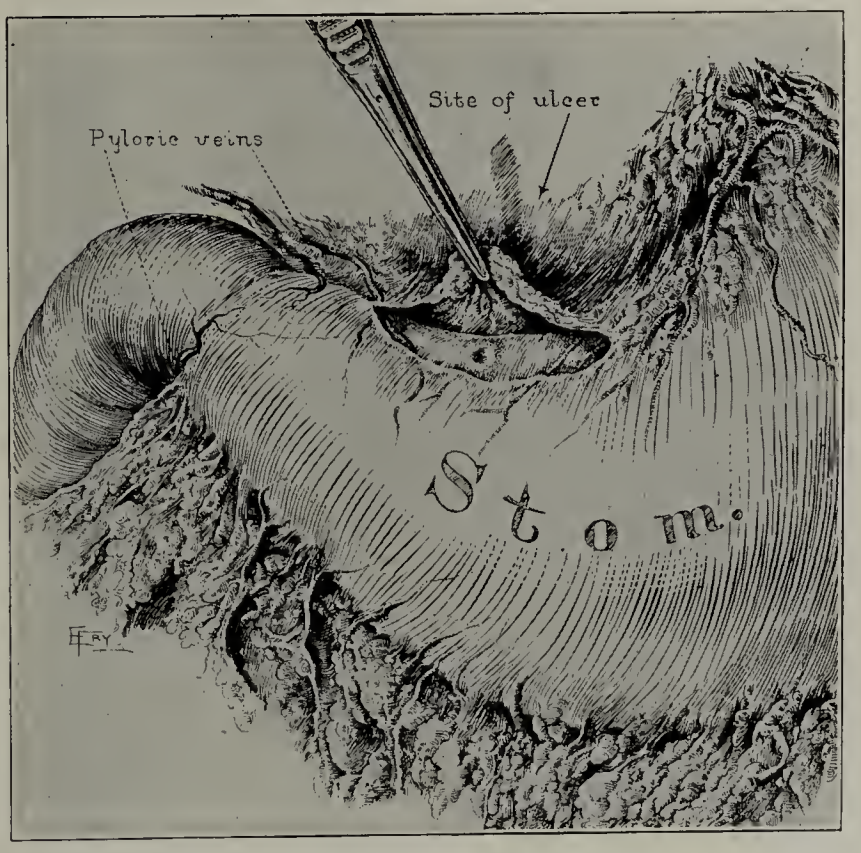


Fig. 1.—Musculoperitoneal flap with gastrohepatic omentum and adhesions raised, exposing the ulcer. Note pyloric veins.

Acute perforation in ulcer of the stomach is less common than in ulcer of the duodenum, but in the former there is less probability of the ulcer being protected by adhesions. The gastric capacity is large so that considerable contents may escape. Since the contents are relatively much less sterile than in the duodenum, there is a greater chance of perforation producing general septic peritonitis. When operations are performed for acute perforation of gastric ulcer, the opening will often be found in the center of a large calloused area, making closure difficult.

Hemorrhage occurs in both gastric and duodenal ulcers with about the same degree of frequency and danger, but in the stomach it may be gastrotoxic in origin. So true is this that the large majority of severe hemorrhages from the stomach which are not preceded or followed by the ordinary signs and symptoms of ulcer are not due to ulcer but to gastrotoxic conditions the result of some type of gastro-intestinal or hepatic poisoning.

There is, in gastric ulcer, the ever present danger of cancer developing on the ulcer, a danger to which duodenal ulcer does not appear to be liable. Finally, the operative procedures which must be carried out for the relief of gastric ulcer are more serious than in duodenal ulcer; there is, moreover, a somewhat larger mortality and a somewhat smaller degree of certainty of cure. The history and clinical symptoms of a typical duodenal ulcer are so distinctive that, as Moynihan[1] has pointed out, the diagnosis might be made by correspondence; but many duodenal ulcers are not typical in their symptomatology and this is even more true of gastric ulcers. Therefore, in a very considerable percentage of cases, an exact differential diagnosis between duodenal and gastric ulcer could not be established until the advent of fluoroscopy.

In duodenal ulcer, hyperperistalsis of the stomach and deformities of the cap and, if obstruction exists, bismuth retention, give a typical appearance, and are almost as typical as the roentgenographic appearance of the niche in gastric ulcer and the appearance of hour-glass and other deformities.

Usually, the pain in duodenal ulcer comes later and radiates from the epigastric midline to the right; in gastric ulcer it may radiate to the left. When posterior adhesions of gastric ulcer exist, especially when the crater involves the pancreas, pain in the back is a frequent symptom.

Gastric ulcer is more frequent in men than in women, 71 males to 29 females, and is single in the large majority of the cases. The proportion in duodenal ulcers is 83 males to 17 females.

The occurrence of carcinomatous change in gastric ulcer has been a mooted question from those who

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Moynihan, Sir Berkeley: The Gifts of Surgery to Medicine, Address, Brit. Med. Jour., 1913, ii, 169.

believe with Aschoff[2] that it is a comparatively rare phenomenon, to those like Moynihan,[1] Wilson,[3] MacCarty[4] and others, who believe that it is a very frequent condition. The opinion of the postmortem pathologist who studies only the end results has no such value as the opinion of the clinical pathologist who has an opportunity to make the examination during

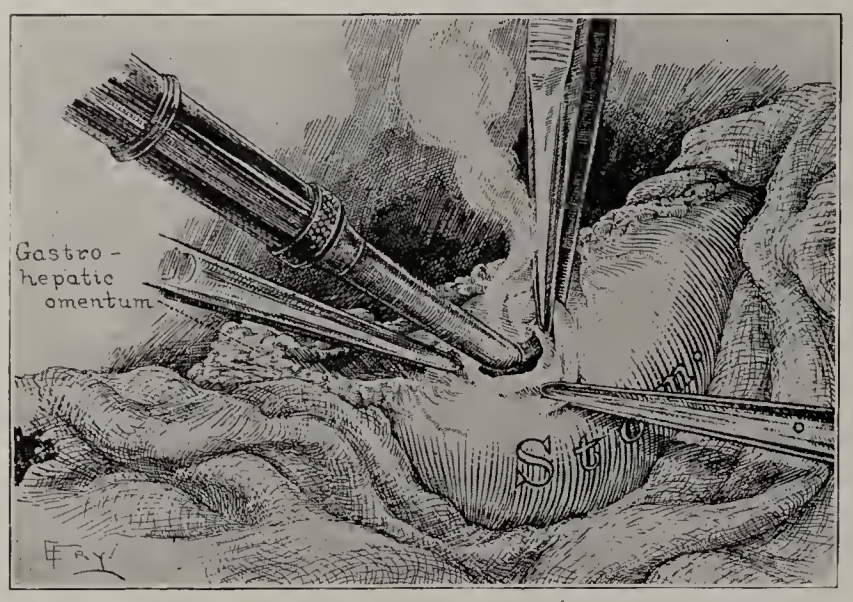


Fig. 2.—Excision of the ulcer by means of the Paquelin cautery.

the life of the patient, an opportunity which the operative removal of gastric ulcer and carcinoma has made possible. Fütterer[5] pointed out the relation of fish-hook ulcer to gastric carcinoma and presented proof that malignant change actually took place. Wilson[3] and MacCarty[4] from the study of a large number of specimens showed that it was not the base but the overhanging margin of the ulcer which became carcinomatous. A review by Wilson[6] of the later histories of 19 cases in which a gastric ulcer had been excised and diagnosed as probable early malignancy, in 1909, has been of very great value in clearing up the question, as four of these patients have since died of gastric carcinoma. Accepting as correct Aschoff's[3] criteria that if the base of the ulcer is carcinomatous the ulcer has been carcinoma from the beginning, Wilson was able to show in the excised specimens that the carcinoma had developed on the margin of the ulcer, as the base was of cicatricial tissue and free from cancer.

A study of the cases reported by von Eiselsberg[7] is interesting. He shows from the ultimate history of patients operated on in his clinic for gastric ulcer that 10 per cent. have since died of cancer of the stomach. The differentiation between ulcer of the stomach and duodenum was not so well established at the time these operations were made as now and the series showed few duodenal ulcers. It may be surmised that a percentage of the ulcers near the pylorus were duodenal, not gastric, and yet had been classified with the gastric. Since a duodenal ulcer rarely undergoes malignant change, this would increase the relative percentage of secondary gastric malignancy by whatever that error may have been. Analyzing von Eiselsberg's[7] statistics still further, it is found that thirteen patients died with carcinoma following operation for ulcer. The total number of deaths was forty-one. In other words 32 per cent. of all the deaths following operation for gastric ulcer were from gastric cancer. Recent data from the clinics of Payr-Perthes, Küttner and others show the same results.

Wilson[3] has contributed materially to the theory that detached fragments of functionating gastric epithelium buried in the ulcer by scar tissue may be the starting point of carcinomatous change. While it is not justifiable to say that all carcinomas of the stomach have their origin in ulcer, there is sufficient evidence to show that a preceding lesion in the gastric mucosa is practically always present before carcinoma develops. The prevailing skepticism on this point is not justified by the facts and tends to prolong medical treatment

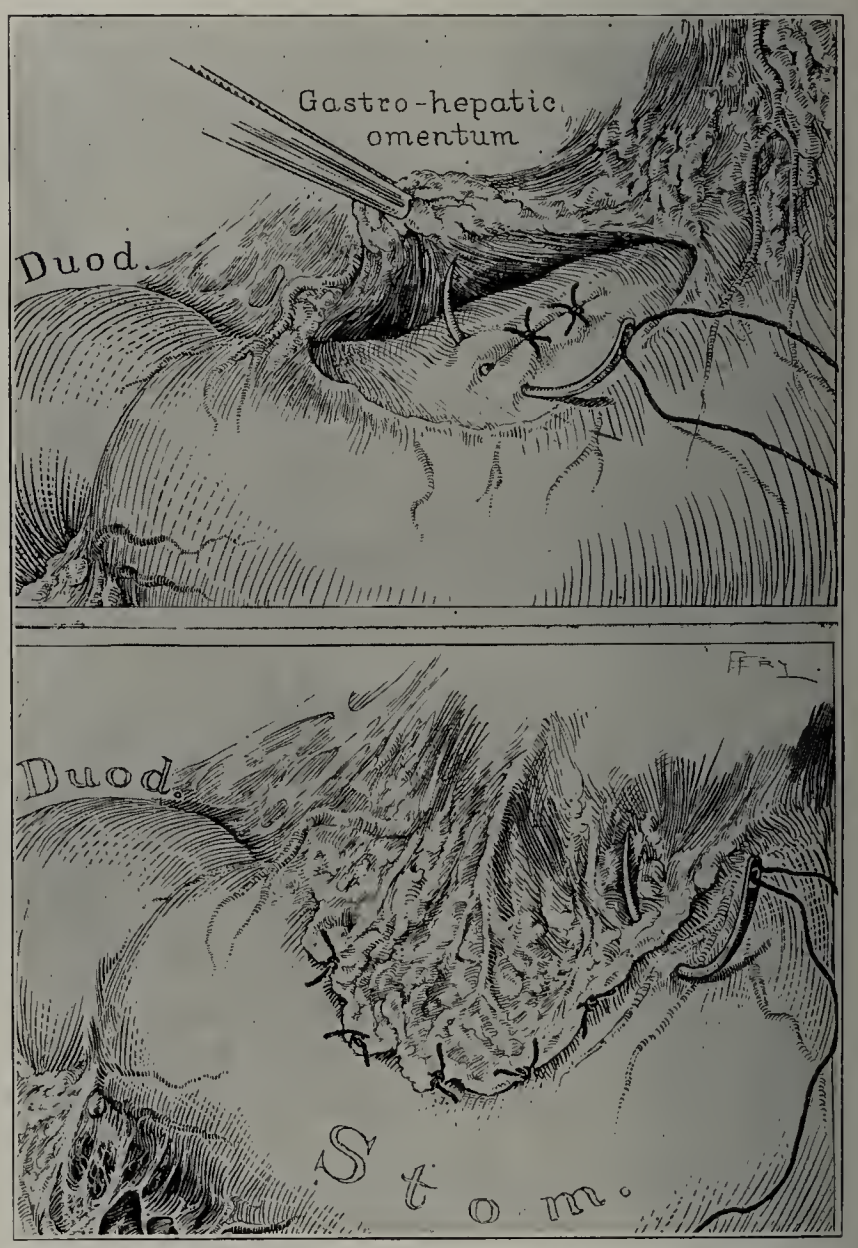


Fig. 3.—Upper figure shows closure of the gastric opening with chromic catgut and interrupted silk sutures. The lower figure shows the flap reapplied.

of chronic cases which would be more promptly treated by the surgeon were the carcinoma liability in addition to the ulcer risk and disability better understood.

Opinions as to the medical cure of ulcers are based on the frequent cessation of symptoms which, for that matter, occurs with or without treatment. When supposedly cured cases are operated on during the quies-

2. Aschoff, L.: Ueber die mechanischen Momente in der Pathogenese des runden Magengeschürs und über seine Beziehungen zum Krebs, Deutsch. med. Wchnschr., 1912, xxxviii, 494.

3. Wilson, L. B.: Studies in the Pathology of Early Gastric Carcinoma, Colorado Med., 1914, xi, 366.

4. MacCarty, W. C.: Precancerous Conditions, Jour. Iowa State Med. Soc., 1914, iv, 1. Wilson, L. B., and MacCarty, W. C.: Pathologic Relationships of Gastric Ulcer and Gastric Carcinoma, Am. Jour. Med. Sc., 1909, cxxxviii, 846.

5. Fütterer, G.: Treatment of Chronic Round Ulcer of the Stomach, THE JOURNAL A. M. A., Jan. 11, 1902, p. 76.

6. Wilson, L. B., and McDowell, I. E.: A Further Report of the Pathologic Evidence of the Relationship of Gastric Ulcer and Gastric Carcinoma, Am. Jour. Med. Sc., 1914, cxlviii, 796.

7. Von Eiselsberg, F. A.: The Selection of the Method of Operation in the Treatment of Gastric and Duodenal Ulcer, Lancet, London, 1914, ii, 296.

cent interval, the ulcer is not found to be cicatrized, but unhealed. The roentgenogram shows the same condition. While no one would contend that every gastric ulcer should be surgically treated, we at least should agree that if permanent cure does not take place within a reasonable period, other things being equal, the patient should have surgical treatment.

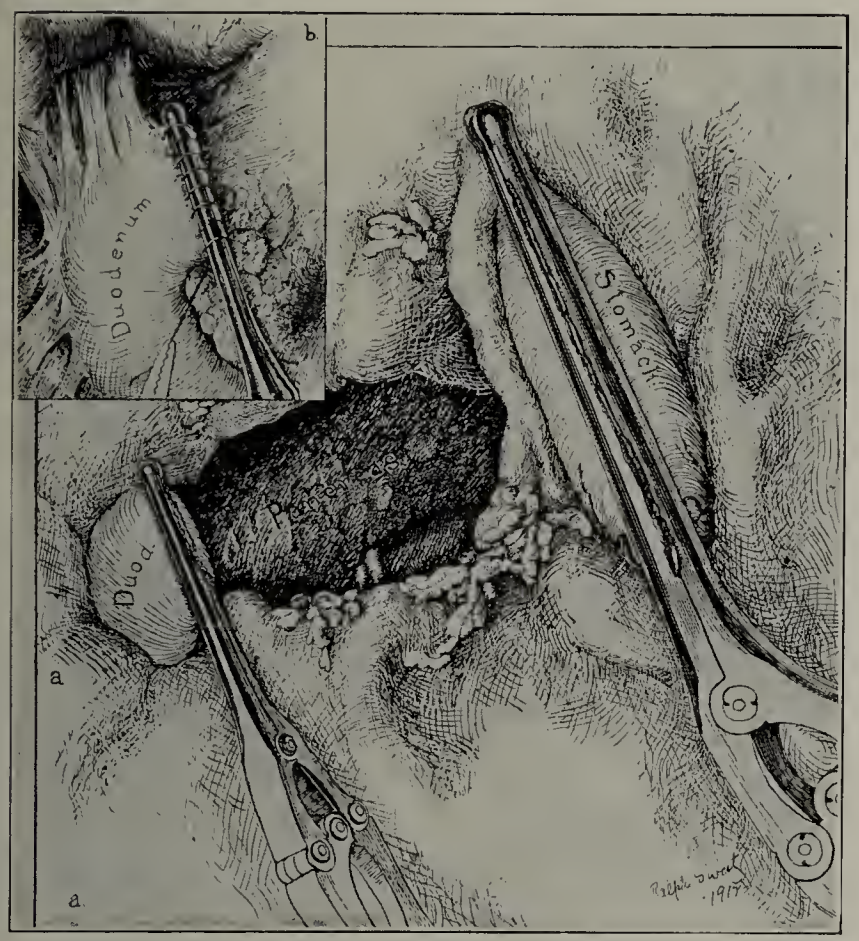


Fig. 4.—Pyloric half of stomach removed; (*a*), ends in crushing clamps; (*b*), sutures placed for closing ends of duodenum.

Thirty per cent. of all cancers in civilized man are in the stomach. The relative infrequency of the disease in primitive man and the lower animals suggests that there is some cause for this preponderance; that is, since the food of man and the lower animals is of the same character there must be something in its preparation or method of taking which predisposes civilized man to gastric cancer. There are many well-known illustrations of the fact that chronic irritation from heat disturbs the epithelium, thus making malignant disease possible. It has been shown that when a considerable quantity of fluid is taken into the stomach it passes by the canalis gastricus[8] along the lesser curvature and directly to the duodenum without mixing with the food mass in the fundus. This is exactly the situation of 85 per cent. or more of all ulcers and cancers of the stomach and ulcers of the duodenum. Food is cooled during mastication but liquids are often swallowed hotter than can be borne comfortably in the mouth. One cannot help thinking that hot drinks may be one of the most important irritative causes of chronic ulcer and precancerous lesions. Extreme cold may have the same effect. Primitive men and animals do not take their drinks hot and seldom have gastric cancer.

PYLORIC ULCER

The location, size and relations of gastric ulcer are extremely important from a surgical standpoint. The conditions created vary from the simple problems presented by a pyloric ulcer with obstruction, to those more complex problems represented by hour-glass contractures and extensive posterior ulcerations involving the pancreas. Ulcer of the pyloric end of the stomach and antrum should not be mistaken for duodenal ulcer. When ulcer occurs in the terminal one and one-half inches it is prone to develop a tumor, which, with the edema and obstruction, may and probably will be mistaken for carcinoma. When operating during an exacerbation an unusual amount of hypertrophy and edema in the immediate vicinity of such an ulcer will be found. The mass can often be felt through the abdominal wall on palpation. Cases are frequently reported in literature in which the two-stage operation for cancer of the stomach was planned and after a preliminary gastro-enterostomy the tumor completely disappeared. It is reported that one of Billroth's early patients on whom gastro-enterostomy was done for supposed carcinoma of the stomach, lived twenty years following operation. In our earlier experience several patients in whom a gastro-enterostomy was done for what appeared to be a fixed, inoperable malignant growth of the pyloric end of the stomach, clinically not distinguishable from cancer, lived five years or more following simple gastro-enterostomy. With increasing experience one finds that there are differentiating signs between pyloric cancer and ulcer when the tumefaction is exposed. A greater amount of edema, more extensive adhesions and more fixation occur in ulcer than usually occur in cancer of the same size. Ulcer does not present those little separated carcinomatous foci in the vicinity of the growth from dissemination just underneath the peritoneum. The glands are usually enlarged in both ulcer and cancer, and the removal of such glands which do not show cancer is unfortunately not conclusive, because glands enlarged from sepsis often exist in connection with cancer but in which

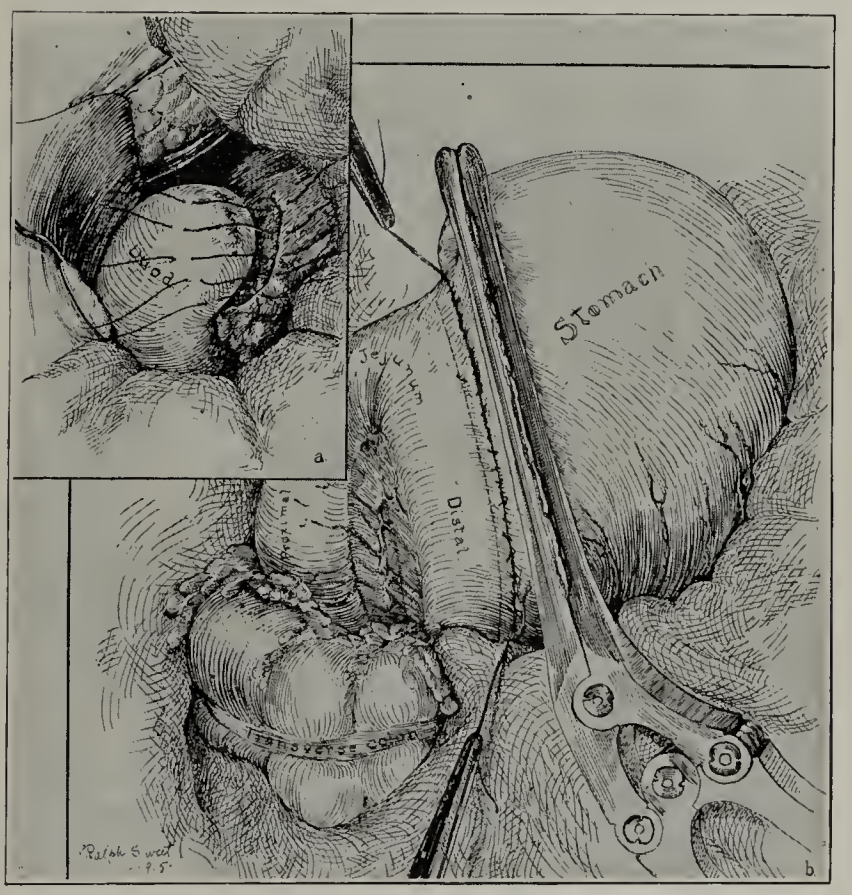


Fig. 5. — (*a*) Sutures in position for final closure of duodenum; *b*, jejunum, close to its origin, brought through an opening made in transverse mesocolon and sutured with interrupted silk sutures to posterior wall of stomach. Dotted line along jejunum shows proposed incision for gastro-intestinal anastomosis. Crushing clamp to be removed to open up gastric cavity for the anastomosis.

8. Jefferson, G.: The Human Stomach and the Canalis Gastricus (Lewis), Jour. Anat. and Physiol., 1914-1915, xlix, 165.

the glands themselves have no malignant cells. MacCarty and Blackford[9] have called attention to the fact that the size of a regional lymphatic gland is no criterion of the presence or absence of gastric cancer.

In the differentiation between pyloric ulcer and ulcer of the duodenum, the pyloric veins are an important diagnostic aid (Fig. 1). Above and below the pylorus

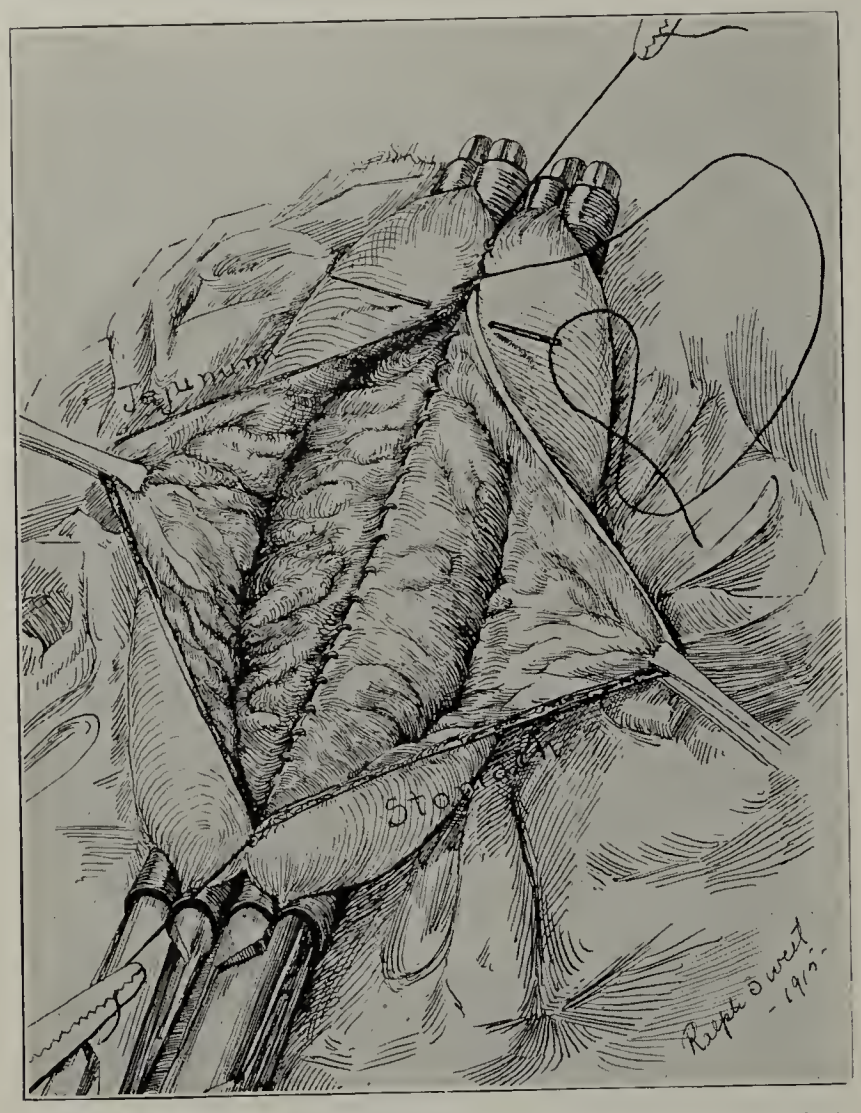


Fig. 6.—Entire end of stomach anastomosed to jejunum posteriorly with interrupted silk and a through-and-through continuous catgut suture which is being continued on to anterior surface.

short, stumpy veins come up on each side and give off one or more veins, sometimes anastomosing across the anterior surface, sometimes ending in a little spray of vessels. Once having observed the peculiarity of these pyloric vessels, which are quite different from those in any other situation on the stomach, differentiation is easy.

The Rodman[10] operation of pylorectomy and partial gastrectomy for this particular group of ulcers is remarkably well adapted to give relief; it removes the cancer liability and also a considerable portion of the acid-forming part of the stomach and this removal is of importance in reducing the possibility of the production of that rare but serious after-result of gastro-enterostomy, the jejunal ulcer. It should be remembered, however, that the mortality of the Rodman operation is somewhat greater than simple gastro-enterostomy, and that simple gastro-enterostomy will usually cure the patient. The Rodman operation, therefore, should be reserved, first, for those patients in whom the physical conditions are such that the operation can be performed with a minimum risk, and, second, for those patients in whom the possibility of cancer amounts to a probability, so that the increased risk of the operation will be more than counterbalanced by the benefits to be derived from it.

9. MacCarty, W. C., and Blackford, J. M.: Involvement of Regional Lymphatic Glands in Carcinoma of the Stomach, Ann. Surg., 1912, lv, 811.

10. Rodman, W. L.: Excision of the Ulcer-Bearing Area in Gastric Ulcer, THE JOURNAL A. M. A., Sept. 17, 1904, p. 801.

ULCER OF THE LESSER CURVATURE AND ANTRUM

The work of Forssell[11] in showing the gastric tendon of the lesser curvature of the stomach is very important in relation to ulcer of the lesser curvature, and explains why the simple excision of an ulcer without gastro-enterostomy may fail to effect a cure even though the pylorus be not obstructed. It would appear that the portion of the greater curvature of the stomach which corresponded in its musculature to the lesser curvature at the seat of the ulcer is often permanently crippled by the ulcer, and that this condition was not overcome by the excision of the ulcer. A considerable percentage of our cases of ulcer of the lesser curvature in which excision had been done later required gastro-enterostomy and this operation is now performed at the time the excision is made. Two deaths have occurred after excision of a simple ulcer of the stomach, from continuous hemorrhage coming on in the second week. The first week following the excision the patients did well; in the second week hemorrhage into the stomach appeared, at first not serious, but gradually becoming severe. As a last resort in each case, gastro-enterostomy was done but without avail. It was shown at postmortem that the bleeding did not come from definite vessels. The mucosa of the stomach had failed to unite and had widely retracted, leaving the muscular coat exposed in the lumen of the stomach, and this was the source of the oozing blood.



Fig. 7.—Operation completed and end of stomach drawn completely through opening in transverse mesocolon. Margin of opening sutured to gastric wall.

Following these two unfortunate results, Balfour[12] (Figs. 2 and 3) began the use of the actual cautery to destroy the ulcer. His method is as follows: The

11. Forssell, G.: Les rapports entre les formes radiologiques de l'estomac humain et l'architecture musculaire de la paroi stomacale, Arch. d'elec. med., 1912, xx, 529.

12. Balfour, Donald C.: Treatment by Cautery of Gastric Ulcer, Surg., Gynec. and Obst., 1914, xix, 528.

peritoneal and muscular coats are dissected back from the ulcer in the shape of a flap. Then the Paquelin heated to a dull red (just hot enough so that it will not stick) is pushed through the ulcer, gradually heating the entire calloused area. The cautery opening is closed with chromic catgut and interrupted silk, the flap of peritoneal and omental tissues replaced and, finally, gastro-enterostomy is performed. Experiments which Balfour and Mann conducted on dogs showed that the cautery sealed the gastric mucosa to the muscular tissues and that the scar left was almost imperceptible. Experience with this method in a very considerable number of cases has steadily given good results. When there is suspicion of malignancy, a bit of tissue is excised for microscopic examination before using the cautery. The use of the cautery in these cases, however, destroys the ulcer and the diseased mucosa in its vicinity so thoroughly and coagulates, as shown by Percy, tissues beyond to such an extent that one might expect the method would be as effectual as local excision against early malignant disease. Of course, if malignancy is shown to exist, resection is indicated.

In some cases in our clinic in which the cautery and gastro-enterostomy were combined the pylorus was also blocked to force the food out of the gastro-enterostomy opening. The results have been excellent in either case and blocking the pylorus has not seemed to have added anything of value to the operation.

LARGE ULCERS OF THE BODY OF THE STOMACH

Large ulcers occupying the body of the stomach, when the callus and ulcer are too large for the cautery operation of Balfour,[12] are best treated by the sleeve resection, that is, the removal of a segment of the stomach including the ulcer, and an end-to-end anastomosis of the two fragments. This shortens the stomach considerably but gives an excellent permanent result. Just why this operation, in which the corresponding part of the greater curvature is removed at the time the ulcer is excised, should leave a stomach with good motility while excision of the ulcer without removal of the segment of the greater curvature of the stomach leaves it with poor motility is an interesting conjecture.

The most serious ulcers are those of the body of the stomach involving the posterior wall. These ulcers are usually of large size and often involve the pancreas. At times there is an ulcer with a foul crater of considerable size containing food remnants and in which it is extremely difficult to tell whether or not malignant disease is present. In a general way it can be said that where the actual crater of the ulcer is larger than a silver dime the majority of gastric ulcers will prove to be undergoing malignant change. On the posterior wall of the fundus of the stomach this is not so generally true, for, while many of these ulcers are malignant, some extensive ulcers are benign. For such ulcers, if not too large, the transgastric operation[13] will be found satisfactory. The anterior wall of the stomach is opened, the ulcer excised from within the stomach and the gap sutured from within. The base of the ulcer may be pancreatic tissue; if so, it can be shaved off with a sharp knife until all the exposed part of the callus has been removed, or it may be destroyed with the acutal cautery. If it is possible to gain access to the posterior wall of the stomach, a few musculoperitoneal sutures may be placed to protect the sutures applied from within the gastric cavity, but experience has shown that these are not essential. We have, however, taken the precaution to carry a strip of folded rubber tissue to the pancreatic lesion after covering it with omental grafts. As none of these cases have had any discharge following such drainage, it can be looked on as unnecessary. I am convinced, however, that the more extensive ulcers in this situation are better treated by radical removal of the entire distal end of the stomach including the ulcerated and contractured area, and then the end of the gastric pouch anastomosed directly into the side of the jejunum. This furnishes perfect drainage, gets rid of the entire acid-forming part of the stomach, and insures the patient against recurrence. Comparatively few cases are sufficiently serious to warrant so extreme a procedure, but in several instances, after the failure of less radical means to give relief, and especially in the presence of secondary jejunal ulcers, I have adopted this plan with great satisfaction.

HOUR-GLASS STOMACH

The hour-glass stomach, if a single loculus, may be treated by gastrogastrostomy after the Watson method or by the sleeve resection just described. We have found the results of either of these operations satisfactory. A gastrogastrostomy which is planned in a general way after the Finney gastroduodenostomy will give excellent results. A considerable number of hour-glass stomachs have secondary obstruction in the vicinity of the pylorus, or they are associated with duodenal ulcer. In either case gastro-enterostomy in addition to the treatment of the hour-glass condition is necessary (Figs. 4, 5, 6 and 7). Where several loculi exist, increasing the lumen of each by a plastic operation of the Heinke-Mikulicz type so that they shall be converted into one large cavity, and then making a gastro-enterostomy is most efficient.

13. Mayo, W. J.: Transgastric Excision of Calloused Ulcer of the Posterior Wall of the Body of the Stomach, Ann. Surg., 1910, lii, 797.

THE RELATION BETWEEN GASTRIC ULCER AND CANCER *

A. J. OCHSNER, M.D.
CHICAGO

This subject has been discussed so frequently and so thoroughly, especially since the attention of the surgical world was again directed toward its importance by the classical address of President Rodman[1] made before this association, that it would seem useless to bring this feature into discussion again were it not for the fact that its importance from the point of view of prophylaxis and the bearing its consideration by the practical surgeon has on prognosis must be appreciated in order to decrease the percentage of mortality from cancer of the stomach, which now, according to Dowd, equals nearly one third of all deaths caused by cancer in the entire body.

Regarding the frequency with which cancer is found in patients giving a history of ulcer, authorities differ so widely that, for the reasons for this great difference, one must look to the manner of taking histories in these cases and to the values placed on certain symptoms. Smithies[2] gives a series of 712 cases in

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Rodman, W. L.: Excision of the Ulcer-Bearing Area in Gastric Ulcer, THE JOURNAL A. M. A., Sept. 17, 1904, p. 801.

2. Smithies, Frank: Symptoms and Signs of Gastric Cancer, THE JOURNAL A. M. A., Feb. 20, 1915, p. 643.

which 61 per cent. belonged to a group which gave histories of ulcer.

Only a few months earlier F. Friedenwald published a careful study of 1,000 cases[3] in which he gave 7 per cent. of cases with a direct history of former ulcer and stated definitely that, in this series of cases, in only 23 per cent. could the cancer have developed on an ulcer.

It is necessary only to select the report of these two well-known, conscientious, capable and reliable authors to prove that an analysis of case reports cannot give us data of great value on this subject, not because of probable unreliability, but because one could have the same house officers write history after history of patients who had definite symptoms of ulcer in the past without recording the facts on which one could make a diagnosis. One can make an analysis which will have value only when the histories of all cases under consideration have been written by men who have followed the cases in which a diagnosis of gastric ulcer has been made into the operation room where the diagnosis has been proved or disproved. I have personally tested this phase many times and am convinced that every careful clinician who will direct his attention on this point will agree with me on making a series of tests. To my mind, the positive statements which Graham[4] made on the relation between ulcer and cancer years ago were very significant because he followed all of his cases into the operating room and all the specimens obtained into the pathologic laboratory.

In the personal experience of each individual surgeon who has specialized more or less in the treatment of diseases of the stomach, one finds that at first many cases must have escaped detection, while, according to Cabot, is only 72 per cent. of the cases admitted to the hospital with a diagnosis of cancer of the stomach was cancer found at the necropsy. It is true that when one's attention has been once directed thoroughly to the symptomatology of gastric ulcer, careful attention to the history alone gives a very reliable basis for a positive diagnosis. It is also true that, in clinics in which many cases of gastric ulcer come for operation, even the younger assistants learn to recognize the symptomatology, but the histories one finds in the hospitals which were written only a few years ago are quite free from the appreciation of these symptoms.

On the pathologic side the evidence is still more misleading, because until very recently but a very small proportion of the cases in which cancers were removed surgically from the stomach came early enough to enable the pathologist to recognize the presence of an ulcer margin on which the cancer had been engrafted. It is of course quite improper from a scientific point of view to give any value to the observation that in advanced cancer no trace of ulcer can be found, because it is the development of the cancer from a minute beginning to its ultimate growth which must necessarily remove every evidence of the existence of the ulcer which was present at the time of the first appearance of the cancer.

In order, then, to have a reasonable basis for our judgment, we must consider only specimens in which the cancer cannot have destroyed the evidence of ulcer at any time before the specimen was obtained, in case this was present as a lesion on which the cancer was primarily planted.

Thomson and Graham[5] made an interesting study on "Fibromatosis of the Stomach and Its Relationships to Ulcer and to Cancer," which aids greatly in clearing up some of the evidence which has generally been misconstrued. It seems clear from their exposition that "the ulcer which is complicated with fibromatosis may also become the starting point of cancer."

Rodman, Mayo and others have constantly directed our attention to the significant fact that the ulcer-bearing areas of the stomach are also the areas most commonly occupied by cancer. This has led to much discussion in two directions. On the one side, it has been claimed that, because of this fact, all ulcers should be excised at the time of operation in order to remove the possibility of the development of a cancer on the base of an ulcer. On the other hand, the wisdom of this position has been doubted because of the observation of Kocher, who found "no carcinoma in eighty patients one to twenty-two years after operation for ulcer," [6] and this fact has been construed to mean that cancer would not have developed in any of these ulcers had they not been operated on, while in fact it means that, these ulcers being cured before cancerous infection had taken place, the exciting cause was permanently removed.

Other observers have followed large numbers of cases with the same result, and some of them have concluded from this that there could be no definite causal relation between ulcer and cancer. Again, the fact that cancer occurs only very rarely in the duodenum, while it occurs so frequently near this point in the contiguous mucosa of the stomach, has been used as an argument against the causal relation of ulcer and cancer. If we bear in mind, however, the fact that the conditions under which these two forms of ulcers exist are entirely different, notwithstanding their proximity in location, the foregoing argument loses all of its force. On the side of the stomach there is a great deal of trauma because of the violent action of the muscles of the pyloric end. This causes a great increase in the amount of irritation, and we know from the study of cancer in other parts of the body that there is a direct causal relation between irritation and the formation of cancer. These facts were all brought out so clearly by Coffey[7] that they need not be repeated here. Moreover, intestinal contents are held in contact with the ulcerated surface on the gastric side of the pyloric sphincter for a considerable period of time each day, while on the duodenal side these contents are forced on immediately on entering the duodenum. This has been demonstrated many times by means of the use of a bismuth meal and Roentgen-ray screening. Recent observations, especially those of Abelmann and Carl Beck, seem to point forcibly toward the possibility of inoculation with cancer virus, quite different from our former conception that cancer is amenable to transplantation but not to infection. That transplantation of cancer from points in the upper portion of the alimentary tract to the stomach is possible has been shown by

3. Friedenwald, J.: Clinical Study of One Thousand Cases of Cancer of Stomach, Am. Jour. Med. Sc., November, 1914.
4. Graham, C.: Cancer of the Stomach, Boston Med. and Surg. Jour., Nov. 12, 1908, p. 635.
5. Thomson, A., and Graham, J. M.: Ann. Surg., 1913, lviii, 10.
6. Quoted from Murphy's Clinics, April, 1914.
7. Coffey, R. C.: Cancer of the Gastro-Intestinal Tract, Northwest Med., May, 1908, p. 165.

the remarkable studies of Fütterer and is supported by analogy in other parts of the body.

We find here, then, on one side of the pyloric sphincter conditions which are favorable to cancer inoculation, while on the other side these conditions are absent, the only similar conditions being the defect in protection against inoculation because of the lesion in the mucous membrane.

Whether the presence of an acid medium on the gastric side and an alkaline medium on the duodenal side has any relation to the cancer infection cannot be determined at the present time, although the rareness of occurrence of cancer in the liver, which acts as a filter for all of the blood, would indicate that there may be inhibitory qualities in the bile.

Whenever experimental work shall have advanced sufficiently to convince pathologists generally that cancer is due to an infection, of which I am fully convinced not only from clinical observation and the careful study of many hundreds of human specimens but also from a study of the experimental work of Abelmann and Beck, the causal relation between ulcer and cancer of the stomach will be as clear as the relation between ordinary wounds and pus infection is today.

The observation that ulcer does not commonly result in cancer after relief from operation for the former condition would indicate that the ulcer simply acts as an opening through which an infection of carcinoma can conveniently enter, just as an abrasion on the skin will permit the entrance of the germs causing acute infections, and that so soon as the ulcer has healed the patient is again fairly protected against cancer infection.

The experiments of Rosenow seem to show a definite relation between streptococci infection with a definite selective quality and the formation of gastric ulcer. It may be possible in time to eliminate the formation of these ulcers by preventing the introduction of these streptococci. The observations of Gaylord, Marine and Marshall concerning the production of cancer in fish with food containing fecal excrement seems worthy of consideration in connection with this subject.

There can be no doubt but that much unclean material could easily be eliminated from our food, or, if it is present in the food in such a form that it cannot be eliminated, it can at least be sterilized by careful cooking. I refer especially to uncooked vegetables which are grown in soil filled with manure.

One of the most convincing arguments, from the statistician's point of view, in favor of the theory that cancer of the stomach usually develops on an ulcer is based on the fact that there is the same relative preponderance of cancer in men over women that we find in regard to ulcer, the condition being nearly twice as common in the former as in the latter. Were there not a definite causal relation between ulcer and cancer, it does not seem reasonable that this proportion could be identical in the two sexes.

During the past ten years I have personally studied all cases of cancer of the stomach removed in our clinic with a view of determining whether its beginning was in the margin of an ulcer, and in all of the cases not too far advanced for reliable observation I have been able to find evidence of the previous existence of an ulcer. In the late cases neither positive nor negative evidence could be found.

Regarding the evidence from the history, from previous diagnosis from those treating the case and from laboratory findings I have found that one who is thoroughly careful in his search for all facts which have a bearing on the fact that cancers are implanted on ulcers can always elicit from the patient by careful cross-examination, a sufficient amount of evidence in the history to support this position, while if one must depend on the facts put down in the ordinary history written by house officers whose attention is not centered on this feature, one will be disappointed in his search for typical ulcer symptoms. It would, of course, be improper to deny the presence of an ulcer on the evidence found in histories of cases of gastric cancer written by assistants whose attention had not been directed to the importance of carefully searching for relevant facts, although these histories may be quite bare of any evidence which would establish the presence of ulcer beyond a doubt.

In order to obtain statistics with value in this direction we must consequently give especial attention in the future to this feature. It is significant that most surgeons with a very large experience in the operative treatment of gastric ulcer and cancer seem convinced of the positive causal relation of the two conditions. This has again been brought out by Moynihan;[8] he fully agrees with the views of W. J. Mayo, whose enormous experience alone would be sufficient to establish the causal relation between ulcer and cancer beyond a doubt.

Coming to the practical end of the subject, it seems clear that, if cancer of the stomach is usually implanted on ulcer, we are in position to reduce the mortality from this cause to a very marked extent, first, by eliminating the various causes of gastric ulcer so far as possible; second, by securing the permanent healing of these ulcers when they first appear, primarily by making an early diagnosis and instituting carefully regulated long-continued dietetic treatment and hygiene; secondarily by surgical treatment; in the third place by preventing the use of unclean, uncooked foods, and in the fourth place by excising all suspicious ulcers.

My observations seem to warrant the following conclusions:

1. In all of the recent or early cancers we have encountered, the growth was located in the edge of an ulcer.

2. By careful study of the history of late cancer, in which the original ulcer had, of course, been obliterated by the growth, it was possible to elicit a previous ulcer history.

3. In studying the development of cancers in other parts of the body we find that a point is usually selected which has been subjected to long-continued irritation, as in the lip, face, rectum or uterus.

4. The fact that there are so few cancers of the duodenum as compared to cancer of the stomach can be explained by the fact that, while there is stasis in the stomach, there is none in the duodenum. In other words, while food containing the cancer germs will remain in contact with the ulcer of the stomach sufficiently long to permit the germs to become implanted, this is not the case in the duodenum.

5. It is possible that these germs may require an acid medium to stimulate them to attack the tissues.

8. Moynihan: Abdominal Operations, Ed. 3, i, 287.

6. It is relatively an easy matter to overlook the history of a previous gastric ulcer, because in the absence of severe hyperacidity the pain in these cases is frequently not sufficient to be remembered through the great distress from which the patient suffers after the cancer has developed.

7. In our experience a large majority of these patients have habitually eaten large quantities of food which was certain to be infected with manure, such as lettuce, celery, radishes, etc., so the introduction of the cancer germ into the open wound of the ulcer could easily be explained.

8. These gastric ulcers are of such long duration that the focus of irritation might readily serve to locate cancer germs which might have entered the circulation through some other portal.

9. This does not indicate that every patient who has ulcer of the stomach will ultimately have cancer, any more than that every soldier going to war will be shot, but it shows the wisdom of closing this opening for the entrance of cancer by curing the ulcer early and permanently.

10. Much attention should be given to the early history of these cases, and to the prevention of feeding these patients with unclean, uncooked foods.

2106 Sedgwick Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MAYO AND OCHSNER

Dr. Emmet Rixford, San Francisco: These papers have brought together the knowledge of the world on the subject of gastric ulcer and gastric cancer, together with the results of experience of Drs. Mayo and Ochsner. There has not been in the minds of most of us much doubt as to the relation of gastric ulcer to gastric cancer since the paper of Dr. Rodman (Trans. Am. Surg. Assn., 1908, xxvi, 189) which showed a definite sequence of the one on the other, and it is interesting to learn after these years that there has been very little added to what Dr. Rodman then said. In regard to etiology, little has been produced that is of interest, and we have not gone far beyond the point reached long ago that cancer develops at points of irritation. We are as far as ever from finding the organism, if there is such an organism. In the present state of knowledge the most that can be done practically in the prevention of cancer is to lessen the effects of chronic irritation on such lines as were clearly laid down by Drs. Mayo and Ochsner. We know what to do with the well-developed cancer of the stomach, and we also know full well what is the outcome. The indications for abdominal section are so much wider in the development of modern surgery that we see stomach conditions at a much earlier date; we are therefore put to it to make a differential diagnosis between ulcer and cancer in the operating room when the abdomen is opened. We do not always have a competent pathologist with us, and sometimes we yield to temptation to operate in some other place than our own operating room and cannot take the pathologist along. Not always is cancer found, when present, even when the pathologist has the best opportunity to make his microscopic examination. I recall a gastric ulcer with secondary carcinoma implanted on it (at least that was my operative diagnosis) and I made a wide excision and sent the tissue to the pathologist for examination. He found no carcinoma and I regretted having done an unnecessarily extensive resection. Later the patient returned with definite carcinoma whereupon the pathologist in reexamining the original specimen, making almost serial sections, found small areas of carcinoma. If, however, we can have a microscopic examination by a competent pathologist at the time of operation, many errrors will be climinated and a more logical and more radical operative procedure inaugurated.

Dr. William L. Rodman, Philadelphia: For fifteen years the question has, to me, been a plain one. Gastric ulcers demand radical treatment; for, even if we waive the question as to whether or not benign ulcers of the stomach tend to become malignant, there is enough evidence to justify radical treatment in every case of gastric ulcer where the lesion is mobile or can be mobilized. Even though you ignore the liability to cancer, I insist that excision should be practiced because the danger in excision is only one-third that from perforation, and only one-half the danger from hemorrhage, to say nothing of such complications as subphrenic abscess, hour-glass stomach and conditions other than cancer. But more important than all these is malignant transformation. In 1839 Cruveilhier, in 1848 Dittrich and in 1849 Rokitansky and men of their type emphasized the danger of malignant transformation, and it was reading these authors that made me, in 1900, insist on excision or radical treatment of gastric ulcer. Sir Berkeley Moynihan, when here in 1903, said to me: "Rodman, you are wrong; the estimate of Hauser that 6 per cent. of carcinomas are preceded by ulcer, is large enough and would more than include ulcers undergoing malignant transformation." When he came back in 1908, in a paper read before the American Surgical Association, he said that, after careful examination and investigation of his cases, more than 72 per cent. were undoubtedly preceded by ulcer. Mayo Robson, as well, has changed his views, now advocating excision of the ulcer-bearing area on account of 59 per cent. of his gastric cases having been preceded by ulcer. The Rochester Clinic shows a much larger percentage and W. J. Mayo further says that no one can from inspection and palpation tell definitely whether a lesion is benign, and that many cases supposed to be benign subsequently were found to have been malignant. While it is true that ulcers at the pyloric end of the stomach are particularly prone to undergo malignant change, and that ulcers in the larger and more expanded four fifths of the stomach are not so likely to become malignant, too much has been said on this subject, because there are cases on record in which ulcers in the larger portion have undergone malignancy. Cackovic reported such a case, so have I, and even if there were none, and we still ignored the possibility of malignancy, it is unwise to allow these ulcers to perforate, because that part of the stomach is always movable, does not form adhesions readily, extravasation quickly occurs, and such patients will not be rescued after perforation. The danger of perforation and hemorrhage from such ulcers is more than sufficient to demand radical treatment.

It is naturally gratifying to me to see the marked change which has taken place in the surgery of ulcer. When I first suggested excision of ulcer in the body of the stomach and pylorectomy for those at the pylorus (1900), it was considered much too radical and gastro-enterostomy was the operation almost universally practiced. The latter, as I then pointed out, was entirely inadequate and is generally so recognized, and excision and pylorectomy have become the operations of choice with those having the greatest experience in gastric surgery.

Dr. W. I. Terry, San Francisco: It seems to me that the question of carcinoma of the stomach following ulcer is a determined one. The frequency with which it occurs will be determined after the lapse of many years and particularly after a careful analysis of many cases which have been subjected to operation in the large clinics. The follow-up work of Dr. Peck throws light on several questions in the diagnosis of these conditions of the stomach, and when followed up thirty years from now we will have something very definite on which to base our statements. In the meantime, however, we have to do the best we can by these patients and treat them all as suspected malignancy and do the radical work by the Rodman, Coffey, Balfour or other approved method and then we shall have done our duty to the best of our knowledge.

Dr. Miles F. Porter, Fort Wayne, Ind.: To my mind the question of the etiologic relationship existing between ulcer and cancer of the stomach is a settled one, but as to what it is I do not think it is certain. Are we warranted in concluding that because gastric ulcer predisposes to carcinoma, that therefore the carcinoma is probably produced by a germ

and that this is the only explanation? Recent experiments have shown that the injection of raw sterilized albumin produces carcinoma, so, therefore, I think we should wait for more evidence before deciding this question. The practical point, however, remains the same. The same process devised for the killing of the germ by Dr. Ochsner will also cook the raw albumin. Gastric ulcerations allow the passage of raw albumin into the general circulation. It has been proved that animals, sensitized by the injection of raw albumin, are prone to cancer. I bring this point up for the purpose of putting a question worthy of further study. Dr. Rixford said that sometimes we operate in these cases when we have no pathologist present. Now I want to say that I think I have no business to operate when I have no pathologist present, and I say this with the kindliest sentiment in the world.

DR. A. E. ROCKEY, Portland, Ore.: I want to say a few words in reference to the etiology of carcinoma in its relation to ulcer. In a paper presented at the recent meeting of the Pan American Medical Congress, I advanced the hypothesis that carcinoma is not due to any single external cause, but that it is produced by a defensive reaction of the cells to a great variety of irritations. The result of any sufficient irritation to the cells, whether it be microbic, traumatic, radiant, thermic or toxic, is the death of the cells. The body is a community of individuals, which we call cells, that have both an individual existence, and a community relation with each other. Embryonal cells are the same in character until after their division into the germinal layers of the ectoblast and endoblast. In adult tissues there is a normal repulsion to admixture of the cells. When any irritation falls short of the death of the cells, there is produced a stimulation, which is defensive in character, and which is followed by an active karyokinesis to increase the number of the cells. The more rapid this defensive karyokinesis, when growth is closely balanced with destruction, the more nearly do the cells approach the embryonal type. There are fortunately only certain conditions in which this causes carcinoma. Irritation produces the same reaction in the mesoblastic tissue as it does in the epiblastic tissue, and to form cancer the basement membrane must be destroyed. In their common struggle for existence against any irritation, when growth and destruction are closely balanced, the cells lose their normal antagonism for each other, become irregular in their mitosis and the young cells from the epiblast become engulfed in those from the mesoblast, and cancer is begun. Being thus submerged, they cannot attain either normal anatomic perfection or physiologic activity. They retain the excessive karyokinetic tendencies of their immediate progenitors, and expend their energy in a reproduction that is both immature and irregular. Deflected from their proper place in the epiblastic layer, they infiltrate the mesoblastic tissue, which they destroy by pressure, and enter the lymphatics and form metastases. Dr. Ochsner has intimated that proof will presently be forthcoming of the specific microbic origin of cancer. What single microbic cause can we find suggested in cancer, where the source of irritation is so varied as that which we find in pipe smokers' cancer of the lip, betel nut chewers' cancer of the mouth, cancer of the breast following a single trauma, cancer of the abdominal wall in the natives of Thibet, who wear small charcoal stoves to keep the hands and body warm, or in Roentgen-ray cancer of the hands? We have searched too far, and have overlooked the very evident fact that a defensive reaction of the tissue cells to irritation that threatens their destruction is the cause of that irregular growth and displacement which we call carcinoma.

DR. J. CHRIS. O'DAY, Portland, Ore.: When I was an understudy of Miles F. Porter he taught me to regard cancer as the manifestation of epithelium running wild. I still believe it. If the theory of Dr. Ochsner is correct I would ask how the fecal matter gets to the mammae or the uterus, for do we not have cancer there? As to gastro-enterostomy in the presence of gastric ulcer, I have made it a rule for several years that when a gastro-enterostomy will short circuit the chyme from the ulcerated area it is the operation of choice. If it will not do this it is not the operation to do. When the ulcer is in the region of the pylorus, the beautiful results one obtains by this operation are known, but when the ulcer is higher, and the gastro-enterostomy will not short circuit the stream—in other words, the ulcerated area is still exposed to the irritation—it will do no good. As to Dr. Mayo's operation of opening the anterior wall and attacking the ulcer on the posterior wall from within, it seems to me there is something about that operation which he did not tell us. Personally I would be afraid to attempt it because my technic is such that unless I include peritoneum in my needle work, I would feel in danger. He did not tell us how he applied his sutures. From the illustrations it would seem that if the sutures yielded to the gastric juice before union had been firm, gaping or leakage might occur.

DR. C. G. LEVISON, San Francisco: The cure of cancer is not going to come from the surgeon, it must come from the physician. There is one point that must be accomplished before cancer can be cured and that is that we cannot succeed in getting good statistics until the cases are seen in their incipiency, which means that by the time gastric ulcer has been referred to the surgeon for operation cancer is already present in the advanced stage.

A case in point will illustrate this. A friend had returned from Europe with all of the manifestations and the cachexia of cancer of the stomach. He was seen at the club and I remarked to a mutual friend, I will tell you what will happen to this patient; he will be treated by the family physician who after six months will refer him to the surgeon for operation; at the operation the patient will be found to have an inoperable cancer of the stomach. After six months we were called in to operate and when the abdomen was opened an inoperable carcinoma of the stomach was found. Until these conditions have changed there can be no improvement in our statistics as far as ultimate cure is concerned. The development of cancer of the breast and stomach can be averted by operating in benign conditions, just as the gangrenous appendix has almost disappeared as the result of the interval operation.

THE DECOMPOSITION FOOD PRODUCTS AS CARDIOVASCULAR POISONS*

ROBERT N. WILLSON, M.D.
PHILADELPHIA

To those who know the heart simply as a muscular pump, the function of which is to supply the various parts of the body with blood, the term "cardiovascular poison" will mean little more than a drug which causes the heart to misbehave or to functionate badly. Generally speaking, the heart is a much neglected study. The why and the wherefore of its phenomena, its minute anatomy and physiology, their relation to clinical and physical signs, and their influence on and response to the action of drug and other toxins, all form phases and spheres of heart study, a thorough grasp on which is as essential to intelligent bedside observation as it is to laboratory investigation.

It is well to realize that we know only two and perhaps only one true cardiac tonic, oxygen, and perhaps certain forms of sugar. On the other hand, it will be of advantage to forget the old belief that the heart is lacking in nervous tissue. We are often reminded that "there are few nerve elements in the heart, and none in the atrioventricular bundle," or in the other foci of cardiac nodal tissue. And yet it is no very recent discovery that, if any human organ is rich in its nerve supply, the heart is that one.

---

* Read before the College of Physicians of Philadelphia, May 5, 1915.

It is an excedingly important, and also a not recently acquired item of knowledge that, probably with a view to the maintenance of intracardiac pressure, one of the main nervous distributions in the heart is subendocardial. The sinus node contains a veritable network of vagal filaments, and the specialized nodal tissue itself is composed of cells and fibers which merge now into nervous structures and now into muscular. These are features of all nodal tissue, including that recently discovered in the intestinal wall by Arthur Keith, which seems to differ neither in structure nor in function from the specialized tissue of the heart.

Up to the present time we have failed to solve the functional riddle of the myriads of sympathetic ganglions in the heart. The mere knowledge of the existence of these structures is, of itself, important, even though for the immediate present we appear to have been blocked in our attempt to discover their exact method of working. Especially in relation to the administration of medicaments it is essential to realize that the heart is not simply a nerveless muscle. So in the matter of the assimilation of the foodstuffs it is essential to remember that the cardiac nerve structures enter in greater or less degree into the inception and the discharge of each and all of the main functions of the heart. Herein lies the cardiovascular significance of the toxic character of many of the end-products of the foodstuffs.

With this simple introduction, I wish to discuss briefly a class of cardiovascular poisons originating in the gastro-intestinal tract as the result of the decomposition of various articles used as food, and often exerting a powerful influence when an idiosyncrasy exists. I have chosen the term "cardiovascular" advisedly, in the realization that clinically and practically those substances which stimulate and strengthen and nourish the heart exert a like influence on the very similar tissues in its extension, as it were, the arterial tree. Just so, the substances which poison the tissues and deplete the forces of the heart tend to injure and to render incompetent the blood vessels. This does not mean, however, that the pharmacologic action of every drug is primarily and secondarily identical on the two, unless essentially poisonous for both.

The decomposition food products are at work from childhood to old age. Together with tobacco, they constitute, I believe, the chief underlying and causal factors in the production of the arterial changes and the hypertension which contribute so actively to the cardiac disease of later years. In babyhood the main influence in their production is usually an oversupply, less often today an unclean or improper form of food. This factor of gross overfeeding and consequent gastro-intestinal decomposition is operative, as a rule, throughout childhood and well past puberty. Occasionally it is continued through life. It exerts two influences on the heart, one toxic, the other mechanical. Beginning with the child's admission to the general diet of the family table enters still more forcefully the factor of indigestible food, not infrequently taken in unreasonable excess. We all eat too much for our individual needs; we all indulge in many things better calculated to disturb than to further nutrition, and most of us send them on their way toward the stomach and the bowel very imperfectly prepared for assimilation. As a direct result, whether babies, or adult working units, or old men and women, we have at all times within us digestive tubes much more foul than they should be, from which we absorb the poisonous end-products of not only an excess, and of improper pabulum, but also of the altogether suitable foods. The popular present-day name for this condition is intestinal stasis, and the surgeons are manifesting a cordial interest in Jackson's membranes, Lane's kinks, and similar obstructions as its cause. Our grandparents knew better, and though they stuffed the grandchildren from the breast to puberty, "too much food" was their lay diagnosis, and castor oil their very rational and effective cure. I think it fair to assume that a timely and intelligent and persistent use of the same regimen would relieve by prevention, if not cure, very many of the conditions diagnosed as Lane's kinks today.

Intestinal decompostion implies at once the manufacture and the absorption of toxic material, in part strictly chemical, in part purely bacterial, in part consisting of normal food end-products, poisonous perhaps to a given individual, though utilizable by the majority of human beings. These toxic substances act in one or all of three ways: (1) through a chemical toxemia and a direct poisonoing of the body tissues; (2) through a bacteremia, as in the frequent colon bacillus infections, and (3) by the formation of poisonous gases, which not only are in some measure absorbed, but also, by mechanically displacing and discommoding, embarrass organs above and below the diaphragm through gastro-intestinal distention.

In all three of these forms of food influence, the first recognizable effect is on the cardiovascular system. I have experimented on laboratory animals and on myself, and have questioned very carefully patients in my care with a view to gaining light on this point. From all three sources I obtain ample evidence that the heart and vasomotor system experience very early the influences of a food toxemia, of whatever nature. Usually there is a marked quickening of the cardiac action, often distinct palpitation; almost always in the acute stages (before collapse) there is a marked elevation of both the systolic and diastolic pressures. Later, as the heart begins to tire, the systolic pressure may fall and the rhythm become irregular. Not infrequently I have seen distinct signs of cardiac dilatation in the entire absence of abdominal distention, that is, not a mechanical embarrassment.

I have just finished a nine months' study of a giant tom cat in which were noted on a single meal per diem a normal pulse rate of about 100, a single formed stool, and an apparently well, lazy, affectionate cat. On two daily meals (one of milk, one of mixed food from the table) the cat ran a distinctly angry cardiac action and rate of about 120, its stools numbered two and three and were exceedingly offensive, and the cat was evidently irritable and ugly when disturbed. On three meals daily, two of them containing a small quantity of meat, the stools became numerous and diarrheic in character, and occasional blood streaking could be noted, the animal manifestly suffering from an intestinal inflammation secondary to the decomposition of food in excess. The cardiac action averaged from 120 to 130, and the apical impulse was no longer bounding and angry and of high tension; it was rather diffuse and weak, and an occasional irregularity could be detected. The heart and the vessels were incompetent as the result of a toxemia.

This series of experiments was carried out repeatedly on various kinds of foods, with identical results in all

instances. The excess of animal proteins would poison the animal more promptly than a strictly vegetable dietary, but the main factor was manifestly the excess of supply, and not the kind furnished.

Long before it had occurred to me to test out in a laboratory animal the theory of cardiovascular poisoning through decomposition food products, I had suspected the relation of cause and effect, owing to numerous personal experiences. For years I have been in the habit of taking either no third meal in the day, or else a simple saucerful of boiled rice with milk and sugar. I found that the moment this boundary was overstepped I began to receive signals from my cardiovascular system that were finally too definite to be ignored. Within an hour after a moderate evening (third) meal my whole body (not the abdomen) began to feel full and tense. The hands and feet, the thorax, the head, especially the skin surface, felt full and tense and hot. The pulse rate in a short time increased from 20 to 40 beats per minute. The systolic pressure (Stanton apparatus) has on more than one occasion risen to 160 and 170 (my normal is 130), and the diastolic to 110 and 120. After retiring I could feel my cardiac action from head to foot to a most uncomfortable degree. It seemed as though the bed responded to the cardiac impulse, so general was the hypertension and overaction. Always following such an experience, there would occur during the night hours, or during the next morning, several dark offensive, often liquid stools. Only on their evacuation would the toxemia and excessive cardiovascular tension disappear and I become comfortable.

I have questioned many intelligent and observant physicians and laymen, and find that my experience is not an isolated one by any means. As with the cat, the idiosyncrasy is not one of particular classes of foodstuffs. It is usually one of quantity and excess, though I learned long ago that a number of the fruits and vegetables which Mendel[1] and other laboratory authorities believe are fully assimilated as basal and alkaline products are toxic for me, and, as regularly as I venture to use them, just so surely they produce in me an acid toxemia within an hour or two of their ingestion.

In connection with an actual infection of the blood stream and consequent harmful effects on the heart and vessels, I have been interested for a considerable number of years in the presence of myriads of bacilli of the colon group in the nondecomposed urine of persons experiencing gastro-intestinal disorders. Only recently have I begun watching for and noting the frequent implication of the cardiovascular system in such individuals. Not always in these colon infections was there hypertension and overaction of the heart present. Occasionally there was a systolic blood pressure of 100 or lower, and a diastolic pressure of 55 or 60. I recall two physicians, each weighing nearly 200 pounds, in whom the systolic pressure averaged 100, and the diastolic 75. Rosenow's[2] recently reported cultural experiments may throw some light on these clinical findings. Of his twenty (fourteen acutely) diseased appendixes removed by operation, he found, in six, pure cultures of the colon bacillus in the pus within the lumen, and in predominating excess, though in company with streptococci or other bacteria in the remainder. As the appendix reflects in a considerable measure the conditions of the entire bowel, it seems fair to assume that somewhat similar bacterial findings will prevail in disorders of the main digestive tube. If correct in this assumption, we need not seek far for the explanation of the toxic effects on the heart and vessels in the many forms of food poisoning which seem possible of understanding only on a microorganismal basis. I refer to such phenomena as the toxic and overdriven heart and vascular hypertension, in association with a bronchitis (evidently toxic), and widely separated joint and muscle pains, and skin eruptions other than those typically vasomotor — all temporary, but appearing shortly after a dietary indiscretion, and subsiding only after a thorough cleansing and approximate sterilization of the gastro-intestinal tract.

Still another series of cases will base its cardiovascular symptomatology on the presence of gases in the intestinal canal. Their toxic influence is apparently due to their absorption as such, and to a direct action on the cardiovascular as well as on all the body tissues. I can easily believe, after observing a number of such instances, that the distress in typhoid tympanites is not altogether mechanical, and that it is not entirely due to overdistention and to dislocation of the heart from its normal position. The intestinal gases appear toxic, and I have no doubt the patient absorbs them with the same effect on the blood and cardiovascular system as though he were to inhale illuminating or some other noxious gas. Undoubtedly the mechanical factor is always in evidence, in the form of a transverse position of the heart and an interference with its intake and output of blood. But probably the toxic influence is the more prompt and serious.

It is remarkable how completely incapacitated an individual may be who has ineffectually emptied the rectum and possibly the sigmoid, whereas higher up in the large bowel or in the coils of the small intestine some particle of food is undergoing decomposition, and meanwhile is filling not only the intestine but also the blood and lymph circulations with poisonous gases. These may be retained in the bowel for hours, especially at night, slowly filtering into the blood. Meanwhile the patient suffers all the symptoms of a toxemia and of mechanical discomfort combined. The diastolic pressure is usually elevated, and also the systolic, if the heart muscle is still intact. The vessels pulsate and throb, the skin is pale, the head aches, the tongue is coated, the breath is foul, vertigo is often distressing, and not infrequently the hands and feet feel distended and swollen. Finally a thorough housecleaning of the gastro-intestinal tract causes the expulsion of the offending food substance, and ahead of it an unconscionable quantity of gas, whereupon the blood pressures resume their normal level, the heart returns to an orderly method of procedure, and slowly the nausea, pallor, headache, and the puffiness of the hands and feet subside.

It has been necessary to refer to the various toxic symptoms other than those of the heart and vessels. I have done so briefly, however, as it is my object to direct attention to the primary influence of the food toxemias on the cardiovascular circulation. Wherever the arterial and capillary ramifications penetrate, there will be found indications of a toxin or toxins at work.

1. Mendel, L. B.: Newer Points of View Regarding the Part Played by Different Food Substances in Nutrition, THE JOURNAL A. M. A., Sept. 5, 1914, p. 819.
2. Rosenow, E. C.: The Bacteriology of Appendicitis and Its Production by Intravenous Injection of Streptococci and Colon Bacilli, Jour. Infect. Dis., 1915, xvi, 240.

Dale[3] and later Eustis[4] have attributed the main and usual effects on the blood pressure to certain of the amino-acids, notably the derivatives from leucin and tyrosin. Eustis, by removing the proteins in large measure from the dietary, has in many of his patients caused a distinct lowering of the blood pressure with the disappearance of the general symptoms of toxemia. Other amins have been found working similar cardiovascular mischief, as oxyphenylethylamin in overripe German and American cheeses, by Winterstein and Küng[5] and by Van Slyke and Hart.[6]

I have already mentioned my personal experience with certain nonprotein foods, among them the highly acid vegetables such as tomatoes and rhubarb, and also such fruits as the apple, orange, lemon, peach and strawberry, and the cantaloup as perhaps the worst offender of all in producing an identical picture with that which follows either a protein excess or an overindulgence in any kind of food. Shellfish, unless used in the strictest moderation, will also produce toxic effects.

It would seem, therefore, as though the clinical symptoms suggesting a toxemia, especially as reflected in the cardiovascular system, are to be ascribed in the main to poisons elaborated in the intestine, to be sure, but not from any one group of foodstuffs. The only requisite would seem to be that a given food substance or one of its constituents or end-products shall prove toxic for its individual host. Furnish the summer heat of the bowel, retention for hours, and the decomposition of masses of undigested and often indigestible food, the presence even of food substances innocuous and tissue builders in other individuals, only provided they are toxic for the given one — here we have all the conditions favorable to the production of acute cardiovascular crises, which, if repeated often enough and persistently enough, will result in cardiovascular disease.

I believe most thoroughly, as the outcome of many experiences such as I have described in myself and others, that when we begin to look to the gastro-intestinal tube and its misuse for the origin and cause of hypertension, arteriosclerosis, the myocardial degenerations, and now and again hypotension, just so soon shall we comprehend the fundamental factors inducing the all too prevalent premature old age. Its other name is preventable cardiovascular disease!

1827 Spruce Street.

3. Dale: Jour. Physiol., 1909, xxxviii, No. 4.
4. Eustis: South. Med. Jour., May, 1912, p. 442.
5. Winterstein and Küng: Mitt. Ztschr. f. physiol. Chem., 1909, lix, 138.
6. Van Slyke and Hart: Bull. 231, New York Agric. Exper. Sta., 1903.

Plague.—Recently acquired knowledge has shown that, when intelligently handled, plague is not the menace to man that it was only a few years ago supposed to be. Plague being primarily a disease of rodents and only secondarily a disease of man, it is apparent that, as plague in the past has been recognized to be present only when it attacked man, it has frequently existed in localities without its presence being known. The presence of the disease in rodents is of far more significance than its presence in man, and the history of a disease in a community must be primarily that of its presence in the rodents of the community, plague being present when it exists in rats just as truly as when it exists in man. In fact, a plague-infected rat is a greater menace to the community than is a plague-infected man.—*Public Health Reports*, Aug. 6, 1915.

HOSPITALS AND ESTHETICS*

THE ARCHITECTURAL PROBLEM, WITH PARTICULAR REFERENCE TO ESTHETICS AND THE ART OF ARCHITECTURE

GROSVENOR ATTERBURY
Fellow of the American Institute of Architects
NEW YORK

"In treating the patient, do not forget the man."

I. INTRODUCTORY

What we might call the mortal life of an architectural design ends with its crystallization into the three dimensions of the finished structure. With its resurrection in brick, stone and steel comes the final severance of the created thing from the constructive imagination of its designer. In happy instances it may also mark the beginning of an honored immortality. But in any event the investigation and study of a completed building is from the point of view of the architect really an academic question—a kind of pathologic study—and in the case of a hospital, at any rate, an affair most appropriately conducted by medical experts. And the matter may be left to them in this instance the more fittingly because the details of this building, as the result of conditions peculiar to the medical problem of the Phipps Clinic, are necessarily of limited interest except so far as they illustrate general principles either of institutional organization or architectural design. Therefore I shall confine my attention to a single general phase of this architectural problem—a phase preeminently important in the Phipps Clinic, but also of great, though I believe insufficiently recognized, value in all hospitals; affecting as it does that human side of every hospital problem so well epitomized in the sentence suggested for the entrance of the Virchow hospital in Berlin, and which I have taken for my text: "In treating the patient do not forget the man."

II. THE HOSPITAL AND ESTHETICS

So in the present discussion we shall not further concern ourselves over the dry bones of the matter—the anatomy of the building and its painful growth out of the vast mass of special requirements and conditions that carry the germ of the architectural solution of the problem.

On the other hand, I am vastly interested in the fact that we have managed to turn the iron window guards into little window greenhouses and that we have achieved open fireplaces and window curtains in the wards; and have even smuggled in quite charming brass andirons and fenders. For while these also are quite obviously details, they appeal to me not only because they are pleasant phenomena in themselves—like crocuses and bobolinks in spring—but because likewise they are signs pregnant with meaning. In this instance, moreover, they serve especially well to introduce the real subject of this paper, "Hospitals and Esthetics."

For while those fundamental requisites which we are so light-heartedly passing by form the crux of what we may call the institutional aspect of the architectural problem of the modern hospital, there is that other side which, though more subtle and difficult to define, is to my mind no less essential, albeit demand-

* A paper prepared for the dedicatory services of the Henry Phipps Psychiatric Clinic at Johns Hopkins Hospital.

ing far greater skill to handle satisfactorily. This has to do with the form of the solution rather than the syllogism that determines it. It is more a function of the art than of the science of architecture. And it largely determines the character and quality—the atmosphere—of the resultant building. In other words, it is the solution of the equation in terms of esthetics.

The esthetic phase of the problem of the modern hospital is ordinarily considered as of minor importance and as pertaining to the point of view of the patient only, as differentiated from that of the institution. That this is a distinction without a difference should go without saying; though as a matter of fact there still exists both within and without most hospitals a general impression—or misapprehension—that there are really two points of view—that of the patient and that of the institution—and that the best solution to be hoped for is a compromise between them.

However this may be, the prime requisite from the esthetic point of view is that these institutional demands, and many others not here mentioned, should be met with complete harmony, without architectural disturbance; that all the various functions—clinical, research, teaching—be so comfortably housed under one roof that they may all present their most agreeable aspect to the stranger who enters their household, to the student and teacher no less than to the patient, in one sense the guest of honor.

You see, I am using the simile which lies buried in the word "hospital" itself, and putting the doctor in the position of the kindly and watchful host, not the keen eyed inquisitor—putting back into the definition of hospital the full meaning of "hospitality," somewhat forgotten perhaps in the stress of scientific progress.

Architecturally, this means an interior which shall be cheerful but not exciting; varied but without disturbing contrast; roomy but without the large scale that stamps it an institution. In a word, a building expressing that familiar quality of the individual home to a degree sufficient not only to rob the institution of its tendency to arouse the feeling of strangeness but also to produce if possible a more soothing and agreeable reaction in the patient than in his ordinary lot in life.

III. THE INSTITUTION AND THE PATIENT

And first, with particular reference to this question of esthetics, I want to speak of those so-called two points of view, that of the institution and that of the patient, and their apparent divergence when the hospital problem is looked at in certain lights. For no one else, I think, of all those concerned in the matter of hospital design—trustees, doctors, superintendents, nurses, students or patients—has such a comprehensive and unbiased view of all its aspects as the architect. And withal, because of his own sins I think he can peculiarly well understand the true inwardness of the situation.

For the architect perhaps of all professionals is most tempted in his work, to mistake the means for the end. While the real value of architectural drawings lies mainly in their effect on the building to be produced, they are often mistakenly thought to represent the entire problem; being at the start its only tangible manifestation and the medium through which the designer must work out his solution. And so in studying the plans he sometimes forgets the building.

Thus in a somewhat similar way it is easy for the doctor—and in accord with the popular habit I let him stand here for the institution—to forget the man in treating his ailment. It is perhaps natural for him to regard the situation somewhat as if he had the disease in the hospital while the patient remained comfortably at home, instead of having them wrapped up together in the same bed jacket. And the illusion is made almost perfect when that garment is made of jaundiced gray flannel, presenting to the eye a sight exactly analogous to the smell of ether and iodoform—a garment, in short, just such as you would expect a disease to wear, and a correspondingly complete disguise for a human with red blood in his veins and a heart with cockles crying to be warmed.

But to the layman the patient appears as a combination of a man and a disease, presumably brought to the hospital to be separated one from the other. The rather obvious point I wish to emphasize once more is that they do enter the hospital together, however they depart.

Quite naturally the doctor and surgeon may be inclined to speak of "cases," and catalogue the man under the name of his ailment. It is natural and convenient, the necessary practical custom, just as we architects deal with our problem in terms of draughtsmanship and habitually think of them, I regret to say, as plans and elevation, in terms of two dimensions instead of three, and thereby make some of our most grievous blunders. Hence it is that an architect can speak with a certain professional sympathy on the text of this paper, "In treating the patient, do not forget the man."

IV. THE "HOSPITAL ATMOSPHERE"

I think it safe to say that no one expects to experience a sense of pleasure on entering the ward of a hospital. It would be unreasonable to expect the fundamental fact of sickness and suffering to be obliterated by a cheerful environment; but that the emphasis can and should be put on the hope of recovery and the joy of life seems axiomatic. And the point I wish to make, again, is that in seeking to accomplish this end we should make use of the physical environment no less than any other therapeutic agent. Make the hospital ward a tonic in itself, adding an esthetic section to materia medica.

After many weeks spent in visiting institutions throughout Europe, the impression made by the ward of a recently completed hospital in London still stands out vividly in my memory. The room was rather low ceiled, and made no architectural pretense. But the sunlight came through prettily dressed windows and fell on stands of flowering plants, while the reflection of a brisk open fire danced on a dark polished floor. And lying in brass-knobbed beds, crisp and fresh against warmly tinted walls, the patients themselves provided a finishing touch of cheerfulness by wearing bed jackets of hunting pink. It was positively festive. In the midst of smoky London, and in the heart of a great institution, it gave one a shock of pleasant surprise. My first impression was that we had made a mistake; and the next, that if we were really by chance in a public hospital ward I should be more content to be ill under such conditions than well in most other rooms in London. Of course I knew better than that; but such was the mental reaction, distinct and immediate, and in radical contrast, to experiences in a hundred other wards.

For any one, I think, who has seriously studied hospitals must acknowledge that in most cases the doctor, with the help of the trained nurse and an equally efficient mechanical plant, makes his cures in spite of rather than with the aid of the atmosphere immediately surrounding the patient in the ward. To realize this you have only to ask yourself how the ordinary hospital ward would affect its inmates if they were placed there without the doctor, without the trained nurse, and without all the other special aids to efficient treatment and bodily comfort.

While a hospital is obviously and essentially a place to get out of, it should equally be a place into which the sick man is eager to go; and the presence of one and the same quality in the building would aid materially, I hold, in producing both these desirable characteristics. And it is of this "quality" and the relation it bears to all hospitals, and their design, that I shall now particularly speak.

The first and very obvious fact is that while there must always be "institutions" as well as "a public" to serve, there can be no longer two different points of view. The interests of the two always are and have been, of course, identical. The trouble has been rather with the eyesight—a matter of astigmatism, or more accurately speaking, "double vision"—fortunately of the kind that decreases with the years, as its causes are eliminated. But its genesis in the case of the patient is historical and dates back to the days of Bedlam and the Hotel Dieu—the days of chains, straight jackets and pens, and of four, or even six, in a bed. And all this, let us remember, only a few generations since. Let us acknowledge, then, at the start, that the hospital has a gruesome reputation to live down, however undeserved it be today. That the inheritance was partly bred of ignorance and superstition is immaterial. As a matter of fact, to a certain extent the masses still have a tendency to mistrust and fear.

After all, taking a man out of his home, however poor it may be, is transplanting him, and means that he must find himself again in the new environment. The sheets of the hospital bed are cleaner, even finer, perhaps, than his own; but he has got to warm them up, nevertheless, before he can relax between them.

The poorer he is, the more startling the contrast between the impersonal institution, high ceilinged, vast, mechanical and unresponsive, and the tiny room he has left, stuffy, dirty and ugly, if you please, but thoroughly vitalized through personal use. To leave it for the average hospital ward is like changing from a comfortable dressing-gown to a ready-made suit of oilcloth several sizes too large. The less educated, the less intelligent he is, the more he depends on sensuous feelings for contentment. Sensuous ideas, the first to emerge from the mind, are the first to arouse delight, and constitute primitive happiness and content.

After the patient is warmed and fed, the sense of color may quite conceivably make the strongest appeal for gratification. And what is there in the conventional hospital to gratify it?

The answer is "complete asepticism"—glistening tile, white marble and glass, nickel and enamel paint, iron furniture, windows without curtains, mechanical ventilation, invisible convected heat to the exclusion of the radiant open fire, or even the reddening stove. And on all sides our friend the gray flannel bed jacket! Perfect asepticism, with not a germ in sight, in many cases not even the germ of comfort!

Such conditions are, I think, already changing; but a ward designed with any real esthetic consideration is still rare.[1] And such consideration, when it happens at all, is largely superficial. Given the size, shape and general character of the room as determined on the lines of the most efficient service of the doctor, nurse and orderly, the architect is indeed permitted to make the best of the conditions. But his treatment of the problem must not involve additional expense, either in first cost or upkeep. So that any stray element of beauty that may find lodgment in the crackless walls of efficiency and asepticism is oftenest a hazard of fortune, a by-product at best of the architect's design.

It is a fair question whether there is not a larger efficiency to be considered, and whether the price of perfect asepticism is not too high. For in spite of all its modern improvements, when you send even the intelligent patient to the hospital you have put him in the incipient stages of mental gooseflesh, whereas the prime requisite of the hospital, after all is said and done, is that it should inspire confidence and hope. And surely this requisite, this quality in the institution so closely analogous to personal magnetism in the physician—what I might call its own "personal appeal" to the public—should be the wider and more compelling just in proportion as its scientific efficiency increases.

Is there no way in which this result can be more generally assured?

Personally—speaking always as a lay observer—I believe that it can be done; not only without material expense, but also with ultimate economy in the operation of the hospital. This is, I admit, a difficult thing to prove. Our argument must necessarily be based on *a priori* reasoning, on common sense and a study of the effects of environment on the normal man, both cultured and uncultured, all of which is beyond the scope of this writing, as well as the writer's knowledge. But there is already sufficient testimony from high medical sources to establish the serious importance of the matter. Sufficiently so, I think, to reduce the debate to a question of degree—the general principle being admitted—the degree to which consideration of a patient's mental mood, as it reflects the reaction of his senses to environment, can profitably be carried.

For in the last analysis the problem is of course an economic one. And if it were only possible to make tests of one and the same patient under conditions identical, except as to that of his immediate environment, it would be a simple sum in arithmetic to answer the question beyond peradventure.

V. EFFICIENCY AND FIXED CHARGES

Unfortunately, all we can do at present is to show how small need be the benefit to the patient in order to justify a considerable expendituure in making his environment as stimulating as possible to his recuperative instincts. To this end let us capitalize a small fraction of the time during which the sick man uses the hospital, considered as a huge machine, and see what the saving of it would mean financially. Let us look at the matter for a moment from a purely commercial point of view.

The real efficiency of a hospital, I take it, is measured by the rapidity with which it discharges its

1. A noteworthy exception is found in two units of the Indianapolis City Hospital (Bare Walls and Monotony, Current Comment, The Journal A. M. A., Dec. 5, 1914, p. 2049).

patients with relation to the cost involved therein, and the degree of permanency of their betterment. In other words, the efficiency of the hospital, like that of the industrial plant, is measured in terms of its "production costs" and the quantity and quality of its products. But where the industrial corporation considers the interest on its invested capital as one of the fundamental items in its accounting, the hospital, having no stockholders, naturally assumes that its efficiency is practically determined by its current operating cost, quite regardless of invested capital, sinking funds to cover depreciation and obsolescence of plant, and the various other items which go to make up the fixed charges of a commercial corporation.

Taxes on hospital property are remitted, of course; and while from one point of view it is permissible for the hospital to disregard likewise the matter of interest on funds donated for its perpetual use, it might be better if such institutions were to look on their endowments in the light of invested capital whose stockholders expected an interest return on their stock.

Let us consider then, for a moment, this vital element in its economic relation to operating expenses and see how such a point of view would affect our statement of "cost per patient," particularly as an index of real efficiency. For the figures ordinarily given in hospital reports as the cost per day per patient do not in themselves by any means record the efficiency of the institution. Such figures mean little except when taken in relation to the average time during which a bed is occupied in each case—the quickness with which the hospital performs its function and discharges its patient.

Presumably the better equipped institution—that with the most approved layout and apparatus—will turn out its patients at a smaller cost per day or in a shorter time, or both. The important question, then, is whether such savings are sufficient to justify the additional cost required to effect them. So the real efficiency of the hospital—its power to make profits for the community—can be determined only when in addition to its operating costs we take into consideration the cost of the plant, and the consequent fixed charges under which it must operate, exactly as in the case of a commercial enterprise.

Let us see in the case of the Johns Hopkins Hospital, for example, what the real cost would be per patient per day if the matter were looked at from a purely business point of view and proper allowance made for the use of the plant, and what even a small saving in time would mean in consequence.

The cost of the buildings and the apportioned share of the general land and plant investment used for the indoor service of the hospital totals approximately $3,600,000. Assuming an interest charge of 5 per cent. on this amount, without any sinking fund for replacement, the annual fixed charge would be $180,000.[2] This sum apportioned among 358 beds, which may be assumed as the average capacity of the hospital, would make a fixed charge of $500 per year to be carried by each bed, or $1.37 per day.

This item, which, as we shall see, increases the cost per patient per day by 45 per cent., is nowhere to be found in the Annual Report of the institution. This is but following the general custom of our hospitals; yet in cases where the amount charged as "running cost" is lower than at Johns Hopkins this silent factor is relatively even more important. The inclusion of proper fixed charges in many instances would increase the so-called cost per patient by as much as 60 or 70 per cent.

Now, the average time of occupancy for each patient is approximately three weeks; and if we were to assume that this could be shortened 5 per cent., it would mean a saving of a full day's interest, or $1.37 for each occupant; and for the average of seventeen patients per year, an annual saving of $23.29 per bed. This capitalized at 5 per cent. represents either an investment or a saving in endowment of $465 per bed; or for each ward of twenty beds, $9,316.

This, however, is only the saving in fixed charges. The same shortening of the period of occupancy would mean a saving also in the actual running expenses (stated in last year's annual report to average $3.03 per bed per day) of $51.51 for each bed; which again capitalized would represent $1,020 per bed, or $20,404 per ward of twenty beds.

Thus, when we take into account fixed charges in addition to operating expenses, the shortening of the average time of occupancy by a single day would represent a saving equivalent to the interest on an additional investment in plant of $1,486 per bed, or $29,720 for a ward containing twenty beds; or for the Johns Hopkins Hospital as a whole, containing 358 beds, the comfortable sum of somewhat over $500,000.

This calculation, it is to be noted—dealing only with the clinical service—takes no account of the collateral savings or advantages accruing to the other departments of the institution. Nor is any attempt made to estimate the financial value to the community at large of the time saved for its wage earners by a quicker return to work.

While a fraction of this $500,000 properly spent would make a vast difference in the atmosphere of a hospital, even one of the size of Johns Hopkins, the question still remains as to whether or not such a metamorphosis would effect the shortening of the average confinement by as much as twenty-four hours in three weeks. And though the amount figured above seems to provide a wide margin to work with, nevertheless for the moment I shall frankly beg the question. Nor will I here attempt any suggestions as to the spending of these capitalized savings, contenting myself with suggesting a line of thought—a point of view that may be worth investigation. From a purely commercial point of view, however, it would look on the face of it as if any increase of investment cost per bed less than $1,486 which would shorten its average occupancy by one day out of twenty would be obviously a good business proposition.

So for the present the sum of "somewhat over" $500,000 may remain in trust until I have time to prepare a second paper, after consultation with the doctors and psychologists, patients and nurses, dedicated to the purpose of spending it. Meantime, I might as well confess, I am keeping the trimmings, the "somewhat over"—the sum of $31,988, to be explicitly frank—with which to provide at once open fireplaces, window curtains and pink bed jackets for the entire hospital.

VI. THE INSTITUTIONAL ATTITUDE

I am afraid, however, that my good intention in these respects, even though gratuitous, will be met with objections from the authorities. Open fires make dirt and chimney flues harbor germs, enticed, one must

2. The figures on which these calculations are based were furnished by the comptroller through the courtesy of Johns Hopkins Hospital.

assume, from their present spacious suburban dwellings in the ventilating ducts. The hunting pink bed jackets show spots, and the window curtains are nothing short of an insult to the aseptic school of thought, and would cost a lot to wash, besides; to which I cannot refrain from replying, that both bed jackets and curtains being hypothetic, there is scarcely any chance of their ever getting dirty, and hypothetic washing would cost nothing if they did. And besides, if the dust is there why not catch it with the curtains anyhow?

But this whole matter of asepticism I am going to leave to the doctors, including the question of glistening tile and paint. For I suspect a certain amount of sympathy in their attitude in this matter. I have been secretly advised that because certain conditions in hospitals are general they are not necessarily right; that possibly the aseptic pendulum has swung too far; that cold white walls, even in the operating room, may be a mistake from an entirely practical point of view.[3] And as I reflect with what shocking clearness the dust shows on our black piano lid, I wonder whether these doctor friends are not right and take courage afresh in consequence.

As to the source of such objections as just cited, merely as typifying the ordinary point of view held by most hospital authorities, I cast no aspersions; although in passing I am tempted to take a deprecatory whack at the hospital superintendent. Not that there is any personal feeling about it—merely a matter of racial antipathy. For the superintendent is a fellow whose existence depends on lavish economy in other people's affairs, while the architect lives, of course, on wise and economic expenditure—expenditure anyway—oftentimes by these same "other people."

So even against these minor reforms, the efficient hospital superintendent will probably protest. From his point of view all these homelike things complicate; even walls of good texture and pleasing variety of color throughout large buildings mean trouble and expense in redecorating. And after all, he says, while you and I appreciate such things, the average patient would never know the difference. And herein he has usually been backed up by his board of trustees.

This is their manner of saying that the sense of beauty is a cultivated, not a natural sense; or if natural, then at any rate a negligible one. Whether this does not put the cart before the horse, the sense of beauty being the vital moving cause of all culture, is not to be discussed here; nor is it perhaps worth discussing at any time. But we are very presently concerned with the practical consequences of a theory which teaches that while the senses of heat and cold, of smell and hearing and touch, are to be reckoned with and respected—like all other bodily functions—the sense of sight needs no consideration; that the eye can protect itself.

I do not especially blame any of these gentlemen. It is more in sorrow than in anger that I point out the fact that if any of them were to scent an unpleasant odor in the ward (ether and iodoform are here classed by courtesy as "pleasant") they would be shocked; and still more so if they were greeted with distracting noises at every turn throughout the hospital and were told that both the smells and the noises were part of the hospital environment to which patients soon got accustomed—had to, in fact, unless they held their noses and kept their fingers in their ears. And what would they say if told that sick people of the class that come to hospitals do not notice smells and noises anyway?

Yet when I claim an analogy between discordant esthetic conditions, in color, line and form, and the corresponding reactions of the senses of smell and hearing when irritated by what we call smells and noises, they will dismiss it quite likely as an academic question. Furthermore, it will doubtless be claimed that even if this be true, we are all used to "visual noise and smells," particularly in the case of those liable to become ordinary hospital patients. And this, one must acknowledge, is more or less true. For while society recognizes noises and bad smells as evils against which the individual should be protected, and includes the boiler and the glue factory, the brass band, and even the church chimes, in the nuisance clause, discordant, hideous forms and colors are not mentioned. While, in short, the sense of smell and sense of hearing are protected, the sense of sight is left to protect itself, or grow callous. I admit, then, that the hospital patient is accustomed to more or less ugly and disturbing surroundings.

On the other hand, we do not argue that because the sick beggar on the street has not known what it is to be really warm for months he can just as well be left cold when he is taken into the ward. As a matter of fact, he is apt to get a special dose of hot things. And that even this same beggar would not react—subconsciously if not consciously—to a radical change of visual environment—that he could not feel the difference even though he could not consciously appreciate it—I am prepared to question.

My point here is fairly well supported, I think, by the example of the negro and the primitive savage. Even the simple minded country bull has an opinion in this matter of color. And his opinion is at least entitled to respectful consideration. At any rate it has always received it.

Of course I am not speaking of those niceties of value, color and form that one ordinarily correlates with the words "esthetic" or "artistic"; nor of architectural scale and design where the case is less obvious than in the matter of color. The appreciation of form is higher up in the scale of sense perception. But because we have not as yet recognized its presence except in the so-called cultured human being is no proof that it does not exist, even in the average hospital patient.

Again, the attempt to capitalize the glow of the open fire and the brass knobs on the beds may be challenged as far-fetched. But think for one moment what the world pays to satisfy the esthetic instinct of mankind. Are the billions spent annually for such purposes merely colossal extravagances—simply unrelated madness exhibited by nine tenths of the human race? When commercial greed plays on such sense instincts in a thousand ways, for the single reason that the satisfaction of their hunger pays rich dividends, can you say that such "feelings" are negligible, have lost their power to respond when we need them for higher purposes, as an aid in the alleviation of suffering, a stimulus to life and happiness? For centuries Mother Church has known and used them to the utmost—music, incense, stained glass windows, wondrous architecture—as a mighty aid in her work of exalta-

3. For example, the walls of Carrel's operating room in the Rockefeller Institute are painted very dark gray, almost as black as the sheets, gowns and masks used to cover the patients, assistants and the surgeon himself.

tion. Why then should Medicine admit them to the hospital only on sufferance?

VII. CONCLUSION

The generic function of architecture is, of course, the proper housing of the human race, in sickness as well as health, and I venture to say that there is today no greater field of prophylaxis against disease. It is fast becoming so recognized in all civilized countries. The point I make is, that if the art and science, the esthetics and mechanics, of architecture are useful in the prevention of disease, so also may they be of service in its cure, and that this involves more the art than the science of architecture. For the profession may properly be thus defined, theoretically, as of two departments, after the fashion of medicine and surgery. No less, unfortunately, is it largely practiced as one to the exclusion of the other, nowhere more regrettably than in the case of the hospital, where too often the science has entered to the exclusion of the art. So it has happened that among all the new hospital conditions that have combined to make the radical advances since the days of Bedlam and the old "Hotel Dieu," one looks usually in vain for the esthetic element—a consideration of the sense of beauty. With rare exceptions, the only real esthetic touch in our great hospitals is an accidental one—the trained nurse in her cap and gown. And I venture to say that, considered merely as a piece of decoration, she has done more than any other one thing to counteract the blight of the institutional atmosphere.

The Æsculapian temples of healing were shrines of beauty. Should we then consider the modern hospital as nothing more than a huge shelter provided for the surgeon's, doctor's and nurse's work, as an aseptic workshop furnished with power and machinery, the latest tools and the most perfect equipment and scientific aids to research and clinical efficiency, merely a complex of conveniences and apparatus? Or can we consider it not merely a great mechanism, but a silent agent in the art of healing?

Is this utopian? Is there healing virtue in sunny climates, in the scent of pine woods, in the stimulating sight of lofty mountain peaks? And is the value of such things found only in direct physical results? Is environment powerful only in aspects of nature? Does our sense of sight react less powerfully to walls of cheerless glaring plaster than of sunlit foliage? Must the patient make the effort to shut out the one while he welcomes the other? And is an invalid less sensible to such things than the well man? Is the sense of beauty measured altogether by a man's strength and vitality any more than by the degree of his so-called culture?

Am I wrong in thinking that, after all, the most perfect hospital is the one which most nearly satisfies the requirements of that master of all consultants, Dame Nature, and that diagnosis, operation, treatment, research, are all but a seeking to find the way of least resistance through which Nature shall work? And if this is so can we afford to neglect the least helpful thing even though we believe others more important? Can we yet say through which door of the bodily senses this healing spirit is most apt to come and go? Above all, should we neglect the sense of sight? Or is it mere poetic license that calls the eye "the window of the soul," thus rating vision, psychically, as our master sense? Is it right that the sense of beauty should receive full communion in God's cathedral of Nôtre Dame and a block away be cast out like some dreaded heretic from the Hotel Dieu?

That a profession whose great minds hail medicine and surgery as inseparable would wittingly call in the architect to serve as master builder but exclude him as the artist, I am indeed loath to believe.

"Λαμπάδια ἔχοντες διαδώσουσιν ἀλλήλοις"—"Having torches they passed them on, one to the other." And should it not be today—and always—as it was in the days of the torch race? In his address in surgery on the "Realignments in Greater Medicine," Cushing pleads for the wider cooperation of medicine and surgery and their allied sciences; which, as he quotes from Huxley, "are independent in proportion as they are imperfect." And so he speaks hopefully of the closer copartnership into which the men of medicine, surgery and scientific research are now entering. But must we stop there? Is it presumptuous to suggest that in this business of healing the sick in hospitals, the art of architecture be included as a kind of special partner? Are there not times when in the brotherhood of all the arts and sciences one profession should take the torch from another, as did those Greek runners, proud to be its bearer if only for a moment, eager to advance it toward the goal; content if only it be none the dimmer for his carrying, and ready to yield it in turn to some fresh runner in the race of human progress?

So, while as an architect speaking of things medical I have some fear lest parts of this paper appear to be rather superficial criticism of things beyond the scope of my profession, from a broader point of view I make no apologies. For to my thinking the universality of art, both in extent and intent, enfranchises the craftsman in every domain of human activity in which he renders service—gives each profession a brevet in the ranks of every other. So I feel that in a large sense, even as it is, I speak among confrères.

In such a spirit at all events, encouraged, be it said, by some of those who are today the acknowledged torch bearers of greater medicine, I have thus ventured into its kingdom, asking "safe conduct" for the sake of the Art whose passports I carry.

20 West Forty-Third Street.

THE CASUALTIES OF MODERN NAVAL WARFARE*

F. E. McCULLOUGH, M.D.
Surgeon, U. S. Navy
WASHINGTON, D. C.

A consideration of the casualties and surgery of modern naval warfare were best approached by a brief review of ancient and modern naval battles, the implements used for the destruction of the enemy, and the character of the casualties inflicted. The means used for caring for the wounded would be almost a recital of the history of medicine and surgery.

The Bible, though replete with land warfare, beginning with the first battle described in Genesis xiv, 14-15, wherein Abraham had under his command a body of men for distinctly military purposes, fails to recount a single naval engagement, for the reason that the only two fleets enumerated (and also described in profane history) were designed for commercial instead of war purposes. Solomon controlled the Red Sea by reason of David's conquests, and only by consent

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

of Solomon could the Tyrians pass through this sea. They had gained the mastery, but not the supremacy, of the sea. King Hiram of Tyre built and manned a fleet for Solomon, who sent it to Ophir for gold, from which port it safely returned. The Tyrians also built a fleet for Jehosaphat for the purpose of bringing gold from Ophir, but the ships were large and unwieldy and were broken up on the shore of Tarshish, a port of the Red Sea. Though possessed of military skill and with a knowledge of strategic maneuvering, they did not take kindly to the sea. They intuitively divined that which Hawkins derived from experience — that "The sea is naturall for fishes and the land for man." When the sons of Jacob came to sojourn in the land of the Pharaohs, the Egyptians were already expert in warfare and had a considerable army. A bas-relief from Thebes (period 1400 B. C.) depicts a naval engagement wherein the Egyptians vanquished the Indians. Herodotus describes Egyptian war galleys 126 feet long and 16 feet beam and writes that they were manned by the rowers and soldiers. These vessels had a raised poop, on which the archers were mounted, and had a metallic ram bow. They were built of strong acacia planks; ribs and knees and the masts were of fir. Xenophon give an excellent description of the Greek war galleys.

The stage of the simple missile weapon had no doubt passed before the first sea fight, but we find the dart, the javelin, and the spear of the missile type, and for weapons at close quarters, the cleaving axe, the crushing club, the thrusting sword or dagger, and the ram bow; and last, the discharging missile type, comprising the bows of the archers and the catapult. These were used in the earliest naval engagements and the wounds inflicted can readily be conjectured.

Greek legend relates that Minos, the Phenician ruler of Crete, sent out ships to free the Grecian sea of pirates; this was two generations prior to the siege of Troy and the Argonautic expedition. The sea coast had been devastated and nothing remained but a pirate village or the abode of a fisherman. Thucydides states that the oldest sea fight was that of the Corinthians against the Corcyreans. Their small and deckless craft were the origin of the valorous Grecian navy, which with a much inferior force vanquished the great Persian fleet of Xerxes, numbering 1,207 vessels of war, exclusive of the transports, having a complement of 241,000 men, in 480 B. C., between the island of Salamis and Attica, the first decisive naval battle of the world's history. In Herodotus' account of the battle he describes the Persians as healing the wounds of the brave Grecian, Pytheas, with myrrh and binding them with flaxen cloth.

At the battle of Actium, 450 years later, Antony's fleet of 200 heavy vessels armed with the heavy artillery of that period, was set on fire by four fire-ships and destroyed. The great loss was from drowning and burning.

Rome maintained an imperial navy as a part of her military establishment. A tablet was found on the Elysian fields, in the vicinity of the Pontus Julius and the station of the imperial fleet, erected to the memory of M. Sartorius Longinus, physician to the *Cupid,* a three-banked ship. When it is considered that the complement of men in the ships of this period was about 480 it is probable that medical men accompanied navies as well as armies.

Passing to the sanguinary battle of Lepanto in 1571, wherein the states of the Mediterranean united against the Turks, and 273 Turkish vessels engaged 208 heavier Christian vessels, the Turk force of 20,000 men was almost all sunk or driven ashore. In the engagement the Christians were armed with cannon and small arms, but the Turks relied principally on bows and arrows. "The arquebusier, the musketeer, and the bombadier of the Christian force looked carefully to the state of their weapons and equipment and the surgeons prepared their instruments and bandages, and spread tables in dark and shaded works for the use of the wounded." In the conflict 20,000 Turks were killed, largely by fire arms, and 8,000 Christians perished by the arms and cuirasses of the Turks. On Cordona's galley "the masts and spars were stuck full of arrows" and 450 out of the 500 Sicilian soldiers were killed. Cordona received a wound in the throat, of which he died. Lepanto, which spoke the doom of Turkish naval power, was the last European battle in which a commander used the crossbow.

Seventeen years later came the defeat of the Spanish Armada — 32,000 Spanish on 132 vessels, and 17,000 English on 197 vessels, generally smaller (although the *Triumph* was 1,100 tons). The fire-ships played an important part for the English in this conflict "with almost equal effect to that of the fire-ships which the Greeks so often employed against the Turkish fleets in their war of independence."

In Nelson's great victories, the Nile and Trafalgar, the French casualties were appalling, especially during the Nile engagement, wherein the *Orient* caught fire and exploded. In this battle, of the 11,000 persons in the French fleet, but 6,000 returned to France.

Passing to our own naval battles, in the first American victory in the engagement between the *Bon Homme Richard* and the *Serapis* we find a high casualty rate. Jones gave the wounded on board the *Serapis* as more than a hundred, and the killed probably as numerous. Of the wounded, thirty-three were said to have been "miserably scorched," doubtless by the explosion of the cartridges on the main deck. This means a casualty list of nearly 70 per cent. The *Richard* had forty-two killed and forty wounded, a total of 25 per cent. "Two of the three eighteen pounders in the *Richard's* gun room burst at the first fire, spreading around an awful scene of carnage," writes Slidell. "The three American guns which remained in commission were double shotted and loaded with grape and canister to clear the enemy's deck. From the *Richard's* tops and yard arms, hand grenades were dropped setting the *Serapis* afire many times. One of these set fire to a number of cartridges, which exploded and killed twenty men at the guns and stripped the remainder of their clothes, burning them frightfully."

The American sailors during the Revolution were better marksmen than the English. Trained in the backwoods to take aim before firing, they practiced these tactics with their batteries, while the English fired point blank. They also used carefully aimed, slow moving, heavy balls, which splintered the wooden sides of their opponents, annihilating whole gun crews with the resultant shower of splinters. "This is how the *Wasp* demolished the *Frolic* in forty-three minutes, and the *Hornet* demolished the *Peacock* in just eleven." At the battle of Lake Erie, as the result of the concentration of the British fire on the *Lawrence,* out of a crew of 101 there were eighty-three casualties. The guns used in the engagement ranged from four to twenty-four pounders.

During the Civil War, one half of the *Cumberland's* crew perished when the iron prow of the *Merrimac* rammed her. At the same time a raking fire of shells was poured into the Union frigate's side. "The battle of the afternoon had ended the day of wooden navies." In the battle of Santiago 353 of the Spanish were killed or drowned and 151 wounded. At Manila Bay the Spanish casualties were 167 killed and 214 wounded. At the battle of the Sea of Japan 4,000 Russians perished and but 116 Japanese were killed and 538 wounded.

From Sanoyeshi and Suzuki, of the Japanese navy, we have detailed accounts of the casualties of the naval war between Japan and China, and from Suzuki, Totsuka, and Braisted, those of the Russo-Japanese war; and from Medical Director C. F. Stokes, former Surgeon-General of the United States Navy and Surgeon Don Juan Redondo of the Spanish navy we had the same of the Spanish-American war. These different reports agree generally as to the gross lesions, and from them the following summary is drawn.

The hollow steel shell, with its conical point and its interior mechanism, which causes detonation on impact, ignites the large bursting charge, causing a comminution of the steel, producing a conical shaped shower from the point of disintegration, in consequence of its mass momentum. Added to this is every object struck by the fragments, which becomes a secondary missile. These may be wooden or metal objects—a splintered door or a bursting steam pipe. Shell fragments are irregular in size and form, with roughened and sharp edges. They retain so much heat that the tissues in which they lodge are seared. Their velocity is relatively low.

Wounds occasioned by shell fragments, or by the secondary missiles caused by shell explosions, will naturally vary according to the size, form, momentum and gyration; the difference in the tissue affected is even greater. Laceration is the common characteristic of all lesions, whether the tissue be soft or bony. Great extent, multiplicity, and the frequency with which missile fragments and portions of clothing are carried into the wound are other happenings. The wounds of entrance are generally smaller than those of exit, but the reverse condition sometimes happens. As Suzuki remarks, "This phenomenon and others are hard to explain." He found cavities of blind wounds with comparatively small inlets containing fragments of shell several times larger than the wound itself, wounds of only one orifice, in which no fragments of shell or splinters could be found lodging, even with the Roentgen ray, and at postmortems others were found, the presence of which could not be accounted for.

Multiplicity of wounds is usual; there may be more than a hundred wounds from one shell in a single individual. The different wounds on the individual will vary widely in character. The majority of the wounds are blind, and as compared with bullet wounds, perforations are relatively few, this being the result of the decreased velocity. Troublesome hemorrhage is rarely produced, even though the wounds be large and in several parts of the body, although there is great injury from extensive wounds. In mutilated wounds of the limbs the blood vessels were frequently cut through, with but few cases of hemorrhage, owing to the retraction of the severed ends. Fragments often pass close to the blood vessels without injuring them. Comminution of a bone generally results when small fragments strike it; yet at times the bone is merely fissured or chipped off. Traumatic aneurysms are common. The shell fragments may be lodged at any depth and involve every structure of the body. The bursting steam pipe or exploding boiler, perhaps complicated by displaced ashes, will cause every variety of burn. Concussion of the brain and rupture of the membrana tympani are frequent occurrences.

With reference to the infection of wounds from shell fragments the majority of observers report that infection is general. Redondo states that wounds in naval battles, in the great majority of cases, are not, and cannot be, aseptic wounds in which we hope for quick healing under the simple first-aid dressing applied on the instant, and Stokes concluded, "It is not surprising that they are so commonly infected when we consider the extent of contused and lacerated surfaces exposed to contaminating influences." Both these observers wrote from conditions observed during the Spanish-American war in 1898. Suzuki is more optimistic; he writes: "Shell fragments are generally antiseptic. Wounds of small shell fragments generally heal by primary union. When suppuration occurs examination should be made for the presence of foreign bodies, which once removed, wounds heal quickly." These conclusions are from observations during the Russo-Japanese war of 1904-1905. Suzuki, however, remarks: "Even in peace complete asepsis is a difficult matter of attainment on board ship. During an engagement it is ten times more difficult. During the firing of guns, the hastening to and fro, and a thousand other things that fill the air around the temporary surgery with dust and particles of matter, a number of wounded cases are brought in, each demanding immediate attention, and asepsis is impossible." Two other valuable remarks of this careful observer are that covering the wounded surface with skin is a good protection to it, and in cases of compound fractures, free segments of bone in the cavities should be extracted, but if not completely detached, they should be permitted to remain in the cavity.

The comparative frequency of wounds with reference to the parts of the body involved vary with different observers. During the Russo-Japanese war, of 2,164 wounds reported by Suzuki the following percentages are recorded:

Lacerated wounds	32
Contusions	21
Abrasions	10
Blind wounds	10
Burns and scalds	6
Multiple wounds	6
Concussion of labyrinth, rupture and congestion of tympanic membrane	5
Perforated wounds	5
Pulverized wounds	2
Wounds with loss of soft tissue	2
Incised and punctured wounds	1

The difference between wounds inflicted during naval battles and those on shore is due to the fact that about 90 per cent. of those on board ship are the result of shell fragments, and of those of land warfare 90 per cent. are inflicted by bullets of small caliber, high velocity and penetrative force. An examination of the available reports of the present war from British naval hospitals, and from the naval action off Heligoland, in the North Sea, and at Zanzibar shows

no change in the relative per cent. of casualties from shell fragments from that in previous naval wars.

In wounds from small caliber bullets, at times both the wound of entrance and exit are located with difficulty. The present war has not altered the status. Osler remarks, as a result of his observations of wounds of this character in the present war: "They illustrate the inefficiency of the modern rifle as a weapon of war." Of nine wounds of the chest, seven were complete perforations with bullets, one shrapnel bullet lodged in the lung, and one fragment of a shell had also penetrated the lung. "These men had been wounded within a fortnight, yet all were up and about, without fever, practically without cough or other symptoms, and with very few physical signs." The wound of entrance in all was small and healed, the wound of exit a little larger and healed. "The death rate in the Spanish-American war was 27 per cent., while in the Japanese war in 927 cases, it was only 3.67 per cent." The mortality in the present war may be still lower. The observations of Alexis Carrel are to the same end. The Berlin observations are also corroborative.

Medical Inspector Gravatt of the United States Navy reported that during the battle of Santiago, when a competent first dressing was applied, wounds did remarkably well, notwithstanding unfavorable surroundings. He also stated: "One of the most practical lessons taught by the war, ashore and afloat, and about which all observers are agreed, is the importance of a competent first-aid dressing in preventing wound infection."

Surgeon C. M. Oman, United States Navy, recently wrote: "It can be prophesied with assurance that most wounds of naval warfare will suppurate, but with liberal use of iodin this ought to be less marked than in former battles." In view of the great efficiency of iodin in emergency surgery in civil life all agreed in this optimism, and it is as discouraging as it is astonishing to note the following from the "Preliminary Report of a Committee Appointed by the Director General of the Medical Department of the (British) Navy, in December, 1914, to Inquire into the Best Method of Treating Wounds Sustained During an Action, Especially During the Early Period After Their Infliction." The report was published April 1, 1915, and its committee membership is Sir Watson Cheyne, Fleet Surgeon, P. W. Bassett Smith, and Mr. Arthur Edwards, F.R.C.S.—all eminent names in the British medical and surgical world.

The report contains this sentence: "*Many of the wounds which have been treated with iodin are amongst the most septic which we meet with.* It is quite clear from all these facts that iodin is useless for the disinfection of wounds in war, or for inhibiting the growth of bacteria in wounds." The provisional recommendation of this committee is: It is proposed to recommend this combination (salicylic acid and boric acid in equal parts) to the navy in the form of pepper pots (pepper shakers) containing about 1 ounce each, and of paint tubes (collapsible tubes) containing ½ ounce of 20 per cent. cresol paste (in lanolin and wax base) the tubes being provided with a nozzle about 2 inches in length, which are screwed on the ends of the paint tubes, so that they can be introduced into the depths of the wounds in various directions. This tube should be used on only one patient and then thrown away. In the ships a sufficient quantity would be issued to deal with the probable number of wounded; in the case of a naval contingent acting on shore each man would have a pepper pot and a tube in his field dressing. In case of a wound at the front the first thing is, of course, to stay the bleeding as much as possible, and then to powder the whole surface thoroughly. The cresol tube is then introduced into the wound and small quantities of the contents are squeezed into it in various directions, endeavoring, as far as possible, to leave small portions of the paste scattered over the whole surface of the wound, not more than 1 inch apart. Some of the paste should also be smeared over the skin around the wound, and after a final dusting of the borosal powder, the emergency dressing is applied. This can be done quickly and the patient can wait till such time as the wound can be more thoroughly attended to.

For many years medical officers of the different navies were at considerable variance as to where the battle dressing-station should be located, and also as to what activities should be attempted by the medical and hospital corps during action. In our latest superdreadnaughts there will be two battle dressing-stations on each vessel, entirely behind armor. Beginning with the battle ships authorized in 1898, all our larger vessels and many of the smaller are provided with a fully equipped operating-room, dispensary, and hospital (sick bay). Quoting Medical Inspector Thomasuri of the Japanese navy: "In the older warships, constructed originally without provision for special distributing stations, it is often found that the position of a temporary distributing station has been settled on the eve of an action or engagement. Thus during the Chino-Japanese war in 1894 and 1895, the Japanese warships used the officers' wardroom as a dressing-station, and owing to its exposure to the fire of the enemy the *Hiyei* had her dressing-station destroyed at the beginning of the battle of the Yalu. The entire medical staff and all those who were at the moment in the wardroom were killed or wounded." In the days of Nelson the wounded were carried to the cockpit. "The surgeon is placed in the hold, where he should be in no danger of shot, whereby they will be deprived of all help for hurts of wounded men." This was the procedure of that period. All such questions have been disposed of after years of consideration and all such questions are provided for in the recently issued "Manual for the Medical Department of the United States Navy." In equipment and preparation no navy in the world is better provided for. Hypothetic casualties are cared for at drills and general quarters, the routes of transportation to dressing-stations and the compartments of the ship are constantly studied. Medical officers are detailed to the Naval War College, as Surgeon General Braisted stated: "To study most carefully the plans of the proposed operations, and to familiarize themselves from the military standpoint with the demands that will be made and so to prepare and equip that the campaign may not end in defeat and disaster on account of a personnel overcome by disease and disability."

Naval warfare is evolutionary, hence its casualties will be varied. The present conflict has not varied materially from the calculations of many naval strategists, except possibly in the extent of submarine activity. If two navies of equal, or nearly equal, strength were engaged in a contest for the supremacy of the

sea, or to land an expeditionary force, and an engagement between superdreadnaughts, or composite fleets of superdreadnaughts, battle cruisers, and destroyers, we would anticipate a different type of casualties than has occurred in the present war, principally in the diminished ratio of deaths from drowning. But excluding this single cause of death, all other casualties may be anticipated, and in some measure provided for.

The following is the "Detailed Organization for Relief of Wounded Aboard Ship" in the United States Navy, to which previous reference was made:

The regulations require that the medical officer shall frequently advise the divisional officers in the use of the first aid appliances. These include shell wound dressings, designed to occlude and protect the wounds caused by shell fragments, and tourniquets for the control of hemorrhage. In addition, instructions in resuscitation of the apparently drowned are given. The divisional officers in turn give instruction to the men under their immediate command. The medical officer also provides for the instruction in first aid and transportation methods of the hospital corps and stretcher men in number equal to about 2 per cent. of the complement of the ship. Turrets, handling rooms, gun stations, torpedo, fire and engine rooms, and fire control stations and other stations not readily accessible, in which men and officers are stationed in battle, should be provided with first aid appliances. Dressings for burns and scalds in engine and fire rooms, plainly labeled, should be accessible to the occupants of these stations.

Modern naval warfare presupposes a high casualty rate and a rapid accumulation of the wounded, but the casualty rate will vary widely on different ships, probably being the highest in the leading divisions. Any effective organization of medical personnel to meet the demands of the wounded in a naval engagement will usually go beyond the facilities of a single ship and will necessitate the adoption of a more comprehensive scheme of assistance external to the ship, but every vessel should be self-sustaining as far as practicable, and no effort should be spared to attain this end. When wide dispersion of the ships or other conditions render outside assistance unavailable, the measures to be adopted by the ship's resources alone during and subsequent to battle will comprise the following:

Continuous first aid to the wounded during battle on the part of the personnel at large. The effectiveness of this service will depend largely on the thoroughness with which the units have previously been instructed by the medical and division officers, as required under the regulations, and how well they have become imbued with the principle that first aid, calmly administered by themselves or comrades, represents the maximum service that can be rendered the wounded during the height of a naval action. The ship's force should have been warned that elaborate measures of treatment or extensive transportation during battle are inadvisable and impracticable. The wounded man after the administration of first aid, should be placed to one side where his presence will be the least felt, and where he will not incommode or disturb the fighting force.

In a suspension or lull in the battle, or after the engagement upon notice from the central station, and when prompt treatment of the wounded in or near the fighting position is denied or deferred for any reason, the stretcher men may be required to seek out and transport certain of the wounded to the battle dressing stations. It should be the first duty of the medical officer to give attention to such of the wounded as may render further service at the guns or elsewhere after the application of the appropriate treatment. These men should be promptly returned to their stations. It must be borne in mind that the primary purpose of first aid is to keep as many effectives at their stations as possible. A graver class of injuries may require deliberate surgical intervention, but extensive procedures on the part of the ship's force are only legitimate if evacuation of the wounded, for any reason, is delayed or rendered inadvisable. The personnel of the Medical Department should institute a search for the seriously wounded to afford them relief and to prepare a list of the dead as soon as practicable. To assure the wounded early and efficient treatment, effect their rapid removal from the fighting ship, and insure a continuous record of each case is the object of the organization.

General Quarters: When at exercise simulating action (in so far as it is possible to do so) the medical officer will employ this opportunity to instruct the personnel of the dressing stations in their duties, insuring himself that all members of the ambulance party are competent to administer first aid; that they understand their stations and the limits of the ship assigned to them, and the usual routes of transport to and from the groups of personnel. At drill the dressing stations will not be equipped in advance of the signal "general quarters."

Battle Dressing Stations: Battle dressing stations should be easy of access and located behind armor. Routes to the dressing stations should be indicated by an arrow and a red cross. There should be at least two, one installed as a main or primary dressing station, and one as an accessory or secondary station. The stations should have an abundant supply of drinking water, all connections being installed behind armor. As these connections might nevertheless be interrupted, storage tanks for drinking water should be provided, having a capacity sufficient to furnish in first-class ships 1 gallon of water per man, allowing for 20 per cent. of wounded. Dressing stations should also be well ventilated and well lighted, and as cool as the surroundings will permit. It has been estimated that each 36 square feet of area should be provided with one cargo light of approximately 200 candlepower (six lamps). If possible, connections for electric lights should be distributed on two circuits; lanterns or some other means of lighting should be available in case the electric lighting circuits suffer interruption. Electric or steam connections should be provided for the water and instrument and dressing sterilizers. In ships wherein proper connections are provided, sterilizers should be removed from the surgical operating room and set up in the main dressing station prior to the action. When so installed they should remain during the period of hostilities. If possible there should be some provision made for the drainage of this space. In the vicinity of the dressing station or adjoining it there should be arranged a berthing space for the wounded sufficient to accommodate about 10 per cent. of the complement. This space should be easy of access from the dressing station, and like the latter, have an abundant air supply. In addition to the usual equipment transferred from the sick bay and operating room and distributed in the dressing stations, the following articles should be provided: electric fans with proper connections; half tubs; water buckets; swabs and brooms; washing stands; tables for apparatus; shelves; supports or hooks for irrigators; dressing lockers; bedding for the berthing space for wounded; restoratives, etc. A reserve supply of surgical dressings should be available on this deck in a secondary station, behind armor and accessible for distribution to the dressing stations if required.

The station of the medical officer of the ship during action will, as a rule, be at the main (operating) dressing station, where he will see that the necessary equipment is provided.

Preliminary to battle the personnel should be required to bathe and put on clean underclothing.

Means of identification of the dead should be provided for each officer and man.

The organization of the Medical Department, showing all the dispositions under battle conditions, should be worked out for the ship as soon after going into commission as practicable. Provisions should be made for the instruction of officers and men in first aid as described above; and for a definite organization of the personnel of these stations, as well as for their progressive instruction in first aid and transportation methods. During action the difficulties of transportation preclude any extensive exercise of the functions of the stretcher men, and as their most important duties

arc to be performed after the action is over, or during intervals of action, they will avoid exposing themselves unnecessarily. Such emergency work as is feasible will be performed.

The galley and bakery of ships of old types if intact after the engagement may be placed at the disposition of the medical officer for preparing additional hot water and dressings and for sterilizing instruments.

Operating Room: If not dismantled, the ship's operating room may be made use of after the action to supplement the work of the dressing stations, provided the removal of the gravely wounded direct to hospital ships is not feasible.

Transportation of Wounded: Apparatus will be provided by the medical department of the ship for the transportation of the wounded, but complicated appliances liable to displacement will be avoided. Simple measures designed to facilitate transporting wounded by stretcher directly to the dressing stations by the most convenient hatch, down which they will be lowered or passed by hand to the deck below, or over the side to boats from the hospital ship, are to be preferred to more elaborate means of transport.

A suitable place should be assigned for the disposition of the dead.

When the medical transport or hospital ship is at hand the seriously wounded should be transferred as promptly as is consistent with their welfare. A fighting ship should be cleared of such cases as soon as possible after an action, in order that she may be ready to reengage in battle. On the other hand, patients who will probably soon be fit for duty should be retained on board, and these may constitute a large proportion of all cases.

There would seem to be no great difficulty in teaching men of the mentality of a navy such as ours to properly apply a first-aid dressing, and experience has demonstrated that there is none. When the individual applies his first-aid dressing self-preservation will inspire him to do it properly. When it is impossible for him to apply it all that is needed on the part of his comrades, in addition to proper instruction and equipment, is presence of mind. Notwithstanding the instructions furnished Japanese sailors during their last war, Surgeon General Suzuki said he was somewhat disappointed that the wounded had not carried out his instructions more carefully. About one third of the wounded did apply, or had applied, the first-aid before coming to the dressing-station; the remainder simply grasped the wounded portion or member and came to the dressing-station.

All will agree with Volkmann, "The fate of the wounded rests on the hands of the one who applies the first dressing."

The effects of powder-gases and smoke is a cause of serious concern during a naval battle. The powder in shells is composed of nitroglycerin, gun cotton, nitrocellulose, and a deterrent; the combustion products include CO and NO_2. "From the composition of powder-gases," writes Stokes, "it is evident that we shall have two types of poisoning; one resembling illuminating gas poisoning, the other irritative in its effects. A larger dosage of powder-gas may lead to unconsciousness and death." A shell exploding in a closed compartment is more serious than one in the open air, on account of the concentration of the gases. Spear writes, "The fumes from bursting Shimose shells in closed compartments had the effect of making the men exposed weak and nauseated and causing a sensation of weakening, without a loss of consciousness. Some of these men recovered quickly; others took days before all symptoms had disappeared." Stokes concludes, "It is probable that the undue proportion of prostration attending shell wounds, formerly attributed to shock, is really due in part, at least, to gas poisoning and not to injury alone." In this connection, the following extract from an account of "Wounded Treated at the Royal Naval Hospital, Shotley," by Fleet Surgeon L. W. Burton, R. N., is interesting (out of 197 severe cases there were eleven cases resulting from the inhalation of lyddite fumes, two resulting fatally):

I could see no difference, clinically, between the effects produced on German seamen by the inhalation of fumes from lyddite shells and on our men from the fumes of the German mines, so I suspect the noxious gases produced by the explosion in both are very similar, and that the effect is due mainly to nitrous fumes, such as are given off by the burning, not detonation, of almost any of the nitro explosives. These cases proved the most insidious and most rapidly fatal of any which came under treatment. Patients who were apparently suffering very little inconvenience on admission rapidly became asphyxiated and died within twelve or twenty-four hours, with all the symptoms of an acute capillary bronchitis or bronchopneumonia, which evidently resulted from the irritant action of the fumes on the vesicles and mucous membrane of the bronchioles. They first complained of some pain and tightness around the chest, which gradually became worse and was accompanied by cough, marked dyspnea, and the expectoration of blood-stained frothy mucus. As the minute tubes became more and more aggravated and violent, efforts were made to aerate the blood, as was seen by the sucking in of the suprasternal, supraclavicular and intercostal spaces with each breath. Respiratory distress became more and more marked as the inspiratory efforts became less effectual, and the patient gradually passed into a state of coma, and finally became quite unconscious. The heart beat feebly for some time after respiration ceased, and after death a copious discharge of blood-stained frothy mucus from the mouth and nostrils continued. As regards the treatment, there is little to be said. Some temporary benefit resulted from the use of oxygen and the bronchitis kettle, but no medicines tried seemed to retard the rapidly fatal progress.

Staff Surgeon Hewitt, R. N., in his "Report on the Casualties in Action Between the *Pegasus* and *Konigsberg*," states: "The fumes of the high explosive powder used seem to have a sickly, stupefying effect and perhaps cause a feeling of dizziness, but those may have been due to concussion. I, personally, had been breathing more deeply than normal in assisting a wounded man up a ladder from the torpedo flat, where the fumes were particularly dense, and experienced a feeling of nausea and dizziness. For several days after, on deep breathing, one seemed to exhale the same fumes. Others were affected in a similar manner." Surgeon Hewitt was wounded in the action.

The menace of smoke may be appreciated when it is deemed necessary to protect the smoke stacks of the new superdreadnaughts with 13-inch armor. The supply ventilating apparatus of a warship cannot be operated during an action on account of the danger of forcing products of combustion into the interior of a ship. Nothing more disconcerting could happen than the perforation of a smoke stack in any part from which the smoke would pour into the occupied spaces.

From the foregoing it is evident that the surgery of naval warfare of today, other than first-aid and emergency measures, must be most conservative until action has entirely ceased. The conservatism disappears partially with the cessation of action, and before the arrival of the hospital ship or transport, and not absolutely until the sanitary base is reached. Chloroform must be the anesthetic, on account of its rapidity. Shattered limbs will require amputation, and collapse from abdominal hemorrhage may require laparotomy.

Severed nerve ends must be united and dyspnea from throat wounds and depressed fractures should be regarded as surgical emergencies. The immobilization of fractures and search for foreign bodies should be performed as expeditiously as circumstances will allow, until roentgenoscopy is available. Burns, even the most extensive, require picric acid in saturated solution applied with thick layers of gauze kept well moistened. For shock, morphin in half-grain doses, fresh air and physiologic salt solution should be used.

The cause of the greatest number of deaths during naval warfare is the same as during peace, namely, drowning. During the Russo-Japanese war out of a total of 1,891 deaths in the Japanese navy, 1,445 were from drowning. During the engagement off the Falkland Islands, between the British and German fleets, of a total complement of 2,177 on the *Scharnhorst, Gneisau, Leipzig,* and *Nurnberg,* the British Admiralty reported "only a few saved." The casualties in the British navy, from the beginning of the war up to March 18, 1915, were 6,668. Most of these were probably from the sinking of Admiral Cradock's fleet off the coasts of Chile, and that of the *Cressy, Aboukir, Hogue,* and *Hawke* off the European coast.

Submarines, which have proved so efficient in offensive operations during this war, have many elements of danger to their crews. P. A. Surgeon W. H. Halsey, U. S. Navy, from experience with this type of craft, summarizes, to wit:

The dangers from without may be from striking an obstruction when running submerged, striking an obstruction when coming to the surface after a submerged run, diving to too great a depth to be able to acquire sufficient buoyancy to come to the surface, as for example by reason of an abrupt dive, leaks in the water-tight body of the boat and vitiation of the air in the boat due to constant rebreathing and the running of the engines with the batteries on a long submerged run, or when it is impossible to come to the surface.

The dangers from within comprise gasoline poisoning in the gasoline type of boat, which may occur from breathing the fumes of the raw or burned gas and demonstrates itself in various forms of nervous excitation. Wild delirium is frequently seen in gasoline poisoning, and sometimes coma of the profound type. Poisoning by hydrochloric acid gas, from leaks into the battery tanks, may occur. The electrolyte is sulphuric acid and when salt water leaks into it hydrochloric acid gas spreads through the boat with great rapidity; men are overcome by the gas almost instantaneously. There is a coughing, choking and gasping for air, and then collapse. Battery explosions sometimes occur, due to the rapid combination of the nascent battery hydrogen with oxygen; this is usually due to defective battery ventilation. Back fire in the gasoline exhaust, sometimes due to ignition of unburned gases in the exhaust, frequently occurs.

Climate and Tuberculosis.—Climate exercises absolutely no influence on the more or less marked frequency of the disease. Tuberculosis takes place just as frequently and its appearance is just as serious among the Esquimaux and the Laplanders as among the negroes of the Congo State or the Kanaki of the New Hebrides. If, generally speaking, these races suffer less than the Europeans, this is exclusively owing to their habit of living together in less numerous groups, and also owing to the nomadic life which some of them habitually lead.—A. Calmette-Lille.

THE RÔLE OF THE NOSE, THROAT AND ACCESSORY SINUSES IN THE ETIOLOGY OF CHRONIC INFECTIOUS ARTHRITIS *

ROLAND HAMMOND, M.D.
PROVIDENCE, R. I.

For many years it has been recognized that perhaps the chief problem to be considered in chronic infections arthritis is the determination of the etiologic factor within the body. It is reasonable to suppose that if the arthritis be due to some suppurative process, the joint condition *should* be relieved provided the etiologic factor can be found and removed. In the presence of more than one source of infection, it may require clear judgment and careful analysis of the history and physical findings, in order to determine which factor is responsible for the arthritis in a particular case.

Every organ, every secretion, and nearly every inch of the body has been carefully scrutinized in an attempt to determine the cause of the disease in numerous cases of chronic infectious arthritis. One of the regions of the body which has seemed to offer a fruitful field for such investigation is the domain of the "nose and throat man"—the ears, nose, throat and accessory sinuses.

Many articles have been written of late years, placing emphasis on the importance of these organs in their relation to arthritis. Some of the recent writers have attributed so much importance to this region, as the site of infection in a large number of cases of arthritis, that I was led to undertake the investigation on which this paper is based.

The experience of many workers in this field seems to show an undoubted connection between tonsillitis and arthritis in many cases, especially those acute in onset and character. This study was undertaken to determine, if possible, what percentage of cases of chronic infectious arthritis were found to have coexisting disease of the tonsils, and of the ears, nose and accessory sinuses as well. As would naturally be expected, such examinations would lead to the discovery of disease in the teeth and gums. Whenever possible the dental conditions were studied, their possible relationship to the arthritis analyzed, and proper treatment instituted if found necessary. We also wished to determine the efficacy of treatment by the nose and throat surgeons in these cases, and have endeavored to trace every patient operated on by them, and to ascertain the effect of this treatment on the arthritis.

I wish to state at the outset that I did not share the opinion of those workers in this field who believe that a recognizable focal infection is present in nearly all cases of chronic infectious arthritis. Nor could I be convinced, from my experience in these cases, that the removal of a focal infection would necessarily cure an arthritis of some months' duration. It is a matter of common experience with those who see a large number of these cases, that a brilliant result is occasionally obtained by the removal of tonsils containing pus pockets, or by the drainage of a suppurating sinus. Similar results are obtained when a focus of infection anywhere in the body is removed. In my experience

---

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

such a happy outcome in the case of chronic infectious arthritis is the exception rather than the rule.

Most of the cases of chronic infectious arthritis which have come to the orthopedic clinics of the Rhode Island Hospital and St. Joseph's Hospital during the past two years, in which the etiology was not readily determined, have been referred to the ear, nose and throat departments of these hospitals for examination. This included a majority of the cases of infectious arthritis. Cases in which a gonorrheal infection had immediately preceded the onset of the joint condition were not referred for examination, since the disease was usually limited to one joint, and the connection between the gonorrhea and the arthritis seemed fairly well established.

The cases were not selected in any way, but, as they appeared, were referred for examination and treatment by the nose and throat surgeons when deemed necessary by them. The cases were nearly all polyarticular in distribution, and were the bulk of that interesting and often puzzling group of joint cases, encountered in the daily routine of any adult orthopedic clinic. Cases were referred for examination, even in the absence of any symptoms pointing to disease of the ear, nose, throat or sinuses.

Otherwise these cases were all treated in the routine manner. They were referred to other departments of the hospitals, when necessary, for consultation and treatment, and laboratory and Roentgen investigations were made in nearly every case. In classifying these cases as positive or negative, according as they showed disease of the nose, throat or sinuses, or did not, the opinion of the nose and throat surgeon has been taken as the sole criterion, even in cases in which it seemed to the orthopedic surgeons that some other etiology was probable.

The result of this investigation is shown in Table 1:

TABLE 1.—PREPONDERANCE OF TONSILLAR INFECTION

Total number of cases studied	61
Cases with doubtful nose and throat evidence	3
Cases with negative nose and throat evidence	28
Cases with positive nose and throat evidence	30
Cases with positive nose and throat evidence in which nose or throat operation was performed	12
Cases with positive nose and throat evidence in which such operation was not performed	18

In Table 1 the large proportion of cases showing tonsillar infection is noteworthy.

Of the 12 patients operated on, the tonsils were removed in 9, pockets in the tonsils were opened in 1, the frontal sinus was drained in 1, and a deviated septum corrected in 1. In two of the cases of tonsillectomy the adenoids were also removed, and in another case the midturbinate was removed to drain the ethmoid cells.

Of the 18 patients not operated on, the tonsils were infected in 12, there was sinusitis in 3, otitis media in 1, necrosed teeth in 1, and Riggs' disease in 1.

The condition of the arthritis following operation for disease in the nose or throat in 12 cases is shown in Table 2:

TABLE 2.—CASES SHOWING POSITIVE NOSE OR THROAT DISEASE AFTER OPERATION

Marked improvement	2
Slow but gradual improvement	3
No improvement (one with ankylosis)	2
Better in one joint, worse in two others	1
Worse in joints after operation	1
Not found	3
	12

The advice given in 18 cases with positive nose and throat evidence in which operation was not performed is shown in Table 3:

TABLE 3.—CASES SHOWING POSITIVE NOSE AND THROAT AFFECTIONS NOT OPERATED ON

Operation advised but either refused or not yet performed (4 improved without operation)	10
Operation not advised (2 improved without treatment)	4
Operation not advised but treatment advised (1 improved without treatment)	2
Referred to dentist	2
	18

Of the 28 patients with negative nose and throat evidence, 5 had necrotic teeth, 3 had Riggs' disease, and 2 had had arthritis following removal of adenoids and tonsils, in one case six weeks, in the other nine months, after the operation. In the last two cases no connection between the operation and the arthritis is presupposed. In making this report we feel that care should be taken in drawing conclusions from a small number of cases. The difficulties in the way of proper deductions are many. It is a well known fact that deep in its crypts the most innocent appearing tonsil may harbor micro-organisms of a harmful nature. The *Streptococcus hemolyticus,* which is the special agent found in associated joint lesions, lies in deep chronic abscesses and sealed crypts. Consequently it is very difficult in a doubtful case to determine whether operation should be urged or decried. In the case of an infected sinus, the difficulty of prov-

TABLE 4.—POSITIVE NOSE AND THROAT EVIDENCE IN CASES WITH OPERATION

Name	Age	Joints	Duration	Nose or Throat Condition	Operation	Results
E.	9	L. knee	2 weeks	Tonsils infected, adenoids present	Tonsillectomy	Improved
L.	23	L. elbow, r. knee, r. wrist, l. ankle	5 months	Acute tonsillitis	Tonsillectomy	Slight gradual improvement
E.	26	Elbows, wrists, hands, r. knee	7-8 years	Tonsils infected, adenoids present	Tonsillectomy, adenectomy	No improvement (ankylosis)
K.	27	Hands, wrists, r. knee, r. elbow	1¼ years	Tonsils infected	Tonsillectomy	R. wrist better; l. wrist and l. elbow worse
E.	28	Shoulder, knees, wrists, ankles	6 months	Tonsils infected	Tonsillectomy	Throat better, joints worse
C.	24	Shoulders, knees, feet	6 months	Deviated septum	Septum corrected	Not found
M.	48	L. knee, l. elbow, r. wrist	5 years	Tonsils infected, teeth necrosed	Tonsillectomy (arthrotomy)	Improved, both throat and joints
D.	12	L. hip, hands, r. knee	3 months	Tonsils infected	Tonsillectomy	Very slight, gradual improvement
C.	21	Knees, ankles, wrists	2 months	Frontal sinusitis	Sinus drained	Not found
D.	14	L. ankle, knees, hips	7 years	Tonsils infected	Tonsillectomy	Joint condition no better, but less pain
W.	44	Shoulders, knees, spine	4 months	Tonsils infected	Tonsillectomy, adenectomy	Slow, gradual improvement
G.	42	Wrists, hips, ankles	11 years	Pus on midturbinate	Turbinate removed, pockets in tonsils opened	Not found

ing its relationship to an existing arthritis is even greater.

It would have been profitable to have investigated other focal sources of infection in these joint cases, such as necrotic teeth, Riggs' disease, lesions of the genito-urinary and gastro-intestinal tracts, gallbladder and other infections. Since the study was limited to the nose, throat and accessory sinuses, however, the conclusions must be based on a study of diseases of those organs.

The results of operative treatment in these cases were, on the whole, not encouraging. The removal of tonsils or the draining of a suppurating sinus have produced marked improvement in the joint conditions in these cases in only a few instances. Often there has been slow, gradual improvement as is seen under routine orthopedic treatment. The general condition of the patient has improved after the nose and throat operation in nearly every case. It seemed as if a load had been removed and the general health was much better.

It is to be remembered that the majority of these cases are chronic in nature, and marked improvement is not reasonably to be expected except with the lapse of considerable time. This is even more true when ankylosis is present.

In most of these cases the damage seems to occur early in the course of the disease. The time for investigation and treatment of a focus is in the early stages or even before the onset of the arthritis. Patients who have had previous attacks and have recovered without permanent damage to the joints should have the focus removed, if it can be discovered, to prevent the recurrence of other attacks. This is especially true in the numerous cases in which attacks of tonsillitis have been followed by arthritis. When permanent damage to the joint structures has occurred, but little improvement may be expected from removal of any focus of infection, beyond the improvement in the general health.

The difficulty lies in determining with certainty that the focus which has been discovered is really the cause of the arthritis. Many cases show diseased tonsils or a suppurating sinus coexistent with carious teeth or Riggs' disease. Which factor in such a case shall be considered the responsible cause? The removal of one or all of these foci may have no beneficial effect on the arthritis, and we may find that absorption from the gastro-intestinal tract, or some other source, is the real cause.

Our experience has shown that the greatest benefit in these cases is to be expected from stimulating measures tending to build up the general health of the patient, trusting to later improvement in the local joint conditions as the patient responded to treatment.

266 Benefit Street.

TABLE 5.—POSITIVE NOSE AND THROAT EVIDENCE IN CASES WITHOUT OPERATION

Name	Age	Joints	Duration	Nose or Throat Condition	Operation Advised	Results
G.	35	Knees, ankles	3 weeks	Frontal sinusitis	None	Not found
F.	48	Shoulders, knees, hips, wrists	5 months	Left otitis media	None	Improved
D.	12	Knees, r. ankle	6 months	R. tonsil infected	Tonsillectomy	Improved
D.	8	Knees, feet	4 months	Tonsils infected, adenoids present	Tonsillectomy, adenectomy	Improved
D.	54	R. wrist, r. elbow, r. knee	3 months	Tonsils infected	Tonsillectomy	Not found
B.	34	Feet, l. knee	2 months	Tonsils infected	Tonsillectomy	Not found
V.	21	Knees, hip, ankle, hand, spine	3 weeks	Tonsils infected	Tonsillectomy	Not found
S.	42	Wrist, knee, shoulder, ankle	3 months	Mucopus in epipharynx Riggs' disease	Teeth extracted	No improvement (ankylosis)
B.	45	Hands, feet, shoulder, knees	11 years	Suppurative ethmoiditis and polypi	Turbinectomy	Slight, gradual improvement
W. B.	26	R. ankle, r. knee	1½ years	Necrosed teeth	Referred to dentist	Not found
E.	18	Feet, hands	5 months	Tonsillitis, ethmoiditis?	None	Not found
M.	48	Feet, r. thumb, r, knee	4 months	Pockets in tonsils, sinusitis, Riggs' disease	None	Improved
S.	56	Wrists, ankles, knees	2 years	Tonsils infected	Tonsillectomy	Not found
K.	38	Shoulders, knees, hands, spine, feet	3 months	Tonsils infected	Tonsillectomy	Not found
B. B.	15	Knees, feet, wrists, elbows, shoulders	4 weeks	Tonsils infected, adenoids present	Tonsillectomy, adenectomy	Much improved
L.	39	Hands, r. hip, r. ankle	2½ years	Otitis media, sinusitis.	None	Died of periostitis femur
C.	24	Knees, shoulders	1½ years	Tonsils infected	Tonsillectomy	Not found
W.	32	Knees, feet, shoulders, ankles	6 months	Tonsils infected, Riggs' disease	None	Slight, gradual improvement

THE CLINICAL TYPE OF ARTHRITIS ORIGINATING ABOUT THE TEETH *

THOMAS B. HARTZELL, M.D., D.M.D.
Research Professor of Mouth Infections, University of Minnesota Medical School
MINNEAPOLIS

The etiology of rheumatism has attained a new position in the last few years, and to Alfred Mantle, consulting physician to the Royal Halifax Infirmary, Harrogate, England, should be credited the first work leading to change of position concerning the etiology of this disease. When he commenced his work, bacteriology was in its infancy. At a meeting of the British Medical Association which was held at Brighton, he read a paper in the section of medicine, presided over by the late Sir William Broadbent, the title being, "The Etiology of Rheumatism Considered from a Bacteriological Point of View,"[1] at which time he demonstrated the organisms he had found both macroscopically in culture and microscopically.

Even prior to that time, Mantle had discussed the frequency of rheumatic symptoms in scarlatina.[2] His observations in this paper suggested that the

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Mantle, Alfred: The Etiology of Rheumatism Considered from a Bacterial Point of View, Brit. Med. Jour., 1877, i.

2. Mantle: Quart. Med. Jour., quoted by Mantet, Practitioner, London, January, 1912.

throat, joints, and serous membranes become infected during bacterial invasion, and he suggested the possibility of acute rheumatism itself having a like origin. He also witnessed the two epidemics of rheumatic fever which pointed strongly to infection. He embodied his clinical observations in a thesis which he sent up for the Doctorate of Medicine and naively remarks that these views did not gain acceptance by the examiners, one of them being the late Dr. W. Miller Ord. Though this dampened his enthusiasm, his thesis was accepted. The material on which he based his later paper, published in 1877, was founded on a study of a typical case of acute rheumatism from which he obtained under antiseptic precautions, by means of a sterilized hypodermic syringe, a dram of serum withdrawn from the knee-joint. This he placed in sterilized gelatinized meat infusion, which was placed in an incubator. These plantings produced copious bacterial growth. From six other cases, over a period of several months, he obtained serum from effused joints with like results. Following this he made blood cultures in sixteen cases, taking every precaution to prevent contamination from without, and he tells us in most of these cultures, bacteria were found. Subsequent to this, he was permitted, by the Home Office, two experiments which were conducted in the Durham College of Medicine, in which he injected two monkeys with his cultures. These experiments failed to produce the disease in the monkeys, however, and for the time being, his research was set aside.

The next work of importance in England in this line was published by Poynton and Paine in 1900, though between 1877 and 1900 considerable research in this field was done on the continent. Guttman in 1877, Birch-Hirschfeld, Bouchard and Charin, Triboulet, Sahli and Sacaze "found organisms in acute rheumatism." "In 1891 Achalme first found his bacillus. In 1894 several observers in Germany, Italy and France, described organisms occurring in joint fluids and blood of patients suffering from acute and 'chronic' rheumatism." In 1895 Newsholm demonstrated that the disease might be epidemic and in the same year Leyden isolated a delicate diplococcus. Mantle tells us Achalme's results seemed nearest his own. In 1900 Poynton and Paine[3] published a letter in the *Lancet,* in which they fully acknowledged Dr. Mantle's priority in this field, though their work was undertaken and accomplished without knowledge of Doctor Mantle's work until after their attention was called to it by the editor of the *Lancet.* Beatson and Ainley Walker in 1903[4] confirmed the results published by Poynton and Paine and others isolating a diplococcus in fifteen cases, and Beattie in 1904,[5] produced a combination of lesions similar to those of rheumatic fever in man.

That much wonderful work has been done in later years confirming this earlier work and largely adding to what we have already gained is known to all. It would be valuable did time permit to refer to the bibliography of this subject in detail. I cannot in passing neglect, however, to especially speak of the work of Rosenow[6] on "The Etiology of Arthritis Deformans," and many other articles from this same author; "Experimental Myocarditis," by Leila Jackson,[7] and the work of Klotz,[8] from the pathologic laboratories of the University of Pittsburgh.

That inflammation of the joints can be caused by many organisms which gain access to the para-articular tissues is probably true. We are all acquainted with the classic effects of the gonococcus when distributed in these tissues. John B. Murphy, in a paper read before the Hennepin County Medical Association, cited from his practice a case of joint infection in which the colon bacillus was isolated. The relationship of the *Streptococcus viridans* to chronic joint infection has been firmly fixed by Rosenow and other observers, but so far as I know, little has been done to establish dental-path relationship for the admission of infectious material causative of joint lesions. Perhaps the first contribution directly relating dental infections to joint infections was published by Kenneth Goadby,[9] in which he describes a series of three cases of chronic arthritis of the deformans type wherein, by the removal of infected teeth, he was able to cure these cases, one of which had been completely disabled for a period of many months. Coincident with the treatment of these cases, he was able to isolate an organism termed by him "streptobacillus malae," which he was able to grow on egg agar. He also exhibts a streptococcus from an infective gingivitis to show the morphologic difference between it and his *Streptobacillus malae.* In this article, he recounts the result of animal inoculation in which he was able to produce by the introduction of his *Streptobacillus malae,* disease in the joints of rabbits. Just what organism this *Streptobacillus malae* is, I do not fully understand. There is not the slightest doubt, however, that his work is valuable and it is doubtless true that his *Streptobacillus malae* was in the particular cases cited by him responsible for the joint infections described. I believe to him must be given the credit for first establishing the fact that the dental path is an important avenue of infection for the planting of rheumatism.

In my own work since 1896, I have noted a seeming relationship between mouth sepsis and chronic rheumatism, because of the coincidence of cure of rheumatism following the extraction of abscessed teeth or the cure of a pyorrhea. This had occurred in my experience sufficiently often to occasionally call forth inquiry from the patient. Therefore I have been keeping rather carefully the records of those cases in which such results were noted, and, when my attention was drawn to Goadby's contribution to the literature of rheumatism coincident with the recovery of a patient, who had experienced marked relief from a somewhat troublesome joint inflammation, involving the knees, ankles, and insteps, following drainage of a chronic dental abscess, it caused an increased interest on my part in chronic joint infections, and I at once sought opportunity to make a careful study of them, and began with the case of a bedridden woman, whose history was briefly the following:

The patient had always been strong and healthy and able to do her own work. She was exposed to rain and cold, contracting as a result a severe torticollis, which was succeeded by inflammation of the shoulders, later involving the

3. Poynton and Paine: Lancet, London, 1900, xi, 1306.
4. Beatson, R. M., and Walker, E. W. A.: Brit. Med. Jour., 1903, i, 237.
5. Beattie: Jour. Path. and Bacteriol., 1904, ix, 272.
6. Rosenow, E. C.: Etiology of Arthritis Deformans, The Journal A. M. A., April 11, 1914, p. 1146.
7. Jackson, Leila: Experimental Myocarditis, Jour. Infect. Dis., September, 1912, p. 243.
8. Klotz: Arterial Lesions Associated with Rheumatic Fever, Jour. Path. and Bacteriol., 1913, xviii.
9. Goadby, Kenneth: Practitioner, London, 1912, lxxxviii, 107.

knees, ankles, and insteps. Though this patient had a considerable mouth infection, the treatment directed toward the teeth seemed to do little or no good. A vaccine was prepared and administered with little or no benefit.

Despite the discouragement in this case, I persisted in this work and when the opportunity to do a systematic research, supported by animal inoculation, presented itself through the use of funds appropriated by the National Dental Association, I was enabled to continue my study in the university hospital of the school of medicine, in cooperation with the medical staff of the college of medicine and with the constant help of Dr. Arthur T. Henrici, instructor in bacteriology in the school of medicine. I am also indebted to Dr. Harold J. Leonard, who has carried out the mouth treatment in those patients resident in the university hospital, of which there were in all sixteen cases, seven of which gave an acute history. Our method of study has been briefly as follows:

When patients presenting joint infection have entered the hospital, they have been referred to us for investigation and treatment of mouth conditions, whereupon careful roentgenographic examination of the teeth and jaws has been made in the roentgenogram laboratories of the hospital. Whenever dental abscesses were present, we have isolated the abscessed teeth with dry gauze, cleansing the tooth or root with iodin, and whenever possible, cauterizing the tissue about the neck of the tooth, then extracting the tooth and biting off the root tips with sterile forceps, which tissues have been immediately dropped into culture mediums. These plantings have invariably produced, among other organisms, the *Streptococcus viridans* and this has been the organism which we have used in our animal inoculation in the intensive study of a certain number of these cases.

Though we have carried on intensive study and animal inoculation from material obtained from a comparatively few of the patients presented in this series, we have invariably found the *Streptococcus viridans* present in the confined dental abscess, and, in order to satisfy ourselves as to its common presence in the tissues about the teeth, we have cultured up to the present time from 220 patients and have invariably found this organism to be present not only in the confined dental abscess but in the superficial tissues of the peridental membrane about the teeth. We have found this so constantly that we were impressed with the idea that it must always be present. We, therefore, have attempted to obtain teeth which were free from *Streptococcus viridans* and to that end have extracted a number of living teeth containing healthy pulps. The roots of these living teeth with healthy pulps have usually also afforded growth of *Streptococcus viridans* when planted in the manner just described unless we cauterized the gingival crevice. Following this technic, we have been able to find, out of a total of twenty vital teeth examined, ten teeth containing living pulps, the roots of which have proved to be germ-free when planted in broth. We believe that the dental path is commonly infested with *Streptococcus viridans,* not only the superficial tissues immediately surrounding the teeth but all dental abscesses.

We have been able to produce typical joint lesions in three rabbits by its inoculation. We have also been able to secure a large number of satisfactory recoveries from joint infection by the elimination of peridental infections, in some cases by extraction, and in others, by drainage of abscesses or the elimination of pyorrhea pockets. In all, we have in our series 127 cases which it has been my fortune to observe including the 16 cases before mentioned in which the patients were resident in the university hospital. Twenty-five patients have been bedridden, 102 have been of the ambulatory type, only 15 of the 127 commenced with chill and fever, and of these 15 commencing with chills and fever, tonsil and throat infection was noted in all save 2. The infection in these two cases was due to a rapid and excessive work to eliminate pyorrhea pockets and abscesses, suddenly overloading the circulation of the patient with bacteria from these lesions.

The bedridden cases with few exceptions were of the chronic type, some of them being absolutely helpless, two of them in one family, man and wife, the man at present has been in bed two years, and incapable of doing anything for himself, the wife having been helpless now for eight years. The extraction of the abscessed teeth for the man produced streptococci in rich culture, though he was unbenefited by the extraction or by a vaccine subsequently administered from the cultures obtained from his abscesses. The wife refused treatment, though the gums in this case contained the roots of twenty broken-off teeth. As this patient declined to go to the hospital, no treatment was attempted.

The 102 ambulatory cases very from individuals presenting a mild soreness of the joints to persons going about on crutches. They vary in length of time of the disease from a few weeks to many years. None of them have complained of either chill or fever, the disease beginning in the great majority of cases with tenderness in the muscles of the neck, particularly the sternocleidomastoid. Oftentimes, the mandibular joint is involved. Following tenderness in the mandibular joint and muscles of the neck, the shoulders are commonly attacked. In fifty of these cases, however, the first tenderness noted was in the finger joints, oftentimes a single joint being sore for a considerable period of time before the others commenced to be tender.

Following the fingers, the shoulder joint is next in frequence. In the lower extremity, the knee joint has been first attacked in 65 per cent. Later the joints of the feet, and of these, the metatarsopharyngeal articulation of the great toe is most often attacked. The disease when of the dental-path origin seems to be characterized by exacerbation and remission. Sometimes, weeks or months intervene between them, but each exacerbation is generally a little worse to bear than its predecessor. Fever is rarely present, hyperplasia of the connective tissues about the joints being constantly present. This hyperplasia of the tissue about the joint gradually leads to great thickening and effusion and finally to exostosis. One of the fairly constant features is the partial disarticulation of many of the phalangeal joints of both hands and feet.

Eventual destruction of the articular surfaces of the knee joints is to be expected, though it is comparatively slow in its progress. First evidence of destruction of the articular surface is made evident to the patient by a mild crepitus accompanied by pain, which crepitus sometimes increases to a sufficient degree to be heard at a distance of several feet when the joint is put in motion. It would seem, therefore, that arthritis of dental-path origin is characterized by slow onset with exacerbations and remissions, which exacerbations

seem coincident with the filling to distention of dental abscesses or retention of pus from deep pyorrhea pockets, which drain directly into the circulation.

The amount of material absorbed may be great, as a pyorrhea case with one-quarter inch average depth of pocket has 7½ inches of ulcerating surface from which to absorb pus, which in the end firmly seats disease in the tissues of the individual. I have constantly noted exacerbation of joint inflammation following surgical treatment of pyorrhea or the curettage of alevolar abscesses, and exacerbation is particularly likely to occur as tension of continued abscess fluid increases.

Treatment of pyorrhea pockets by curettage and evacuation of dental abscesses confers a double benefit. Such surgical interference necessarily inoculates the patient with a large number of organisms, inducing an effect similar to that of an efficient vaccine, with the added advantage that the constant supply is shut off from the focus disturbed. When many pyorrhea pockets or abscesses exist, it is important to permit from three to six days to intervene between treatments in order to gain the full advantage of what might be called surgical autoinoculation. Certain it is that the above method brings about a constant and permanent gain generally ending in cure, whereas if sudden complete extirpation of all foci is practiced, as, for example, extraction of all the teeth at once, as is done in some instances, or extraction of all the teeth and removal of tonsils on the same day, the end result will be positive harm.

This type of arthritis is easily controlled when of dental origin, if the foci of infection are early recognized and eliminated. When, however, such foci obtain in an active state for a considerable period of time, the disease becomes so firmly fixed that elimination of the primary focus does little in the way of repair, though elimination does limit further progress of the disease. The kidney, blood vessels and heart relationships in arthritis of dental-path origin are similar to those that exist with other types of arthritis, for in our experimental work we find that while organisms obtained in the dental path may cause acute inflammation in the joints of animals inoculated, they also attack heart, kidney and blood vessels. The dental lesion presents a very favorable site from which to secure the offending organism for the purpose of obtaining material for a vaccine, and the elimination of the dental neighborhood infection by extraction is always helpful if such extraction is carried on at intervals and treatment given gradually, whereas if elimination is undertaken rapidly and by rough surgical procedure, the disease is often unbenefited or made worse.

The great majority of cases wherein we have myositis accompanied by inflammation of articular and periarticular tissues without marked pathologic changes in the joints themselves almost invariably may be permanently cured by elimination of primary foci. When cure in this type of case does not so occur, an autogenous vaccine, the material for which should be obtained during surgical treatment, may be of great benefit. The greatest thought regarding this disease when of dental-path origin is that it is certainly preventable and generally curable if taken early, whereas if left until grave pathologic changes in the articular tissues have occurred, treatment at the most can only relieve pain and prevent involvement of other joints.

716 Donaldson Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HAMMOND AND HARTZELL

DR. J. W. COKENOWER, Des Moines, Ia.: In consideration of the fact that the oropharyngeal cavity is not much less than a septic tank for infection, it is not strange that we should look to this cavity for the source of many of the infections that we find in joint disease. Two years ago at Minneapolis before this section I read a paper on joint disease due to infection from other parts of the body, especially the tonsils and teeth, and since that time I have been making a tabulation of cases that have come under my observation, numbering forty-seven, and that involved not only the joints of the upper, but the joints of the lower extremities. In investigating their true etiology I found the percentage relation to the different parts by infection as follows:

Forty-four per cent. was traceable to the oropharyngeal cavity; only 8 per cent. to the thoracic cavity; 28 per cent. to the abdominal cavity, and 20 per cent. to the pelvis, and in each one of these cases treatment to remove the cause resulted entirely satisfactorily; hence I think that routine treatment of joint disease should be a thing of the past. It is not difficult to get satisfactory results if you ascertain definitely the etiology. These two papers, in my opinion, are valuable on a subject that has only in recent years been given especial attention. I believe that it will be given more attention in the future. I do not believe that any joint disease should be treated, unless the etiology is positive, without referring to the oropharyngeal cavity.

DR. EMIL S. GEIST, Minneapolis: We appreciate the necessity of having men who are not only tooth carpenters, but who are stomatologists, in order to take up this work successfully. As I emphasized once before, sometimes there is some tooth disturbance and a patient is sent to the dentist. He is quickly returned with his teeth pulled, or, there having been a little dental work done as a result of the reference, returned with the remark "that the teeth are all right now" and the real disease is often not recognized. In other words, we must have men of the type of Dr. Hartzell to cooperate with us in this work if we are to get results.

DR. HENRY W. FRAUENTHAL, New York: We have considered this work so important, at the Hospital for Deformities and Joint Diseases, that we uniformly examine the gums for pyorrhea infection, and also in a great many cases it is necessary to take roentgenograms of the mouth for these blind abscesses, and in doing so we have been greatly surprised by their frequency. It has become so important, I think, that it is only going to be a short time before dentists will not alone fill teeth, but will examine for blind abscesses. Also, a very important thing in filling teeth is that they must be *fully* filled to the tip of the root and not opened up for the infection of the roots.

DR. H. R. ALLEN, Indianapolis: As a factor of safety, our attention should be called to one point in tonsillectomy. Nose and throat men have two procedures: local anesthesia is one, and general anesthesia is the other. If you refer a child to a nose and throat man to have the tonsils removed and he uses a general anesthetic and allows one or both lungs to fill up with blood, you lose the child, and it puts a bad mark down both for the orthopedist and for the nose and throat man. I refer no case for tonsillectomy to a nose and throat man who uses general anesthesia unless he guarantees to me that the child's mouth and head will be held lower than the rest of the body. I feel rather emphatic on this point, because one year ago my right lung was filled and my left up half way, which only left the upper half of my left lung for breathing purposes. I feel very fortunate in being able to be here today, as I had a serious attack of pneumonia following my tonsillectomy. It is merely a matter of elevation. It is a simple mechanical fact that fluids will flow down hill. They will flow into the lungs if the lungs are down or they will flow out of the mouth if the head is low.

DR. M. C. HARDING, San Diego: I think we have all had the experience that Dr. Hammond speaks of — looking for the focus, then hoping or thinking we had found it and

cleared it up, but failing to get a recovery from the arthritis. I am sure that has been my experience. For a number of years past I have been making a routine examination of all of my patients so far as the teeth, nose and throat conditions are concerned, but I was impressed with this same point, that often I did not get results. While in the Orient I noted the fact that practically every patient had enlarged cervical glands. So the examination for enlarged cervical glands has also become a routine habit with me, one which I have carried out in this country, where a surprisingly large number have been found. It is a point which no doubt many of you have carried out, but if you have not you will be surprised at the number of enlarged glands you will find. Now the glands of the neck, as you of course know, are simply a continuation of the tissues of the tonsils and adenoids. The infection can remain there indefinitely, at some future time to crop out and give trouble.

DR. J. P. LORD, Omaha: I want to mention two points: One, that we cannot depend on the varying reports of the nose and throat men. They do not have the same conception of it as we do. I have had patients go through the hands of two or three of these men, with the specific recommendation that they determine the condition of the tonsils, and whether they required removal. After negative reports, the disease had continued, and having been backed up by an internist, who insisted the focus was there, the tonsils were removed on general principles. When that was done, the cases have been cured. Another instance: A case of mine gave me great trouble in its persistence, and the patient's parents were questioned repeatedly in regard to the thoroughness with which tonsillectomy had been done two years before. They said it had been done by a most capable specialist and it was impossible that anything could be there. But there was a fragment of tonsil and a focus there. We had it removed. The laboratory demonstrated the presence of the streptococcus. The patient got well. I do not take the testimony of anybody. See that any doubtful focus is removed, no matter where it is, even though you have to go to the appendix or gallbladder for it.

DR. THOMAS B. HARTZELL, Minneapolis: I should like to say that I do not advocate or wish to convey the idea that the dental path of infection is more than one element in this matter of arthritis, but slides which I have prepared show bacterial masses on the teeth, their port of entrance, and channels of distribution.

THE APPLICATION OF THE VARIOUS THEORIES IN THE MANAGEMENT OF PERITONITIS *

WILLIAM D. HAGGARD, M.D.

Fellow of the American College of Surgeons; Professor of Surgery and Clinical Surgery at Vanderbilt University; Surgeon to St. Thomas Hospital; Visiting Surgeon to Vanderbilt and City Hospitals

NASHVILLE, TENN.

In spite of nearly three decades of effort in the prophylaxis of peritonitis there are yet, even in cases that should be prevented, many examples of this disease that under any method of treatment still yield a very high mortality. While this has been greatly curtailed, and betterment in early recognition and efficient treatment is constant, there have been several additions to the plans of management which are worthy of consideration and application.

The beginning of the operative treatment of this disease yielded a frightful death rate, because we were as pioneers in its handling, and while our methods have been vastly enhanced in point of effectiveness, the disease is still as formidable as ever. At the Russian Congress of Surgeons in 1913 there was reported a mortality of 60.9 per cent. in 758 cases of the various forms of peritonitis. In cases occurring after forty-eight hours the death rate was 78 per cent. It is obvious that these statistics are appalling. Without any invidious criticism of our confrères, it is incontrovertible that in America we have nothing near so desperate a mortality, and yet our results are far from being ideal.

Next to the introduction of operative intervention for the elimination of the focus of peritoneal infection, the greatest adjunct in its treatment is the recognition of the forces at work in Nature's behalf and their conservation. It has been notorious that the most inopportune time for intervention is the period too late to anticipate the widespread invasion of the peritoneum and too early to allow for the benefits of the effort which Nature puts forth in her own behalf. The peritoneum is wonderfully efficient in protecting itself and destroying its invaders. The results of operation in the very early hours of the disease are most brilliant. Likewise in the terminal stages, as the result of the successful efforts at localization with the formation of localized abscess, the surgical task is greatly simplified and the results pleasing. In the interim when the battle wages, especially on the third, fourth and fifth days of the disease, our procedures are perilous, and herein lies the great difficulty of decision. The active group of surgeons immediately preceding our own time call attention to this fact. Cartledge in 1900 was among the first to draw attention to the undesirability of operating in peritonitis of appendiceal origin, in the third, fourth and fifth days, and yet operation was probably better than the purely nonoperative measures of that time.

It remained for Ochsner, with his searching inquiry and bold persistence, to point out a way by which these bad cases could be converted into safer risks. His methods are well known. In the beginning they were misunderstood by the medical man, who disregarded the first rule laid down by him, to operate in all cases of appendicitis in the first thirty-six hours when a competent surgeon was available. Moreover, his teachings at first were violently opposed by the surgical side, who realized the great need for therapy of some sort for the ravages of peritonitis. They were unmindful of the successful issue of many apparently very bad cases by Nature's efforts. We were constantly seeing walled-off abscesses in the peritoneum, which were uniformly evacuated with success, without taking into consideration how it was encompassed by Nature and how we might aid it. Ochsner taught us that absolute quietude of the patient, and inhibition of peristalsis was the desideratum. Nearly everybody learned the starvation feature but disregarded the underlying principles, and still persisted in the mischievous and often murderous efforts at purgation. At present, ten years after Ochsner's plan was given to us, it is a frequent and sad experience to see widely diffused peritonitis as the result of purgation plus delay. The latter is bad enough, but the lesser evil.

Ochsner says he has never seen a death from peritonitis (I presume he means of appendiceal origin) when no food or purgatives were given from the start. That ideal condition is rarely obtainable. Any practitioner, sufficiently versed in the pathology and needs

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

of peritonitic cases, would recognize the wisdom of very early surgical relief. When neither are appreciated by him, the surgeon has to choose, on the one hand, between the late institution of the Ochsner plan, when the harm from the infraction of its three fundamentals, early operation, absence of food, and withholding purgation has actually accrued, and, on the other hand, the risk incurred by operation. With the perfected modern operation and the valuable postoperative auxiliary methods of after-treatment, most surgeons under these circumstances employ operative measures.

Thus in 516 cases of appendicitis, of all grades of severity, operated in the last four years, with 13 operative deaths, 2.5 per cent., I declined only 4 cases, too desperate for operation, which, added to the operative mortality, make 17 deaths, or 3.2 per cent.

Deaver[1] has lately shown the devastating effects of purgation. He asserts that purgation is more deadly than the scalpel, and analyzes seventy-nine cases with a history of purgation and found in all save two, at the time of operation for appendicitis, that the organ was either perforated, gangrenous, or surrounded by an abscess. Of seven deaths in his series, five patients had been purged, and of those who had been drastically purged, nearly all showed a very severe type of disease. The purge in peritonitis is the submarine to Nature's allies.

The value of gastric lavage, before and after operation in peritonitis, is incontrovertible. The removal of quantities of decomposed food, or even bile with the mysterious poison which seems to emanate from the duodenum, is very essential. In its employment, however, one should not neglect to cocainize the pharynx. This gastric lavage, if attended by great resistance, straining and vomiting, while intended to be beneficial, is about as harmful as food or purgation in causing movements of viscera and dissemination of the infecting material.

All surgeons are agreed that in the advanced cases of peritonitis, when the patient shows a clammy blue skin, extremely rapid pulse, low or subnormal temperature, with great distention, a motionless abdomen, low white cell count or leukopenia, that operation is practically useless. Patients in cases of less severity may recover with gentle and skilful interference. It is not to be denied, however, that interference at an inopportune time sometimes brings disaster, when the utilization of the Ochsner principles, plus deep morphinization, might have availed. It is a common experience with fifth and sixth day cases, before the complete walling off has taken place, that when infection is at its zenith and the resistance of the patient has not yet overcome it, particularly when the condition is very grave, operation in all probability would prove fatal, and yet with these rational measures improvement is manifest and in a few days the abscess becomes encapsulated and can be cured by simple incision and drainage.

Page,[2] in a thoughtful article with reference to the localized form of peritonitis, says it is very definitely shown that opening a local abscess and draining without crossing the peritoneum is attended with a considerable death rate. He has advanced the idea of simply opening the abdomen, and if the abscess is not adherent to the abdominal wall, but is still effectively walled off, not to interfere with the abscess at all. He simply inserts a medium-sized cigaret drain to the outer side of the abscess cavity, and says in a very considerable number the inflammatory swelling subsides without any pus appearing.

In the event the temperature does not subside and the pain continues, he removes the tube after a few days, and under gas inserts a finger along the tract of the drainage tube and breaks into the abscess and drains it. It is obvious that a badly situated abscess is thus rendered extraperitoneal in its evacuation. He has by this conservative method treated nineteen localized abscesses with absolutely no deaths, as contrasted to three deaths in twenty-five cases treated by the ordinary method at St. Thomas Hospital in London.

Contrasted to this plan, Knott[3] has urged the evacuation of all localized abscesses, after having sequestrated the outlying peritoneum, removing the appendix in every instance and draining the pelvis with gauze in a split rubber tube. He reports 501 cases with a mortality of 1.2 per cent. This practice has been employed more and more in this country, and is now almost the routine plan unless the localized abscess is ancient — 10 to 14 days — and adherent to the abdominal wall. In such cases I stop with evacuation and drainage, and do not search for the appendix.

In every case of peritonitis, whether localized or not, one should never fail to explore the pelvis with a long glass catheter as a capillary tube, a small sponge on holder, or a suprapubic incision if the original incision or focus has been in the upper abdomen. Often large quantities of more or less infected fluid will well up.

The knowledge of the danger zones in peritonitis, the greatest of which has been shown to be the upper abdomen and the least vulnerable the pelvis, led Fowler to suggest the upright position which has since caused his name to be associated with the great improvement in the treatment of this disease. Its wide adaptation has been one of the signal advances.

Murphy's addition to the principles of early operation, minimum interference (compatible with) rapid and efficient work, was the instillation of large quantities of salt solution through the rectum. It restores body fluids, dilutes toxins in the blood current, causes a great transudation of serum into the peritoneum, irrigates it with its bacterins, and helps manufacture lymph for trench warfare around the focus of infection. Its technic, however, while not in the purview of this paper, needs to be very actively gaged to insure results. As a maximum, 18 pints should be administered in twenty-four hours. When it is not retained, Murphy says it is the fault of the method of administration.

If it is necessary to obtain the anatomic and physiologic rest by withholding food, cathartics, gastric lavage and rectal infusion, was the old theory of Alonzo Clark — the use of large quantities of opium to absolutely inhibit peristalsis — so very erroneous? When the real pathology was uncovered surgically, this theory was thought to be exploded.

Recently Crile, in advancing the fascinating kinetic theory of peritonitis, has in effect drawn our attention to the very great value of deep morphinization to insulate the patient from the fatal dissipation of his energy in fighting his disease.

1. Deaver: Internat. Clin., iii, Series 22, p. 242.
2. Page: Brit. Med. Jour., Nov. 1, 1914.
3. Knott, Van Buren: The Removal of the Appendix in All Cases of Appendicitis with Localized Abscess, The Journal A. M. A., March 28, 1914, p. 1004.

He has shown that the lethal results of peritonitis are due to the great exhaustion with its destructive action on the great organs, that is, the brain, the liver and the adrenals. This results from the enforced transformation of potential into kinetic energy used in defense. All of the local and general symptoms are Nature's combative response to the infection. The pain compels the patient to assume a "box-like rigidity." The anorexia, vomiting and obstipation prevent ingestion and the dissemination of infection by peristalsis. The temperature burns up the protein compounds of infection. The distention of paresis, the exudation of lymph, the gluing of viscera together, are efforts at walling off infectious areas or products. All these symptoms, therefore, are really wonderful, automatic and often successful efforts at protection and self-cure, but they require great expenditures of kinetic energy. Can we protect the individual from this loss of energy while the "offensive movement" of phagocytosis continues? If the patient were asleep and oblivious to the conflict that was costing him nothing in the output of energy, he would be thus aided and abetted while his forces overcame the infection. This can be greatly promoted in the severest cases that cannot be handled in the usual way by keeping the individual deeply narcotized with morphin after operation. The respirations should be held down to 12 or 14 per minute. I have employed this method in addition to the usual plans after operation in three recent cases of general suppurative peritonitis with two recoveries, neither of which I believe would have resulted without the mental, physical and cellular immobility of the protective influence of deep narcotization.

The restoration of energy can be kept up by the introduction of large quantities of fluid, by the seeping method of Murphy. Plain water as advocated by Trout can be used or it can be impregnated with salt, glucose for nourishment, or sodium bicarbonate to antidote acidosis. By the anoci method Crile has been able to reduce his deaths to only two in 391 cases of acute appendicitis, with and without peritonitis, with the addition of narcotization in the very severe cases.

In general diffuse, suppurative peritonitis, the mortality under any method of treatment is staggering. It is not so much the impotence of our various plans of treatment, as the delay in employing them. Everything depends on promptitude. It is profitless to consider the cases of this class statistically as the time limit, virulence and extent of involvement vary so widely. One can never know whether the entire peritoneal membrane is implicated or not. If it is, and sufficient delay has occurred to bring this about, then an enormous death rate is inevitable under any and all known methods of treatment. All cases of peritonitis from perforation of stomach, duodenum, or other hollow viscera by gunshot or stab wounds, imperatively require operation within the first eight hours if possible. I have recently operated successfully at the end of eighteen hours, following a perforated duodenal ulcer, in a man of 56 who had been transported a considerable distance, but it is incontrovertible that the mortality rises with amazing rapidity with each hour intervening before operation.

The opportunities for the improvement in the results of peritonitis have never been more satisfactory. Early recognition of its causes is becoming more universal, although it may be admitted that whenever a case of advanced peritonitis, particularly from the appendix, has to be dealt with, it is proof of faulty management up to that time.

The most essential treatment, therefore, with or without operation, is an absolute prohibition of anything whatsoever by mouth, with immediate preparation for operative relief when possible. When for any reason this cannot be done the continuance of this principle with the addition of deep morphinization are the most dependable methods. After operation drainage by the glass tube suprapubically and the employment of the upright posture and proctoclysis is well nigh routine.

The various theories herein considered can be judicially employed for the varying manifestations of peritonitis, and by a judicious combination of the plans briefly referred to in this paper and the perfection of the technic of each, it is believed that the prevalence of peritonitis by surgical prophylaxis can be greatly reduced, and the percentage of cures when its progress has not been immediately prevented can be very appreciably augmented.

184 Eighth Avenue North.

ABSTRACT OF DISCUSSION

DR. WILLIAM B. BRINSMADE, Brooklyn: Let me call to mind the picture you have seen so often. A poor patient is seen, generally late at night; the lips are pale, the abdomen is distended, the pulse weak, the respiration labored; as you lift the covering the odor of flaxseed or turpentine, chloroform or some liniment greets your nostrils. As you put your hand on the abdomen, the patient flinches and perhaps brings up a few ounces of bile-stained fluid. Then comes the history of an acute onset—pain, vomiting, and gradually increasing constipation. The treatment has consisted of salts, castor oil, more salts, more oil, soapsuds enemas, turpentine enemas, alum enemas—and you are told that everything has been tried for three days and nothing has done any good, and therefore the salvage corps has been called on in the shape of a surgeon. Inquiry develops that the poor patient has had something done to her hourly, and has had no sleep for two or three days. Such a case demands an operation in the early stage; after forty-eight hours of a progressive invasion, operation is positively contraindicated. If there is a chance for the poor soul it lies in rest—rest for the stomach and bowels, rest for the body, rest for the brain, and this can be best attained by a large dose of morphin and gastric lavage. If the fates are with her, the patient may recover sufficiently to undergo the indicated surgical interference. If the surgeon operates, she will, in ninety-nine cases out of a hundred, pass on to the land from which there is no returning. Peritonitis is not a primary disease and of course should not be allowed to occur, but it does occur and always will. The time to operate and the method of operation are questions of the wisest judgment, which the surgeon is ever called on to exercise. If the patient can stand the burden of an operation, an incision over the original focus of disease with drainage, and an added suprapubic drain will fill the immediate requirements. Rectal and vaginal examinations will occasionally indicate the route for drainage of the pelvis.

DR. JOHN O. POLAK, Brooklyn: I desire to call attention to the importance of the application of part of Dr. Haggard's paper to the gynecologic and puerperal forms of peritonitis. If there is one class of peritoneal involvement that needs Ochsnerism, it is the class that follows the abortion or the exacerbated gonorrheal infection or a puerperal infection, for there is no class with which operative procedure is fraught with such mortality, morbidity and anatomic sacrifice. The principle which I lay down for the practitioner to follow is that where there is peritoneal irritation, particularly when there is a history of pelvic

origin, that case is not to be treated with salts and fed—but to have absolute starvation and morphin and the Fowler position, and I go further; I believe these pelvic cases do better if we omit the Murphy drip and use a 2 per cent. glucose solution by hypodermoclysis. We have carried these patients for many days. Serious distention, due to the paresis, will subside, the tongue be kept moist, and the vomiting cease. Lavage, morphin, hypodermoclysis, the Fowler position and leaving these patients alone is the general plan. When we operate, we operate for a definite pus formation. Where there is an exudate we wait and never operate until the case falls within the rule Simpson has laid down; i. e., the temperature has remained normal for a long time—he puts it three weeks in the classical cases—when the exudate has disappeared and the examination does not increase and cause an exacerbation of the temperature or exudate and when the leukocyte count has remained below eleven thousand.

DR. EDWARD REYNOLDS, Boston: I wish to speak of certain points in the technic of the operative management of the walled-off abdomen. Everyone agrees that when this class of abdomen can be gotten at through the vagina without opening uninfected peritoneum above, that is preferable. But when that is not possible one must open from above. First and foremost in importance is quick, brief, gentle operation. If one opens and finds that one is well away from the walled off part, instant, thorough walling-off is required, and if one opens within the adhesions, walling off from the start with gauze, that at least no more peritoneum may be infected. When one gets down to the thickened adhesions behind which we know the pus lies, use a little fresh, separate gauze, before the finger goes through the adhesions and opens the actual pus cavity, that pus may be protected even from the walling off gauze. Follow by gentle evacuation, drainage, and the removing of the gauze in actual contact with the pus, without disturbing the walling off of the more distant peritoneum. I have had the greatest satisfaction since I have begun to sop out the infected area with sponges dripping with alcohol, cleansing the peritoneum as I would any other thing. Of course sop out the cavity, if it is possible, and then use iodin on the infected surfaces. The drainage should be placed in situ before the disinfection. The whole procedure should be completed as rapidly and gently as possible. I have had a better percentage of recovery since I began the fearless application of alcohol to the whole infected area and tincture of iodin to the actually traumatized area in those infected cases.

DR. J. B. DELEE, Chicago: Diagnosis is important. There is a distinct difference in the mortality of surgical peritonitis and obstetric peritonitis. Most cases of appendicitis get well without operation. Immediate drainage is not advised. The abscess should be allowed to form and can be opened later when the mortality is lower. On the other hand, puerperal peritonitis after a full term labor has a very high mortality and I was hoping that Dr. Haggard would present some successful method of treating these patients. I have tried all the methods that Dr. Haggard has so ably presented. The women die in spite of all you do in general puerperal peritonitis.

The borderline cases of peritonitis offer a better prognosis. After abortions and when the inflammation is limited to the pelvis, a more expectant plan of treatment is to be recommended. The Fowler position, the withholding of food for two or three days, large doses of opium—I prefer opium as it has a more sedative effect. When localization begins the longer the operation is postponed the better. As long as there is a continuous fever it is wise to keep out. There are cases in which an operation in the early stages of puerperal peritonitis may be indicated.

I would like to mention the facility with which the abdomen may be opened. You can turn the patient across the bed, insert a speculum and open the culdesac; a few injections of novocain around the cervix will make the operation as painless as the filling of a tooth. The abdomen may be opened very simply. The patient does not have to be taken out of bed; painting the skin with iodin, novocain is injected along the line of incision and in five or six minutes the operation is completed.

DR. H. O. PANTZER, Indianapolis: On opening the abdomen and finding free fluid, nonodorous, beside an abscess distinctly foul, I have learned such a condition to indicate a favorable prognosis. The observation first leading up to this was in a child 6 months old, with a general peritonitis in connection with a gangrenous appendicitis. The abdomen was full of purulent nonodorous fluid. The abscess contained about 45 c.c. of a thick, creamy, very foul pus. The child made an uneventful and speedy recovery. This observation was repeatedly verified in similar cases during the nine years since then, and I have come to regard this sign as of real prognostic value. One point in regard to therapy. Given a case which is drifting rapidly toward death, as indicated by dryness of skin, foulness and dryness of tongue, coma, etc., and which indicates in itself a toxemia which the glands can no longer cope with, here large doses of sodium salicylate—30 or even 60 grains at a dose—are of eminent usefulness. Given by rectum, with one pint of water and a few drops of camphor every four hours, this medication will often do wonders.

POSTMORTEM REFLEXES

JOSEPH H. CATTON, M.D.
SAN FRANCISCO

Examinations of certain of the tendon and superficial reflexes were made on the bodies of fifteen persons, dead from various causes, in the wards of the San Francisco Hospital. Observations began immediately after death and continued for from forty to sixty minutes.

LIST OF PERSONS EXAMINED

Name	Age	Date of Death	Cause of Death
S. D.	42	2/15/14	Lobar pneumonia
D. R.	60	10/24/13	Lobar pneumonia
G. B.	46	4/ 9/14	Bronchopneumonia
F. M.	65	11/14/13	Rectal carcinoma
F. C.	34	10/28/13	Pneumococcic meningitis
C. A.	93	10/23/13	Cerebral hemorrhage
D. J.	40	10/28/13	Acute dilatation of stomach
J. N.	54	10/16/13	Bronchopneumonia
I. B.	69	10/18/13	Cerebrospinal syphilis
O. W.	50	10/27/13	Chronic diffuse nephritis
W. H.	50	11/ 1/13	Pyemia
T. R.	62	11/16/13	Bronchopneumonia
W. R.	46	2/11/14	Chronic parenchymatous nephritis
E. D.	54	10/24/13	Lobar pneumonia
S. H.	27	2/13/14	Cerebrospinal meningitis

OBSERVATIONS

1. From the moment following death and during the entire period of examinations, no true deep reflexes were obtained on tapping the biceps, triceps, patellar or Achilles tendons in the proper manner.

2. No true skin reflexes were obtained on attempting to elicit abdominal, cremasteric or plantar reflexes in the usual way, nor were there observed in any case a Babinski or Oppenheim.

3. A response simulating a deep reflex was obtained persistently if a tendon, as the Achilles or biceps, was tapped high enough to include even a small amount of muscle.

4. A response simulating a true plantar reflex was obtained if a hammer handle or key was pressed deeply into the sole as it was drawn along.

5. The slightest tap on a muscle belly caused it to contract, and this response was progressively more marked as time passed till a certain maximum was reached; then it became gradually less marked and had disappeared at the end of about sixty minutes.

6. A short quick tap caused a localized contraction of a few muscle fiber bundles, raising a definite nodule about the size of a pecan nut. The latter gradually receded. This phenomenon was independent of the general tendency toward muscular contraction mentioned above.

7. Muscular contractions were obtained on tapping numerous places about the wrist in an attempt to elicit the periosteal reflexes. There was, however, in all cases muscle tissue beneath the part tapped.

8. These findings were present in all the cases.

CONCLUSIONS

1. The tendon and superficial reflexes disappear at death.

2. Muscular irritability, that is, to mechanical stimulation, is increased immediately following death, continues to increase to a maximum and then to decrease, disappearing at about sixty minutes post mortem.

3. Since similar increase in muscular irritability is observed in certain organic diseases of the nervous system, these reflex studies and similar studies of the electrical reactions of muscle and nerve following death should lead to new aids in the diagnosis of nervous disease.

4. In eliciting tendon reflexes, one must be careful that he taps only muscle-free tendon.

5. The instrument must be made to stroke and not dig into the sole in eliciting the plantar reflex.

6. The persistence post mortem of many reflexes about the wrist warns us not to confuse them with the periosteal reflexes in life.

209 Post Street.

THE ELIMINATION OF POTASSIUM IODID IN THE URINE

AN EXPERIMENTAL COMPARATIVE STUDY OF ITS ADMINISTRATION BY MOUTH OR RECTUM *

WILLIAM A. WOVSCHIN, PH.G., M.D.
NEW YORK

This work was entirely confined to the study of the urinary elimination of potassium iodid after oral or rectal administration. The patients of the general ward type were given 1 gram of potassium iodid and the urine was subsequently examined to determine the total amount of potassium iodid excreted day after day, until the last traces had disappeared. For comparison, whenever possible, the same patient was given a similar quantity of potassium iodid per rectum (by proctoclysis) and the urine was treated in the same

* From the Chemical Department of the Pathological Laboratory of the Lebanon Hospital.

TABLE OF RESULTS OF DETERMINATION OF POTASSIUM IODID ELIMINATION IN URINE *

Name	Clinical Diagnosis	Blood Pressure	1 gm. of Potassium Iodid given by Mouth — Day			Rectum — Day		
		Mm. Hg.	1st	2d	3d	1st	2d	3d
A. E.	Cardio-nephritic	S. 200 D. 50	0.25	0.01	—	0.32	0.1	—
L. C.	Influenza	S. 115 D. 80	0.51	0.1	Trace	0.3	0.05	—
H. R.	Emphysema	S. 160 D. 75	0.4	—	—	0.6	0.06	Trace
Ch. G.	Bronchial asthma	S. 120 D. 90	0.32	0.01	—	0.52	0.08	Trace
A. H.	Rheumatic endocarditis.	S. 125 D. 80	0.5	0.15	—	0.65	0.02	—
A. K.	Carcinoma of intestines	.....	Not given	Not given	....	0.75	0.15	—
Ch. E.	Typhoid abscess of lung	S. 130 D. 80	0.29	0.01	—	0.45	0.1	—
M. A.	Peliosis rheumatica	S. 120	0.75	—	—	Not given	Not given	..
I. S.	Nephritis	S. 180 D. 80	0.3	0.03	—	0.28	0.08	—
M. A.	Nephritis	S. 145 D. 80	0.2	—	—	0.32	0.06	—
I. W.	Nephritis	S. 165 D. 85	0.39	0.01	—	0.45	0.06	Trace
R.	Nephritis	S. 155 D. 95	0.18	0.04	—	Not retained	Not retained	..
I. Sh.	Uremia	S. 260 D. 155	0.1	—	—	0.24	0.1	—
M. W.	Uremia	S. 185 D. 95	0.2	—	—	0.35	0.06	—
M. K.	Nephritis	S. 160 D. 90	0.09	—	—	0.28	Trace	—
S. S.	Acute nephritis	S. 120 D. 85	0.36	0.15	—	Not retained	Not retained	..
G. B.	Arteriosclerosis	S. 145 D. 85	0.35	0.02	—	0.45	0.06	—
S. R.	Rheumatic endocarditis.	.....	0.65	0.09	—	Not retained	Not retained	..
A. P.	Pneumonia	S. 130 D. 80	0.5	—	—	Not given	Not given	..
A. N.	Pneumonia	S. 140 D. 95	0.32	—	—	Not given	Not given	..
A. B.	Pneumonia	S. 135 D. 90	0.3	—	—	Not given	Not given	..
G. G.	Pneumonia	S. 130 D. 90	0.42	—	—	Not given	Not given	..
A. F.	Influenza	.....	0.52	0.04	—	0.48	0.09	—
B. F.	Auricular fibrillation of heart	.....	0.5	0.2	—	0.42	0.08	Trace

* Twenty-four hour specimens of urine were used.

manner as before. It is not the intention of this paper to discuss the action, uses and polytherapy of iodids in medicine.

The technic employed for the quantitative analysis was the following:

1. A fiftieth normal solution of sodium thiosulphate ($Na_2S_2O_3$) was prepared and carefully standardized against a definite quantity of potassium iodid. The standardization was performed as follows:

An exact 10 per cent. solution of potassium iodid is used. One c.c. of this 10 per cent. solution is diluted up to 100 c.c. with distilled water and introduced into a separating funnel. To this is added 5 c.c. of a mixture composed of strong nitric acid plus 5 per cent. of nitrous acid, and well shaken. Allow to stand five minutes and then add 10 c.c. of chloroform. Agitate well to wash out the liberated iodin. Let stand for five or ten minutes and drain off the purple colored chloroform from the bottom of the separating funnel into a beaker. The iodin extraction is continued and repeated with several fresh, smaller portions of chloroform and the whole of the chloroform used for the washing is collected in the same beaker. The washings should be continued until the returning chloroform is colorless.

2. Next carefully titrate the chloroform-iodin contents with the fiftieth normal sodium thiosulphate solution until the purple chloroform becomes completely colorless. Having thus determined the amount of sodium thiosulphate solution necessary to decolorize the iodin of 1 decigram of potassium iodid, calculate its equivalent for 1 c.c. of $\frac{Na_2S_2O_3}{50}$ N. and use the obtained figure as the standard.

For the urine determination, 100 c.c. of a twenty-four-hour specimen of urine is used and treated exactly as described above in the standardization. Having determined the potassium iodid elimination per 100 c.c. of urine, calculate therefrom the total excretion in the twenty-four-hour specimen.

REMARKS

It is to be noted that the major portion of the eliminated potassium iodid is excreted in the first twenty-four hours, from 5 to 10 per cent. is given off in the second twenty-four hours and by the third day only a trace or no potassium iodid is excreted.

As is to be expected, the amount of potassium iodid recovered never equaled or even approximated the amount introduced, indicating that other avenues of elimination (skin, saliva, etc.) excreted a considerable portion, and perhaps part may be utilized in thyroid-protein moleculization.

Patients who spit up a great deal excreted less potassium iodid in the urine.

The total elimination of potassium iodid in nephritic cases, as compared with other diseases in the chart, is the lowest and serves as a hint of poor renal function.

When the potassium iodid was given per rectum in the nephritic cases there was a more notable elimination, due probably to slower absorption and the proctoclysis acting as a renal stimulus.

Observe the peculiarity of the four pneumonia cases in excreting in the first day all excretable potassium iodid with no traces on subsequent days. Possibly this fact bears some relation to the low total chlorin elimination in pneumonia, as both are halogens.

The blood pressure seemingly has no material relation to the excretion index.

Potassium iodid can be given by rectum to comatose patients with the same result as when given by mouth (Patient A. E. being in coma when brought to the hospital, later regaining consciousness).

On the same case a lumbar puncture was made and a trace of potassium iodid was found in the spinal fluid. In two other instances, however, no potassium iodid could be discovered in the spinal fluid.

Whether those that excrete little through the urine are the ones that suffer from toxic and skin symptoms could not be ascertained, as experiments on the same patients were limited. Some patients could not retain proctoclysis and therefore only mouth determinations were possible.

1001 East One Hundred and Sixty-Seventh Street.

QUININ AND UREA INJECTIONS IN HYPERTHYROIDISM

LEIGH F. WATSON, M.D.
OKLAHOMA CITY

Since my preliminary report,[1] I have used quinin and urea injections over two hundred times in fifty cases of goiter, with no unpleasant effects.

I recommend the method only to relieve hyperthyroidism and not to remove the goiter. It is often true that in small toxic and atoxic goiter the inflammatory reaction following the injection is sufficient to cause the disappearance of the tumor; but the process is slow, usually covering several months, and when used for this purpose alone, the results are liable to be disappointing.

The injection must be employed with discretion; I have used it two years; the length of time being too short, and the number of cases too limited to draw final conclusions. It is suitable for use only in a hospital by men skilled in goiter work. One inexperienced is liable to inject too deeply, or to make the injection within the trachea. The indiscriminate use of quinin and urea, in the hands of one not familiar with the low threshold to stimuli possessed by the average case of toxic goiter, is liable to produce alarming symptoms of hyperthyroidism which might result disastrously.

In all cases of hyperthyroidism, I have obtained the best results by keeping the patient in bed in a hospital several weeks while giving the injections, the length of time depending on the severity of the symptoms and response to treatment.

PRELIMINARY TREATMENT

The necessity of minimizing pain from any injection by the use of local anesthesia cannot be too strongly emphasized.

To raise the patient's threshold to stimuli, thereby preventing an acute attack of hyperthyroidism which might otherwise follow the slight pain of the first quinin and urea infiltration, all cases of toxic goiter receive at one to three day intervals, preliminary injections into the most prominent portion of the goiter, of a few minims of sterile salt solution followed by injections of sterile water.

After two to four preliminary injections, the nervous reaction is so diminished that the quinin and urea can be given with only slight discomfort and no increase in symptoms; as soon as there is no hyperthyroidal reaction following the water injections, their usefulness is at an end.

I have observed in giving these injections that if the same point is always used, the reaction is less

1. Watson, L. F.: Quinin and Urea Hydrochlorid Injections in Hyperthyroidism, THE JOURNAL A. M. A., Jan. 10, 1914, p. 126.

than if each is given at a different place. For this reason I give the preliminary injections and the first quinin and urea infiltration at the same site.

TECHNIC

A study of thyroids removed after infiltration has demonstrated the difficulty of destroying even a small portion of the gland by injections through the skin. As one becomes experienced in the technic, it is possible to give each injection into tissue that has not been previously infiltrated; thus destroying the greatest amount of thyroid with the smallest number of injections.

For the injection I use an all glass syringe of 1 or 2 c.c. capacity, fitted with a slip needle so that the syringe can be readily attached and detached without traumatizing the thyroid. I prefer a fine platinum needle 1½ inches long.

After the usual aseptic precautions, the site of the injection is anesthetized with a 0.1 per cent. cocain or 0.25 per cent. novocain solution infiltrated into the skin, subcutaneous tissues and muscles, down to the gland. The syringe is now detached and the needle is thrust carefully into the body of the goiter. After ascertaining that there is no fluid in the thyroid and that no blood or air comes through the needle, the syringe is attached and the infiltration slowly made.

In cases of hyperthyroidism, I usually give from 1 to 4 c.c. of a from 30 to 50 per cent. quinin and urea solution at a treatment, repeating the injections about every third day, depending on the progress of the patient. Eight to fifteen infiltrations are usually necessary to produce a marked improvement in the general symptoms and the disappearance of the bruit over the superior thyroid arteries.

In cases of recent cystic goiter with moderate symptoms of hyperthyroidism, I aspirate the fluid and make one to three injections. Although the action of quinin and urea on the cystic type is uncertain, in the five cases I treated early in 1914, the tumor has disappeared and has not recurred.

EXPERIMENTAL RESULTS

The report of two severe toxic goiters removed after injection may be of interest:

CASE 1.—Six months after the usual injections through the skin, one case of toxic goiter was not relieved of hyperthyroidism, although the tumor was reduced one half. A partial thyroidectomy disclosed only isolated areas of necrosis—thus demonstrating that I had failed to destroy a sufficient amount of thyroid tissue to relieve the symptoms.

CASE 2.—A vascular goiter was exposed as for operation and one half of the gland thoroughly injected. Prompt relief from hyperthyroidism followed this extensive infiltration. Three weeks later, for cosmetic reasons, a partial thyroidectomy was done, revealing a complete necrosis of the injected area.

In each of these cases there was a noticeable absence of adhesions around the gland; the operation was not made more difficult because of the previous treatment.

The injection of weak quinin and urea solutions into thyroid tissue is productive of only a temporary fibrinous exudate which is rapidly absorbed with more or less accompanying hyperemia; the reaction following the strong injections is more intense and results in extensive inflammation with round-cell infiltration, connective-tissue proliferation and necrosis of the thyroid cells with a loss of staining properties of colloid and thyroid.

CLINICAL RESULTS

Sixteen patients with recent toxic goiter, treated before June 1, 1914, have been free from symptoms of hyperthyroidism for one year. In four of these patients, the goiter has entirely disappeared; in eight, the gland has perceptibly decreased in size; in two, the thyroid has slightly enlarged; and in two others there has been no appreciable change in the size of the tumor. Two patients with severe toxic goiter are free from symptoms of hyperthyroidism eighteen months after the last injection. Ten of these patients, who were emaciated at beginning of treatment, have shown a marked increase in weight, some gaining as much as 40 pounds during the treatment and the four months following; and so far as I can learn at this time none have lost the weight they gained.

Late in 1913, two injections were given in each of three cases of toxic goiter. The first patient was free from hyperthyroidism for seven weeks; the second was relieved for two weeks; both of these patients later went from under my care and had a partial thyroidectomy. The third patient, who had hysteria complicating hyperthyroidism, was relieved for two months; when the symptoms recurred she refused further treatment, and I am informed that now, a year since I saw her, she is improving at home without any treatment whatever.

Nine cases of recent atoxic (simple) goiter treated before June 1, 1914, are under observation. In two of these cases the goiter is undiminished in size; in three, it has entirely disappeared; and in four, it is slowly diminishing.

Twenty-five cases of toxic and atoxic goiter which have been under observation since June 1, 1914, will be the subject of a future report.

CONCLUSIONS

1. The study of the quinin and urea treatment is based on fifty cases of goiter in which I have used the injection more than two hundred times with no unpleasant effects. The method is recommended only to control the symptoms of hyperthyroidism in cases of toxic goiter, and is not recommended to remove the tumor in atoxic (simple) goiter for cosmetic reasons alone.

2. The injection will not relieve the symptoms of advanced toxic goiter when the vascular and nervous systems have been permanently damaged.

3. In summarizing, I believe the following observations may be ventured: Much depends on a proper selection of cases; the necessity of preventing pain from any injection, by the use of local anesthesia, is of vital importance; if acute attacks of hyperthyroidism are to be prevented, the use of preliminary injections into the most prominent portion of the goiter, of a few minims of sterile salt solution given at one to three day intervals, followed by injections of sterile water, will be found indispensable; the result of the quinin and urea injection depends on the amount of tissue destroyed.

4. The quinin and urea injection in experienced hands is a harmless procedure; it is almost painless, and there is no postinjection discomfort. It is suitable for use only in a hospital by men skilled in goiter work.

5. The gradual improvement of the exophthalmos in certain patients following the quinin and urea treatment points to a nerve control exerted by the thyroid

on the exophthalmos, through the sympathetic nervous system, as first suggested by Landström.[2]

6. I believe the greatest field of usefulness for the injection will be found in those cases of beginning hyperthyroidism not severe enough to justify operative treatment, and as a preparatory measure to partial thyroidectomy in chronic cases of toxic goiter in which the patient is too ill to warrant any form of immediate operative procedure.

THE PRACTICAL USE OF COPPER SULPHATE IN SWIMMING POOLS

STANLEY JUDSON THOMAS, M.S., M.A.
SOUTH BETHLEHEM, PA.

Since the publication of a paper on "The Use of Copper Sulphate in the Purification of Swimming Pools" in the *Journal of Industrial and Engineering Chemistry*,[3] and the editorial comment in THE JOURNAL,[4] I have received many inquiries from physicians who are interested in the practical side of this subject. As the first paper was primarily an attempt to show, by scientific reasoning and fact, the advantages of copper sulphate as a disinfectant in pools, no attempt was made to describe the actual method of using it, that is, the method of charging the water, the amount of disinfectant to use, frequency of application, and practical workings of the system. In this paper an attempt will be made to give minute directions for the use of copper sulphate by a person in charge of a pool.

Of course it must be understood that no means of purification is of itself sufficient when the ordinary laws of sanitation are not obeyed. Moreover, the efficacy of a disinfectant depends to a greater or less degree on the chemical contents of the water used in the pool, and no definite amount of the disinfectant can be recommended with the statement, "This will make your pool water pure." If possible, frequent bacteriologic analyses should be made, at least during the first week or two of the treatment. This will show better than any other means whether or not the proper amount of the disinfectant is being used.

The first requisite in the sanitary management of a swimming pool is the proper cleansing of the bathers before they enter the pool. A thorough shower bath with warm water and soap should always precede the plunge. When it is possible, as in the case of Y. M. C. A., school or college pools, no clothing whatever should be allowed. In the case of public pools, girls' pools, Y. W. C. A. pools, etc., in which this provision cannot be carried out, bathing suits of light colored materials should be insisted on, and these should be washed in disinfecting solutions at frequent intervals. Lastly, and this is of prime importance, no person should be allowed in the pool who knowingly is suffering from a communicable disease. This means that a physician should have at least a general supervision over every swimming pool.

That these general precautions, however, do not destroy the danger of transmitting disease through the medium of the pool water is fully realized by sanitarians. Within the last two or three years especially, this fact has received universal attention by hygienists throughout this country and Europe. Various means of purifying pool water have been proposed. We have seen pools designed with traveling buffers to force out the dirty water for subsequent treatment. Many pools in cities in which water rates are high use refiltering systems, of which there are many excellent types on the market. Ozonation and purification by means of ultraviolet light are receiving commercial attention. Recently the use of bleaching powder or calcium hypochlorite has been advocated. All of these methods insure pure water entering the pool, but they fail in what must be considered the most important particular—they cannot keep the water pure after bathers have been in the pool.

Consider these figures as an example of "before and after using" a swimming tank: On analysis, the pool water in the Taylor Gymnasium at Lehigh University was shown to contain, just after filtration and before any one entered the pool, 10 bacteria per cubic centimeter, and no colon bacilli; after forty men had been in the pool, although all the preliminary sanitary precautions had been taken, the water contained 5,300 bacteria per cubic centimeter, 200 of which were colon bacilli. Bleaching powder introduced into the pool in germicidal quantities is out of the question on account of its disagreeable odor and its irritating effect on the eyes and mucous membrane. Copper sulphate can be used in germicidal quantities without any disagreeable results.

The method of using copper sulphate is very simple. I found as the results of experiments that about one-twentieth (0.04) part of copper sulphate to a million parts of water, used every day, kept the water pure. As stated before, this amount cannot be recommended absolutely for every pool. The chemical contents of the fresh water, the number of bathers, the frequency of refiltration, etc., are factors that should not be overlooked. However, for most pools averaging not more than from 100 to 150 bathers per day, and in which the proper care is taken, this amount will prove the proper one.

In order to determine in pounds the amount of copper sulphate to add, the capacity of the pool must first be determined. In the case in which this is known as a certain number of gallons, the problem simply amounts to multiplying the number of gallons capacity by 8.3 (the weight in pounds of a gallon of water), and dividing the weight of the water thus determined by 2,000,000 (the solution being one-half part per million). The result is the weight in pounds of copper sulphate to be added. For example, suppose the pool contains 90,000 gallons of water:

$$\frac{90{,}000 \times 8.3}{2{,}000{,}000} = 0.37 \text{ pounds, or about 6 ounces, of copper sulphate to be used.}$$

In case the capacity of the pool is not known, it may be determined as follows: Multiply the length in feet by the width in feet, and the result by the average depth in feet. This will give the capacity of the tank in cubic feet. As a cubic foot of water weighs 62.5 pounds, we now have the formula:

$$\frac{\text{length} \times \text{width} \times \text{average depth} \times 62.5}{2{,}000{,}000} = \text{weight of copper sulphate to be used}$$

The copper sulphate should be added daily. The method of introduction consists simply in dissolving the required amount, placed in a small bag, such as a 5-cent salt sack, directly in the pool, either by dragging the bag through the pool by means of a pole, or by throwing it into the pool as an object for the bathers

2. Landström: Ueber Morbus Basedowii, 1907.
3. Thomas, S. J.: The Use of Copper Sulphate in the Purification of Swimming Pools, Jour. Indust. and Eng. Chem., 1915, vii, 496.
4. The Practical Disinfection of Swimming Pools, Current Comment, THE JOURNAL A. M. A., July 10, 1915, p. 176.

to dive for. Another very easy way is to dissolve the disinfectant in a quart or two of water and pour this solution into the pool. No more than enough solution for one treatment should be prepared at one time if it is used in this way. The swimmers soon distribute the dissolved salt throughout the pool.

As to the time of treatment, it is best to use copper sulphate between the two most popular times for the pool, such as at noon if there are large morning and afternoon classes, and at supper time if there are large afternoon and evening classes. To use any disinfectant just before or just after adding a large amount of fresh water is, of course, simply a waste.

Copper sulphate may be obtained at the present time under the commercial name of blue vitriol for about $7 per hundred pounds. One hundred pounds will last the average pool about a year.

RUPTURED ANEURYSM OF THE RIGHT VERTEBRAL ARTERY*

FRED D. WEIDMAN, M.D.
PHILADELPHIA

The patient, an unmarried white man, aged 40, was admitted to the University Hospital, Nov. 24, 1914. He had joined a ship's crew only four days previously and earlier history than this, therefore, could not be expected. On the day of admission he had been ashore, returning in perfect health, for he was afterwards observed reading in his bunk. At 8:30 p. m. he was seized with chills and sweats, receiving 5 grains of quinin therefor. Half an hour later he was unconscious. His companions said he had fainted. On recovery he complained of headache and pain in the back of the neck. He walked unsteadily to the ambulance and was received in the hospital in a state of forgetfulness, constantly asking where he was, but remembering only a few minutes. In a few minutes he became restless, surly, and so violent as to require mechanical restraint. In four hours he was irrational, became rigid and developed opisthotonos for several minutes, followed by profuse sweating. During this time he was unconscious. Respirations were of Cheyne-Stokes type. The extremities were not rigid. Temperature 98.4, pulse 64, respiration 24. The pulses were strong, equal and of good volume. The sclerae were muddy, and the eyes turned to the left when not moving. Accommodation reflexes were indeterminable. He frequently yawned. The abdominal muscles were tense, but without trismus. Taches cérébrales developed slowly and were indistinct. Reflexes were normal, Kernig's sign mildly positive.

On the day after admission spinal fluid was withdrawn and found to consist of almost pure blood. No organisms were found. The leukocyte percentage was lower than that of his blood. Blood examination showed: red blood cells, 3,870,000; white blood cells, 22,400, hemoglobin, 68 per cent. Differential count of leukocytes, polymorphonuclears, 87; lymphocytes, 10; large mononuclears, 1; transitionals, 2; eosinophils, 0. He vomited much brownish fluid in the morning. The urinalysis showed a trace of albumin, and that acetone was present, but no diacetic acid.

Two days after admission, he became rational at times, and stated that he drank considerable whisky on the day before his attack. He was somnolent and irritable when awake. On the third day an eye examination (left) showed shoked disk and numerous hemorrhages. Pupils were contracted, limiting the examination. A second spinal puncture furnished, again, almost pure blood. The patient always laid on his left side.

On the fourth day a Wassermann reaction from the spinal fluid was reported positive. The urine was reported + for acetone and a trace of sugar by fermentation test.

On the fifth day he was seized with sudden tetanic convulsions, became rigid, developed opisthotonos and shortly died by respiratory failure. The heart beat for a long time after respirations ceased.

The temperature chart showed an imperfect daily rhythm, rising to about 100 between 6 and 9 p. m. and falling to normal or subnormal in the mornings. The temperature rose to 101 at death.

In short, the history describes an apparently perfectly healthy man, at rest and in the prime of life, suddenly seized with headache, chills, and in half an hour unconsciousness; with partial recovery of consciousness in a short time, quickly succeeded by return of unconsciousness, and in four hours irrationality, violence, rigidity, opisthotonos, sweating; in twenty-four hours or thereabouts recovery of consciousness and somnolence persisting for three or four days, and then dissolution by respiratory failure with convulsions and rigidity.

At necropsy (U. P. 4621, 1914, 142) the scalp and calvarium were found quite normal, the dura mater of normal thickness and without pathologic features. The cerebral vessels, especially those in the occipital region were markedly congested and the fluid of the pia arachnoid here had a red tinge. The cisterna magna and medullary meninges were highly infiltrated with fresh, soft, black clot which embedded and concealed the nerve roots and cord. When the brain was removed the hemorrhage was found to be most marked in the basal region, extending anteriorly as far as the optic chiasm. The clot was most abundant at the bulbopontine junction, and here the right vertebral artery was found divided at the middle of a pea-sized expansion. This lay 10 mm. below the beginning of the basilar artery. It was the dorsal (posterior) wall of the artery which was most markedly dilated, the aneurysm belonging to the saccular variety. It lay against the bulb, about 10 mm. below the bulbopontine junction and extended into the angle between the right cerebellar lobe and the bulb. It did not impress the latter. The inferior half of the aneurysm was almost filled by a laminated thrombus which was pierced ventrally by a blood channel about 1.5 mm. in diameter in which the blood had evidently been circulating. The rupture appears to have occurred anteriorly (confirmed microscopically) at about the middle of the aneurysm, at the point of emergence of the posterior inferior cerebellar artery.

The internal carotid arteries were distinctly sclerosed, but the other members of Willis' circle were only slightly so. The basilar and vertebral arteries showed no sclerosis. Microscopic sections of the latter arteries showed early intimal degeneration and slight medial fibrosis best marked at the point of emergence of a small branch. No additional aneurysms, miliary or otherwise, were found in any of the intracranial arteries. The aorta was very elastic and showed slight superficial atheroma. Other organs showed no notable fibroses or other stigmata of syphilis.

A microscopic section was cut transversely from the ragged upper surface of the lower half of the broken aneurysm, lying therefore, at about its middle. The histologic report follows:

On one side the muscular coat is recognizable as such, vital and divided into three segments by blood extravasations and by a gap. On the other side the wall is highly attenuated, markedly bulged outward and encloses a thrombus. The latter does not completely fill the vessel, a broad lumen persisting close to the vital side and communicating with the exterior of the vessel by means of the gap mentioned above. The attenuated aneurysmal side of the vessel constitutes fully four fifths of the circumference. Here the different coats are fused, not recognizable as individuals, hyaline, necrotic, but nowhere ruptured. There are no attempts at organization of the overlying thrombus, which is of very recent type. In the periphery of the thrombus the outlines of the red blood cells are more or less preserved and leukocytes are in fairly vital condition, while the luminal part is very recent, showing fibrin reticulum and cellular elements in excellent condition. The point at which the dilatation begins

* From McManes Laboratory of Pathology, University of Pennsylvania.

is sharply indicated, and here, on either side, the thrombus extends between and separates the media and adventitia, continuing on one side as a narrow zone quite as far as the gap. This gives the appearance that the adventitia really constitutes the wall of the artery and that the intima and media (of the vital part) project their unattached extremities into the thrombus, the necrotic adventitia extending around the whole vessel, only interrupted at the gap. On the vital side the media is divided into three segments by hemorrhages which show laked red blood cells and hemosiderin granules. Over the segments the elastica is corrugated, over the defects serpentine or straight, save at the gap, where it is broken. This gap is directly opposite the aneurysmal dilatation. The intima immediately adjacent is cloddy, granular and discontinuous, underlaid by laked red blood cells and no media. It is overlaid by a thin layer of ropy, hyaline, necrotic material suggesting old thrombus. There is no histologic evidence of specific causation.

Sections from the basilar and cerebral arteries at times show a mild proliferative endarteritis.

The foregoing findings apparently indicate an unusual mechanism of rupture, for which reason they have been made the subject of a separate communication.

A review of the literature shows that aneurysms of the vertebral artery in its intracranial course are distinctly rare. In 1866 Lebert[1] wrote an article on numerous intracranial aneurysms wherein he cites most briefly two cases which occurred in the vertebral artery. Of these, the first was reported by Cruveilhier[2] in 1835, and occurred in a man, aged 60, who showed several aortic aneurysms, one on the mesenteric artery and one on the right vertebral. The pons was deeply depressed and blood pigmented. The second citation was that of Hodgson[3] who found a distinct widening of both vertebrals before they joined the basilar.

In 1894 von Hofman[4] published an exhaustive analysis of 75 cerebral aneurysms of which 10 occurred in the vertebral. All of these cases were his personal observations extending over twenty years, during which time he had especially examined all cases available of sudden death with cerebral symptoms. All ten of his vertebral aneurysms had ruptured and death had taken place by intrameningeal hemorrhage. This high percentage of rupture is doubtless explained by his selection of patients who died suddenly. His largest specimen measured 2.5 by 1.3 cm. The smallest was of the size of a tare. He did not give the clinical history of all his cases.

In 1906 Ruston and Southard[5] reported a case of miliary cerebral and gross vertebral aneurysms in which they emphasize suboccipital pain as an important clinical feature. The subject, a woman aged 69, had been drowsy for about a year. The attack was sudden, severe and initiated by boring, suboccipital, strictly localized pain and projectile vomiting. During the first five days there were slight chills and sweating. On the eighth day a second attack occurred followed by improvement up to the nineteenth day, when death occurred suddenly. At necropsy both vertebrals were aneurysmal, fusiform, 0.75 cm. in diameter and not ruptured. These writers cite cases among which is one by Ladame and Monakow, in 1900.[6] The lesion here was the size of a pigeon's egg and had produced degenerations of pons, cerebellum, olive, pyramid and left acoustic nerve. The left fifth, sixth, ninth and tenth nerves were slightly atrophied. The patient had symptoms of cerebellar type for two years before death. A second case cited by the same authors was reported by Rindfleisch.[7] A woman, aged 51, had had headache and eructations for three years. Sudden suboccipital pain and eructations occurred six days before death. She became comatose in three days. Death took place by respiratory failure. The aneurysm was the size of a bean and had ruptured.

In 1907, Beadles[8] investigated 555 cases of intracranial aneurysms which had been proved by necropsy. Of these he mentioned but three as occurring in the vertebral artery and did not refer to the cases of Lebert, von Hofman and Ruston and Southard. Of these three his one personal observation was on an aneurysm of the size of a pea at the junction of the left vertebral and inferior cerebellar arteries which compressed the roots of the seventh, eighth, ninth (?) and twelfth nerves. The pyramid and olive of the same side were atrophied. His figure shows it as a shallow pouch from whose fundus the inferior cerebellar artery is emerging. His second case is a citation of Schulze.[9] This was a saccular aneurysm of the left vertebral. The patient had spasm of all the muscles of the left side of the face except the frontalis. Beadle's third refers to Moser's[10] case. Symptoms of a bulbar lesion had existed for a considerable period of time; and a loud murmur was heard on each side between the mastoid and vertebral column. At necropsy the left vertebral artery showed fusiform dilatation, measuring 12 mm. in width and 20 mm. in length. The basilar was also strikingly wide. The olivary body and restiform body were flattened or diminished, and foci of softening were found in the corpus striatum and optic thalamus.

Since Beadles' paper but seven vertebral aneurysms are indexed, and of these none had ruptured.

Boinet's[11] specimen lay on the left side, 5 mm. below the basilar artery and measured 30 by 15 mm. Many gummas were present on the surface of the brain and in the substance of the nervous centers. The clinical history is so brief as to be of little value.

Bailey's[12] case showed a cord softened and compressed by the aneurysm and dotted with hemorrhages. His patient had presented symptoms of brain tumor for two or three years. The position and size of the aneurysm are not given.

Hedinger's[13] case occurred in the right vertebral artery and was of the size of a hazel-nut. The patient had been syphilitic for twenty-four years and for the last eight years had presented a left side hemiplegia. Fourteen days before death violent headache set in with vomiting, slowing of pulse and variable loss of consciousness. Hedinger's report is brief, consisting of only eleven lines, does not locate the aneurysm precisely nor state its possible relation to the hemiplegia.

Babonniex's[14] specimen was 5 mm. below the basilar and of the size of a pea. The patient died with

1. Lebert: Berl. klin. Wchnschr., 1866, iii, 60.
2. Cruveilhier: Anatomie Pathologique, 1838-1842, xxviii, Plate III, (Paris text).
3. Hodgson, Langstaff: Traité des maladies, des artères et des veines, Breschet's translation, i, 89.
4. Von Hofman: Wien. klin. Wchnschr., 1894, p. 823.
5. Ruston and Southard: Boston Med. and Surg. Jour., 1906, cliv, 312.
6. Ladame and Monakow: Nouv. iconog. de la Salpétrière, 1900, xiii.
7. Rindfleisch: Lichtheim's Festschrift, Deutsch. Arch. f. klin. Med., 1905, lxxxvi, Parts 1 to 3.
8. Beadles, C. F.: Brain, 1907, p. 285.
9. Schulze, F.: Virchows Arch. f. path. Anat., 1875, lxv, Part 3.
10. Moser: Deutsch. Arch. f. klin. Med., 1884, xxxv, 438.
11. Boinet, E.: Compt. rend. Soc. de biol., 1910, lxix, 210.
12. Bailey, P.: Med. Rec., New York, 1913, lxxxiii, 268.
13. Hedinger, E.: Cor.-Bl. f. schweiz. Aerzte, 1905, xxxv, 26.
14. Babonniex, L.: Gaz. d. hôp., 1913, lxxxvi, 1253.

an acute pericarditis. Symptoms prior to the present illness were never cerebral. She had "paroxysmal tachycardia" showing at necropsy a chronic interstitial nephritis, arteriosclerosis and a heart weighing 530 gm. with no valvular lesions. The pneumogastric centers showed no degenerations histologically. It would appear that the aneurysm had produced no symptoms.

Mathew and Pirie[15] report an aneurysm of the *basilar* artery which had ruptured, and since it closely resembles this case clinically it will be given in more detail. No statements are made as to the presence of previous attacks. The patient dropped unconscious at a railway station, flaccid, cyanosed and with stertorous breathing. Temperature subnormal, pulse 62, regular. In two hours consciousness returned, he threw his limbs around uneasily and in two hours woke up with frontal headache.

On the next day he complained of occipital and lumbar pain. On the fourth day of the disease he again became unconscious for two hours. On the fifth day the spinal fluid was found blood stained. In the evening he again became unconscious and died in fifteen minutes by asphyxia. The pulse continued sixty seconds after respirations ceased.

At necropsy the aneurysm was 13 by 7 mm., at the anterior end of the basilar artery; but the point of blood escape could not be made out. Much blood was present in the meninges over the base. Microscopically it showed endarteritis proliferans. The lesion was local, no other arteries being pathologically altered.

He summarizes his case as follows: Successive (?) brief, unconscious attacks, quickly recovered from with only headache remaining, and death in five days. The perforation in the aneurysm was probably small and the first two hemorrhages small, the symptoms abating as the blood diffused. The third attack caused death by pressure on the medulla, with respiratory failure.

Etiology.—It is not within the scope of this communication to discuss the cause of aneurysm in general. It is felt that a special statement should be made, however, in regard to the factors concerned in the causation of intracranial ones. In the case here reported the subject was a sailor, aged 40, showing only a local cerebral arteriosclerosis and no somatic arteriosclerosis. The Wassermann reaction was positive. His lesion, then, was local and all signs pointed to syphilis as the important factor causing weakness of the artery walls. In other cases it must be noted that these arteries have normally very thin walls, and are very poorly supported externally so that it is not necessary that the lesion should be a deep one (syphilitic) in order to produce a serious grade of weakening. The same reasoning applies to the vertebral arteries (and other thin-walled basal cerebral arteries) as does to the smaller branches of the cerebrals, whose common miliary aneurysms constantly precede apoplectic lesions, and in which no one attempts to invoke an invariable or even usual syphilitic causation. We should therefore be less hasty in suspecting syphilis as the cause of these cerebral aneurysms than in the case of extracerebral aneurysms.

Pathogenesis.—After reviewing the foregoing cases it is possible to divide them into two groups, acute and chronic. Most of the cases had produced symptoms for two or three years (Bailey's and Moser's cases) and showed degeneration of the nearby nervous tissue. Others were cases of sudden death by hemorrhage with no preliminary symptoms and no degenerations found at necropsy.

It is believed that the case here reported belongs in the acute class and that the initial expansion occurred on shipboard five days before necropsy. This idea is given in part because the patient was in good health prior to the fatal attack, but more from the postmortem findings. Grossly the aneurysmal thrombus was black, with faintly indicated peripheral lamination. The walls were not fibrosed nor adherent to nearby structures. Microscopically, too, the thrombus was fresh in type and easily so young as five days. I realize as Smith[16] has pointed out, that the lack of organization of the thrombus does not avail here in age determination, on account of the known failure of organization even in very old aneurysms. Furthermore, sections taken from the medulla immediately in contact with the aneurysm show no degenerations when prepared by Weigert's method.[17]

With the initial expansion on shipboard there was probably minor hemorrhage, although the sudden pressure during expansion may have been the sole factor in producing the suddenly occurring initial symptoms. A continuation of the pressure gave rise to the violent second set of symptoms noted on arrival at the hospital, and by this time hemorrhage surely had taken place, as shown by discovery of blood in the fluid from spinal puncture. It was during this period (that is, early) too, that the media was broken, for the red blood cells observed microscopically between the segments are of some standing, as shown by tendency to lysis and the presence of blood pigment granules. Coagulation of the blood probably prevented any massive loss at this time, but during the four or five days of somnolence the elastica suffered progressive stretching and weakening, as shown microscopically by loss of corrugation, its ultimate rupture giving massive hemorrhage and death by pressure on respiratory centers.

That death takes place regularly by respiratory failure is shown by the frequency with which cyanosis is mentioned in recorded cases as a terminal symptom, and by several special statements that the heart continued to beat many (60) seconds after the respirations ceased.

Of the recorded cases, those of Babonniex and Mathew and Pirie were doubtless of this acute nature. Many of von Hofman's were surely also acute, but the exact proportion is indeterminate from lack of clinical history and detailed necropsy reports.

Diagnosis.—Beadles[8] discusses the subject of diagnosis of intracranial aneurysms in general at some length. He brings out the fallacy of bruits, which may also be produced by tumors which press on an artery. Hissing and buzzing sounds experienced by the patient are, in similar way, fallacious. With our present diagnostic armamentarium it appears that the positive diagnosis of intracranial aneurysm cannot be made. It may be suspected when there is sudden boring suboccipital pain, and blood in the spinal fluid. The diagnosis of intrameningeal hemorrhage may be

15. Mathew, E., and Pirie, J. H. H.: Rev. Neurol. and Psychiat., Edinburgh, 1911, ix, 107.

16. Smith, A. J.: Personal communication.

17. That such degenerations may be produced by aneurysms in this position is shown in other reported cases (Moser, Bailey, Footnotes 10 and 12) and that even pea-sized ones may do so by Beadle's personal case. In some of these cases definite cerebral symptoms had existed a long time.

made, but localization of an aneurysm to a particular artery is not to be expected.

Treatment.—With such imperfect means of diagnosis little hope can be held out of curative measures. Ligation of the carotid artery has been contemplated (Hutchinson[18]) in one case in which a bruit was heard, but operation was refused. It is difficult to conceive how such a procedure could avail when there is such an adequate collateral circulation as the circle of Willis affords.

242 North Sixty-First Street.

TREATMENT OF SYPHILIS OF THE BRAIN *

A PRELIMINARY REPORT OF THE USE OF MERCURIC CHLORID INTRADURALLY

GUY O'NEIL IRELAND, M.D.C.M., F.T.M.C.
Assistant Physician to Western State Hospital, Fort Steilacoom
FORT STEILACOOM, WASH.
AND
C. STUART WILSON, M.D.
TACOMA, WASH.

The proof that general paralysis of the insane is an active syphilitic disease,[1] together with the advent of intradural medication, has given a new hope in the treatment of these unfortunates.

The choice of technic in intradural treatment lies between .the Swift and Ellis method,[2] the Ravaut method,[3] and the Byrnes method.[4]

The high cost of salvarsan and the scarcity of this product in our Western market have prevented us from using the Swift and Ellis method to any great extent. We were attracted by the Byrnes method because of its apparent freedom from danger and its low cost.

The patients here reported, twenty-three in number, have all been diagnosed clinically as having general paralysis, and the clinical diagnosis has been accepted as the basis for this work. The patients have not been selected as to the duration of disease, stage, or physical condition; but rather as they came to this particular service. This series represents, however, mostly the so-called third stage.

The technic of treatment is practically the same as described by Byrnes.[4] About 40 c.c. of blood are taken, under aseptic conditions, from one of the veins of the forearm, and the serum allowed to separate. To 12 c.c. of clear serum is added 1 c.c. of a sterile solution of mercuric chlorid containing $\frac{1}{50}$ grain, and 17 c.c. of sterile normal salt solution prepared from freshly distilled water. This total of 30 c.c. is heated to 56 C. in a water bath for thirty minutes. Lumbar puncture is performed and from 15 to 30 c.c. of fluid are withdrawn, and the 30 c.c. of diluted mercurialized serum is slowly injected. We have used a 25 c.c. Lüer syringe.

In those cases in which neosalvarsan was given, the usual Swift and Ellis technic was used. The serum has been administered within twenty-four hours of its preparation. The interval between injections has been determined by the condition of the patient.

The Wassermann tests were carried out with original technic in one-tenth quantities.

Antigens: Alcoholic extract of beef heart and this same antigen fortified with cholesterin 0.4 per cent.

Patient's blood serum used in 0.1 c.c. unless otherwise noted.

Patient's spinal fluid used in 0.1 c.c., 0.5 c.c. and 1 c.c.

Hemolytic system used was rabbit antisheep.

Complement was from the pooled serum of guinea-pigs.

Globulin test made according to Nonne.[5]

Cells counted with Thoma-Zeiss hemocytometer.

Lange's colloidal gold test according to Miller and Levy.[6]

In those spinal fluids which had the slightest tinge of blood no cell count, Nonne's or Lange's was done. There were, however, several tubes which on their arrival at the laboratory had perfectly clear fluid but a very slight blood sediment. No cell counts were made on these, but a globulin and Lange's tests were performed.

The following case records show the clinical and serologic findings. Many of these patients had treatment before coming under our observation but their histories are indefinite and do not include intraspinal injections:

CASE 1 (B).—The patient has delusions of grandeur, hears voices, is violent and has to be restrained. Knee jerks are absent, the pupils are of the Arygll Robertson type, there are fibrillary tremors, the tongue is tremulous, deflected to right, and there is ataxia of speech and gait.

Treatment: 14 intraspinal injections of mercurialized serum; 1 Swift and Ellis 40 per cent. neosalvarsanized serum; 14 grains of mercury succinimid intramuscularly. Total mercury: intraspinal, $\frac{1}{3}$ grain; total serum, 180 c.c. Results: At present the patient is mentally clear, the neurologic signs being absent except that the pupils are unequal. Wassermann, blood serum and spinal fluid tests were negative; the globulin test doubtful, 40 cells; Lange's test positive.

CASE 2 (C).—The patient has delusions of grandeur, hears voices, sees things, shows extreme fabrication, is excitable, weak and anemic. Weight is 86 pounds. Knee jerks +; pupils, Argyll Robertson. There are fibrillary tremors and ataxic speech and gait.

Treatment: 6 intraspinal injections of mercurialized serum; Swift and Ellis 40 per cent. neosalvarsanized serum; 5 grains of mercury succinimid intramuscularly. Total mercury: intraspinal $\frac{1}{8}$ grain; total serum, 120 c.c. Results: The patient is mentally clear, neurologic signs absent except delayed knee jerks. Weight is 119 pounds. Wassermann on blood, 0.2 c.c., positive; spinal fluid, 1 c.c., positive; globulin negative, 10 cells; Lange's positive.

CASE 3 (A).—The patient has delusions of grandeur, is excitable, talkative and filthy. Knee jerks +, pupils normal, reaction +. Ataxic speech and gait. Blood pressure 182 mm. Hg.

Treatment: 4 intraspinal injections of mercurialized serum; 3 Swift and Ellis 40 per cent. neosalvarsanized serum. Total mercury: intraspinal, $\frac{1}{12}$ grain, total serum, 84 c.c. Results: clinical and mental improvements, some lessening of neurologic signs. Sudden death occurred, following cerebral apoplexy.

---

18. Hutchinson: Tr. Clin. Soc., viii, 127.

* The tables showing in detail the clinical and serologic controls in this series are omitted from this article because of limited space, but will appear in full in the author's reprints.

1. Noguchi: Jour. Exper. Med., 1913, xvii, 232.
2. Swift, Homer E., and Ellis, Arthur W. M.: The Treatment of Syphilitic Affections of the Central Nervous System, with Especial Reference to the Use of Intraspinous Injections, Arch. Int. Med., Sept. 15, 1913, p. 331.
3. Ravaut: Ann. de méd., 1914, No. 1, p. 49.
4. Byrnes, Charles Metcalfe: The Intradural Administration of Mercurialized Serum in the Treatment of Cerebrospinal Syphilis, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2182.
5. Nonne: Syphilis and the Nervous System, Philadelphia, J. B. Lippincott Company, Ed. 2.
6. Miller and Levy: Bull. Johns Hopkins Hosp., 1914, xx-v, No. 279, p. 133.

CASE 4 (Q).—The patient has delusions of grandeur and persecution, hears voices and see things. Knee jerk +, pupils normal, Romberg +. Fibrillary tremors and ataxia are present.

Treatment: 2 intraspinal injections of mercurialized serum, 4 Swift and Ellis 40 per cent. neosalvarsanized serum. Total mercury: intraspinal, 1/25 grain; total serum, 72 c.c. Results: none permanent mentally or physically; Wassermann on blood always negative, spinal fluid positive; globulin positive, 60 cells; Lange's positive; patient went on to usual death of paresis.

CASE 5 (K).—The patient has delusions of grandeur and persecution, and is depressed. Knee jerks +. There are fibrillary tremors and ataxia. Blood pressure 173 mm.

Treatment: 8 intraspinal injections of mercurialized serum, 8 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/6 grain; total serum, 96 c.c. Results: no particular change. Sudden death following cerebral apoplexy.

CASE 6 (Y).—The patient has delusions of grandeur and is restless. Knee jerks +, pupils, Argyll Robertson; Romberg +. There are fibrillary tremors and ataxic speech and gait.

Treatment: 5 intraspinal injections of mercurialized serum, 5 grains of mercury succinimid intramuscularly. Total mercury; intraspinal, 1/10 grain; total serum, 60 c.c. Results: Mental improvement except that the patient is emotional; neurologic signs are absent, Wassermann on blood is doubtful; spinal fluid positive; globulin partially positive, 40 cells; Lange's positive.

CASE 7 (R).—The patient has delusions of grandeur and is restless. Knee jerks +, pupils Argyll Robertson, Romberg +. There are tremors and ataxia.

Treatment: 6 intraspinal injections of mercurialized serum; 6 grains mercury succinimid intramuscularly. Total mercury; intraspinal, 1/8 grain; total serum, 72 c.c. Results: no change clinical or serologic.

CASE 8 (G).—The patient has delusions of grandeur and persecution, high sexual desire and is depressed. Knee jerks +, pupils Arygll Robertson, Romberg +. Ataxia and tremors are present.

Treatment: 9 intraspinal injections of mercurialized serum; 9 grains of mercury succinimid intramuscularly. Total mercury: intraspinal, 9/50 grain; total serum, 108 c.c. Results: At times patient is rational, delusions less active. Knee jerks +, Argyll Robertson +, Romberg —. Ataxia is not present; Wassermann on the blood has always been negative, on the spinal fluid, variable; globulin faintly positive, 50 cells; Lange's variable.

CASE 9 (T).—The patient has no delusions but is depressed. Knee jerks +, pupils, Argyll Robertson, Romberg +. There are fibrillary tremors and ataxia.

Treatment: 7 intraspinal injections of mercurialized serum; 7 grains mercury succinimid intramuscularly. Total mercury: intraspinal 1/7 grain; total serum, 84 c.c. Results: Patient is mentally improved. Knee jerks —, Romberg —, pupils Argyll Robertson; tremors and ataxia less. Wassermann on blood partially positive; spinal fluid positive; globulin positive, 90 cells; Lange's positive.

CASE 10 (F).—The patient has delusions of grandeur and persecution, sees and hears things and is violent. Knee jerks +, pupils, Argyll Robertson, reaction +. There are tremors and ataxia.

Treatment: 13 intraspinal injections of mercurialized serum; 13 grains of mercury succinimid intramuscularly. Total mercury: intraspinal, 1/4 grain; total serum, 156 c.c. Results: No change clinically, Wassermann on blood partially positive; spinal fluid positive; globulin partially positive, 20 cells; Lange's positive.

CASE 11 (O).—The patient has delusions of grandeur, sees and hears things, is violent and has to be restrained. Knee jerks are retarded, the pupils are normal. Ataxia and tremors are present.

Treatment: 4 intraspinal injections of mercurialized serum; 3 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/12 grain; total serum, 48 c.c. Results: No delusions, no hallucinations, clean, bright, neurologic signs, ataxia and tremor less, otherwise no change. Wassermann on blood partially positive; spinal fluid positive; globulin positive, 11 cells; Lange's positive.

CASE 12 (M).—The patient has delusions of grandeur, sees and hears things and varies from extreme emotion to elation. Knee jerks +, pupils, Argyll Robertson, Romberg +. Ataxia and tremors are present.

Treatment: 5 intraspinal injections of mercurialized serum; 5 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/10 grain; total serum, 60 c.c. Results: slight mental improvement, neurologic; Argyll Robertson —; Romberg —. Ataxia and tremors gone; Wassermann always negative on blood and spinal fluid; globulin positive, 98 cells; Lange's positive.

CASE 13 (P).—The patient has delusions of grandeur and persecution and is violent. Knee jerks +, pupils, Argyll Robertson. Tremors are present.

Treatment: 13 intraspinal injections of mercurialized serum; 2 Swift and Ellis neosalvarsanized serum; 13 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/4 grain; total serum, 180 c.c. Results: no change mentally or neurologically; Wassermann on blood, doubtful; spinal fluid positive; globulin doubtful, 160 cells; Lange's positive.

CASE 14 (W)—The patient has delusions of grandeur, is dull and confused. Knee jerks +, Romberg +, pupils, Argyll Robertson; there are ataxia and tremors.

Treatment: 5 intraspinal injections of mercurialized serum; 5 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/10 grain; total serum, 60 c.c. Results: no change mentally, or physically; Wassermann on blood and spinal fluid positive; globulin positive, 30 cells; Lange's positive.

CASE 15 (S).—The patient has delusions of grandeur and is violent. Knee jerks —, Romberg +; pupils, Argyll Robertson. There are ataxia and tremors.

Treatment: 7 intraspinal injections of mercurialized serum; 5 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/7 grain; total serum, 84 c.c. Results: Mentally patient is somewhat improved; knee jerks normal; Romberg —, Argyll Robertson, retarded. There is no ataxia or tremor; Wassermann on blood doubtfully positive, spinal fluid positive; globulin positive, 190 cells; Lange's positive.

CASE 16 (U).—The patient has delusions of grandeur, is depressed and untidy. Knee jerks —, Romberg +. The pupils are normal, there is ataxia and tremor.

Treatment: 4 intraspinal injections of mercurialized serum; 4 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/22 grain; total serum, 48 c.c. Results: Patient is mentally improved, ataxia and tremor gone; knee jerks normal, Romberg —; pupil, Argyll Robertson. Wassermann on blood and spinal fluid positive; globulin positive, 90 cells; Lange's positive.

CASE 17 (H).—The patient has delusions of grandeur and is depressed. Knee jerks —, pupils, Argyll Robertson; Romberg +. There are ataxia and tremors.

Treatment: 12 intraspinal injections of mercurialized serum; 11 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/4 grain; total serum, 144 c.c. Results: Delusions are not so pronounced, patient is more tidy, ataxia is less. Wassermann on blood is doubtfully positive; on spinal fluid positive; globulin positive, 70 cells; Lange's negative.

CASE 18 (V).—The patient has delusions of grandeur, hears things, and is untidy. Knee jerks +, pupils normal, Romberg +. There are ataxia and tremors.

Treatment: 6 intraspinal injections of mercurialized serum; 6 grains mercury succinimid. Total mercury: intraspinal, 1/8 grain; total serum, 72 c.c. Results: Patient is mentally clear, knee jerks —, Romberg —; pupils normal; no ataxia or tremor; Wassermann on blood and spinal fluid positive; globulin positive, 10 cells; Lange's positive.

Case 19 (E).—The patient has delusions of grandeur, is violent and untidy. Knee jerks +, pupils, Argyll Robertson, Romberg +. There are ataxia and tremors.

Treatment: 16 intraspinal injections of mercurialized serum; 1 Swift and Ellis 40 per cent. neosalvarsanized serum, 16 grains mercury succinimid intramuscularly. Total mercury: intraspinal, ⅓ grain; total serum 204 c.c. Results: The patient is mentally clear, pupils normal; knee jerks +, Romberg +. There is some tremor: Wassermann on blood always negative, spinal fluid partially positive; globulin partially positive, 20 cells; Lange's positive.

Case 20 (L).—The patient has delusions of grandeur and is violent. Knee jerks +, pupils, Argyll Robertson, Romberg +. Ataxia and tremors are present.

Treatment: 16 intraspinal injections of mercurialized serum; 16 grains mercury succinimid intramuscularly. Total mercury: intraspinal, ⅓ grain; total serum, 192 c.c. Results: Variable improvement mentally, ataxia and tremors gone. Knee jerks, pupils, Argyll Robertson, Romberg +. Wassermann on blood partially positive; spinal fluid positive; globulin positive. 60 cells; Lange's positive.

Case 21 (X).—The patient has delusions of grandeur and is depressed. Knee jerks +, pupils Argyll Robertson, Romberg +. There are ataxia and tremors.

Treatment: 5 intraspinal injections of mercurialized serum; 5 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/10 grain; total serum, 60 c.c. Results: Patient is brighter, delusions are indefinite; no change in physical signs. Wassermann on blood, partially positive; spinal fluid positive; globulin positive, 40 cells; Lange's positive.

Case 22 (D).—The patient has delusions of grandeur, is restless and hears things. Knee jerks +; pupils, Argyll Robertson; Romberg +. There are ataxia and tremors.

Treatment: 13 intraspinal injections of mercurialized serum; 13 grains mercury succinimid intramuscularly. Total mercury: intraspinal, ¼ grain; total serum, 152 c.c. Results: no change, Wassermann in blood always negative, spinal fluid variable; globulin positive, 20 cells; Lange's positive.

Case 23 (I).—The patient has no delusions, but is unconscious at times and has flighty and disconnected speech. Knee jerks +; pupils, Argyll Robertson, Romberg +. There are fibrillary tremors but no ataxia.

Treatment: 2 intraspinal injections of mercurialized serum; 7 Swift and Ellis 40 per cent. neosalvarsanized serum; 11 neosalvarsan intravenously. Total mercury: intraspinal, 1/25 grain; total serum, 108 c.c. Results: Patient is normal mentally; knee jerks slightly exaggerated, and pupils still sluggish, Wassermann on blood negative; spinal fluid positive in 1 c.c.; globulin negative, 30 cells; Lange's negative.

Practically all mercurialized serum given prior to March 30 with the exception of that given to Patient 1 was prepared from pooled blood serum. The reactions were those of severe pain in back, legs and testes. About March 21 all patients receiving treatment had very marked depression and constipation. This depression was so severe that a two weeks' interval was necessary before resuming treatment. The spinal fluid of one of the donors at that time was orange yellow, but did not give hemoglobin reaction. Subsequently his blood was not included in the pool and no recurrence of a universal depression followed. When we changed to autogenous serum most of the patients remarked on the lessened reaction.

In all but three cases there has been a clinical improvement some time during their treatment. This improvement has taken place by the fifth treatment in 75 per cent. of the remaining twenty cases. There has been a tendency to a return to their former clinical state some time later in 40 per cent. of those improved.

In 15 per cent. the improvement reached a certain point and seemed to proceed no further as in Patient D., who improved after his sixth treatment but has remained stationary through his following seven treatments.

The serologic improvement has not been so marked or so constant as the clinical. Of the fifteen patients who received the 1/30 grain mercuric chlorid intradurally, 46 per cent. had a severe reaction and 54 per cent. no more severe than usual; 61 per cent. had their Wassermann in the spinal fluid temporarily converted to a negative, while 38 per cent. were not immediately influenced. We did not continue the 1/30 grain injections because the reactions were too severe.

The marked fluctuations in the pupillary reactions and knee jerks are of interest, as an exaggerated knee jerk may become temporarily lost and vice versa. We have not noticed any constant relation between the globulin reaction, cells and colloidal gold test.

In only two cases out of the twenty-three have we seemed to be able to convert the colloidal gold test to a more or less permanent negative. The globulin reaction and pleocytosis were very variable and seemed to follow no definite course.

CONCLUSIONS

The injections of 1/50 grain of mercuric chlorid intradurally, by the method of Byrnes, is apparently safe.

Autogenous serum is much preferable to pooled serum.

The reactions are a little more severe than following the Swift and Ellis method of 40 per cent. salvarsanized serum.

A clinical improvement usually appears after about five treatments; 75 per cent. of our cases showed this improvement.

A tendency to relapse to their former condition was observed in about 40 per cent. of those at first improved.

The clinical improvement is more marked and rapid than the serologic.

How permanent the improvement will be we are unable to state, as the time of observation is too short.

We are encouraged to continue this study, however, and a later report will be given on these patients after further treatment and observation.

The colloidal gold test is the most resistant to change.

It is possible to have clinical general paralysis with a negative Wassermann reaction in blood serum and spinal fluid, but in this series the colloidal gold test was uniformly positive.

Honor to Spanish Physician.—The *Siglo Medico* of July 31 relates that the town physician of Cercedilla, Spain, Dr. A. Cañadas, was treating a pauper child of 3 for a severe burn; deeming a skin graft necessary, he took it from his own person and cured the child. The local authorities and the people of Cercedilla published an appeal in a Madrid paper petitioning for an official reward for this act of altruism. The minister of the interior, the governor and municipality of Madrid and others, including the medical profession, organized a banquet in his honor at the Escorial. One of the lay speakers said that Cañadas' act "should be engraved with letters of gold in the pages of humanity." Cañadas illustrated the technic with which he was able to cut from his own skin the extensive piece required. Steps are being taken to have the cross of the order of Beneficiencia conferred on him.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

PINEAL GLAND

The functions of this gland have not yet been established but there is some pathological and some experimental evidence that there is a relation between the gland and some processes of development and growth; the nature of this relation is unknown. Adiposis is a frequent sign of disturbed pineal function, but observers are not agreed whether to interpret this as indicating hypofunction or hyperfunction, or possibly a concurrent disturbance of the pituitary. In some instances intravenous injections of pineal extract have seemed to cause a distinct fall in blood pressure. It has been inferred from observations in cases of pineal tumors in the young that the gland in young individuals furnishes a secretion which inhibits growth, particularly the development of the reproductive glands, but the results of experimental administration of pineal substance orally have led other observers to infer that the pineal secretion favors physical and possibly mental and sexual development. It has been suggested that, as all evidence points to the fact that the function of the pineal gland is one of early life, extract of adult pineal glands might be expected to be inert. Experiment has also indicated greater activity in glands obtained from young animals than in those obtained from older ones. The Council has accepted this preparation simply for experimental purposes.

DESICCATED PINEAL GLAND—Armour.—The pineal gland of normal cattle freed from connective and other tissue, dried and powdered without the addition of preservative or diluent.

Actions and Uses.—See general article Pineal Gland, above.

Dosage.—From 0.003 to 0.006 gm. (1/20 to 1/10 grain) three times a day, in powder or tablets.

Manufactured by Armour & Co., Chicago. No U. S. patent or trade-mark.

Pineal Gland Tablets-Armour.—Each tablet contains desiccated pineal gland 1/20 grain.

Desiccated pineal gland-Armour is a light yellow powder having a peculiar odor; it is partly soluble in water.

One part represents approximately seven parts of fresh tissue. On incineration it should yield not more than 8 per cent. of ash.

SCOPOLAMINE STABLE, Roche. — Scopomannit. — An aqueous solution of pure scopolamine hydrobromide, protected against decomposition by the addition of 10 per cent. of mannite, supplied in ampules, each containing 1.2 c.c. (1 c.c. contains 0.0003 gm. scopolamine hydrobromide).

Actions, Uses and Dosage.—The same as Scopolaminae hydrobromidum, U. S. P. (See Useful Drugs or Physician's Manual of the U. S. P. and N. F.).

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (The Hoffmann-LaRoche Chemical Works, New York). No U. S. patent. German patent No. 266,415. U. S. trade-marks Nos. 103,288 and 103,289.

Scopolamine stable, Roche, is prepared from freshly manufactured scopolamine hydrobromide having an optical activity of — 26.0° for the sodium line (determined in an aqueous solution containing the equivalent of 4.5 Gm. of anhydrous scopolamin hydrobromide in 100 Cc. at a temperature of 15 C. in a 100 millimeter tube) and a melting point of 195 C. by dissolving in an aqueous 10 per cent. solution of mannite.

That scopolamine stable, Roche, contains all of its scopolamine in an undecomposed state may be determined by comparing its action with that of a freshly prepared solution of scopolamine hydrobromide. For this purpose the manufacturers recommend the method of Langer, in which the frog heart is stopped by muscarine, or, better, by pilocarpine, and the systolic heat is reestablished by the addition of scopolamine, which is antagonistic to both muscarine and pilocarpine.

COAGULEN CIBA.—Coagulen, Kocher-Fonio.—Coagulin, Kocher-Fonio.—An extract said to be prepared from blood-platelets and to contain thromboplastic substance (cytozym, thrombokinase, thrombozym), mixed with lactose, 1 gm. representing 20 gm. dried blood.

Actions and Uses.—Coagulen Ciba is said to act as a hemostatic by increasing and accelerating the natural process of coagulation. It is claimed that the thrombozym contained in Coagulen Ciba reenforces the thrombozym already present in the blood, and that the combined action of the two on the thrombogen increases the formation of thrombin and thus the conversion of fibrinogen into solid fibrin. Coagulen Ciba is said to be useful in the treatment of local hemorrhage, parenchymatous concealed, inaccessible and pulmonary hemorrhage, surgical operations (including laparotomy, operations on bony structures and eradication of tumors) and in gynecology.

Dosage.—Solutions of Coagulen Ciba generally 5 per cent. are used locally, intramuscularly and intravenously. The subcutaneous or intravenous injection is contraindicated in cases in which there is a tendency to thrombosis or embolism, for example, in arteriosclerosis, aneurysm, heart weakness, phlebitis, certain stages of lues and in varicose veins. Solutions should be freshly made by dissolving in physiologic salt solution and sterilizing this by boiling for three minutes. In urgent cases ordinary water may be used as a solvent.

Manufactured by the Society of Chemical Industry, Basel, Switzerland (A. Klipstein and Co., New York). No U. S. patent. U. S. trade-mark No. 99,809.

Coagulen Ciba is a yellowish, granular powder, having a slight odor and a sweet taste. It is very soluble in water and such solution may be boiled for two or three minutes without decomposition. The active principle of Coagulen Ciba is also soluble in alcohol and chloroform.

TETANUS ANTITOXIN, UNCONCENTRATED (See N. N. R., 1915, p. 289).

The Cutter Laboratory, Berkeley, Calif.

Tetanus Antitoxin for Human Use.—Marketed in syringes containing 1,500, 3,000 and 5,000 units each.

DIPHTHERIA ANTITOXIN, CONCENTRATED (See N. N. R., 1915, p. 286).

The Cutter Laboratory, Berkeley, Calif.

Diphtheria Antitoxin, Globulin.—Marketed in syringes containing 2,000, 3,000, 4,000, 5,000 and 10,000 units each.

ANTIPNEUMOCOCCUS SERUM (See N. N. R., 1915, p. 296).

The Cutter Laboratory, Berkeley, Calif.

Anti-Pneumococcic Serum.—Marketed in syringes containing 10 Cc.

NORMAL HORSE-SERUM (See N. N. R., 1915, p. 282).

The Cutter Laboratory, Berkeley, Calif.

Normal Serum (from the Horse).—Marketed in syringes containing 10 Cc.

LIQUID PETROLATUM.—Petrolatum Liquidum.—Liquid petrolatum is described in the U. S. Pharmacopeia. For description see the Pharmacopeia or Useful Drugs.

Non-Proprietary Preparation:

Calol Liquid Petrolatum, Heavy.—Liquid petrolatum said to be derived from California petroleum and to be composed essentially of hydrocarbons of the naphthene series. Manufactured by the Standard Oil Co. of California, San Francisco.

It is colorless, non-fluorescent, practically odorless and tasteless. Specific gravity 0.886 to 0.892 at 15 C. or 0.881 to 0.887 at 25 C. It complies with the tests of the U. S. Pharmacopeia (8th ed.) and in addition to the following test:

If 5 c.c. of sulphuric acid, U. S. P., are mixed with 5 c.c. of nitric acid, U. S. P., in a 25 c.c. glass-stoppered cylinder, and after the mixture has cooled, 5 c.c. of liquid petrolatum be added and the mixture shaken for thirty seconds, neither the test reagent nor the liquid petrolatum should assume a color deeper than canary yellow, nor should any matter separate at the junction of the liquids. (This test is claimed by the manufacturers to show absence of unsaturated hydrocarbons.)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, SEPTEMBER 25, 1915

TO WHAT ARE DUE THE EFFECTS OF ALTITUDE ON MAN?

The physiologic effects of altitude on the human organism have a twofold interest. The purely scientific aspects of life under conditions of lowered barometric pressure are of themselves deserving of careful investigation. The fact that altitude plays a part in many therapeutic recommendations and forms a feature of climatology applied to medicine furnishes an added reason why the subject should be placed on a rational basis. The familiar phenomenon of mountain sickness is an ordinary example of the undoubted effect of a sojourn at higher levels on the functions of the body. As soon as an attempt is made to interpret the physiologic phenomena of altitude in terms of their causes, difficulties arise. The literature is full of contradictory theories and conclusions.[1] The reason for this uncertainty is doubtless to be found in the complexity of the factors which enter into the environment of man at high altitudes. Among the climatic variables are the lowered atmospheric pressure, with its lowered partial pressure of oxygen, and exceptional conditions of temperature, humidity, light and movements of the air and its ionization. Little wonder that some confusion of facts and their interpretation has arisen amid such a possibility of complications. Owing to the very nature of the case, the attempts to consider the factors one by one have not always succeeded.

There is apparently an agreement that at least some of the most prominent of the effects of altitude are directly attributable to the barometric changes with the consequent lowering of the oxygen pressure of the atmosphere. These special features can, of course, be imitated in a pneumatic cabinet — an air-tight chamber in which the pressure of the atmosphere can be reduced to any degree corresponding to known heights and in which the air can be renewed from time to time. One or two factors may be studied at a time, and humidity or isolation or light or temperature can be changed independently. As might be expected, pneumatic cabinets have frequently been requisitioned for the study of physiologic responses to lowered barometric pressure. Until recently, it has been practically impossible to try any very prolonged experiments on man, at least in the small "closed boxes" that have been available. For psychic and physical comfort, something more elaborate is required if a stay in the cabinet is to be ordinarily endurable. It was the appreciation of the unique appropriateness of the pneumatic cabinet for dissociating the concomitant variables of the surroundings in the laboratories at high altitudes, as well as the realization of the need of tolerable comfort, that led to a unique enterprise at the Finsen Institute in Copenhagen. Hasselbalch and Lindhard[2] have constructed what may be termed, by way of comparison with its predecessors, a palatial pneumatic cabinet equipped with scientific and gymnastic apparatus, a bed, a telephone, water, electric appliances, etc., and intended for prolonged residence. Here Lindhard actually resided for twenty-six days in succession, becoming "acclimated" gradually to a reduced barometric pressure of 450 mm., at which he lived for two weeks. Here each climatic factor could be separately controlled.

The novel experiments already conducted in this apparatus — a sort of alpine resort brought to the sea level — show the most familiar effects observed at altitudes, namely, the acceleration of the pulse and accompanying changes in the circulation of the blood, and the augmentation of the frequency and depth of respiration. These are, therefore, clearly due to the rarefaction of the atmosphere and the lowered partial pressure of oxygen. It has further been demonstrated that, even in the prolonged stay at an atmospheric pressure of 455 mm., the consumption of oxygen was entirely uninfluenced by the oxygen pressure of the atmosphere. Therefore the lowered barometer alone is without effect on the extent of respiratory metabolism. It remains to be seen what further results alterations in the climatic environment can bring about.

1. See the review of the literature in von Fürth, O.: Probleme der physiologischen und pathologischen Cnemie, Leipzig, 1913, ii, 585 et seq. Cohnheim, O.: Ergebn. d. Physiol., 1903, ii, I, 612.

2. Hasselbalch, K. A., and Lindhard, J.: Zur experimentellen Physiologie des Höhenklimas, II, Biochem. Ztschr., 1915, lxviii, 265; III, ibid., p. 295.

THE ARTIFICIAL FIXATION OF ATMOSPHERIC NITROGEN

Broadly speaking, nitrogen plays two rôles with relation to life: At the behest of Nature, it nourishes; at the bidding of man, it destroys. Nature makes Peruvian guano; man makes gunpowder and nitroglycerin. Today the greater part of Europe is expending its fixed nitrogen in destroying life at a rate hitherto unknown in the world's history.[3] "Every cannonshot," says Duncan,[4] "disperses in an instant the fixed nitrogen which it required millions of microbes cen-

3. In Germany, where the fertilizer industry consumes about 800,000 tons of nitrate a year, the government is said to have confiscated all stores of nitrates for military purposes (Landis, W. S.: Jour. Indust. and Engin. Chem., May 1, 1915, p. 453.)

4. Duncan, Robert Kennedy: The Chemistry of Commerce, New York, Harper & Brothers, 1907.

turies to accumulate." If a war as gigantic as that now raging in the eastern hemisphere could have occurred a hundred years ago, the question might perhaps have been asked whether the waste of so much of the world's supply of combined nitrogen was not a greater, because a more irreparable calamity than the destruction of life which it caused. The human race could replenish itself far more rapidly than the slow processes of Nature could restore to the earth the fixed nitrogen necessary to make it fertile. Science has now relieved us of the fear of a famine in combined nitrogen, and no better time could be found for a glance backward over the nitrogen problem.

The imagination of even the tyro in chemistry cannot fail to be impressed by the massive paradox presented in this element, so obstinately inactive in its free state, so labile and energetic, both for good and for ill, in combination. The most tantalizing phase of this paradox is the boundless liberality with which Nature supplies the inert free nitrogen, and the niggardly parsimony with which she doles out the indispensable fixed nitrogen. Even in peace we consume and waste fixed nitrogen much faster than Nature supplies it. The higher forms of life on this planet, bathed as it is in vast and inexhaustible floods of free nitrogen, might actually be in danger of ultimate starvation for lack of assimilable fixed nitrogen if men had not found ways of ensnaring this element from the atmosphere, through both biochemical and purely chemical processes.

The biochemical processes are merely a speeding up of Nature's work on the soil. Marshall[5] regards Liebig, who first recognized nitrification in the soil, as the pioneer in this field. Pasteur first suggested that nitrification might be the work of micro-organisms. This hypothesis was verified by Schloesing and Müntz, who found that the formation of nitrates in the soil could be checked by the use of antiseptics. Winogradski isolated the organisms, and Hellriegel and Wilfart discovered the habitat of these organisms in the warty growths found on the roots of clovers and other leguminous plants. That the fertility of the soil can be increased by growing clovers in rotation is a fact that has been observed by farmers from the day of Pliny down. As Marshall says, "no more interesting scientific fact can be found than the culmination of centuries of observation and speculation in the classical experiments of Hellriegel and Wilfart." This discovery of the symbiotic fixation of nitrogen by bacteria and leguminous plants has been practically applied in the artificial inoculation of soils with nitrifying bacteria, a method which, Marshall estimates, has added millions of dollars to the wealth of the United States.

As for the purely chemical processes of nitrogen fixation, in the laboratory, of course, they are nothing new. Ever since Cavendish, in 1789, synthesized nitric acid from the atmosphere by means of the electric spark, the theoretical possibility of direct fixation of atmospheric nitrogen, without the intervention of living organisms, has been well recognized. The difficulties in the way of the practical realization of this possibility on a commercial scale, however, are many and great. They have now been surmounted with greater or less degree of success in processes falling into three groups: (1) direct synthesis of nitrogen and hydrogen to ammonia; (2) combustion of nitrogen and oxygen in the electric arc with nitric acid as the final product; (3) combination of nitrogen with metals and carbids.

The first of these groups, according to Landis,[3] is represented by only a single process, which has been industrially developed in Germany. Its use is said to be unprofitable in this country because it demands large amounts of skilled labor.

The first industrial attempt to convert atmospheric nitrogen into oxids and nitric acid by the aid of electricity (the second group of processes) was made in this country.[6] The enterprise, though not commercially successful, proved that nitrogen compounds could thus be synthesized on a larger scale, and thereby stimulated further attempts. These processes require great quantities of cheap power, and on that account have attained some development in Norway, which has natural advantages in its high waterfalls and mountain lakes.[7]

The third class of processes, in which atmospheric nitrogen is fixed by union with metals and carbids, is represented chiefly by the cyanamid process. The product, calcium cyanamid, is used directly as a fertilizer, and is capable of various transformations, as into ammonia, urea and dicyandiamid. It has a great commercial advantage over nitric acid, the end-product in the previous group of processes, in that it is readily transportable. According to Landis, there are fourteen cyanamid factories throughout the world, which last year produced about 300,000 tons of material carrying over 20 per cent. of nitrogen. The process is said to be the cheapest yet discovered for the direct fixation of atmospheric nitrogen, and to be well adapted for use in this country, which is already employing it to some extent.

The direct fixation of atmospheric nitrogen as a commercial enterprise is in its infancy, but doubtless the present war will prove a stimulus to its growth. Not only, as remarked before, are many great nations consuming vast stores of fixed nitrogen with almost incredible speed, but also some of them are cut off from the main sources of the natural supply. Thus

5. Marshall, Charles E.: The Technical Application of Microorganisms to Agriculture, Science, Aug. 27, 1915, p. 257.

6. At Niagara Falls, under the patents of Bradley and Lovejoy (Carpenter, F. B.: The Fixation of Nitrogen, Jour. Indust. and Engin. Chem., January, 1909, p. 4).

7. Eyde, Samuel: Oxidation of Atmospheric Nitrogen and Development of Resulting Industries in Norway, Jour. Indust. and Engin. Chem., October, 1912, p. 771.

there is the strongest possible incentive to inventive ingenuity and commercial initiative. No doubt we shall before long be able to supply our nitrogen needs at will.

ACIDOSIS AND THE REACTION OF THE BLOOD

Like the body temperature and the osmotic pressure of the blood, the normal neutrality or alkalinity of the circulating mediums of the organism is adjusted by a mechanism within the body, but permanently maintained by exchanges with the environment. Throughout the animal body, while life exists, there occurs a regular formation of acid substances, excretory products of metabolism.[1] As they form, these various matters, carbonic acid, sulphuric acid and phosphoric acid in the main, immediately combine, but only partially, according to their several avidities, with the basic constituents of protoplasm and blood. In pathologic conditions, great quantities of aceto-acetic acid and beta-oxybutyric acid may be produced and claim their share of base. Thus, through resulting changes in equilibriums between bases and acids, normal metabolism steadily operates to lower the unvarying alkaline reaction of the body. This tendency is held sharply in check by special protective mechanisms, acting coordinately, in cooperation and regular succession. The likelihood of a disturbance of the normal protective equilibrium between bases and acids is held in check by the kidney, which, in the process of urine formation, reverses the reaction of neutralization of acid and restores to the blood that alkali which has served as a carrier of acid.

An appreciation of the preceding point of view will make it easier to understand what has seemed to many like a physiologic paradox. We are assured that conditions of acidosis, that is, undue production of acid, may arise in the organism, and yet the real acidity or reaction of the blood as indicated by its hydrogen ion concentration may remain essentially unaltered. The excess of acid is in large measure lost by the regulatory devices of the kidney. Nevertheless, there are demonstrable effects of acidosis in the blood, particularly in the extreme form in which it may be encountered in diabetes, in which pathologic appearance of unusual and abnormal products of metabolism occurs. The chemists at the Hospital of the Rockefeller Institute for Medical Research, Drs. Van Slyke, Stillman and Cullen,[2] have demonstrated that, while in acidosis the hydrogen ion concentration of the blood may not be altered, its reserve alkalinity (ability to retain normal reaction despite addition of acid) is decreased, and that the decrease can be measured by a variety of methods. For example, normal serum binds about 75 per cent. of its volume of carbon dioxid. In diabetic acidosis, the capacity to hold this acid product of metabolism in solution may become as low as 20 per cent. Similarly, although the hydrogen ion concentration (or acidity) of untreated blood plasma itself is about the same in normal condition and in acidosis, in the latter condition, as follows from the reasoning of L. J. Henderson, the ability of the blood to maintain its reaction when treated with acid must be lowered. This is actually demonstrated by the newer results. Addition of a volume of fiftieth-normal hydrochloric acid to ordinary plasma of healthy individuals gives a practically neutral solution. Plasma from patients in acidosis becomes acid under the same treatment. The regulation and the supply of alkali are no longer adequate. The loss of "reserve alkalinity" betrays itself, even in the blood, when careful methods of investigation, of which these are illustrations, are employed.

1. We have quoted liberally in this discussion from the paper presented at the Eighth International Physiological Congress at Vienna, September, 1910, by L. J. Henderson: A Critical Study of the Process of Acid Excretion, Jour. Biol. Chem., 1911, ix, 403.

2. Van Slyke, D. D.: Stillman, E., and Cullen, G. E.: The Nature and Detection of Diabetic Acidosis, Proc. Soc. Exper. Biol. and Med., 1915, xii, 165.

THE RELATION OF SELECTIVE TISSUE AFFINITY TO INFECTION

In our conception of an infectious process, the fact that many pathogenic bacteria possess a predilection for certain tissues is fundamental. Koch and his associates recognized this important factor, and formulated laws for the study of the etiologic relationship between bacteria and disease whereby the causative agents in many infectious diseases have been determined. Furthermore, it has been observed that at some time during the course of most infections there is a bacteremia. This condition is usually of short duration, and the bacteria rapidly become localized in some certain part of the body, giving rise to pathologic changes quite often characteristic of the invading organism. For example, in lobar pneumonia the pneumococcus enters the blood stream and localizes in the lungs, while in typhoid fever *Bacillus typhosus* holds a definite predilection for the lymphoid elements of the gastro-intestinal tract and spleen. In these and many other infectious diseases, the invading organisms may exhibit marked variations in virulence, but their specificity for particular tissues is quite constant.

On the other hand, there are many species of bacteria, such as the streptococcus group, which may invade almost any tissue of the human body and give rise to a great variety of pathologic changes. In recent years, evidence has been advanced which indicates that, even among these bacteria, different strains may have a very marked tissue affinity. As early as 1902, Forssner[1] recognized such a possibility. He found that streptococci obtained from various sources, when grown artificially on kidney tissue or in extracts of that tissue, would localize in the kidneys of animals when injected intravenously. But the great importance of this elective tissue affinity in infections with

1. Forssner, G.: Nord. med. Arch., 1902, p. 1.

this group of bacteria was not recognized until many years later. Rosenow,[2] using special methods, has isolated streptococci from the pathologic lesions in such diseases as acute rheumatic arthritis, cholecystitis, appendicitis, gastric and duodenal ulcer, herpes zoster and erythema nodosum. These streptococcus strains were low in virulence and similar to each other in morphologic and cultural characteristics; but when injected into animals, each strain tended to localize electively in the tissue from which it was isolated. Also, streptococci with similar tissue predilection were isolated in many instances from such probable infection atria as the tonsils, the sinuses and pyorrhea pockets. These organisms when first isolated were usually highly specific for certain tissues; but by frequent animal passage or cultivation artificially, this specificity was lost, and a new tissue predilection was acquired. Thus, the appendix strains, at first highly specific for the appendix, rapidly lost this characteristic on animal passage, and invaded the walls of the stomach and gallbladder. It is worthy of note also that in these various streptococcus infections, produced by different strains, there was in most instances some involvement of the joints. This observation supports the view that the vascular anatomy of the joints is an important factor in the production of acute infective arthritis.

The results of these experiments emphasize the importance of foci of infection as places in which bacteria may grow and acquire elective pathogenic properties which determine their mode of action and distribution after their entrance into the blood stream. In these foci the changing biochemical properties of the tissues, which affect the cultural conditions, are probably very important factors in the development of new pathogenic characters, and on this basis, elective tissue affinity can best be explained. Different tissues present various opportunities for the growth of bacteria during life, owing to their peculiar metabolism, which modifies their chemical composition. Experimental evidence in support of such a view has been advanced by many investigators. Thus Flexner[3] observed that the *Bacillus pyogenes filiformis* invaded certain tissues almost constantly, and under artificial conditions grew more luxuriantly in the same tissues. Again, bacteria when grown in certain tissues artificially tend to localize in these tissues when injected into animals. It is rational, therefore, to assume that different tissues are probably invaded by bacteria which can live and grow in their special chemical environment. Other factors, such as trauma and virulence of the invading organism, probably influence to a certain degree the extent and mode of infection.

Since different strains of streptococci may acquire predilections for widely different tissues under varying environmental conditions, it is not illogical to expect similar changes in other groups of bacteria. Investigation along these lines may greatly increase our knowledge of such bacteria as the diphtheroid bacilli, the colon group, and the Gram-negative diplococci whose pathogenic properties are so little understood.

OBSERVATIONS ON THE ACTION OF ARSENIC COMPOUNDS

It has been customary, if not imperative, to speak in rather general terms regarding the action of arsenic compounds. This is true whether the remark be applied to arsenicals as drugs or as poisons. What is meant by this statement may be made clear by an illustrative quotation: Arsenic poisoning is said to lead to "a chain of obscure symptoms which have their expression through the perverted functions incident to general toxic action on the tissue protoplasm." Whatever significance a statement couched in such general terms may have, it falls far short of that definiteness which clearly correlates cause and effect, and which locates pathologic disturbances with anatomic precision. It is helpful, of course, to know that arsenic compounds disturb metabolism and act as general protoplasmic poisons. The future, however, ought to reveal the details of their pharmacodynamic behavior.

The introduction by Ehrlich of synthetic compounds of arsenic as specific poisons for certain infectious organisms gave an impetus to progress in the pharmacologic investigation of arsenic. As an illustration may be mentioned the recent studies of Brown and Pearce[1] of the suprarenotropic action of arsenic. Observations on more than sixty compounds, including such substances as arsenous acid, arsenic acid, sodium cacodylate, atoxyl, arsacetin, arsenophenylglycin, salvarsan and neosalvarsan, have shown that, without exception, toxic doses of all these arsenicals produce definite lesions of the suprarenals. The suprarenotropic action of all compounds of arsenic is not equally great or identical in character, but the lesions produced by a given compound in a given animal species are quite constant, and in some instances are the dominant pathologic manifestations of the toxic action of the compounds. The essential features of this action involve vascular changes in the suprarenal, alterations in the lipoid content, cellular degeneration, and the effect on the chromaffin. Brown and Pearce note that the latter feature is of especial interest. Some compounds seem to exercise only slight influences on the chromaffin content of the suprarenals, while others, such as sodium cacodylate, salvarsan and neosalvarsan, cause a rapid and marked decrease in this substance. Whether or not the effect of thera-

2. Rosenow, E. C.: The Newer Bacteriology of Various Infections as Determined by Special Methods, THE JOURNAL A. M. A., Sept. 12, 1914, p. 903; Bacteriology of Cholecystitis, and Its Production by Injection of Streptococci, Nov. 21, 1914, p. 1835. Rosenow, E. C., and Oftedal, Sverre: The Etiology and Experimental Production of Herpes Zoster, June 12, 1915, p. 1968. Rosenow, E. C.: Jour. Infect. Dis., 1915, xvi, 240. Rosenow, E. C., and Sanford, A. H.: Ibid., xvii, 219.

3. Flexner, Simon: Jour. Exper. Med., 1896, i, 211.

1. Brown, W. H., and Pearce, Louise: On the Pathological Action of Arsenicals upon the Adrenals, Proc. Nat. Acad. Sc., 1915, i, 462.

peutic rather than toxic doses of arsenic compounds is exhibited in a definite stimulation of the suprarenal glands remains to be seen. Such a suprarenotropic action is, of course, strongly suggested by these new findings.

Arsenic compounds are familiar causes of renal lesions. In view of the supposed behavior of arsenic as a "capillary poison," the nephritic defects engendered by it have usually been classed as vascular lesions. They are exemplified in the hemorrhagic kidney produced by arsenous acid. At the Rockefeller Institute for Medical Research, Pearce and Brown[2] have demonstrated that the kidneys of animals given lethal doses of such substances as arsenous acid, salvarsan, neosalvarsan, arsenophenylglycin, atoxyl and arsacetin are separable into two extreme groups, the red and the pale kidneys, with transitional types in which the predominating changes ally them more closely with the one group or the other. In the group of red kidneys, congestion and hemorrhage are the dominant features of the arsenic action, while in the pale kidneys, the dominant lesion is tubular. At the one extreme is the congestion and hemorrhage produced by arsenous acid — a pathologic condition diffuse in character with only slight tubular necrosis. The other extreme in the action of arsenicals on the kidney is exemplified by arsacetin, which produces a typically pale kidney. While congestion and hemorrhage are still apparent to a minor degree in the boundary zone of these kidneys, the vascular injury is so completely overshadowed by the injury to the tubular epithelium as to leave no doubt as to the dominance of tubular injury. Further, the prompt and vigorous regeneration of the tubular epithelium indicates that the extensive necrosis produced by arsacetin cannot be regarded as a secondary anemic phenomenon.

The arsenic group of poisons has clearly been shown by Pearce and Brown to include agents which produce a so-called tubular nephritis as well as those producing a vascular nephritis. These wide differences in the pathogenic action of different compounds of arsenic are explainable only on the basis of their chemical constitution.

2. Pearce, Louise, and Brown, W. H.: Variations in the Character and Distribution of the Renal Lesions Produced by Compounds of Arsenic, Proc. Nat. Acad. Sc., 1915, i, 463.

Laboratories and Research.—Laboratories and discoveries are correlative terms. If you suppress laboratories, physical science will be stricken with barrenness and death, it will become mere powerless information instead of a science of progress and futurity; give it back its laboratories and life, fecundity and power will reappear. . . . Ask that they be multiplied and completed. They are the temples of the future, of riches and of comfort. There humanity grows greater, better, stronger. There she can read the works of Nature, works of progress and universal harmony, while humanity's own works are too often those of barbarism, of fanaticism and destruction.—Louis Pasteur.

Current Comment

"LOCAL INDUSTRIES AND THE SOFT PEDAL"

Two weeks ago THE JOURNAL, under the title quoted above, called attention to a peculiar situation that developed in Rochester, N. Y., relative to a lecture that was to be given before the American Public Health Association on "The Patent Medicine Fraud" by a physician connected with the Department of Health of New York City. In the apparent fear that the speaker who was to turn the light on the "patent medicine" business might refer to the local industries in that line, a Rochester physician wrote to the New York Health Department intimating that a discussion of local frauds would be undesirable. For a while the place the lecture would have on the program was in doubt. After some correspondence between the health commissioner of New York and some of the members of the local program committee of the American Public Health Association, a place was finally found for the lecture. It was delivered the night before the American Public Health Association convened. Naturally, the lecturer mentioned the two most widely advertised "patent medicine" frauds emanating from Rochester — "Duffy's Malt Whiskey" and "Warner's Safe Remedy." The lecture was well attended and from all reports was appreciatively and enthusiastically received by the audience. What did the Rochester newspapers do about it? Some of them practically ignored it. The others gave a general report of the lecture but carefully avoided mentioning by name any of the nostrums with which the lecturer dealt. Ordinarily, one would suppose that a specific denunciation of an important local industry would be considered news and, according to all the tenets of newspaper faith, it *is* news. So far as the newspaper-reading public of Rochester is concerned, however, unless it receives its information from other sources,[1] it will never learn that "Duffy's Malt Whiskey" and "Warner's Safe Remedy" were explicitly and definitely denounced in a public meeting held in their own city under more than ordinarily auspicious circumstances. The damper pedal was successfully depressed. Whose was the foot?

THE LOVE OF HEALTH

If any one doubts that this is an era of health propaganda he must, indeed, be oblivious of what is going on about him. Municipal, state and national agencies are using forces and funds at their disposal to further the interests of public hygiene. Educational influences are directing their energies to the spread of the lessons of procurable health in public print and in documents of both official and unofficial character. Novels and short stories, the literature of biography and travel, the platform and even the pulpit are proclaiming the gospel of health far and wide. The medical profession, more enthusiastic if not more vitally interested than any other group

1. The subject was dealt with in detail by Samuel Hopkins Adams in the New York *Tribune*, Sept. 19, 1915. Some of this article is quoted in the Propaganda department of this issue.

in the promotion and outcome of the modern hygienic movement, may well stop from time to time to inquire about the sanity of the methods of the propaganda. The religious doctrine of past ages involved the threat of harm; it inculcated a fear of the destruction or danger that was sure to follow the violation of the law. This dismal attitude has long since been replaced by a religion of love, of uplift and joyous anticipation. In the health propaganda, likewise, much of the pessimistic attitude, unconsciously perhaps, has been introduced in the past. The fear of disease has been held over the heads of the people. Rarely have we seen the more appropriate spirit of the modern "better health" movement better expressed than in a recent pamphlet of the Life Extension Institute. "It is not a fear of illness or of death that we should encourage, but a love of health, a sense of responsibility for the care of our bodies, a desire for bodily endurance and efficiency and full achievement. If the mind is fixed on these ideals, and the already known means of approaching them are utilized, the needless miseries that embitter the lives of so many may be left to take care of themselves. It is not so much necessary to fight disease as to cultivate health for the happiness, contentment and moral gain that it brings."[1] There is something unusually optimistic and buoyant in such words. They embody the psychologic cue to comfort and happiness for many a patient, without implying that "man is incapable of sin, sickness, and death," or that "health is not a condition of matter, but of mind." To inspire a love of health does not mean to exclude the great body of scientific knowledge which is the best that science can offer today regarding disease, or to replace medicine by crude metaphysics. The ardent love of health insures a mind receptive to the lessons of modern medicine.

COUNTING THE WORLD'S COST

In these days of nearly world-wide conflict between nations, it is reassuring and comforting to know of one campaign in which all civilized nations are allies in a common cause. The neutrality of science has been a subject of frequent comment, especially during the past year. The fight between the human race and disease is carried on without regard to diplomatic agreements or international boundary lines. Probably the only organizations or institutions in existence today which are carrying on their work regardless of warring nations are those engaged in scientific work. Of these, the International Office of Hygiene in Paris is perhaps the most conspicuous example. The British representative, Dr. R. W. Johnstone, now acting as official epidemiologist of the international office, has just issued a report showing the progress of plague, cholera and yellow fever throughout the world, as shown by the reports received and tabulated at the Paris office. This report is complete for 1913, the 1914 material having not yet been completed. According to this report, bubonic plague prevailed to some extent in 1913 in almost every part of the world, there being as yet no evidence that the present world-wide epidemic of this disease, which started about twenty years ago, has begun to subside. A marked decrease was shown in India, where, in 1911, there were 846,873 deaths from this disease, while in 1913 there were only 217,148. On the other hand, the reports for 1914, so far as received, show an increase. Cholera was also less prevalent in India in 1913 than in previous years. There were no serious epidemics of yellow fever during the year in any part of the world. As the London *Lancet* well says, in commenting on Dr. Johnstone's report, these annual summaries possess more than a passing interest. They place on permanent record many facts, the true value of which is more likely to be recognized in the future than at the present time. They will be of service as works of reference to future students of bubonic plague, when the great pandemic now prevailing has spent itself and disappeared. The same remark holds good as regards cholera and yellow fever, both of which may before long, we hope, come to be placed on the list of disappearing diseases. The time will come, as scientific knowledge increases and its more thorough practical application becomes possible, when the only knowledge the human race will have of these diseases, which have devastated mankind since the dawn of history, will be the records of past epidemics. Our knowledge of such epidemics in previous generations is vague, and is based largely on general statements. Definite records from year to year of the gradual decrease of preventable diseases will be of the greatest scientific and historic value to future generations.

1. "Keeping Young," Monthly Health Letter 15 of the Life Extension Institute.

FLIES AS A CAUSE OF INFANT DIARRHEA

Modern public health work is necessarily a mixture, in varying proportions, of practical sociology and applied public hygiene. Today, when cooperation and economy in administration are being sought for in all lines, it is not strange that a combination of practical philanthropists and public officials should be regarded as desirable in attacking a social problem. An excellent illustration of such cooperation is to be found in the study of the relation between flies and diarrheal disease in infants, being made under the joint direction of the Bureau of Public Health and Hygiene of the New York Association for Improving the Condition of the Poor, and the Department of Health of New York City. A report of the second year's investigation on this subject is a valuable contribution to our knowledge regarding the relationship between flies, dirt, feeding and diarrheal diseases among infants. The problem, as stated in the report, involves an effort to answer the following questions:

> Is the house fly the chief carrier of diarrhea to New York babies, or has it more deadly rivals?
>
> Should some of the energy now expended in fly swatting be diverted to other details of home hygiene, or should the hue and cry after this insect pest be redoubled in volume?
>
> Do the fly-exposed infants suffer more than the infants in dirty homes; or than infants who are artificially fed?

In a word, the object of the two years' inquiry is to determine the relative importance of the fly in the causation of infant diarrhea. We shall not attempt

to discuss in detail the many interesting facts presented, the tabulations given and the methods of investigation and education followed. The conclusions, as summarized in the report, show that almost twice as many infants have diarrhea among fly-exposed as among the fly-protected infants, and that almost twice as many infants have diarrhea in dirty homes as in clean homes. On this showing, the relative importance of flies and dirt in the production of this disease seems to be about the same. Artificial feeding, however, was found to be a more important factor than either of the others. Almost two and one-half times as many infants were attacked by diarrhea among artificially fed as among breast-fed infants. If it had not been for careful selection of food and instruction to mothers, the proportion of cases among artificially fed infants would have been even higher. As it is, the influence of flies and dirt combined is of about the same importance as artificial feeding alone in the production of this disease. Artificial feeding and dirt combined are responsible for a still larger percentage of the cases, three and one-half times as many artificially fed infants in dirty homes being attacked as in the case of breast-fed infants in clean homes. While the report shows that flies form one of the three main causes for diarrheal diseases among infants, and constitute one of the two lesser causes out of the three, the demonstration that twice as many infants are the subject of diarrheal diseases among fly-exposed as among fly-protected infants is ample justification for continued prosecution of the antifly campaign. The ideal condition for the reduction of the infantile death rate to the minimum is breast feeding in a clean and fly-protected home for each baby.

WHERE THE BLAME LIES

Elsewhere in this issue[1] is given some information regarding a nostrum that for years has been advertised to — and of course prescribed by — the medical profession. The article closes with this sentence: "That physicians have for years tolerated a nostrum like 'Micajah's Uterine Wafers' is an unfavorable commentary on the medical profession." As the percentage of physicians who prescribe this nostrum is undoubtedly extremely small, and consists of the unthinking or the uneducated, why, it may be asked, should the medical profession as a whole be blamed? Because the medical profession as a whole continues to support — either by contributing to, or by subscribing for — medical journals that carry advertisements that make the continued existence of such products possible.

1. Piso's Tablets and Micajah's Wafers, Propaganda for Reform, The Journal, this issue, p. 1128.

Trailers for Ambulances.—The British military authorities have adopted a trailer ambulance to be attached to any motor car by means of an ordinary drawbar, instead of converting passenger motors into ambulances. Attachments have been fitted to every military motor car so that they may pick up one of these trailers and convey it to the hospital in the rear. The trailer is said to be of great use to the hospital corps.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ILLINOIS

People to Decide on Tuberculosis Hospital.—The supervisors of Kane County, on September 19, decided to secure an option on the Dodson property in Geneva Township as a site for the county tuberculosis sanatorium and to leave the question of the establishment of the institution to the voters of the county at the April election.

Personal.—Dr. Charles O. Nelms has been appointed local surgeon for the Illinois Central R. R. at Herscher.——Dr. J. Forrest Bell, Elgin, was knocked down and seriously injured by a bicycle September 15.——Dr. William S. Williamson, Galesburg, was operated on in the Galesburg Hospital August 30, for an abscess of the abdominal wall, and is reported to be doing well.——Dr. Louis Ostrom, Jr., has filed his bonds for $25,000 as treasurer of the medical board in control of the Rock Island Municipal Tuberculosis Sanatorium.

Chicago

Personal.—Dr. Thomas J. Williams has returned after eight months' service in war hospitals in England.——Dr. Joseph C. Springer, coroner's physician, fell down the steps of his house September 15, sustaining severe injuries.——Dr. Herman C. W. Gresens was seriously bruised in a collision between automobiles, September 16.——Dr. Sydney Walker, Jr., has returned after four months' service with the British forces in Flanders.

MICHIGAN

Personal.—Dr. Charles C. Clancy, Port Huron, has been elected Great Medical Examiner of the Catholic Mutual Benevolent Association.——Dr. B. F. A. Crane, Saginaw, who has been seriously ill with ptomain poisoning, has returned home convalescent.

Laboratory Expert for Detroit. — At the meeting of the Detroit City Council, August 31, the Board of Health was authorized to employ a laboratory expert as head of the Pasteur Institute, and also to make the Wassermann and other tests that might be required. J. B. Kelly, Ann Arbor, has been elected for the position.

Tuberculosis Notes.—At the annual meeting of the Saginaw Anti-Tuberculosis Society, September 14, Dr. John T. Sample was elected president.——Dr. Arthur F. Fischer, Hancock, was elected president; Dr. Henry J. Hartz, Detroit, treasurer, and Dr. Herman Ostrander, Kalamazoo, chairman of the executive committee of the Michigan Anti-Tuberculosis Association. Drs. Collins H. Johnston, Grand Rapids, Victor C. Vaughan, Ann Arbor, and John H. Kellogg, Battle Creek, were elected members of the executive committee of the association.——The Open Air Cottage at Ottawa Beach, maintained by the Grand Rapids Anti-Tuberculosis Society, was closed August 28.——The Kalamazoo Tuberculosis Sanatorium, built last year at a cost of $30,000, has cared for 104 patients during the year.——Muskegon County opened a sanatorium last year with a capacity for ten patients. At present there are four patients in the institution.——Marquette has the only tuberculosis sanatorium in the Upper Peninsula. The institution was built to accommodate twenty patients, but it now has thirty. A total of 176 patients have been cared for since the opening of the sanatorium. ——Ingham County Sanatorium for tuberculosis patients was built by the county of Ingham and city of Lansing jointly in 1913, at a cost of $15,000. It has a capacity for ten patients, and more than forty patients have been under treatment since the building was opened.——Waxford and Barry counties are the first counties in the state to have a tuberculosis survey. This will begin on October 1, and the investigators will canvass the counties, count the cases of tuberculosis, note the varieties, and suggest to the supervisors how they can cooperate with the State Board of Health in corrective measures.

MINNESOTA

Dispensary Opened.—The University of Minnesota dispensary which was formerly located at Seven Corners, St. Paul, was reopened in new quarters in the basement of

Millard Hall on the University of Minnesota campus, Minneapolis, September 4.

Ground Broken for Hospital.—The ceremonies of ground breaking for the Maternity Hospital, Minneapolis, took place September 7, when the granddaughter of the late Dr. Martha Ripley, founder of the hospital, turned the first spadeful of dirt for the new $50,000 main building of the hospital.

Personal.—Dr. Marius J. Jensen, Minneapolis, sustained severe cuts on the head in a collision between his automobile and another motor car, September 10.——Dr. Robert H. Mullin, director of the laboratory of the State Board of Health, and assistant professor of pathology and bacteriology in the University of Minnesota, Minneapolis, for the last eleven years, has been placed in charge of the hygienic laboratory of the University of Nevada, Reno.——Dr. J. P. Heibert, Minneapolis, has been appointed assistant instructor in the department of surgery of the University of Minnesota.

Hospital Notes.—Drs. Andrew J. Gilkinson and William H. Hengstler have rented a suite of rooms in the Caughren Block, Osakis, which they are fitting up as a private hospital.——The subscribers to the Lake City Hospital fund met July 22, and reported that $12,500 had already been subscribed, that the Greer property on South Main Street had been purchased for the hospital and the deed will be turned over to the Hospital Association immediately on its incorporation.——It is planned to spend about $8,000 for improvements and the remodeling of the More Hospital, Virginia.——Construction work on the hospital for the Minnesota Steel Company at Morgan Park has been commenced. The institution will cost about $100,000.——The new hospital building at the Red Wing Training School will be ready for occupancy this fall.

Public Health Conference.—The Minnesota Public Health Association and Minnesota Sanitary Conference will hold a combined meeting at Rochester, September 29, holding sessions in the morning, afternoon and evening. The chief topics for discussions are to be: "Study of an Epidemic of Appendicitis and Parotitis," "The Clean Milk Problem," "Chronic Pathologic Changes of Middle Life," "Community Control of Tuberculosis," "School and Municipal Health Nursing," "The Control and Prevention of Typhoid Fever" and "The Newer Public Health and Minnesota Health Needs." The last topic will be presented by President George E. Vincent of Minnesota and Governor Winfield S. Hammond, the latter of whom has issued a recommendation urging nurses, health officers, and all those in authority to attend the conference in order that plans may be laid to reduce to the minimum the annual toll of victims in the state.

NEW JERSEY

New Health Rules.—At Newark the ordinances prohibiting the selling of "dipped" milk by stores other than regular milk depots handling only milk and milk products, and requiring that children under 10 years of age suffering from whooping cough must wear, on the arm, a yellow band containing the name of the disease, went into effect September 1.

Osteopaths Denied Rule.—Supreme Justice Carrison has refused the application for a restraining order to enjoin the New Jersey State Medical Examiners from demanding personal examinations of osteopaths. The osteopathic physicians are trying to compel the New Jersey State Board of Medical Examiners to issue licenses to practice osteopathy under the Act of 1915.

Work Begun on Laboratory.—The Rockefeller Foundation for Medical Research has begun work on the construction of a laboratory near Princeton for the study of animal diseases. The ground, buildings and equipment of the laboratory will cost about $1,000,000, and the institution will be in charge of Dr. Theobald Smith, professor of comparative pathology in Harvard Medical School.

Personal.—The advisory board of the Trenton municipal colony has been organized with Dr. George N. J. Sommer as chairman and Dr. Paul E. Kuhl as secretary.——Dr. Maurice D. Youngman, Atlantic City, was thrown from his automobile at Margate City, August 11, and seriously injured.

Noted Chemist Dies.—Thomas Bliss Stillman, one of the best known chemists of the United States; professor of analytical chemistry at the Stevens Institute, Hoboken, for thirty-five years; a member of many American and foreign scientific societies and the author of a standard textbook on engineering chemistry; chemist to the medical milk commission of Newark, and city chemist of Jersey City and Bayonne, died at his home in Jersey City, August 10, from heart disease, aged 63.

NEW YORK

Personal.—Dr. John F. Fairbairn, Buffalo, sustained painful injuries by the overturning of his automobile near Ridgway, September 10.——Drs. Marcus B. Heyman, Central Islip, and Joseph H. Marshall, Southland, have been elected members of the board of managers of the Suffolk County Tuberculosis Hospital.

Rabies.—Oneida County has been quarantined on account of rabies, while the adjoining county of Herkimer has raised the quarantine. Dr. W. G. Hollingsworth protests against the efforts of hunters to have the dog quarantine raised and says it is futile to have quarantine in one county while an adjoining county is open. He says the only way to stamp out rabies is to adopt the Australian plan of holding every dog that enters the country ten days for the development of symptoms. This has stamped the disease out in Australia.

Test Right to Sterilize Defectives.—An action has been begun before Supreme Court Justice Rudd by Attorney-General Woodbury to determine the right of the state to sterilize defectives. The individual on whom the state procreation commission proposed to perform the operation is a young man, 22 years of age, one of a family of sixteen, all practically defective. To date it has cost the state $10,000 for hospital care and maintenance of this family. On the decision in this case depends whether the procreation commission will enter on its work of sterilizing mentally defective persons in this state.

New York City

Personal.—Dr. Elizabeth J. Van Slyke, who has been serving with the American Red Cross in France and Belgium, has returned to this country.——Dr. Cyrus J. Strong sailed for Bordeaux on September 4.——Dr. Charles E. Hammack and Dr. David M. Bloom have been appointed bacteriologists in the bureau of laboratories of the department of health.

Error in the City Death Rate.—The health department has been computing the death rate by accrediting the city with a growth of 1,100,000 in five years, while the recent state estimate shows an increase of but 300,000, thus the computations of the health department have been based on an estimated population exceeding the actual population by nearly 800,000. This error makes the estimated death rates lower than they actually are and affects all the computations of the health department.

Output of Milk From Straus Milk Stations.—The output of milk from the eighteen Nathan Straus milk stations in this city for the year ended August 31 amounted to 2,175,208 bottles. In addition to this there were 1,441,580 glasses of pasteurized milk served at the stations in the parks and recreation piers during the three summer months. This completes the twenty-fourth year of distributing pasteurized milk to the babies of the city and the total number of bottles supplied in that time was 39,000,000, besides 21,500,000 glasses of milk during the summers.

NORTH CAROLINA

Typhoid Vaccine.—Dr. C. A. Shore of the State Laboratory of Hygiene reports that during July 137,000 doses of antityphoid vaccine valued at more than $68,000 were sent out by the laboratory for free treatment.

Pellagra.—At Winston during August, eight deaths from pellagra occurred, while there were only six from tuberculosis. This is the first time in the history of the city that the deaths from tuberculosis were exceeded by those of pellagra.

Sanitary Camps for Prisoners.—The State Board of Health and the State Highway Commission acting together have prepared a set of plans and specifications embracing a new system for portable camps for convicts employed outside. Copies of the plans have been placed in the hands of the superior court judges, solicitors, county officials and others interested. The State Board of Health announces that it will soon be ready to report on all state and local convict camps or prisons, and a systematic record will be kept with a standard score for the various points concerned in the making of a sanitary convict camp or prison.

Hospital Notes.—During the year improvements were made to the Rex Hospital, Raleigh, amounting to $25,000.——At a meeting of the Board of Directors of the Mercy Hospital, Durham, it was decided to file a voluntary petition in bankruptcy.——A campaign is being conducted for the establishment of a hospital in Greensboro for the treatment of negro patients.——The Mary Elizabeth Hospital of Raleigh

has been incorporated with a capital stock of $25,000.——The New Mission Hospital, Asheville, erected as a result of a whirlwind campaign, in which $30,000 was contributed, is almost ready for occupancy. The building contains thirty rooms for patients, with diet kitchens and three storage rooms. It is hoped that the institution may be formally opened by November 1.

OHIO

Personal.—Dr. B. B. Neubauer, Cleveland, has returned after several months' service with the American Ambulance, Paris.——Dr. George O. Maskey, Upper Sandusky, has been taken to Mount Carmel Hospital, Columbus, to undergo an operation.——Dr. George M. Logan, Akron, was seriously injured by an explosion of gas in the basement of his home September 12.——Dr. Howard W. Arndt, Lone City, was seriously injured when his automobile was struck by a Baltimore and Ohio train September 2.——Dr. Roy G. Pearce, associate in physiology in the Western Reserve University, Cleveland, has been appointed assistant professor of physiology in the College of Medicine of the University of Illinois, Chicago.

Changes in Cleveland Hospitals.—The following changes and new additions are being made in Cleveland hospitals: At the German Hospital an addition to provide 85 to 100 beds, doubling the present capacity, is being completed, which will cost, without equipment, $35,000.——An addition to Charity Hospital to cost $250,000 will increase the capacity from 135 to 265 patients.——The new Mt. Sinai Hospital will provide 225 additional beds at an estimated cost of $600,000. ——St. John's Hospital will have a capacity of 250. This will necessitate an expenditure of $250,000.——The new Lakewood Hospital will have a capacity of 55 beds and will cost $100,000.——Mt. Sinai Hospital will be completed and ready for occupancy next July; St. John's new hospital and the additions to the German and Charity hospitals, it is expected, will be ready for use this fall. Efforts are also being made to complete the Lakewood Hospital before cold weather.

Department of Health and Sanitation.—The Board of Trustees of Ohio University, Columbus, have authorized the establishment of a department of public health and sanitation, which has been organized with the following appointments: Eugene F. McCampbell, M.D., professor of preventive medicine, and head of the department; Robert G. Patterson, A.B., A.M., assistant professor of public health; Emery R. Hayhurst, M.D., assistant professor of industrial hygiene; William H. Dittoe, C.E., instructor in public health engineering; Frank G. Boudreau, M.D., instructor in public health and sanitation; Lear H. Van Buskirk, B.Sc., instructor in public health laboratory methods. A description of the courses, which have already been laid out and approved by the Graduate Council, University Faculty and Board of Trustees, is contained in the *Ohio Public Health Journal,* August, 1915. The principal object of the course is said to be to prepare young men and women for administrative and executive positions as health officers or members of boards of health, secretaries, agents, inspectors, etc., of health organizations, affording a scientific groundwork for efficient health administration. Graduates in medicine of the Ohio State University and other recognized medical schools will be admitted to the courses on their records and registered as candidates for the degree of Master of Science in Public Health. There are other admission privileges and requirements.

OREGON

Personal.—Dr. Maximilian F. Clausius, government physician at Siletz agency, who has been ill with gastric ulcer for several months, was operated on August 12, at the Good Samaritan Hospital, Portland; a gastro-enterostomy was performed and Dr. Clausius is reported to be making good progress toward recovery.——Dr. David N. Roberg has been appointed state health officer, succeeding Dr. Calvin S. White.

State Association Meeting.—The forty-first annual meeting of the Oregon State Medical Association was held in Portland, September 9 and 10 under the presidency of Dr. Alpha E. Rockey, Portland. The following officers were elected: president, Dr. William Kuykendall, Eugene; vice presidents, Doctors Robert C. Yenney, Portland, Barney Ferrell, Bend, and Harvey J. Clements, Salem; secretary, Dr. Marcus B. Marcellus, Portland, reelected; treasurer, Dr. Katherine C. Manion, Portland, reelected; delegate to the American Medical Association, Dr. Walter T. Williamson, Portland, reelected; alternate, Dr. Joseph A. Pettit, Portland; councilors, Doctors Clarence J. McCusker, Portland, and Robert J. Pilkington, Astoria; and associate editors of *Northwest Medicine,* Drs. William House and Calvin S. White, Portland.

PENNSYLVANIA

Tuberculosis Home Opens.—The new buildings of the department for the treatment of tuberculosis of Allegheny County at Woodville, Pittsburgh, were dedicated September 2. The camp is situated on a hill about a mile from the main buildings of the county home.

Danville Dedication Forbidden.—On account of the epidemic in Danville, on September 15, Dr. Samuel G. Dixon, the state health commissioner, has ordered that the dedicatory exercises of the Geisinger Memorial Hospital and the citizens' testimonial celebration, scheduled for next week, be postponed. There are 132 cases in the State Hospital and 41 in the town of Danville.

Harrison Act Upheld.—Judge Dickinson of the United States District Court, in an opinion filed September 16, sustained the Harrison antinarcotic law. The constitutionality of the act was attacked by an attorney for a physician who is charged with indiscriminately dispensing narcotic drugs and with perjury. The action was tried by Judge Dickinson, who regards the act constitutional.

Typhoid at Norristown Asylum.—An outbreak of typhoid fever has occurred at the State Hospital for the Insane, Norristown where there are a dozen cases among the men and women patients, and there have been two deaths. The source of the infection has not been determined. The water supply is furnished by artesian wells sunk on the premises and the milk is obtained from the hospital herd.

Malaria.—The discovery of three cases of malaria at Trotter in the Connellsville region has led to an investigation by the state health commissioner. Malaria had not appeared in this neighborhood for many years, and malarial mosquitoes have not been found nearer than Pittsburgh, and in the eastern part of the state along the Delaware and Susquehanna rivers. One of the victims it is said suffered from malaria when a child while living along the Potomac River in Maryland.

Infantile Paralysis.—At Erie it was reported September 7 that there were six new cases of infantile paralysis, making forty-four since August 1 and fifty since January. A state health inspector and a representative from the Rockefeller Institute were making an investigation. All children under 12 were excluded from picture theaters and other public places of amusement. Members of the school board announced that the schools would not be closed unless the state officers considered it necessary.

Philadelphia

Personal.—Dr. Charles K. Mills, professor of mental diseases and neurology in the medical department of the University of Pennsylvania, has given up the chair to devote his time to his practice and to research work.——Dr. E. Oliva White sailed from San Francisco for Hawaii, September 1, to make a study of leprosy in the leper colony at Molokai.

Physician Indicted in the Drug Crusade.—As a result of the crusade waged by the Internal Revenue Department against physicians who had prescribed drugs outside of the legitimate course of their practice, Dr. Frank I. Cohen is said to have been indicted September 17 by the federal grand jury on 83 counts.

Sanitary Survey of Schools.—Every principal of a public school and the teachers as well, will be enlisted in a sanitary review of the schoolbuildings and their class rooms. Dr. John P. Garber, acting superintendent of schools, has entered the campaign for better and more healthful school buildings. In addition to the teachers there will be the assistance of fifty-eight inspectors and five supervisors.

Typhoid Outbreak in Suburbs of Philadelphia.—Infected milk is believed to be the cause of an outbreak of typhoid fever in the outskirts of Philadelphia. The first case developed about a week ago. Then in quick succession other persons were taken ill. The milk supply has been tested. It is believed that the water used in cleansing the bottles is infected and the germs are carried in this fashion. Twenty-five cases have been reported thus far.

TEXAS

Asylum Site Offered by San Antonio.—The city of San Antonio has offered to donate twenty acres of land as a site for the State Asylum for the Blind.

New Quarters for Medical Association.—The Bexar Medical Society formally opened its new quarters and library at San Antonio with a smoker, August 19.

State Quarantine to Remain at Galveston.—The State Board of Health on August 23, decided that state quarantine will be maintained at Galveston as before.

The Storm Loss in Houston.—The Harris County Tuberculosis Sanatorium was demolished in the storm which recently devastated Houston. Fortunately no patients were in the building.

Donation for Hospital.—The operating room in the proposed Robert Green Hospital at San Antonio at Bexar County is to be equipped by Alexander Joske at a cost of $10,000. The contract for the building has been awarded at a cost of $200,092.

Texas Cattle Fever.—Inspectors and officials of the state and federal livestock commissions are conducting a campaign of education in the vicinity of Paris and Ballenger on the eradication of the Texas cattle fever tick. Demonstrations are being made of the manner of dipping. Hog cholera is also receiving attention.

VIRGINIA

State Society Meeting.—The annual meeting of the Medical Society of Virginia will be held in Richmond, October 26 to 28.

Hospital Needs Funds.—The Virginia Hospital controlled by the city of Richmond, but operated by the Medical College of Virginia, has appealed for $17,000 to carry on its work.

State Society Meeting.—The council committee on advertising and enterprises of Richmond has voted to appropriate $1,000 to help defray the expenses of entertaining the Medical Society of Virginia which meets in Richmond, October 26 to 28.

WASHINGTON

Personal.—Dr. Samuel D. Cameron, North Yakima, has volunteered for service with the Canadian overseas forces and has been accepted by the assistant director of medical service.

Protest Against Closure of Laboratory.—The Public Service Commissioner and the State Health Commissioner of Washington are making urgent endeavors to have the order closing the State Chemical Laboratory at Seattle revoked. The closure of the laboratory means that the work of investigation of water supplies will have to close at a time when typhoid is prevalent and the work of the laboratory is consequently most valuable.

WISCONSIN

State Society Meeting.—The annual meeting of the State Medical Society of Wisconsin will be held in Milwaukee, October 6 to 8 with headquarters at the Hotel Wisconsin.

Eye, Ear, Nose and Throat Association to Meet.—The second annual meeting of the Wisconsin Eye, Ear, Nose and Throat Specialists will be held in Milwaukee October 8 and 9 under the auspices of the Milwaukee Oto-Ophthalmic Society. Dr. Nelson M. Black is president of the organization.

Health Station Opened.—The first municipal health station was opened in Milwaukee at the Cass Street School August 30. The station will be open Monday, Wednesday and Friday evenings from 7:30 to 8:30. Two physicians will be in attendance who will advise any poor people who apply as to the nature of any illness in the family and the proper course of procedure.

CANADA

Personal.—Dr. Herbert A. Bruce will leave France for Toronto in another month.——Dr. Herbert W. Baker, Toronto, is conducting the Private Hospital of Dr. J. Bryce McMurrich during the latter's absence with the Royal Army Medical Corps.——Dr. Laughlin Sinclair, Walkerton, Ont., a graduate of Ann Arbor University, and who has practiced in that town many years, is seriously ill in the Walkerton General Hospital.

Hospital News.—The Board of Education of Toronto has decided to allow the Hospital for Sick Children, Toronto, and the National Sanitarium Association to commence their annual collections amongst the school children on December 1. The former is to complete its collections on December 6 and the latter on the fifteenth of that month.——October 18 has been fixed as the day on which Military Camp at Niagara-on-the-Lake, comprising about 12,000 men, will start on a trek to their winter quarters in Toronto. The journey will consume six days. Lieutenant-Colonel Frederick W. Marlow, M.D., states that the hospital will be moved to Toronto as soon as the weather turns cold. It will there occupy the Women's Building at the Exhibition Grounds, and patients will be cleared daily in that building by train. Motor ambulances will be required for the removal of patients during the winter in Toronto as it is proposed to also occupy part of the old Toronto General Hospital. Colonel Marlow is calling for contributions for two motor ambulances.——Through the generosity of Mr. and Mrs. J. K. L. Ross, Sydney, C. B., the Ross Convalescent Hospital for the naval forces has been established at the home of the donors. It has been thoroughly equipped with an operating room, public and private wards. The whole cost of maintenance of the entire establishment, matron, nurses and working staff and all supplies is provided by Mr. and Mrs. Ross. It is particularly designed for the care of the sick of the St. Lawrence Patrol. The donors will maintain the hospital until the end of the war without calling on the Canadian government for any financial assistance.

GENERAL

Meeting of Railway Surgeons.—The ninth annual meeting of the Minneapolis, St. Paul and Sault Ste. Marie Railway Surgical Association will be held in the Hotel Radisson, Minneapolis, Dec. 7 and 8, 1915.

Obstetricians and Gynecologists Hold Meeting.—The American Society of Obstetricians and Gynecologists held its twenty-eighth annual meeting in Pittsburgh, September 14 to 16, with headquarters at the Hotel Schenley. Dr. Charles L. Bonifield, Cincinnati, is president of the association.

Pellagra Conference.—The third triennial meeting of the National Association for the Study of Pellagara will be held in Columbia, South Carolina, October 20 and 21, under the presidency of Surgeon Claude H. Lavinder, U. S. P. H. S. The headquarters of the Association will be at the Jefferson Hotel, but the scientific sessions will be held in the amusement hall of the State Hospital for the Insane.

Warning Against Plague.—The United States Public Health Service issued a warning to port officials against bubonic plague September 15. It was urged that it will be necessary to exercise unusual precautions against the introduction of plague during the coming year, because many countries both in South America and Europe are infected. Quarantine officials in southern ports were particularly warned to watch arrivals from South America.

New Officers for Military Surgeons' Association.—The Association of Military Surgeons of the United States held its twenty-fourth annual meeting at the Raleigh, Washington, D. C., September 13 to 15 inclusive. Chicago was selected as the place of meeting for 1916 and the following officers were elected: president, Surgeon-General Rupert Blue, U. S. P. H. S.; secretary, Lieut.-Col. Edward L. Munson, M. C., U. S. Army; and treasurer, Major J. Harry Ullrich, M. C., Md. N. G.

Keen Establishes Fellowship.—Dr. William W. Keen, Philadelphia, has established the Corinna Borden Keen Research Fellowship in Jefferson Medical College, the income from which amounts now to $1,000.00. The gift provides that the recipient of the fellowship shall spend at least one year in Europe, or wherever he can obtain the best facilities for research in the line of work he shall select after consultation with the faculty, and that he shall publish at least one paper embodying the results of his work. Applications, stating the line of investigation which the candidate desires to follow, should be forwarded to Dr. Ross V. Peterson, Sub-Dean, Jefferson Medical College, Philadelphia.

Bequests and Donations.—The following bequests and donations have recently been announced:

Philadelphia Home for Incurables, $5,124.15.

Kensington Dispensary for Tuberculosis, $1,000, by the will of Enos R. Artman.

Philadelphia Aid Association of the Philadelphia Medical Association, $5,000, by the will of Eugene L. Santee.

Philadelphia Orthopedic Hospital, $60,000, by the will of Clementia Furniss.

Jefferson Hospital, Philadelphia, $15,000, as a contingent bequest under the will of Annie M. Wilson.

German Hospital, Philadelphia, $4,300, by the will of Elizabeth M. D. Prince.

Nursery and Child's Hospital, New York City, $1,500, by the will of John Howard Wright.

For erecting a hospital for drink habitúes on Riker's Island, New York, a donation of $18,000 from John D. Rockefeller, Jr., and $10,000 from Mrs. W. K. Vanderbilt.

First Aid Conference.—At the recent meeting of the American First Aid Conference held in Washington, D. C., mention of which was made in The Journal of September 11, p. 965, the following resolution was adopted and sent to the president for his action:

Whereas, There is great lack of uniformity in first-aid methods, in first-aid packages, and in other first-aid equipment and in first-aid instruction, and

Whereas, Many of the aims of first aid are defeated thereby and needless suffering and expense incurred, therefore be it

Resolved, That this Conference recommends to the President of the United States that he appoint a "Board on First-Aid Standardization," said board to consist of one officer each from the Medical Corps of the U. S. Army, the Medical Corps of the U. S. Navy, the U. S. Public Health Service, the American National Red Cross, the American Surgical Association and the Association of Railway Chief Surgeons of America; this Board to deliberate carefully on first-aid methods, packages, equipment and instruction and to recommend a standard for each to a subsequent session of this Conference to be called by the permanent chairman; the creation and maintenance of the said Board to be without expense to the United States.

The foregoing resolution, presented by the committee on resolutions which consisted of Asst. Surg.-Gen. William C. Rucker, U. S. P. H. S., Major Robert U. Patterson, M. C., U. S. Army, representing the American Red Cross, and Dr. William S. Estes of the American Surgical Association was framed after advice from the legal department of the government and after a conference with the secretary to the president. The conference held a very successful meeting. About sixty were present, of whom chief surgeons of railroads formed the greater part. The conference was welcomed and given the official recognition of the government by Assistant Secretary of the Treasury Byron R. Newton. Drs. Harvey Cushing, Boston, and George W. Crile, Cleveland, gave lantern talks on their experience in the American Ambulance Hospital in Paris and at the front. The work of the conference will be published later in its transactions.

Conferences on Tuberculosis.—The National Association for the Prevention of Tuberculosis has called conferences at five points in the United States at which the ways and means of carrying on the war against tuberculosis during the coming year will be discussed.——The Southern Health Conference will meet in El Paso, Texas, September 27 to October 1. This conference will include the states of Texas, Oklahoma, New Mexico, Arizona, California, Nevada, Utah and Colorado.——The Mississippi Valley Tuberculosis Conference will be held at Indianapolis, September 29 to October 1 inclusive and will take in the states of Ohio, Indiana, Illinois, Michigan, Wisconsin, Kentucky, Tennessee, Arkansas, Missouri, South Dakota, Iowa, Minnesota, Kansas, North Dakota, Nebraska, Montana and Wyoming.——The Southern Tuberculosis Conference which will convene at Columbia, South Carolina, October 8 for two days, will pay attention to the problem of the tuberculous negro. The states included in this group are: Alabama, Arkansas, Georgia, Florida, Louisiana, Mississippi, North Carolina, Texas, Virginia and West Virginia.——The New England Tuberculosis Conference will be held in Springfield, Mass., October 22 and 23 and will include the New England States. ——The North Atlantic Tuberculosis Conference will be held in Albany, New York, during the week of November 1, and will include the states of New York, Pennsylvania, New Jersey, Maryland, Delaware and the District of Columbia.

National Safety Council Meeting.—The fourth annual congress of the National Safety Council will be held at the Bellevue-Stratford Hotel, Philadelphia, October 19, 20 and 21. The council is the representative organization in the United States for the prevention of accidents in the industries, railroads and public places, and is represented in every state except two by an aggregate membership of 5,000, covering 150 industries, beside many associations, state departments, insurance companies and other agencies interested in the prevention of industrial and public accidents, medical supervision of workmen and other social betterments. The congress will be made up of a general session and a number of sectional meetings covering particular industries, such as cement, laundry, mining, paper, public utilities, textile, and a round table meeting covering the medical supervision and care of employees. In the general session a number of prominent speakers will discuss such subjects as the development of the safety idea, public safety and the railroads, safety in manufacturing, the safety idea as related to credit, standardization of safeguards, and the vital importance of the visiting nurse in industrial welfare work. In the meeting of the medical section different aspects of medical supervision of industries, standardizing the recording of medical data, first aid outfits, caring for unfit workmen, etc., will be discussed by such men as Drs. George M. Price, New York; W. H. Clarke, Massachusetts; J. W. Schereschewsky, Washington, D. C.; Emory R. Hayhurst and Sidney A. McCurdy, Ohio; D. F. Patterson, Pennsylvania; Alice Hamilton, Chicago; Lloyd Noland, Alabama, and M. J. Shields of the American Red Cross. In the manufacturing and other sections there will be discussions of safety technic as applied to the particular industry or business. The division of the congress into sections is a new feature adopted for this congress, and will enable the members of any one industry to devote their attention to the subjects in which they are most directly interested. It is said that accident prevention symbolizes the interest of the people in the conservation of human life, and that the spread of the safety idea is based on education as to the means of accident prevention, which is the object of the congress. There is still much room for improvement. All friends of the safety movement are urged to attend the congress. Dr. Otto C. Geier, Cincinnati, is chairman of the medical section. R. W. Campbell is president and W. H. Cameron, secretary of the council, with headquarters in the Continental and Commercial Bank Building, Chicago.

FOREIGN

Galician University to Reopen.—It is announced that the University of Czernowitz is to reopen at the usual date this fall. The *Klinisch-therapeutische Wochenschrift* states that during the recent Russian occupancy of the city no damage was done to the university or any of the scientific institutes.

E. Fuchs Retires.—Prof. Ernst Fuchs retires this fall from the chair of ophthalmology at the University of Vienna and also from the leadership of the first university ophthalmologic clinic, after thirty years of service at Vienna. He is now 64. In 1901 Fuchs' Manual of Ophthalmology had been translated into six languages and the original manual had reached its seventh edition. The Vienna university faculty have called in his place one of his former pupils, S. Bernheimer, now professor of ophthalmology at the University of Innsbruck.

Deaths in the Profession Abroad.—A. Giordano, privatdocent of hygiene of mines at the University of Palermo. In 1882 he discovered hookworm in the miners of Sicily and later, pneumonoconiosis. He called the attention of the authorities to the deformity resulting from the carrying of loads and succeeded in obtaining reforms which relieved the miners of many burdens. His great work on the physiopathology and hygiene of miners and numerous articles on industrial hygiene carried his name far beyond the confines of Italy.

WAR NOTES

Blake Leaves Ambulance.—Dr. Joseph A. Blake, formerly of New York City, and one of the founders and chief surgeon of the American Ambulance, Paris, it is reported, has withdrawn from the staff of the institution to enter the British hospital service.

Mourning Changed to Rejoicing.—The names of six medical officers were recently listed in the *Münchener medizinische Wochenschrift* as having fallen on the field of battle. The next issue stated that in fact the names had been incorrectly classified; they belonged in the list of those decorated with the iron cross for conspicuous gallantry.

Anthropologic Study of Prisoners of War.—Our Munich exchange relates that a scientific commission has been appointed for anthropologic research on the prisoners of war in Austria. Prof. R. Poch, of the chair of anthropology and ethnography at the University of Vienna, is in charge of the work which is under the auspices of the Anthropology Institute. The Academy of Sciences has appropriated 4,000 crowns for the work (about $800). The notice states that never was there such an opportunity for research along these lines as is afforded now by the prisoners of war. Practically all the tribes of Asia and Africa are represented among them, and men from the Basque provinces, Wales, Bretagne, Esthonia and other peoples of Western Europe and all the Slavic races. The captives may be regarded as presenting pure racial types, and measurements of the skull, chest, and pelvis, color of the hair and eyes, and other data thus recorded will have great scientific interest. The suggestion for the research came from Professor Buschan of Stettin, president of the Society for Ethnologic and Geographic Research.

BERLIN LETTER

BERLIN, Aug. 24, 1915.

Death of Paul Ehrlich

As has already been noted in the Current News (THE JOURNAL, Aug. 28, 1915, p. 803) Paul Ehrlich died August 19 in Bad Homburg. His death was not unexpected. For many years he has been losing in weight, his hair was turning gray rapidly and his skin appeared to be rather cachectic. His expression was one of fatigue and exhaustion. The high degree of tortuosity of his temporal arteries showed that he was suffering from a not inconsiderable arteriosclerosis. He also became afflicted with kidney disease and, finally, diabetes. The basis for his poor physical condition was undoubtedly his extremely active temperament and great mental activity. He probably never rested and so long as he was not overcome by sleep his brain was busy evolving new ideas. He was unquestionably the most original thinker and worker of his time. The ideas originating in his brain and the problems worked out by him were innumerable. He was a worthy associate of his teacher, Robert Koch. His association with Koch was restricted entirely to bacteriologic research. His chemical and biologic researches were made independently of Koch and therefore were original with Ehrlich. To impart a fitting estimate of Ehrlich's work and influence in medicine is wholly impossible in a letter like this, but it may be said that his sole trend and thought of action was to establish the chemical relationship between tissue cells and chemical agents. When he was only twenty-five years of age he contributed to medical literature his phenomenal work on diseases of the blood. The very fine differentiations of blood cells, made by means of staining agents, originated with Ehrlich, as did likewise the study of the particular affinity of methylene blue for the peripheral nerves. Naturally, the next step in the same direction was the attempt to establish the therapeutic property of methylene blue in neuralgias, especially sciatica, and then he discovered that methylene blue killed the malarial organism and therefore could be used in the cure of malaria. Of equal importance was the discovery that trypan red killed animal organisms in the living body and then naturally followed the discovery that atoxyl could be used for a similar purpose. The greatest discovery of all, however, was salvarsan.

It is probably not known widely that Ehrlich was the first to stain the tubercle bacillus with aniline dyes and his connection with the development of the use of diphtheria antitoxin as a cure for diphtheria should be emphasized. He played a much more important rôle in this discovery than is usually accredited to him in the literature. As much praise should be given to Ehrlich for the development of the antitoxin treatment of diphtheria as to Behring. The right to participate in this work was earned by Ehrlich when he gave to the profession his findings on ricin and abrin immunity. The well-known side-chain theory of immunity with which his name is associated was one of the most important discoveries in bacteriology. For many years he was engaged in research work on cancer. When he was forced to give up his work in the laboratory he was working on cancer. Whether his final illness was made worse by his inordinate use of tobacco cannot be determined, but symptoms of heart weakness led him to go to the sanatorium in Homburg. Following a very short period of improvement, death occurred suddenly, due to a rapidly failing heart.

Personal

Professor Ramon y Cajal of Madrid had conferred on him by the German emperor the order of Pour le Mérite, a rather unique distinction.

Prof. Ewald Hering, the well-known physiologist of the Leipzig University, will retire at the close of the winter semester.

Döhle of Kiel, professor of pathologic anatomy, has been made regular *Honorarprofessor*.

Dr. C. Abel, a well-known Berlin gynecologist, has been named to succeed the late Professor Gottschalk as director of the gynecologic division of the Krankenhaus of the Jewish society in Berlin.

The War

FOOD SUPPLY

That there is little danger of starvation is shown by the fact that, owing to the increased crops, only 75 per cent. instead of 83 per cent. of the grain will be milled into flour. This will not only improve the quality of the bread but it will also furnish sufficient food for cattle. The price of bread has also been lowered. In Berlin during the month of July rye bread cost from 40.86—40.43 pfennig (4 cents +) and white bread 61.69—61.05 pfennig (6 cents +). During the spring months these prices were somewhat higher.

DEATHS OF PHYSICIANS

Up to the present time, 302 physicians have been slightly wounded, 108 severely wounded, 185 killed; 84 have died from sickness, 1 succumbed to gas poisoning; sick, 1; prisoners, 81; missing, 83.

CARE OF GERMAN PRISONERS

Provision has been made to send three female nurses of the German Red Cross, under the direction of the Danish Red Cross, to Russia to visit the places of imprisonment. Three Russian sisters will come to Germany for the same purpose. The ministry of war has outlined the route of travel of both bodies of representatives and every effort will be made to further their work. These nurses are not permitted to carry or convey any written communications although they will be permitted to converse with the prisoners to learn their wishes, to write addresses or post cards provided for that purpose so that the families of prisoners may receive some information from them. The great distance to be traveled and the difficulties of traveling have also made it necessary to forbid the carrying of tokens, trinkets and money to prisoners. The German Red Cross has been furnished with a considerable sum of money to be used to relieve the prisoners of want and to furnish such funds for them as may be necessary. The central committee of the Red Cross will turn over a considerable collection of gifts for the German soldiers imprisoned in Russia, and the reports from the Red Cross nurses may form the basis for the distribution of these gifts. The Danish members of this committee who will accompany the German Red Cross nurses have already arrived in Berlin.

MEDICAL SERVICES TO SOLDIER'S FAMILY

Medical attention given to the families of soldiers in the field is being paid for in several of the Berlin suburbs by the local government. Some medicine is furnished gratis. In Berlin the city physicians take care of these people. The patient is furnished with a certificate especially provided for this purpose and this entitles him to treatment and medicine gratis. This plan has not met with the full approval of the public because it places the families of soldiers receiving such treatment in the class of charity patients. Therefore it is quite likely that this method will be changed shortly.

PARIS LETTER

PARIS, Sept. 2, 1915.

The War

TREATMENT OF PENETRATING WOUNDS OF THE CHEST

An interesting discussion on the subject was held at the Réunion médicale de la Iv-e armée. Dr. Abel Desjardins of Paris emphasized the fact that patients with penetrating wounds of the chest ought to be kept under observation for a long time after they had been dismissed from the ambulances at the front, all the more because the complications often are not pronounced at the outset. They are of three classes, hemorrhagic, infectious and mechanical. Secondary hemoptyses are rare. Pulmonary infections from foreign bodies are more frequent. Mechanical complications producing displacements of mediastinal organs produce signs of dysphagia. Dr. Weitzel, in an ambulance at the front, observed ninety-one cases of penetrating wounds of the thorax, which caused eleven deaths. This mortality approaches that of the statistics of the recent wars of the Transvaal, the Balkans, the Russo-Japanese war and the revolution in China, in which the rate was from 10 to 15 per cent. In most cases of this class, functional symptoms were ordinarily absent. Hemoptysis, sometimes discrete, disappearing in two or three days, was observed in a third of the cases; it never gave occasion for serious disquietude. In wounds of the upper third of the thorax, there was generally no hemoptysis. Ordinarily these patients are discharged at the end of from eight to twenty days, with their wounds cicatrized and without having presented any alarming symptoms. In several of them Weitzel observed a slight elevation of temperature in the two days immediately following the wound, which dis-

appeared under the influence of rest and immobilization. Dr. Potherat, surgeon of the hospitals of Paris, also emphasized the relatively benign character of thoracic wounds: Many patients with wounds passing completely through the chest recover very rapidly and without complications under the influence of rest and immobilization alone; even in cases in which for a few hours at the outset there is a disquieting condition of respiratory embarassment, tranquillity returns and the condition becomes satisfactory. There are even patients who do not suspect that they have been pierced by a bullet and who become aware of their wounds only by the escaping blood. Subcutaneous emphysema, even when it is generalized, does not constitute a serious complication; it is not necessary to intervene either by incisions or by scarifications. The air is gradually resorbed, in a time varying according to the importance and extent of the effusion. Except in the cases of intrapleural hemorrhages from lesions of the vessels of the thoracic walls themselves, there is no reason to intervene against pulmonary hemorrhage. As for projectiles remaining in the pulmonary parenchyma, Potherat believes that it is better in general to refrain from operating, at least in the period immediately following the wound. The case is different in intrapleural projectiles free or partially lodged in the walls of the pleural cavities. Such foreign bodies, when they produce suppuration, can and should be removed in the great majority of cases.

Dr. Petit de la Villéon spoke before the Société de chirurgie de Paris on the thoracic wounds that he observed in the naval hospital at Brest. At the outset, he treated such wounds expectantly. The results were bad; he had hemorrhages, suppurations and deaths. The necropsies taught him better; he found more serious lesions than he had suspected —considerable effusions, cases of pyothorax and injuries at the level of the pulmonary tissue. He concluded that his method had been too slow or too timid, and that it was necessary to act more positively. He then began to practice early thoracotomy with drainage assured by a large costal resection, and thenceforward he was the master of infectious and hemorrhagic complications. It should be understood, of course, that thoracotomy is not to be performed in every effusion, but at the first elevation of temperature, at the first chill, and as soon as the exploratory puncture brings pus a rib should be resected and drainage instituted. As for projectiles situated in the pulmonary tissue which do not produce complications, Petit de la Villéon believes that they should be let alone. Dr. J. L. Faure, agrégé at the Faculté de médecine de Paris, and surgeon of the hospitals, has seen at least ten such cases, has made no extraction and up to the present has seen no complications. Petit de la Villéon thinks that the indication in cases of projectiles situated in the pleura, and especially in the pleural sinuses, is for extraction. Faure agrees, but thinks it is generally very difficult to ascertain the exact site of the projectile.

CREATION OF NEW HOSPITALS

The minister of war has just informed the regional directors of the medical service that barrack hospitals should be installed in the environs of the important hospital centers of each region. These hospitals, intended especially to care for convalescents and slightly wounded men, ought to contain at least 500 beds.

TESTS FOR THE SIMULATION OF ICTERUS BY INGESTION OF PICRIC ACID

I mentioned in a previous letter (The Journal, Aug. 7, 1915, p. 545) the circular of the minister of war with regard to the simulation of jaundice and the test for picric acid in the urine. A new circular recommends the use of the classic reaction to determine the absence of biliary pigments in the urine before making any test for picric acid, for the presence of these pigments may to some degree influence the specificity of the reactions for picric acid:

One, reaction of probability, consists in neutralizing 10 c.c. of urine, then making it alkaline with a drop of a one-tenth solution of sodium hydroxid; then 5 drops of one-fifth solution of potassium cyanid are added. On heating, a dull red color is produced if the urine contains picric acid. The other reaction is a reaction of certainty. To 100 c.c. of urine are added 10 c.c. of hydrochloric acid; this is shaken with 20 c.c. of ether; the ether which is colored yellow is decanted off; a strip of white wool is placed in the ether for an hour. If the urine contains picric acid the wool is colored yellow and the color resists washing with water; after such washing the yellow wool is colored red by ammonium sulphid.

WAR CRIPPLES AND THE STUDY OF WATCH MAKING

The minister of war has had the excellent idea of having a certain number of war cripples study clock and watch making. For this purpose he has decided to open a special section in the Ecole d'horlogerie de Cluses, in the department of Haute-Savoie, with the aid of the departmental committee of reeducation. Some of the new apprentices have already arrived at Cluses. The government pays 45 francs ($15) toward their maintenance; the difference between this allowance and the cost of their living is made up by local subscription.

THE AMERICAN HOSPITAL AT NEUILLY

The American Red Cross seems to have decided to withdraw its hospitals from Pau in the Basses-Pyrenées. It has been mistakenly supposed that this decision would also affect the American hospital established since the beginning of the war at the lycée Pasteur at Neuilly-sur-Seine. The American hospital at Neuilly is a benevolent organization, completely independent of the American Red Cross; it has been organized and maintained by representatives of the American colony. Since the beginning of the war this institution has greatly increased its activity; it now includes not only the establishments at Neuilly and Juilly but also units of automobile ambulances for the transportation of the wounded, operating in various localities near the front. The American hospital is well provided with funds to enable it to continue its task up to the end of the war.

THE INSTITUTE FOR CRIPPLES

M. Justin Godart, assistant secretary of war for the medical service, has been at the military hospital of Saint-Maurice, where he visited the services of orthopedic surgery and physiotherapy which make this hospital a complete center of functional readaptation. These services prepare the patients to be sent to the professional training school situated in the park which constitutes a center of professional reeducation. Harness makers, shoemakers, tailors, agricultural mechanics, electric motor mechanics, accountants, mechanical draftsmen, architectural draftsmen, surveyors, designers, etc., all lame or minus one or more limbs, are taught there by competent instructors. An annex of this professional school, situated at Paris, arranges for instruction in woodwork, jewelry and other trades through professional or private workshops.

LONDON LETTER

London, Sept. 3, 1915.

The War

THE DIFFICULTY OF SUPPLYING ARMY SURGEONS

The difficulty of supplying surgeons for the new army continues to occupy the medical authorities as well as the government. At a meeting of the War Emergency Committee of the British Medical Association, the present position was stated as follows: (1) The number of men already on whole-time war service totals 5,265; (2) the number of men of 50 and over offering whole-time war service, 447; (3) the number of men from 40 to 49 offering whole-time service, 436; (4) the number of men of 40 and under offering whole-time war service, 633, and (5) the number of men of 40 and under not on or offering whole-time war service, 6,555 up to date. It is seen, therefore, that there are approximately 6,555 men of military age in England, Wales and Ireland. Of these it is necessary at present to obtain the services of about one third. Upward of 900 men over military age are offering whole time. The military authorities say that if these men could be induced to take up war locum work, as they are for the most part not wanted by the authorities, they would set free a number of men who are unable to go unless they can obtain substitutes, local help not being available. Professor Littlejohn pointed out that the war office required at the present moment 2,000 out of the 6,555 men of military age still available in England, Wales and Ireland. for the proceedings of the War Emergency Committee did not deal with Scotland, where an effective national committee exists. The large number of young military men at the base hospitals, many of whom had, in ordinary circumstances, not enough work to fill their time, was criticized. Sir James Barr pointed out that it was the number of younger men, some of whom he understood had joined only for home service, which was the objectionable feature. These younger men ought to be with the expeditionary force and not at the base hospitals. A resolution was adopted that the urgent need for enrolment should be brought before the medical profession.

THE POSITION OF MEDICAL STUDENTS

I have stated in previous letters that many medical students have for a time abandoned their studies and joined the com-

batant ranks of the army. The need for army surgeons is so great that those near the completion of their course were asked to return to their schools and complete their studies so as to be able to join the army in their professional capacity. As stated above, the medical department of the war office requires as many doctors as it can obtain. The civil hospitals and the health departments are working with short staffs. The roll of medical casualties continues. As the army grows, more doctors will be required and still more. Meanwhile we are told by responsible authorities that the number of medical students is dangerously low, and that the "visible supplies" are not so large as might be hoped. The question has been addressed to the war office, What should medical students who desire to serve their country do? The war office answered this by recommending that "medical students in their fourth and fifth years should continue their studies with a view to qualifying as soon as possible," and discouraged the granting of commissions to these men, but was unwilling to suggest that junior (medical) students should be discouraged from taking combatant commissions. It is contended that this recommendation will have the effect of using up the visible supplies of medical students and emptying the medical schools, so that three or four years hence the number of physicians will be even lower than at present. This number was too low before the war partly in consequence of the increased medical work under the insurance act.

TRACHEOTOMY DURING A ZEPPELIN BOMBARDMENT

During one of the recent air raids on the East Coast, a surgeon was performing tracheotomy at night when the German aircraft came over the place. The town electric current was at once cut off. All the lights went out suddenly at the very moment he was opening the trachea. As it was not the first attack against this place, the operator had warned his nurses and assistants that lamps should be kept ready during all operations at night. With but trifling delay the tracheotomy was completed and the child did well. Commenting on this case, the *Lancet* says that to have performed so delicate an operation in such circumstances was a considerable feat, for the raid was a serious one, a good many bombs were dropped, several people were killed and injured, and the feeling at the moment was naturally one of intense apprehension. Some of the bombs hit a house near, the residence of another well-known physician. Luckily no one was at home at the time, and the physician got off with the destruction of a certain amount of property.

THE CASUALTIES FROM AIR RAIDS

The total casualties for the past twelve months from German air raids have been published. Seventy-one civilian adults and eighteen children have been killed; 189 civilian adults and thirty-one children have been injured. No soldier or sailor has been killed, but seven have been wounded.

The Falling Birth Rate

The quarterly return of the registrar-general, just issued, again shows a decline of the birth rate. It was 22.9 per thousand of the population, 3.3 below the mean rate of the ten preceding years, and 1.4 below the corresponding period of last year, and the lowest rate recorded in any second quarter since the establishment of civil registration. At the same time the death rate shows an increase. It was 14.9 per thousand, 1.2 above the mean rate in the preceding decade. The continued decline in the birth rate, coupled with the general increase in mortality among infants, is causing anxiety. The downward movement began some years ago, and is diffused over the whole of the western world. Its causes have been for a long time the subject of much discussion of a more or less academic kind. Today when war is daily taking toll of our young manhood, the problem of the preservation of the race has become acute. One branch of that problem is the waste of infant life throughout the country, especially in the large towns. Accordingly, as the number of children born became less, the organizations which watch over children and mothers redoubled their efforts to secure for every child the condition of a healthy life. Attention was drawn in a previous letter to THE JOURNAL to the increase of the death rate of children. Partly this heavy loss of child life was due to an epidemic of measles; but partly also it was attributed to the scarcity of physicians and nurses for work among the civil population in consequence of the war. Much indirect benefit is expected from the new notification of births act.

Marriages

WILLIAM HAROLD RUNCIE, M.D., to Miss Gertrude Nolan, both of Freeport, Long Island, N. Y., at Rochester, N. Y., September 5.

EDWIN R. MULFORD, M.D., LaCrosse, Wis., to Miss Hope Williams of Cleveland, Ohio, in Chicago, September 7.

WARREN E. LEAPER, M.D., Green Bay, Wis., to Miss Florence C. Averill of Cleveland, Ohio, September 13.

INGMAR UNIUS VANGSNESS, M.D., Beresford, N. D., to Miss Cora Gilbertson of Lisbon, N. D., September 9.

LEWIS EDYARD HAECKER, M.D., Hampton, Iowa, to Mrs. Ada Perrin-Johnston, at Rockford, Ill., August 31.

CHARLES THOMAS O'BRIEN, M.D., Woburn, Mass., to Miss Grace M. Gould of Somerville, Mass., September 1.

CHARLES E. SISSON, M.D., to Miss Bertha E. Vollman, both of Elgin, Ill., at Los Angeles, September 1.

JOHN PATRICK O'NEIL, M.D., Highland Park, Ill., to Miss Katherine C. Joyce of Pittsburgh, September 1.

DAVID A. CAMPBELL, M.D., Tampa, Fla., to Miss Addie Alderman of Palmetto Beach, Fla., August 28.

THOMAS WILFRED TAYLOR, M.D., to Miss Grace Peppercil Rundle, both of St. Louis, September 7.

WILLIAM S. COLEMAN, M.D., Rushville, Ind., to Miss Lillian Righter of Carthage, Ind., September 8.

FRANK HOWARD RICHARDSON, M.D., to Miss Clara Louise Dixon, both of Brooklyn, September 8.

AUGUSTUS KORNDOERFER, JR., M.D., to Miss Mildred Faas, both of Philadelphia, September 1.

FRANK A. MCGUIRE, M.D., to Mrs. Delia V. Wilson, both of New York, September 8.

GARNER M. BYINGTON, M.D., to Miss Bertha Long, both of Charlotte, Mich., September 1.

DAVID EISENBERG, M.D., to Miss Birdie Cohen, both of New York, September 1.

JAMES FRANCIS COX, M.D., to Miss Elizabeth Wise, both of Chicago, September 11.

Deaths

John Evans Sheppard, M.D. University of Pennsylvania, Philadelphia, 1882; aged 56; a Fellow of the American Medical Association; American Laryngological, Rhinological, Otological Society, and American Academy of Medicine; and a member of the American Otological Society; clinical professor of diseases of the ear in Long Island College Hospital, Brooklyn; consulting aurist to the Brooklyn Eye and Ear, Brooklyn, Jewish, Methodist-Episcopal, and St. Catherine's hospitals, Brooklyn, and the Day Kimball Hospital, Putnam, Conn.; attending aurist to the Long Island College Hospital, Brooklyn; one of the best known otologists of America and a prolific writer on diseases of the ear and throat; died at his country home in Putnam, Conn., September 13, after two surgical operations.

Frederick Cornell Sutphen, M.D. New York University, New York, 1889; aged 43; of Bernardsville, N. J.; a member of the Medical Society of New Jersey; at one time a member of the board of health and board of education of Bernardsville, and at the time of his death president of the Bernardsville Water Company and medical inspector of schools; died in the Morristown Memorial Hospital, Morristown, N. J., September 12, after a surgical operation.

James Hartley Anderson, M.D. Western Pennsylvania Medical College, Pittsburgh, 1891; aged 47; a Fellow of the American Medical Association; surgeon and chief of staff of the West Penn Hospital, Pittsburgh, and surgeon to the Presbyterian Hospital, Allegheny; assistant to the chair of principles of surgery in his alma mater; died in the West Penn Hospital, September 6, from organic complications following an operation performed September 1.

George W. Croft, M.D. Louisville Medical College, 1897; aged 48; formerly a Fellow of the American Medical Association; a member of the Kentucky State Medical Association; died at his home in Louisville, September 7, from carcinoma of the stomach. The pallbearers at his funeral were taken from his professional associates in Louisville.

David P. Albers, M.D. Tulane University, New Orleans, 1884; aged 60; formerly a member of the Louisiana State Medical Association; well known as a practitioner and pharmacist of New Orleans; tropical representative of the Louisiana State Board of Health from 1900 to 1905; died at his home at New Orleans, September 7.

George Edward Cragin, M.D. Yale University, New Haven, Conn., 1867; aged 75; a member of the Medical Society of the State of New York and an esteemed practitioner of Kenwood, N. Y.; for many years prominent in the affairs of the Oneida Community; died at his home in Kenwood, September 9, from heart disease.

Walter E. M. Ranchous, M.D. Medical College of Ohio, Cincinnati, 1897; aged 45; a Fellow of the American Medical Association; a member of the staff of the Lawrence Hospital, Columbus; died at his home in Columbus, Ohio, September 6, from carcinoma for which operation had been performed three months before.

Malcolm A. Stewart, M.D. University of Minnesota, Minneapolis, 1902; a Fellow of the American Medical Association; of Omemee, N. D.; one of the oldest practitioners of Bottineau County, N. D.; was killed in an automobile accident while making a professional call near Overly, N. D., August 31.

Fred Julius Parkhurst, M.D. Northwestern University Medical School, Chicago, 1880; aged 60; a Fellow of the American Medical Association; a director of the First National Bank of Danvers, Ill.; a prominent practitioner of McLean County; died at his home in Danvers, September 4.

Martin Albert Rush, M.D. Tulane University, New Orleans, 1909; aged 32; a Fellow of the American Medical Association and a well-known practitioner of Bay St. Louis, Miss.; died at Touro Infirmary, New Orleans, September 1, from pneumonia ten days after an operation for appendicitis.

Theodore H. Taylor, M.D. Cleveland University of Medicine and Surgery, 1882; aged 63; a Fellow of the American Medical Association; for many years a practitioner of Evansville, Ind.; died at the home of his brother in Richland, Ind., September 4, from cerebral hemorrhage.

Charles Harvey Fultz, M.D. Kentucky University, Louisville, 1901; College of Physicians and Surgeons, Baltimore, 1907; aged 39; a member of the Kentucky State Medical Association; once mayor of Vanceburg, Ky., died at his home in that city, September 3, from typhoid fever.

Frank Pope Wilson, M.D. College of Physicians and Surgeons in the City of New York, 1888; aged 50; a member of the Medical Society of the State of California; of San Francisco; died in St. Luke's Hospital in that city, September 6, from cerebral hemorrhage.

Thomas W. Largent, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1890; aged 57; formerly a member of the State Medical Association of Texas, and health officer of Angelina County; at one time mayor of Lufkin; died at his home in that city, September 2.

John Wallace Wade, M.D. Jefferson Medical College, 1884; aged 60; a Fellow of the American Medical Association; president of the Millville, N. J., board of health and Millville Medical Association; died at his home in Millville, about September 14.

Henry Cutler Stearns, M.D. Dartmouth Medical School, Hanover, N. H., 1896; aged 49; village commissioner of Haverhill, N. H., and a trustee of Haverhill Academy; was killed August 23, in a collision between his automobile and a train near Woodville, N. H.

Jacob Milton Bosart, M.D. Medical College of Ohio, Cincinnati, 1858; Miami Medical College, Cincinnati, 1867; aged 81; died, July 16, from malignant prostatitis, at the home of his daughter in Sumner, Ill., where he had resided for fifty-seven years.

Philip N. Eckman, M.D. University of Pennsylvania, Philadelphia, 1888; aged 53; a Fellow of the American Medical Association; attending physician for many years to the Boys' House of Refuge, Glen Mills; died at his home in Philadelphia, September 8.

Byron C. Elms, M.D. Chicago Homeopathic Medical College, 1880; formerly a member of the Nebraska State Medical Association; a practitioner of Chadron, Neb., until 1912, and since that time a resident of Chicago; died at his home in Chicago, September 9.

Albert Grant Coyner, M.D. Miami Medical College, Cincinnati, 1889; aged 51; a member of the Indiana State Medical Association and secretary of the Kendallville (Ind.) State Board of Health; was found dead in his office in Kendallville, September 6.

Benjamin Simons Lucas, M.D. Medical College of the State of South Carolina, Charleston, 1855; aged 81; formerly a member of the South Carolina Medical Association; a Confederate veteran; died at his home in Walhalla, S. C., September 5.

Edgar D. Spear, M.D. Minneapolis College of Physicians and Surgeons, 1901; aged 54; a Fellow of the American Medical Association and a well known practitioner of Nome, N. D.; died September 2 in a hospital at Fargo, N. D.

Charles Paul Becker, M.D. Long Island College Hospital, Brooklyn, 1866; aged 71; for many years associate editor of the *New York Medical Journal*; died at his home in East New York, September 1, from nephritis.

Urial L. Taylor, M.D. University of Louisville, Ky., 1875; aged 82; a member of the Kentucky State Medical Association; health officer of Adair County, Ky., died at his home in Columbia, Ky., September 3.

Charles Fred McDonald, M.D. Detroit College of Medicine and Surgery; aged 45; a member of the Michigan State Medical Society; died at his home in Goodrich, Mich., August 28, from cardiac paralysis.

Ceylon S. Carr, M.D. Chicago Homeopathic Medical College, 1877; formerly editor of the *Columbus Medical Journal;* aged 65; died at his home in Columbus, Ohio, from a nervous breakdown, September 6.

Daniel Reed Freeman, M.D. University of Vermont, Burlington, 1873; aged 75; for nearly forty years a practitioner of Colby, Wis., died in the Wisconsin Veterans' Home, near Waupaca, about August 25.

Jacob Daniel Cooper, M.D. Vanderbilt University, Nashville, Tenn., 1895; aged 61; for more than thirty years a practitioner of Aetna, Tenn., died in Cooter, Mo., about September 7, from nephritis.

William H. Stowe, M.D. Yale University, New Haven, Conn., 1888; aged 73; a health officer of Lewisboro, N. Y.; died at his home in South Norwalk, Conn., August 11, from cerebral hemorrhage.

George Thomas Fluke, M.D. Jefferson Medical College, 1905; aged 34; formerly a member of the Medical Society of the State of Pennsylvania; died at his home in Pittsburgh, September 6.

Marcellus M. Irwin, M.D. Tennessee Medical College, Knoxville, Tenn., 1894; of Luttrell, Tenn.; aged 46; died in the Knoxville General Hospital, September 8, from cerebral hemorrhage.

Almond S. Farrington (license, Indiana, 1897), aged 83; a practitioner for fifty-five years; and a pioneer of DeKalb County, Ind.; died at his home in Waterloo, Ind., August 26.

Franklin P. Castanien (license, Arkansas, 1903); aged 62; for fourteen years a resident of Pine Bluff, Ark.; died at the home of his daughter near that place, September 9.

Henry J. Mullen (license, Mississippi, 1882) aged 59; for thirty-six years a practitioner of Copiah County, Miss.; died at his home in Clancy, Miss., August 25.

David Porter Bliss, M.D. Jefferson Medical College, 1867; aged 72; a veteran of the Civil War; died at his home in Delaware, Ohio, August 23, from uremia.

David F. Dumbauld, M.D. Columbus, Ohio, Medical College, 1883; aged 54; of Sarcoxie, Mo.; died at the family home in Carl Junction, Mo., August 27.

Merle Verne Forrest, M.D. University of Oregon, Portland, 1910; aged 29; of Florence, Ore.; died at St. Vincent's Hospital, Portland, Ore., August 22.

Samuel Burt Reed, M.D. College of Physicians and Surgeons, Boston, 1911; aged 40; died suddenly at his home in Maynard, Mass., August 31.

John J. Bazan, M.D. Central Medical College, St. Joseph, Mo., 1902; aged 44; was found dead in his room in St. Joseph, August 28.

Richard Bosworth, M.D. University of Michigan, Ann Arbor, 1865; aged 83; died at his home in Winchester, Ind., September 2

Eber Anguish, M.D. Bennett Medical College, Chicago, 1914; aged 35; of Alberton, Mont.; died in Portland, Ore., August 26.

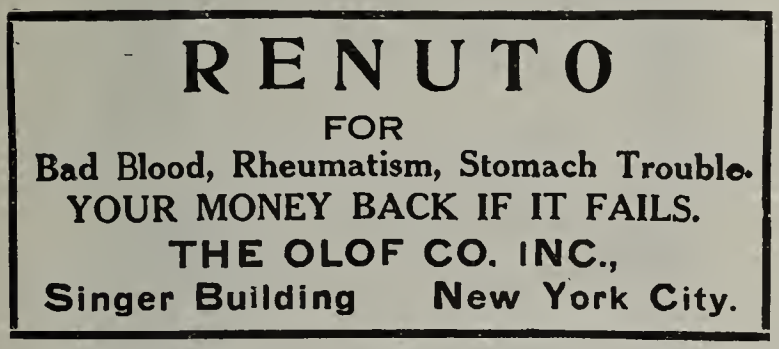
The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WALSH—STREET FAKER

Using the American Medical Association as an Advertising Asset in Faking the Public

"*Ladies and Gentlemen:* The meeting this evening is given under the auspices of the American Medical Association. Mr. Walsh, the speaker of the evening, will show you how some of the newspapers of New York City are in partnership with the patent medicine trust, and are robbing the people. On their editorial pages they inveigh against whiskey as a stimulant and on another page they tell you to take Duffy's Malt Whiskey four times a day to build you up. The American Medical Association, through its investigation bureau, its books and its street orators seeks to educate the public not to buy the nostrums so freely advertised in the columns of your newspapers."



On the back of the package in which Walsh's "Inhaler" is sold, another nostrum is advertised—"Renuto."

Thus, or to this effect, are the curious, on the street corners of New York City, introduced to John J. Walsh, "patent medicine" street faker, by his side partner. After such preliminary bunkum, "Mr. J. J. Walsh of the American Medical Association," speaking from the small automobile that he uses as an accessory in relieving the gullible of their money, harangues the crowd to this effect:

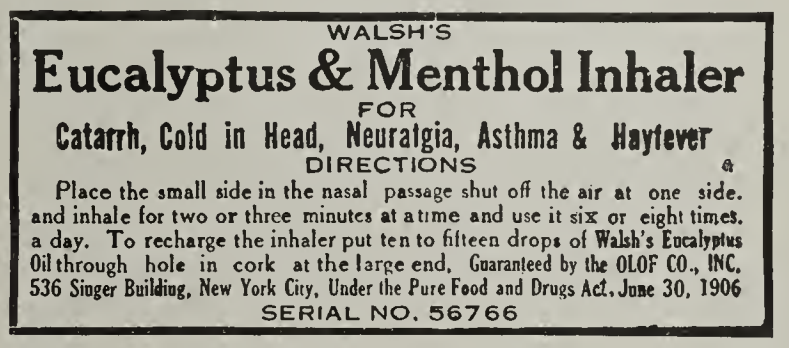
"*My dear friends:* From 1906 until 1909 I was an investigator for the American Medical Association, and during that time I was brought in contact with the various patent medicine advertisers and learned then of the evils of the patent medicine habit. Mr. Samuel Hopkins Adams of the New York *Tribune* in his very able exposé of patent medicines proved beyond any question of a doubt that it is a pernicious habit. He is right. I have here his book, the 'Great American Fraud,' and within a week, possibly a few days more or possibly less, I will have 25,000 of these books for distribution. They have not been sold as yet to the general public, but have been distributed to the members of the American Medical Association for their information."

And much more to the same effect. As part of his stock in trade, Walsh uses a copy of the "Great American Fraud" which he flourishes theatrically, a scrap-book containing newspaper nostrum advertisements, two jars, containing, respectively, a piece of tuberculous lung-tissue and a piece of healthy lung-tissue, and some New York newspapers of the type that carry fraudulent "patent medicine" advertisements. After quoting from the "Great American Fraud" Mr. Walsh finally gets around to the business of the day, that of selling "Walsh's Eucalyptus and Menthol Inhaler for Catarrh, Cold in the Head, Neuralgia, Asthma and Hay Fever." After delivering a panegyric on "Oil of Eucalpytus," Walsh just preparatory to passing inhalers through the crowd for inspection, delivers himself to this tenor:

"Unless eucalyptus oil, Ladies and Gentlemen, was a beneficial oil and afforded relief for catarrh, asthma, etc., the New York County Medical Society, the Society for the Prevention of Tuberculosis, and the American Medical Association would not endorse its use."

Then, with the aid of his assistant, the crowd is prevailed on to exchange perfectly good money for an obviously bad smell.

As a general, all-around prevaricator Walsh may have competitors but he surely can have no superiors. The claim that his meetings are held under the auspices of the American Medical Association is a falsehood; the statement that



Reduced photographic reproduction of the label on Walsh's nostrum and device.



A flash-light picture of Walsh posing as a representative of the American Medical Association while selling a "patent medicine" in New York City. Walsh is shown excoriating newspapers that carry "patent medicine" advertisements. He also uses a copy of the "Great American Fraud" in separating the gullible from their cash. (*Picture by courtesy of N. Y. Tribune.*)

he has been an investigator for the American Medical Association is a lie; the assertion that he will have 25,000 copies of the "Great American Fraud" for distribution is an untruth; the declaration that the New York County Medical Society, the Society for the Prevention of Tuberculosis and the American Medical Association endorse this use of eucalyptus oil is a foolish fabrication; the allegation that the "Great American Fraud" has never been sold to the public varies from the truth by about 150,000 copies!

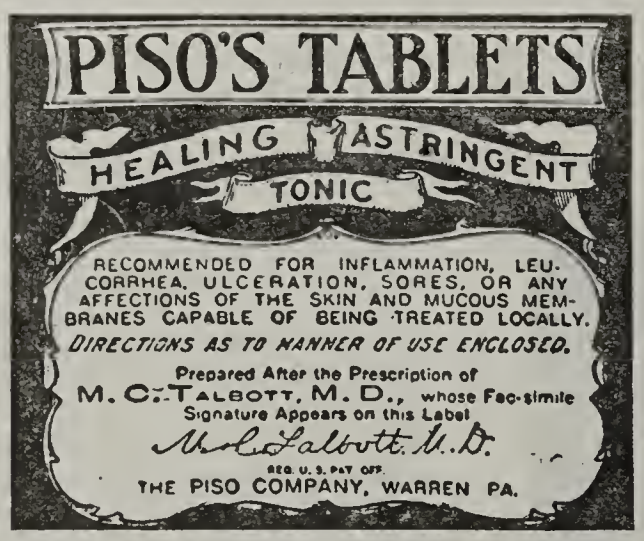
The facts: For months Walsh has been trying without avail, by devious means to get the Association to sell him large quantities of the "Great American Fraud." He even went so far as to invoke the aid of the New York *Tribune*. This great paper, itself an uncompromising foe of medical fraud, then started to look up Mr. Walsh and through its Bureau of Investigation found that the "Olof Company," "The Walsh Herb Medicine Company," "Dr. J. Walsh" of 536 Singer Building and 355 Grand Avenue, Brooklyn, are various names under which J. J. Walsh, "patent medicine" street faker, does business.

Walsh, being unable to obtain the "Great American Fraud" in quantities under his own name or that of "The Olof Company" or "Dr. J. Walsh" has, apparently, invoked the aid of some of his associates. At any rate similar orders have been received from one Octavio Rodriguez, 346 Chauncey St., Brooklyn, and 218 East 42nd St., New York City, who rejoices in the street cognomen of "Parmeelee, the Man with the Economical Principles." Mr. Rodriguez, after investigation, was infomed that he, too, would be unable to obtain the "Great American Fraud" in quantities. Then came a request from one Edward Saphir of 477 Schenck Avenue, Brooklyn, who

was going to "lecture" and wanted to sell the "Great American Fraud" as a side-line. Investigation showed that Mr. Saphir has been connected, if he is not still connected, with Walsh! The latest letter to be received comes from "Miss Delia M. Caulfield" who writes from 355 Grand Ave., Brooklyn (Walsh's home address). "Miss Caulfield" would like two hundred and fifty copies of the Great American Fraud sent C. O. D.—but she is not likely to get them.

PISO'S TABLETS AND MICAJAH'S WAFERS

Many of our readers will remember the Association's Laboratory report on "Micajah's Medicated Uterine Wafers," which appeared in THE JOURNAL, March 26, 1910.[1] In commenting on the laboratory's report, THE JOURNAL referred to the fact "that the same interests that control Piso's Consumption Cure also control Micajah's Medicated Uterine Wafers . . ." Attention also was called to the apparent intent of Micajah and Company, while confining their display advertisements exclusively to medical journals, actually to be catering to the public direct. As was said at the time: "The serious aspect of the matter is, that, by the encouragement given them in the advertising literature to treat themselves, women may neglect proper surgical or medical attention in the early stages of serious diseases such as cancer or dangerous pelvic infections, until they get beyond



Here is reproduced the label on the borax-alum tablets sold to women direct.

the hope of proper management." After the article appeared, Micajah & Co., in a letter to THE JOURNAL, vigorously denied that they were seeking the patronage of the laity.

The oiginal report on Micajah's Wafers stated that the product had, approximately, the following composition:

Alum, dried	59.86 per cent.
Borax, dried	15.62 per cent.
Boric acid	5.67 per cent.
Water of hydration	18.85 per cent.

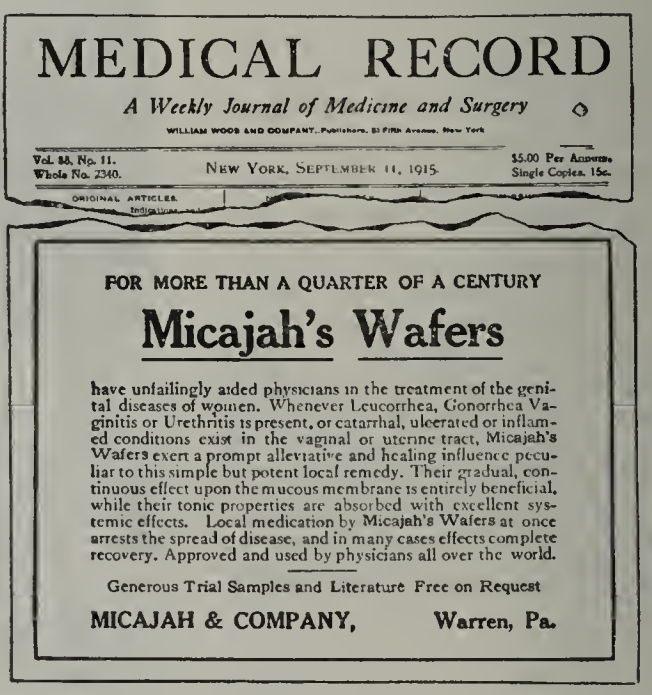
According to such information as we have on file, Micajah & Co. is practically a trade-name under which William A. Talbott does business; that William A. Talbott is secretary and manager of the Piso Company, and that he and his sister are said to control the Piso concern. The Piso Company is well, if not favorably known by the fraudulent nostrum it used to advertise as "Piso's Consumption Cure." The name of this "patent medicine" has, through the exigencies of legal necessity, been modified first to "Piso's Cure, A Medicine for Coughs, Colds, etc.," and more recently to "Piso's Remedy, A Medicine for Coughs and Colds."

Present purchasers of the quondam "consumption cure" find attached to the cork of the bottle a small envelope containing samples of "Piso's Tablets." Those who peruse the less-particular newspapers may also read that "Piso's Tablets are recommended as the best local remedy for women's ailments" and that "two weeks' treatment and an article 'Causes of Diseases in Women'" will be "mailed free" to those who write to the Piso Company.

Those who purchase a box of Piso's Tablets learn from the label that the preparation is "prepared after the prescription of M. C. Talbott, M.D." We fail to find any record of a physician of this name, although the medical directories of about thirty years ago refer to a Dr. Micajah C. Talbott, of Warren, Pa., who was graduated in 1861 by the University of Buffalo Medical Department. The practical identity of the manufacturers of Piso's Tablets and Micajah's Uterine Wafers, suggested the likelihood of the identity of the "tablets" and "wafers" themselves and it seemed worth while to analyze both of these products and compare them. This was done and the report of the Association's laboratory follows:



A reproduction of the label of the borax-alum tablets that are sold to women *via* the medical profession.



Borax-alum tablets advertised ostensibly to the medical profession, but actually to the public. Among other medical journals carrying the advertisement are the *New York Medical Journal, Therapeutic Gazette, Interstate Medical Journal, American Journal of Surgery, Medical Times* and *Medical World.*

CHEMIST'S REPORT

Original specimens of "Micajah's Medicated Uterine Wafers" and "Piso's Tablets," respectively, were submitted to the Chemical Laboratory for examination. The pasteboard box, labeled "Micajah's Medicated Uterine Wafers," manufactured by Micajah and Co., Warren, Pa., contained twenty-five hexagonal wafers. Piso's

1. This is reprinted in the latest (8th) edition of the "Propaganda for Reform."

Tablets manufactured by Piso Company, Warren Pa., consisted of 12 cylindrical tablets in a cylindrical wooden box.

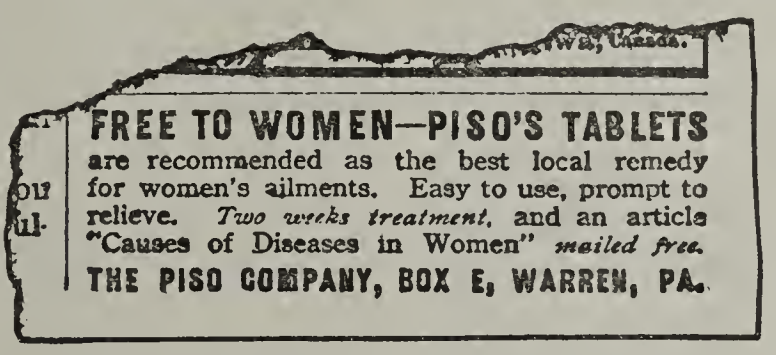
Both "Micajah's Wafers" and "Piso's Tablets" are white, odorless and possess an astringent taste. They are soluble in water with difficulty, the resulting solution being acid to litmus. Hot hydrochloric acid and alkali hydroxids dissolve the powdered substances, leaving a small amount of residue. In both cases lycopodium was identified by microscopic comparisons. Both "Micajah's Medicated Uterine Wafers" and "Piso's Tablets" responded to the same qualitative tests, affirming the presence of aluminum, sodium, potassium, borate, sulphate and a trace of fatty material. From the difficulty in effecting solution, the alum in both cases is probably "burnt" alum.

Quantitative comparisons gave the following results:

	Micajah's Wafers	Piso's Tablets
Average weight.....	About 10.0 gr.	About 10.0 gr.
Water	19.96 per cent.	19.91 per cent.
Aluminum	5.78 per cent.	5.64 per cent.
Boric anhydrid (B_2O_3).....	11.02 per cent.	11.92 per cent.

The acidity of both samples, respectively, was practically the same.

From the chemists' report it will be seen that, as might have been expected, "Micajah's Uterine Wafers"—"ethical proprietary" — are essentially identical with "Piso's Tablets" —"patent medicine." The "Piso's Tablets" advertising matter is of the type common to such nostrums. The underlying theme throughout all of it is to the effect that practically everything that ails a woman is likely to be due to some form of "womb trouble" and that the remedy *par excellence* for "womb trouble" is "Piso's Tablets." However, the claims made to the public for "Piso's Tablets" are no whit more silly or mischievous than the claims made to the medical profession for "Micajah's Uterine Wafers." That the public can be fooled by the claims made for "Piso's Tablets" is not altogether to be wondered at; that physicians have for years tolerated a nostrum like "Micajah's Uterine Wafers" is an unfavorable commentary on the medical profession.



Borax-alum tablets advertised to the public direct.

"LOCAL INDUSTRIES AND THE SOFT PEDAL"

Some Comments Thereon by Samuel Hopkins Adams

In the editorial department of this issue is a Current Comment, the second of its kind, under the title "Local Industries and the Soft Pedal." The incident with which it deals was discussed in an interesting article by Samuel Hopkins Adams in the New York *Tribune* for Sept. 19, 1915. The closing paragraphs of Mr. Adams' article in which he deplores the sinister power of the "patent medicine" interests, as exemplified in the Rochester episode, are worth quoting:

"Patent medicine control of legislatures, city councils, newspapers and magazines, and even social and religious organizations, has become a commonplace of knowledge. But one type of organization has supposedly been free of it, the medical bodies. Had the prediction been made to me, six months ago, that any patent medicine interest, however powerful, could insinuate its influence into the proceedings of a representative body such as the American Public Health Association, even by indirect channels, and efficiently protect itself from attack and exposure, I should have dismissed the suggestion as arrant nonsense. Yet the thing was contrived and successfully carried through. There was no fault of omission or commission on the part of the officers of the American Public Health Association. Technically, the matter was beyond the scope of the organization, since in the confusion of overlapping control Dr. Leiser was juggled by local manipulation, working in the interests of 'peace and propriety,' into a position where he was not dealing at all with the American Public Health Association. The biting fact remains, that in a convention devoted to the furtherance of the public health, the representative national organization was deprived of hearing a lecture on a subject of vital interest, both technical and public, through the strategy of one of the most active and powerful antipublic health factors in existence, patent medicine quackery. It could have happened only in a city where quack interests are dominant. It could have happened only in a city where the newspapers are afraid of the news. It could have happened to an organization such as the American Public Health Association only when that body was for the most part kept in ignorance of what was going on beneath the surface.

"If this principle of 'hands off the local fakers' is to prevail, what an admirable opportunity is furnished to nostrum manufacturers in other cities! How they will rush to extend hospitality in exchange for immunity to the American Public Health Association. Thus the holding of the next convention at Columbus might be regarded as an assurance against anything harsh being said about Peruna, or Buffalo might bid for it in the interests of Pierce's Favorite Prescription, or Chattanooga, to protect that ardent religionist, John A. Patten, from interference with his Wine of Cardui quackery; or Binghamton, N. Y., with the flag of Kilmer's Swamp Root nailed at the masthead of its Chamber of Commerce; or Lynn, Mass., in memory of its sainted daughter, Lydia E. Pinkham, long dead, but still advertising; or the City of Brotherly Love — and three cheers for Old Doc Munyon! There is no limit to the profitable application of the principle —and only one drawback. It lacks assurance of permanency.

"Prophecy is a risky business at best, but I venture this prediction, both as an observer and as a member of the American Public Health Association: The patent medicines won their point at this meeting; they never will at another. There will be too many watchers on guard."

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DISINFECTION OF SWIMMING POOLS

To the Editor:—Please inform me what method or methods are used in rendering swimming pools noninfective or free from contamination to innocent patrons. O. C. KLASS, M.D., Muskogee, Okla.

ANSWER.—Such a method was outlined by S. J. Thomas, *Journal of Industrial and Engineering Chemistry,* 1915, vi, 496, and was commented on in THE JOURNAL, July 10, 1915, p. 176. A paper by Thomas, giving the details of such methods, appears in this issue, p. 1104.

SKIN DISINFECTION — DILUTE ALCOHOL AS A WOUND DRESSING

To the Editor:—Proceedings for alleged malpractice were recently entered against me by a patient who claims that I did not properly cleanse and disinfect a wound following an injury.

The treatment was as follows: The hand and all the wounds cleaned thoroughly with benzine. The hand and all the wounds wiped with dry sterile gauze; an applicator wrapped with sterile cotton and saturated with tincture of iodin was used to paint all abrasions, cuts and wounds on the hand.

My counsel in the case has asked me to give authority which could be quoted to support this treatment and also the continual use of 50 per cent. alcohol as a wet dressing on the hand. We are unable to locate any authorities on this subject. Can you aid me in this matter?
F. R. G.

ANSWER.—The value of benzine in the cleansing of the skin previous to operation and particularly in cleansing dirty

hands or other parts after injuries was set forth by Franke (*Centralbl. f. Chir.*, 1901, xxviii, 300), and since then the use of benzine, alone or in combination, especially with iodin, has become a part of the regular or standard method of cleansing the skin before operation and in cases of accidental injury in many of the large hospitals throughout the world.

The great value of iodin in disinfecting the skin and the surface in accidental wounds is very fully presented in a monograph by Grossich, published by Urban & Schwarzenberg, Berlin, 1911. This monograph also contains a large list of articles on the same subject with a brief abstract of each. The use of iodin for this purpose also finds approval in modern textbooks of surgery, such as Bockenheimer's "Allgemeine Chirurgie," 1914, parts 1 and 2; in Keen's "Surgery," vi; in the Yearbook of Surgery, 1911; and in many periodical articles, and in fact it has found a most extensive use for this purpose during the past few years.

The use of alcohol dressings in the treatment of wounds in the manner mentioned will also be found recommended in Keen's "Surgery" above referred to; in the translated edition of Lexer's "Surgery," and in many other books. Dilute alcohol is an old and well-established dressing for bruises, contusions, wounds, etc.

"STANDARD" RADIUM PRODUCTS—EPISAN (BROBOR)

To the Editor:—1. Please give me some information, if you can, regarding the "Radium Chemical Company" and their "Standard" products. Has the Council on Pharmacy and Chemistry examined these products?

2. Please tell me also whether "Episan," put out by the Gaynor-Bagstad Company of Sioux City, Iowa, has been tested and approved, and with what success used. C. J.

ANSWER.—1. The Council on Pharmacy and Chemistry has accepted for New and Nonofficial Remedies a number of the radium preparations manufactured by the Standard Chemical Company and marketed by the Radium Chemical Company. Before accepting the "Standard" radium products which now appear in New and Nonofficial Remedies, the Council verified the claims made for these products so far as their radium content is concerned. As regards therapeutic efficiency, the acceptance of the Council merely means that no grossly extravagant claims are made for them.

It is believed that, beyond its use in surgical conditions, the chief value of radium is in the relief of pain. In consequence of this, treatment with radium at times seems to bring about improvement in such conditions as arthritis. Scientific reports of curative results appear to be lacking. Many of the published reports concerning radium are overenthusiastic, so that reports of results obtained from the administration of radium preparations, radioactive waters, etc., should be liberally discounted.

2. The Council on Pharmacy and Chemistry held Episan (otherwise known as Brobor) ineligible for New and Nonofficial Remedies for several reasons. In the first place, neither name indicates the active ingredients—potassium bromid, 44.3 per cent.; borax, 41.2 per cent.; zinc oxid, 3.68 per cent., and amyl valerate 4 per cent. A physician prescribing the preparation under either name would not realize that he was administering borax, and therefore would not take the precaution to watch the intestines and the kidneys. Also, he would not realize that the treatment was essentially a bromid treatment. It is a dangerous preparation, without practical therapeutic value in the treatment of epilepsy except that due to its potassium bromid content. There is no evidence to show that borax is harmless, as claimed, or that either borax or zinc oxid is a nerve sedative.

ORANGE JUICE IN INFANT FEEDING—DIABETIC FOODS AND FLOURS

To the Editor:—Is there any objection or advantage in feeding nursing babies small amounts of orange juice? If so, please give particulars and doses.

2. Will you kindly furnish me with the address of a manufacturer of reliable diabetic biscuits or crackers?

L. T. HOTTENDORF, M.D., Paris, Idaho.

ANSWER.—1. Orange juice is not usually much used in the feeding of breast-fed infants. Conditions and indications in the treatment of artificially fed infants are chiefly two: scurvy and tendency to constipation. It is sometimes used in rickets, but the good effects in this condition are doubtful. The dosage is from one-half to 1 ounce a day divided into from two to four portions.

2. In New and Nonofficial Remedies for 1915, p. 191, a number of diabetic foods and flours are described. The preparations mentioned are: Casoid Diabetic Flour, sold by Thomas Leeming & Co., New York City; Gluten Food A, B and C, manufactured by Herman Barker, Somerville, Mass., and Hepco Flour, Hepco Dodgers and Hepco Grits, manufactured by the Waukesha Health Products Company, Waukesha, Wis.

LIGATION OF VARICOSE VEINS

To the Editor:—In THE JOURNAL, July 24, 1915, is an abstract of an article by Secher (*Berl. klin. Wchnschr.*, 1915, lii) on the treatment of varicose veins. Will you please inform me whether in ligating the vein the ligature is thrown directly around the vein or around the skin and the vein? M. O. SHIVERS, M.D., Colorado Springs, Colo.

ANSWER.—Kuzmik of Budapest, whose technic Secher follows, says that the stout silk thread is passed under the vein with a deep curved needle and brought out through the skin, the needle holes being about 0.4 or 0.5 cm. from the edge of the vessel. The ends are tied over a roll of gauze or circular lamp wick, about 2 cm. long, and each thread is tied at once. This insures elastic compression of the vein, which is thus suspended in the loop of silk and prevents the silk from cutting through the skin. Preliminary to the operation, the vein is outlined on the skin. It is rendered prominent by constriction applied to the limb above, and marked with India ink. It is also important to be sure that all branches of the vein are tied off in the same way in the region. The needle is introduced down to the fascia. The detailed report of the article by Kuzmik was summarized in THE JOURNAL, June 14, 1913, p. 1927. The same technic was applied by Schede in 1877, but he used catgut and left the ligature in place only two or three days. His article appeared in the *Berliner klinische Wochenschrift*, 1877, xiv, 85. Kuzmik's latest article appears in the *Beiträge zur klinischen Chirurgie*, 1913, lxxxiv, p. 1.

FORMULA OF THE CARREL-DAKIN "NEW ANTISEPTIC"

To the Editor:—Can you give me the formula for the new antiseptic discovered by Drs. Carrel and Dakin, and the details of this preparation? R. C. EATON, M.D., Chicago.

ANSWER.—This preparation was discussed in an editorial published in THE JOURNAL, Sept. 4, 1915, p. 880. Two hundred gm. of chlorinated lime are added to 10 liters of water in which 140 gm. of anhydrous sodium carbonate have been dissolved. The mixture is thoroughly shaken, and after half an hour the supernatant fluid is separated by siphoning from the precipitate of calcium carbonate, and is then filtered through cotton. The clear fluid thus obtained is made neutral or acid by adding boric acid until a drop of the solution does not redden a few drops of phenolphthalein solution. Usually about 25 to 40 gm. of the boric acid are required.

PONDER'S STAIN

To the Editor:—After looking through various files of journals and several treatises and textbooks on bacteriology, not mentioning medical dictionaries, I have been unable to find any reference to "Ponder's stain," mentioned in the article on "The Recent Methods of Treating Diphtheria," by Dr. Frank C. Neff, THE JOURNAL, Aug. 14, 1915, p. 585. Can you enlighten me? J. E. HUBER, M.D., Peoria, Ill.

ANSWER.—Ponder's stain was described in Queries and Minor Notes, THE JOURNAL, Feb. 7, 1914, p. 476.

STATUS OF NOVOCAIN UNDER HARRISON NARCOTIC LAW

To the Editor:—Is novocain included in the list of narcotics, the same as cocain and opium and its derivatives?

NORTON H. GOOD, M.D., Buffalo.

ANSWER.—In accordance with Treasury Decision 2194, novocain is considered a cocain derivative or substitute, and its registration under the Harrison Narcotic Law is required.

WANTED—REPORTS ON INVARIABLE BLOOD STAIN

To the Editor:—I wish to secure reports of the experience of laboratory men and others who have tried out the Invariable Blood Stain, which I described (THE JOURNAL, Nov. 1, 1913, p. 1627). Such material may be used, with other data, in a second communication. Full credit will be given in case such information is used.

B. G. R. WILLIAMS, M.D., Paris, Ill.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, October 5-6. Sec., Dr. John Wix Thomas, 200 National Bank of Arizona Bldg., Phoenix.

COLORADO: Denver, October 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, October 12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

GEORGIA: Atlanta, October 12. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Wallace, October 5. Sec., Dr. C. A. Dettmen, Burke.

ILLINOIS: Chicago, October 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

IOWA: Des Moines, October 19-21. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

KANSAS: Topeka, October 12-14. Sec., Dr. H. A. Dykes, Lebanon.

MICHIGAN: Lansing, October 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, October 5-8. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, October 26-27. Sec., Dr. E. H. Galloway, Jackson.

MISSOURI: Kansas City, September 28-30. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

MONTANA: Helena, October 5. Sec., Dr. William C. Riddell, Helena.

NEVADA: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

NEW JERSEY: Trenton, October 19-20. Sec., Dr. G. H. Norton, 429 E. State St., Trenton.

NEW YORK: Albany, Buffalo, New York, Syracuse, October 5-8. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, October 12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, October 4. Sec., Dr. Quevedo Baez, Allen St., San Juan.

RHODE ISLAND: Providence, October 7-8. Sec., Dr. Gardner T. Swarts, State House, Providence.

UTAH: Salt Lake City, October 4-5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WYOMING: Laramie, October 13-15. Sec., Dr. H. E. McCollum, Laramie.

Connecticut July Report

Dr. Charles A. Tuttle, secretary of the Connecticut Medical Examining Board, reports the oral, practical and written examination held at New Haven, July 13-14, 1915. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 22, of whom 14 passed and 8 failed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Yale University	(1915)	82.5, 86.3
Tulane University of Louisiana	(1911)	77.9
Johns Hopkins University	(1911) 79.8; (1914)	75.2
Columbia University	(1903) 78.8; (1911) 81.6; (1913)	77.8
Jefferson Medical College	(1914)	79.3, 80.6
University of Vermont	(1913) 76.6; (1914) 76,	77.4, 82
FAILED		
Maryland Medical College	(1913)	56.2
College of Phys. and Surgs., Boston	(1910) 41.6 (1912)	68.3
Harvard University	(1913)	72.7
Cornell University	(1914)	73.7
Western Pennsylvania Medical College	(1905)	67
University of Vermont	(1914)	73, 73.8

Florida June Report

Dr. E. W. Warren, secretary of the Regular Board of Medical Examiners of Florida, reports the written examination held at Jacksonville, June 15-16, 1915. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 67, of whom 53 passed and 14 failed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Birmingham Medical College	(1915)	77
George Washington University	(1910)	85
Atlanta Medical College	(1914) 75, 75, 91; (1915) 75, 75, 82, 83, 85, 86, 86, 87, 92, 93.	79, 79,
State University of Iowa, College of Medicine	(1903)	72*
Kentucky School of Medicine	(1892)	62*
Louisville Medical College	(1904)	88
University of Louisville	(1915)	75, 88
Tulane University of Louisiana	(1915)	92
College of Physicians and Surgeons, Baltimore	(1913)	84
Johns Hopkins University	(1910)	90
University of Maryland	(1895)	87
College of Physicians and Surgeons, Boston	(1912) 75; (1913)	75
University of Michigan, Medical School	(1898)	82
University Medical College, Kansas City	(1896)	85
Washington University	(1901)	75
Columbia University, College of Phys. and Surgs.	(1905)	80
Long Island College Hospital	(1894)	63*
Syracuse University	(1895)	75
University of the City of New York	(1889)	76
Starling Medical College	(1895)	89
Jefferson Medical College	(1889) 70;* (1915)	85, 90
University of Pennsylvania	(1888) 75; (1896)	84
Woman's Medical College of Philadelphia	(1898)	75
Chattanooga Medical College	(1901)	71*
Meharry Medical College	(1915) 80,	81, 83
Memphis Hospital Medical College	(1912)	83
University of Nashville	(1906)	87
University of Tennessee	(1914)	75
Vanderbilt University	(1910) 85; (1915)	91
University of Vermont	(1912)	84
Queen's University	(1909)	83
FAILED		
Birmingham Medical College	(1913)	69
Atlanta Medical College	(1915)	66
Atlanta School of Medicine	(1909)	71
Southern College of Medicine and Surgery	(1913)	52, 57
University of Georgia	(1912)	68
College of Physicians and Surgeons, Keokuk	(1881)	58
Mississippi Medical College	(1911)	43
Lincoln Medical College	(1904)	58
Leonard Medical School	(1913)	70
Meharry Medical College	(1914) 51; (1915)	55, 61
University of West Tennessee	(1914)	72

* Credit allowed for years of practice.

The following questions were asked:

MATERIA MEDICA AND THERAPEUTICS

1. Give physiologic action and therapeutic use of extract of the pituitary body. 2. Give your opinion as to the value of "intestinal antiseptics," and mention the drugs that you regard as belonging to this class. 3. Give indications and contraindications for employment of opium in diarrhea and dysentery. 4. Explain the increased amount of bile in stools following a mercurial purge. 5. Physiologic action and therapeutic use of amyl nitrite. 6. What are antitoxins, bacterins and vaccines? Explain their action. 7. Write a suitable diet list for a child of 18 months suffering from an acute attack of ileocolitis. 8. What therapeutic measures would you employ for treatment of exophthalmic goiter? 9. Outline treatment of chronic furunculosis in a child 10 years old. 10. Mention the therapeutic uses of salicylic acid and its derivatives.

ANATOMY

1. Name the bones concerned in Colles' fracture. 2. Name the bones entering into the formation of the pelvis, and give their articulations. 3. Describe the lymphatic system. 4. What is the difference between aponeuroses and tendons? 5. What structures are concerned in a fallen arch or flat foot? 6. Describe and locate Peyer's patches. 7. Name the muscles of the abdomen; of the orbit. 8. Locate the sacral plexus and tell what organs it supplies. 9. In gastro-enterostomy what anatomic structures are encountered? 10. Describe and locate the rectum. 11. Give origin and course of sciatic nerve. 12. What arteries supply the heart with blood, and from what do they originate?

SURGERY

1. Describe active congestion; passive congestion. State their points of difference. 2. What are the most approved operative procedures in the treatment of varicose veins of the lower extremity? 3. Mention the inflammatory diseases of the bone? Give treatment of acute suppurative osteomyelitis. 4. What are the symptoms of septic surgical fever? 5. What is shock, and how should it be treated? 6. Give treatment of fracture of femur, in detail. 7. Give the symptoms of cholecystitis. 8. Give the palliative and operative treatment of hydrocele. 9. How can the danger of ankylosis be averted after injury to a joint? 10. Describe in detail curettement of uterus.

CHEMISTRY

1. Give a test for indican in the urine. 2. How would you determine if iron was present in the copper solution of Fehling's test for sugar? 3. Give three forms in which carbon is found in nature, and some use for it in each of its forms. 4. Give the formula of three chemical compounds containing ferrum, and a reaction of one of these compounds with some other chemical compound. 5. What is the antidote for iodin poisoning? How can you tell if your solution comes in contact with the iodin? 6. How is nitrate of silver made? Give the formula of its reaction with salt water. 7. Give the physical properties of Mg. How is it best prepared and used as an antidote for potash or the metallic salts? 8. Give the chemical formula for formaldehyd. How is it used as a disinfectant, and how much is necessary to disinfect a room 20 by 20 by 20? What is the difference between a germicide, a disinfectant and a deodorant? 9. Give one gas and one solid, each having the valancy of 2, and what is the effect of one on the other? 10. Give the physical properties of Hg, and the formula for four chemical compounds containing Hg. Which of these compounds named are considered poisonous and which nonpoisonous?

PHYSIOLOGY

1. (*a*) What are the functions of the spinal cord? (*b*) What would be the result of a transverse section in the middorsal region? 2. (*a*) Describe the function of the kidneys, and (*b*) give the physiology of micturition. 3. (*a*) What are the functions of the skin and its appendages? (*b*) How may the functions be affected as to the amount of excretion? 4. (*a*) State the origin and functions of lymph, and (*b*) tell how absorption takes place by the blood vessels and lymphatics. 5. (*a*) Describe the vermicular movement of the stomach and intestines. (*b*) Give the physiology of vomiting. 6. (*a*) Define tidal air; (*b*) complemental air; (*c*) reserve air; (*d*) residual air; (*e*) vital capacity. (*f*) State what changes are produced in the air by respiration. 7. Define: (*a*) afferent; (*b*) efferent; (*c*) trophic; (*d*) inhibitory; (*e*) motor and vasomotor nerve fibers. (*f*) Give the physiology of the vasomotor nerves. 8. (*a*) What portion of the cerebrum comprises the motor area? (*b*) Give the order in which the arm, face and leg receive their motor impulses. 9. (*a*) Describe a complete physiologic revolution of the heart. (*b*) State the factors which cause the heart sounds. 10. (*a*) What is rigor mortis? (*b*) What is the order of its occurrence in the different parts of the body?

GYNECOLOGY

1. Give diagnosis and treatment of gonorrhea in the female. 2. Give early diagnostic symptoms of cancer of: (*a*) cervix uteri; (*b*) fundus uteri. 3. Give causes and treatment of pruritus vulvae. 4. Describe technic of repair of old cervical lacerations. 5. Describe the normal position of the uterus. 6. Give etiology and treatment of dysmenorrhea. 7. Give indications for use of pessary, and name three varieties and describe the introduction of same. 8. Differentiate acute salpingitis from appendicitis. 9. Define mastitis and give treatment. 10. Name the common tumors of the uterus and adnexa.

OBSTETRICS

1. Describe the successive changes that take place in the ovum after fecundation, and during its passage to the uterus. 2. In the first visit to and the first examination of a case of labor, what should be learned? 3. Describe in detail the mechanism of an L. O. P. 4. What conditions demand version? What forceps delivery? What cesarean section? 5. Give etiology, diagnosis and treatment of uterine inertia. 6. Name the different kinds of hemorrhage that may affect the pregnant woman, the parturient woman, and the puerperal woman. 7. What are the principal drugs used to hasten labor, and discuss in general their use. 8. When should you ligate the umbilical cord, and how dress it? 9. What is ophthalmia neonatorum? Give its etiology, prophylaxis and treatment. 10. Describe a case of trismus nascentium, and give its etiology and treatment.

Book Notices

DIARRHEAL, INFLAMMATORY, OBSTRUCTIVE AND PARASITIC DISEASES OF THE GASTRO-INTESTINAL TRACT. By Samuel Goodwin Gant, M.D., LL.D., Professor of Diseases of the Colon, Sigmoid Flexure, Rectum and Anus at the New York Post-Graduate School and Hospital. Cloth. Price, $6 net. Pp. 604, with 181 illustrations. Philadelphia; W. B. Saunders Company, 1915.

The diseases included under the title of this book are clearly and fully described. The author's own experiences appear mostly in the pages devoted to irrigation and surgical treatment. The portion devoted to diagnostic methods and to parasitology is modern and useful. Description of the infecting bacteria, amebas and grosser animal parasites which produce diseases necessitates a consideration of many tropical diseases, so called because commonest in the tropics, though most of them are sometimes found in the temperate zone. The discussion of treatment is characterized by good judgment and fixed by experience.

The most original part of the book is the description of local and surgical treatment. The technic of intestinal washing by the anus and by surgical procedure is well described. The author is convinced of the efficacy and therefore desirability of washing clean ulcerated and inflamed surfaces. Many may think that this is a personal hobby of his because of the space devoted to it, though the indications given for the procedures are conservative, as the following statement shows:

"Surgical intervention should not be practiced in the treatment of diarrheal, catarrhal and parasitic diseases until after other and less radical therapeutic measures have failed to benefit the patient, except when it is evident that the trouble is incident to acute or chronic intestinal obstruction, in which case an operation is indicated at the first opportunity. Operative interference is also imperative in the presence of intestinal cancer, and in neglected cases where the patient is suffering profoundly from diarrhea, toxemia, exhaustive discharges, and extensive ulcerative lesions of the bowel complicated by mixed infection."

Operations for cancer and obstructions, and those for drainage and cleansing the intestines are described, and the author especially illustrates his own technic for enterostomy, appendicostomy, appendico-enterocecostomy and appendicocecostomy.

APPLIED IMMUNOLOGY. The Practical Application of Sera and Bacterins Prophylactically, Diagnostically and Therapeutically, with an Appendix on Serum Treatment of Hemorrhage, Organotherapy and Chemotherapy. By B. A. Thomas, A.M., M.D., Professor of Genito-Urinary Surgery in the Polyclinic Hospital, and R. H. Ivy, M.D., D.D.S., Assistant Instructor in Surgery in the University of Pennsylvania. Cloth. Price, $4. Pp. 359, with 73 illustrations. Philadelphia: J. B. Lippincott Company, 1915.

The authors have presented in simple form the basis and technic of the common immunologic tests and reactions, and the essential principles of biologic treatment. They have succeeded in separating from the mass of experimental evidence and theory the salient facts of immunologic practice. In the preface, the authors give as a reason for the book the fact that the average practitioner's knowledge of biologic therapeusis is a "dangerous thing" because he does not "drink deep of the Pierian spring"; insufficient instruction in these subjects is given in the medical schools, and most authors have written exhaustive treatises of little value to the practicing physician. As a result, "pharmaceutical firms have assumed the function of the department of therapeutics in our medical colleges, not always impartially and to the best interests of medical science."

The book is practically an outline of immunity. The history of the subject and the various antibodies are discussed in separate chapters. The authors consider the various serums and vaccines. Their conclusions seem wholly rational and in line with generally accepted opinion.

In the chapter on miscellaneous serums and extracts, they say concerning crotalin:

"The irrational basis for this treatment and the dangerous nature of the poison are such as to make its use unjustifiable."

Concerning phylacogens they say:

"Without going into further detail, we are of the opinion that the therapeutic use of phylacogens is based upon erroneous conceptions of infection and immunity, is unscientific, empirical, and unjustified. Moreover, there is evidence that their administration is not unattended with risk to the patient."

Considerable space is devoted to the complement-fixation test, the Wassermann test and its various modifications. The Abderhalden, meiostagmin and epiphanin reactions are given. Another chapter explains allergic phenomena and the tests based on them, such as the tuberculin, luetin, gonorrheal and typhoid tests, and the Schick test for diphtheria. A large section of the book is given over to vaccine therapy, which is considered in gross and under the heading of various diseases. In several appendixes the authors describe the technic of serum treatment of hemorrhage, the use of organ extracts in the treatment of disease and the administration of salvarsan and neosalvarsan.

THE NEXT GENERATION. By Frederick A. Rhodes, M.D., Chairman Pittsburgh Morals Efficiency Commission. Cloth. Price, $1.50 net. Pp. 290. Boston: Richard G. Badger, 1915.

This volume consists in the main of quotations, anecdotes, facts and unimpeachable platitudes, rather inconsequently pieced together. Some statistical matter in the final chapter may possibly represent investigation on the author's part as chairman of the Pittsburgh Morals Efficiency Commission; but, beyond this, there is slight evidence of original thought or first-hand knowledge of the subjects discussed. The book resembles as a whole the productions of some pulpit orators, in which the processes of rhetorical asseveration and repetition are substituted for those of thought.

X-RAYS: HOW TO PRODUCE AND INTERPRET THEM. By Harold Mowat, M.D., Temporary Licutenant, R. A. M. C. Cloth. Price, $3. Pp. 204, with 106 illustrations. New York: Oxford University Press, 1915.

This is an elementary work on the diagnostic use of Roentgen rays. It gives a satisfactory consideration of Roentgen-ray apparatus, and of the technic of Roentgen examinations. One hundred pages are given to the diagnostic use of Roentgen rays, and the subject is well covered. The book confines itself to a practical statement of its subject, and can be recommended to those who wish to learn the essential facts for the satisfactory diagnostic use of Roentgen rays.

EXERCISE IN EDUCATION AND MEDICINE. By R. Tait McKenzie, B.A., M.D., Professor of Physical Education, University of Pennsylvania. Second edition. Cloth. Price, $4 net. Pp. 585, with 478 illustrations. Philadelphia: W. B. Saunders Company, 1915.

Four years have elapsed since the publication of the first edition of the book. Needless to state, physical education has advanced greatly in that time, and has now become a part of the system of practically all educational institutions. In that time also the rhythmic dances have assumed a prominent place in the education of musculature. This book is so complete as to be encyclopedic on its subject.

Miscellany

Substitutes for Absorbent Cotton

Since the beginning of the European war the demand for cotton substitutes has increased on account of the high prices and the difficulty of obtaining cotton. Various cheaper substitutes have been devised but are not as satisfactory. Among these substitutes is "Lignin," a German product made by a secret process which is said to absorb blood better than cotton, but is not so good as a dressing for a wound. It is made in sheets 14 by 24 inches in size. A cellulose wadding made from chemical wood pulp is a Swedish product for dressing wounds. It is prepared in thin sheets like tissue paper, but crimped. The process of manufacture is secret, but it seems to be made in the same way as tissue paper. Another substitute for cotton in dressings is a moss gathered in Westmoreland and Yorkshire, in England. The moss contains minute tubes and in a natural state holds water to the amount of eight or nine times the weight of the plant. When it is dry it is one of the most absorbent materials known. It is soft, light and cool, and, of course, is sterilized before use. Little preparation is required, and it is very economical. It has been used for some time in the hospitals in England. The foregoing information is from U. S. Consuls in Berlin, Goteborg, Sweden, and Bradford, England.—*Commerce Reports*, Sept. 15, 1915.

Poisoning by Noxious Gases

In the *British Medical Journal*, July 31, Black, Glenny and McNee describe their interesting observations in 685 cases of gas poisoning in a casualty clearing station in Flanders. The men were hauled 10 miles in motor ambulances, and some arrived only six hours after being "gassed," while others were seen after a much longer period. The majority did not appear to be in immediate danger, while 120 were in a serious condition. Of the latter, 33 died, giving a death rate among the total number observed of about 5 per cent. Sixteen died on the day of admission, 13 the following day, 2 on the second day following, 1 on the third, and 1 on the fourth day after admission.

Graphically describing the condition of the first batch of men received, it is said: "One man was dead before he could be removed from the ambulance. Most of the others were in a choking condition, making agonizing efforts to breathe, clutching at their throats and tearing open their clothes. At one moment they propped themselves up to gasp, at another they fell back exhausted by their struggles. There was marked cyanosis, especially of the lips and ears, and in a few cases a light yellow frothy discharge was escaping from the mouth and nose. Some, especially the older men, were in a condition of collapse; their faces and hands were of leaden hue, their heads fallen forward on their chests. The majority of these cases did not rally."

Among the hundreds of cases subsequently observed, all degrees of asphyxia were evident. As to the symptoms, a typical patient, on admission, was cold, with a subnormal temperature, conscious but restless, the pulse slow and full, except in the collapsed cases. The face was intensely cyanosed, and the expression was strained and anxious. In some cases the patient sat propped up, with head thrown back, gasping for breath; in others he lay on his side with his head over the edge of the stretcher in an attempt to aid expectoration. The respirations were jerky and hurried, often numbering forty a minute, and were associated with a choking cough, accompanied by a varying amount of frothy expectoration. The auxiliary muscles of respiration were brought into play, the percussion note was impaired without being actually dull, and there were moist sounds of different qualities over the chest.

In the progress three stages were noted, the asphyxial, the quiescent or indeterminate, and after some hours the bronchitic. The first stage, which lasted about thirty-six hours, required energetic treatment, and if the patient could be brought through this, he usually recovered. A few died in the stage of bronchitis, which was intense, with thick, greenish mucopurulent expectoration, delirium, a temperature advancing from subnormal to 104, and small pulse, running up to 160. Respirations were less choking, but often up to 70. Postmortem examination showed that the patients died of acute congestion and edema of the lungs. On arrival, the patients were placed in hot blankets in the open air, with hot bottles and hot drinks, and emetics were given in those cases in which the men were badly choked up, the most successful being salt and water in 10-ounce doses, followed by large drafts of lukewarm water. This gave marked relief, large quantities of mucus being expelled. Other emetics were also tried. Artificial respiration was employed when necessary, with good effect. In the way of a stimulating expectorant, ammonium carbonate in 10-grain doses every three hours was most successful, supplemented, at times with wine of ipecac, 15 minims, which produced copious expectoration. Atropin was not found useful. To relieve and support the heart, venesection was tried and pituitary extract used. Oxygen, benzoin inhalations and opium were also used symptomatically. After death, congestion and edema of lungs and glottis were found, subpleural hemorrhages, distended heart, and venous congestion of the abdominal organs, except the stomach, which in all cases showed a marked catarrh, with submucous hemorrhages. There was marked congestion of the vessels of the meninges and brain tissue.

Public Health Legislation in Wisconsin

A digest of laws passed at recent sessions of the legislatures appeared in THE JOURNAL, Aug. 21, 1915, p. 735. In addition to the laws abstracted therein, a number of notable measures were enacted by the Wisconsin legislature. These include amendments to the medical practice act, to the fee-splitting law, and to the marriage regulation act and the enactment of an optometry law. The medical practice act was amended to give the board of medical examiners more definite jurisdiction over the several branches of medicine and surgery. It gives to osteopaths somewhat greater rights than they had before, and sets forth in detail the educational requirements to which all applicants for license must comply, with certain exceptions as regards osteopathy, midwifery, nurses, those who practice massage and hydrotherapy and chiropractors. The last-named may practice, provided they do not represent themselves as registered or licensed physicians. This is to be done by displaying in their office a sign reading, "not registered or licensed in Wisconsin." It is particularly provided that Christian Scientists, and the like, are to be excepted under the law. The fee-splitting law was amended so as to include the receiver of a divided fee as well as the giver. The marriage regulation law was amended by reducing physician's fees for service rendered from $3 to $2, and permitting physicians to make "a thorough examination of," and to make use of "the recognized clinical and laboratory tests" only if they considered it necessary. The optometry law creates a new board of five members appointed by the governor.

Natural Selection

Paul B. Popenoe, editor of the *American Journal of Heredity*, at the Second International Conference on Race Betterment, in discussing "The Natural Selection of Man," declared: There are only two ways to improve the germinal character of the race, to better it in a fundamental and enduring manner. One is to kill off the weaklings born in each generation. That is Nature's way, the old method of natural selection, which we are all agreed must be supplanted. When we abandon that, we have but one conceivable alternative, and that is to adopt some means by which fewer weaklings will be born in each generation. The only hope for permanent race betterment under social control is to substitute a selective birth rate for Nature's death rate. That means eugenics.

Medicolegal

Physician Not Allowed to Testify as to Mental Capacity of Person Observed While Attending Members of His Family

(Eckman vs. Funderburg et al. (Ind.), 108 N. E. R. 577)

The Supreme Court of Indiana affirms a judgment in favor of the defendants in this contest of the will of one Jacob H. Eckman, deceased, where a physician, introduced as a witness by the plaintiff, was not permitted to testify as to the mental capacity of the testator. The court says that the physician had attended members of the testator's family, but had never rendered professional service to the testator himself. After giving testimony apparently intended to qualify him as an expert, the witness further stated that he had seen the testator on occasions when he had been called to treat his mother, and had observed that his facial expression was very peculiar, such as is often noted in cases of epilepsy; that the testator was very reserved in manner, and would never engage in conversation. The witness was then asked: "What did that indicate to you with reference to the mind of Jacob H. Eckman, if it indicated anything?" Objection to this question was sustained on the ground that the examination was not sufficient, and, on the same ground, an offer to prove that such facts indicated to the mind of the witness that the testator was a person of impaired and unsound mind was rejected. The court finds it difficult to determine from the record whether the witness was testifying as an expert or nonexpert, but it thinks that he was being examined as an expert, and that the plaintiff was seeking to introduce evidence for which, in the opinion of the trial court, no proper foundation had been laid. The Supreme Court cannot say that the trial court abused its discretion in sustaining the defendants' objection to the question as propounded, or in rejecting the offer to prove. It is well settled that the question as to the qualification of a witness to testify as an expert is for the trial court, in the exercise of a sound legal discretion, and its discretion will not be reviewed on appeal except for plain error.

Prohibiting Night Work by Women in Factories

(People vs. Charles Schweinler Press (N. Y.), 108 N. E. R. 639)

The Court of Appeals of New York holds constitutional, as a police regulation in the interest of public health and the general welfare of the people of the state, the provision of the labor law that, "In order to protect the health and morals of females employed in factories by providing an adequate period of rest at night, no woman shall be employed or permitted to work in any factory in this state before 6 o'clock in the morning or after 10 o'clock in the evening of any day." The issue presented, the court says, was whether it can be said that night work by women in factories is so generally and substantially injurious to their health that the legislature was justified by public considerations in preventing the evil by forbidding the cause. Protection of the health of women is a subject of special concern to the state. However confident a great number of people may be that in many spheres of activity, including that of the administration of government, woman is the full equal of man, no one doubts that, as regards bodily strength and endurance, she is inferior, and that her health in the field of physical labor must be specially guarded by the state if it is to be preserved and if she is to continue successfully and healthfully to discharge those peculiar duties which nature has imposed on her. The court gets around its decision in People vs. Williams, 189 N. Y. 131, by observing that the statute involved there bore on its face no clear evidence that it was passed for the purpose of protecting the health and welfare of women working in factories, the different manner in which that case was presented to the court, and the facts and arguments that have been developed by study and investigation during the years which have intervened since the decision in that case was made. There is no reason why the court should be reluctant to give effect to new and additional knowledge on such a subject as this, even if it did lead the court to take a different view of such a vastly important question as that of public health or disease than formerly prevailed. Particularly is it felt that the court should give serious consideration and great weight to the fact that the present legislation is based on and sustained by an investigation by the legislature deliberately and carefully made through an agency of its own creation, the present factory investigating commission.

Failure to Diagnose Mastoiditis—Liability of Employer and Evidence of Partnership

(McGray vs. Cobb et al. (Minn.), 152 N. W. R. 262)

The Supreme Court of Minnesota affirms an order denying a motion of the defendants in the alternative for judgment or a new trial in this action wherein a verdict was rendered against them for malpractice. The court says that, on January 15, 1913, the plaintiff, who for a day or two had suffered severe pain in his left ear, called one of the defendants, a Dr. Beals, a duly licensed homeopathic physician and surgeon, to treat him. Dr. Beals prescribed for him, and the next day made a closer examination and undoubtedly located the difficulty as an inflammation of the middle ear. He, however, claimed that there was then no evidence of such pus formation that good practice would require a puncture of the ear drum to drain the infection. The next morning the pressure of the pus ruptured the drum. The drainage thus opened greatly relieved the pain and reduced the fever. But after three or four days, as the discharge from the ear decreased, the pain and temperature returned and did not yield to the treatments given. The plaintiff claimed that Dr. Beals during the latter days of January and the first part of February attributed the pain to neuralgia and treated accordingly. On February 10 the plaintiff went to a Minneapolis physician, who diagnosed the case as mastoiditis, and the next day performed an operation to drain the mastoid process. The inflammation was found to be deep-seated, having affected and penetrated the mastoid cells clear to the coverings of the brain. Two subsequent incisions into the skull in the vicinity of the ear were found necessary before the affected parts could be drained and placed in condition to heal. During all the time of Dr. Beals' treatment, except for two or three days next after the rupture of the ear drum, the plaintiff testified to having experienced intense pain. The result of the ailment was that the plaintiff was left in a weakened condition; he could not attend to his business for months; and the hearing in the left ear was entirely destroyed.

An examination of the record led to the conviction that there was evidence tending to establish that Dr. Beals did not use the care and skill which would be used by the ordinary homeopathic practitioner. And while this evidence was not very specific or positive as to the exact time when a different treatment than the one given should have been had, yet the court deems it of sufficient strength and certainty to entitle a jury to pass on the issues made by the pleadings. Adroit cross-examination served to draw from the plantiff's medical expert certain answers which, taken by themselves, might seem conclusive in favor of the defendants. But the jury had a right to consider the setting in which the opinions were expressed, and on all the evidence give a final estimate of the opinions of the experts. Because no two physicians of the same school might agree as to the exact time when good practice would require an operation for mastoiditis, or precisely how it should be treated, it does not follow that a physician, in the exercise of ordinary care and skill in his profession, should not, under the facts of this case, have readily ascertained the necessity of operating on the plaintiff many days before the aid of the Minneapolis physician was sought. The court thinks there was also sufficient evidence to justify the submission to the jury of the claim that the loss of hearing in the affected ear resulted from the negligent treatment of Dr. Beals.

The defendant Cobb testified that the other defendants were in his employ. Of course, if Dr. Beals was guilty of malpractice, his employer would be responsible. But the court thinks the testimony in respect to office arrangements and bills rendered for professional services indicated a joint enterprise or partnership between all of the defendants, hence there was no error in submitting to the jury the question of the liability of all the defendants as partners. No explanation was offered why, when professional services were rendered by one of the defendants, the patient would be presented with a bill showing all the defendants entitled to receive the fee charged therefor.

Society Proceedings

COMING MEETINGS

American Academy of Ophth. and Oto-Laryn., Chicago, Oct. 5-7.
American Association of Railway Surgeons, Chicago, Oct. 13-15.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
Utah State Medical Association, Salt Lake City, Sept. 28-29.
Virginia State Medical Society, Richmond, Oct. 26-28.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

MICHIGAN STATE MEDICAL SOCIETY

Fiftieth Annual Meeting, held at Grand Rapids, Sept. 1 and 2, 1915

(*Concluded from page 1055*)

Abscess of the Tongue; Report of a Case

DR. J. VERNON WHITE, Detroit: The patient was 28 years old. He contracted tonsillitis, which followed the usual course. On the fourth day he began to feel pain in swallowing, radiating down the trachea and over the side of the neck, which was accompanied with chills and fever. These symptoms continued, but each day they developed greater intensity, causing a nervous irritability characteristic of exhaustion. This condition continued for ten days, without abatement. At this time I examined him for the first time. He was suffering continually from pain. The tongue was swollen and coated with a white mucous secretion. He could not protrude his tongue without causing intense pain. The tip of the tongue was apparently normal, but the posterior two thirds was very hard and hypertrophied, and occupied the whole buccal cavity. There was a thickening of a few submaxillary glands. Palpation revealed an intense induration on compression. There was no fluctuation noticeable. The case continued the same for three days, when on further palpation I discovered fluctuation. When fluctuation is well established, the important point is to determine where to make the incision to liberate the pus. I recommended that an incision be made below the tongue and a little to one side of the median line. This affords proper drainage, is not likely to become reinfected, and at the same time obviates the possibility of a tracheotomy. The bacteria present in this case were the staphylococcus and colon bacillus.

DISCUSSION

DR. V. A. CHAPMAN, Muskegon: I have had three cases of abscess of the tongue in the last eleven years, which taliy with the foregoing description. The first one went on for five or six days, with the patient suffering considerably, before I discovered what was the trouble. The next patient was a man of 76, in whom the symptoms were very grave. In this case an incision was made deep in the base of the tongue from the side, and underneath. The third case was recognized more easily, a free incision made before any fluctuation was felt, and the patient got better. In all of my cases the abscess followed tonsillitis.

DR. B. N. COLVER, Battle Creek: I had an interesting case of this sort. This patient, however, did not have a history of tonsillitis. There was a dysphagia, which led to the diagnosis of probable carcinoma of the tongue. The patient was asked to return, with a view to operation. Within four or five days the man returned with all the symptoms relieved, and with a history of a sudden appearance of pus in the mouth. Examination at that time established the fact that it had been a tongue abscess, which had spontaneously ruptured. I should like to make one suggestion in regard to the early diagnosis of these cases, namely, exploratory puncture with possible withdrawing of the pus, thus making the diagnosis two or three days earlier, and sparing the patient some pain in the days of waiting.

DR. DON M. CAMPBELL, Detroit: These cases seem to be associated with tonsillitis, but it is hard to see how the infection takes place from a peritonsillar infection. It would seem to me to be more likely an infection of the lingual tonsil that would cause such a condition as that reported.

DR. J. VERNON WHITE, Detroit: The literature, which I have looked up very exhaustively, was so obscure as to any causation that I have come to the conclusion that we know nothing about it. It is only a presumption on my part, but, excluding the possibility of other germs, I came to the conclusion that it must be the lymphatics that infected these structures. However, I think Dr. Campbell's point is a good one. But I really think it is very unusual for the deep structures at the base of the tongue to become involved. The time that elapsed between the abscess formation and the time at which the infection originally took place is astonishingly long.

From what information I could gather, the incisions that have been made heretofore in such cases have been through the dorsum of the tongue, by pulling it forward. In this case I thought the easiest way would be to use a trocar and cannula, raising the tongue, and going through anteriorly. In this way the larger vessels are not wounded, and I think it is the safest plan. In operating through the base of the tongue there is danger.

Vincent's Angina

DR. B. N. COLVER, Battle Creek: A large number of cases of Vincent's angina go undiagnosed. It is not a common disease. It may occur epidemically in children's hospitals, but outside of hospitals it is more frequent in young adults. It usually appears in children suffering from some form of malnutrition. It follows or complicates some cases of measles, scarlet fever, whooping cough and diphtheria. In adults, as in children, any lowering of general vital resistance is a predisposing factor. Insanitary environment, faulty personal hygiene and local lesions of the tonsils, gums or buccal mucosa invite the infection. Differential diagnosis must be made with syphilis, diphtheria, streptococcal angina, and other intense infections resulting in ulceration and pseudomembranous formation. In making the diagnosis, one must resort to the study of fresh smears, cultures and the Wassermann test. As regards prognosis, children fare less well than adults. Cases of mixed infection are the least favorable. Treatment should be supportive and eliminative. In hospitals, isolation should be enforced; in families, the usual prophylactic measures. During the past year we have seen seven cases. Two were of the extratonsillar type; one was associated with syphilis, and in another there was apparently a concurrent infection with the Klebs-Loeffler bacillus and the *Bacillus fusiformis* and spirillum. The other three cases showed the possibilities of contagion and the advantage of early diagnosis and prompt therapeutic action.

DISCUSSION

DR. L. J. GOUX, Detroit: I saw one case of Vincent's angina at the eleventh hour. It was thought probable that a tracheotomy in this particular case was the proper treatment. The patient was so much more comfortable by the time I arrived that the idea of any operative interference was dismissed. About three hours afterward I was called suddenly, but the patient died before my arrival. This was evidently an extremely virulent form, and the impression I got from this case was that a case of Vincent's angina in this stage should

not be left alone—that is, without expert help or assistance available.

Dr. B. N. Colver, Battle Creek: The involvement of the larynx in these cases is almost always fatal. I have read of cases in which intubation or tracheotomy has been performed, but in none has such a procedure met success.

Relation of Localized Headaches and Some Organic Eye Lesions to Intranasal Accessory Sinus Diseases

Dr. P. J. Livingstone, Detroit: Some disclaim that the close relation of the sinuses to the orbital cavity is the constant or almost constant cause for grave disease of the optic nerve, associated with disease of the accessory sinuses; but rather that final intra-ocular lesion, especially optic atrophy and retrobulbar neuritis, appears in these cases as a general vascular intoxication. I think, however, the consensus of opinion of those of largest experience is that these two serious conditions, associated with sinusitis and ethmoiditis, are dependent on pressure of exudate, either by direct exudate pressure or distended sinus walls, or local extension of infection or new growth. The important group, however, of ocular symptoms due to accessory sinus disease is made up of those cases of optic neuritis, neuroretinitis and thrombosis without external signs of orbital inflammation. The second class of cases comprises those persons coming frequently for the relief of frontal and orbital headache, by the way of refraction correction. One will not find pus in the anterior portion of the hiatus semilunaris to indicate antrum disease, or in the posterior portion to indicate posterior ethmoid disease, but one will find on inspection often a very narrow middle meatus, sometimes on account of a large, turgescent, intensely red middle turbinate, which of itself fills up the middle meatus, obstructing drainage. Sometimes a high septal deflection is to be found impinging on the middle turbinate, causing pressure swelling. Often these cases have much irritation of the so-called sensitive area, with sneezing, frequent head-colds and conjunctivitis of greater or less degree. I am convinced that many of the latter class deserve more careful examination for obstruction of the middle and superior meatus for the relief of trying frontal and orbital pains.

DISCUSSION

Dr. Don M. Campbell, Detroit: We perhaps have not a very clear idea of the various intranasal conditions which may produce symptom conditions about the eye. The pressure conditions in the intranasal cavity are very important. One class of cases is very trying, namely, those patients coming with asthenopic symptoms, with a low grade of astigmatism, and perhaps some imbalance of the ocular muscle, with heterophoria. In two or three weeks or a month after careful correction, these patients will come back with a different type or degree of phoria. In this class of cases it is almost impossible to fix the point of the axis of the cylinder correctly, permanently. I have seen quite a number of such cases that have been permanently relieved by relief of the intranasal pressure. Another interesting class of cases includes those due to various grades of sepsis in the nose.

Dr. W. R. Parker, Detroit: I have never seen a case of optic atrophy that I have been able to attribute to causes in the accessory sinuses. That it does occasionally occur there can be no doubt, but a coincident retrobulbar neuritis with polypi is not enough evidence to make it an etiologic factor.

Dr. R. B. Canfield, Ann Arbor: Although the optic nerve itself is in very intimate relationship in some skulls with the posterior ethmoid and sphenoid, we find in those skulls absolutely nothing in the nose to support any belief that a nasal condition may be important in establishing this eye disease. In such cases, when other factors have been eliminated, it has been too often the custom to do some surgical interference in the nose, the result of which is that healthy accessory sinuses have been opened, slightly turgescent middle turbinates have been removed, and other operative procedures have been indulged in, with the result that the patient has been more uncomfortable than before. I deprecate such operative interference unless a very definite reason can be seen for so doing. I think that cases of fundus disease dependent on accessory sinus disease are very rare.

Dr. J. E. Gleason, Detroit: I have had two cases of ruptured mucocele in the frontal sinus that produced all the symptoms of tumor of the orbit. In both these cases the roentgenogram failed to help in any way to show necrosis of the floor of the sinus, and there was also no evidence on the part of the middle meatus.

Dr. Albert E. Bulson, Jackson: My experience is that these cases of optic nerve trouble are due to other causes than the nasal reflex irritation present.

Dr. B. R. Shurly, Detroit: For many years I have been endeavoring to find these cases. It would seem, from the work of Dr. Loeb, that we must be missing a great many of them; but, in point of fact, they are extremely few.

Restoration of Functional Activity Following Surgical Treatment of Nasal Tract

Dr. O. W. White, Detroit: Malocclusion produces nasal disturbance. I have noticed cases in which mouth-breathing has developed with no malocclusion of the arches, or nasal obstructions apparently present. The mouth simply relaxed involuntarily, causing all the surrounding tissues to lose tone and their power to functionate. This condition may be corrected by forced nasal breathing during sleeping hours by the use of lip and chin bandages. Even young children can wear them with little inconvenience. Artificial stimulation of tissues involved by massage is always helpful, if skilfully applied.

DISCUSSION

Dr. R. B. Canfield, Ann Arbor: The laryngologist is perhaps considerably at fault because he has not cooperated with the orthodontist as he should. The laryngologist removes adenoids and tonsils, and is very prone to believe that that child has perfect nasal breathing. And if he sends the patient to an orthodontist for the correction of the occlusion, he feels that his duty has been done. It is a very simple thing to measure the nasal breathing and mouth breathing, and this should be done. We know that just as long as a child can breathe more easily through the mouth than through the nose, he will continue to do so. The laryngologist should see that the child breathes more easily through the nose than the mouth after operation.

Dr. V. A. Chapman, Muskegon: I agree with Dr. Canfield's position. These children do not get enough air normally, and consequently are forced to breathe through the mouth. In our public schools they give breathing exercises, which are incorrect, in that they teach the child to inhale through the nose and exhale through the mouth. I think that is radically wrong. Those breathing exercises should be conducted with the inhalation and exhalation both through the nose.

Dr. James M. De Kraker, Grand Rapids: The lack of development of the chest and the muscles of proper breathing in these cases makes it difficult for the child to keep the mouth closed. The thing to do, after the nasal and throat obstructions have been removed, is to try to develop the muscles of proper breathing. I have found that exercises with this end in view have accomplished a great deal. Of course, the closing of the mouth with some apparatus at night is sometimes necessary, because you lose at night what is gained in the daytime, but when you can establish breathing in such a way that it will become easier to breathe through the nose than through the mouth, the mouth-breathing is cured.

Scleral Trephine Operation for Detachment of the Retina: Results Obtained in Twelve Patients

Dr. Walter R. Parker, Detroit: I wish to report my results in cases of detachment of the retina treated by trephining the sclera, associated with incision in the choroid and retina. In three cases very good results were obtained. In two cases in which the vision was made worse, one had fluid vitreous, a portion of which was lost during an operation for cataract extraction, and the other was a case of high myopia. The field was made worse in three cases. In one the detachment was very extensive and the choroid was not incised. In another there were present contraction bands in the retina, the choroid was detached, and the patient had a four-plus Wassermann, with total detachment of the other

eye. The third was a case of high myopia. The procedure seems to be unattended by any danger, either of impairing the integrity of the globe, or, in uncomplicated cases, of increasing the extent of the detachment. On theoretical grounds, at least, it would seem desirable to drain off the subretinal fluid without injuring the retina. In the cases reported, however, the best results were obtained when the escape of the subretinal fluid was followed by a discharge of a small amount of vitreous.

Gas Bacillus Infections

DR. ANGUS MCLEAN, Detroit: This infection in private practice is somewhat different from what it is in military surgery, in that it is unexpected. Cases are rare, and usually the infection is not anticipated until there is some evidence by the air in the tissue and its subsequent crackling. In our experience the Roentgen ray has been able in some cases to show the line of gas before it could be detected by palpation. In our series of cases the results after amputation of the limb have not been any better than the open method. We believe in the excision of all necrotic tissue and the injection above the injury by separate puncture of hydrogen peroxid or oxygen itself. Gas bacillus infection is not always confined to injured tissue. It has been seen in the puerperal cases, and always fatal. Clinically, it is not possible for us to differentiate between the malignant edema and the true gas bacillus infection. The treatment, however, is about the same. We strongly recommend the use of the Roentgen ray in suspected cases.

Ureteral Obstruction: Report of an Unusual Case

DR. FRANK C. WITTER, Petoskey: My patient, 19 years of age, weighing about 95 pounds, suffered with intermittent attacks of pain in the right upper abdomen, accompanied by a visible rounded tumor about the size of an orange, that would disappear, with cessation of the pain. Examination of the urine and functional tests were negative, as were also roentgenograms of both kidneys. Collargol injections were not deemed advisable. She presented some symptoms of chronic appendicitis with general enteroptosis. There was no evidence of stone in pelvis or ureter. Three anomalous vessels crossed the ureter in close proximity to each other, causing the obstruction when the exaggerated visceroptosis allowed the ureter to be drawn tightly across the vessels. Ligation and section of these vessels removed the obstructing factor. No return of the trouble has recurred during the year which has elapsed since the operation.

Osteoma of Frontal Sinus, with Report of Case

DR. V. A. CHAPMAN, Muskegon: A woman, aged 52, consulted me, May 14, 1908. She stated that she had been having headaches for three years, since having the grip. Some enlargement of the right supra-orbital ridge region was apparently bearing down on the right eye. She had headache almost constantly, and sometimes it was very severe. A large, irregular, nodulated, ivory bone tumor was removed from the right frontal sinus. The tumor rested in the frontal sinus, and by pressure erosion had caused a small perforation of the anterior bony wall. There was considerable milky white, thickened mucus about it, and it was this which caused the fluctuation on palpation. The tumor extended from near the external angular process of the frontal bone to nearly an inch past the median line, thus extending over into the left frontal sinus. A large projection of the tumor had pushed down into the ethmoid region beneath the nasal bones. The tumor had arisen by a short pedicle springing apparently from the diploe of the skull above the frontal sinus. There is a thin layer of bone compressed in a fissure between the left projection of the tumor and its main body. This is the portion that extended over into the left frontal sinus.

Effect of Loud Noises on the Organ of Corti

DR. E. J. BERNSTEIN, Kalamazoo: Man is losing many of his delicate senses. Environmental changes no longer necessitate the strenuous exercise of these functions for the maintenance of life. Continued loud noises and explosive noises result in great destruction to the organ of Corti primarily, and secondarily to the nerves of hearing. In many cases this destruction is permanent and irremediable. In some of the explosion experiments, however, especially when they have been repeated, it has been found that Nature restores the function again after a period of rest.

Report of the Committee on Vaccine and Serum Therapy in Diseases of the Eye, Ear, Nose and Throat

DR. WILFRID HAUGHEY, Battle Creek: Circular letters were sent to thirty men throughout the state asking for results of bacterin and serum therapy. It was late in the year, and a sufficient number of replies to justify final conclusions were not received. All who have reported seem to feel that they have secured desired results. The majority use mostly autogenous vaccines. The reports for autogenous vaccines show a little better results, about 4 per cent., than those for stock vaccines. I have used both stock and autogenous vaccines, with the advantage in favor of the latter. In most cases I have used the stock vaccines while having autogenous vaccines prepared. During the time of this investigation I have used autogenous vaccines in fourteen cases, with eleven clinical cures and three improved. I have used stock vaccines in fifteen cases, with twelve clinical cures, one improved, and two not improved. I have used vaccines in otitis media, subacute and chronic, mastoiditis, ethmoiditis, frontal sinusitis, rhinitis, pharyngitis, tonsillitis, blepharitis and furunculosis. One failure was in episcleritis and one in a chronic otitis media. Three of the men who answered the circular letter believe better results are obtained when the infection is staphylococcic, and all state that their experience gives them faith that vaccines have distinct therapeutic value.

DISCUSSION

DR. ANNA O'DELL, Detroit: I have had a good deal of success in the treatment of chronic arthritis following acute attacks with autogenous vaccines.

DR. DON M. CAMPBELL, Detroit: In gonorrheal iridocyclitis in the acute stage, antigonococcic serum is the logical remedy. Diphtheritic conjunctivitis also is best treated by a serum. There is one place in otology in which a suitable serum is of the greatest value. When the surgeon has done all he can do, surgical drainage has been established, all diseased tissues removed, perhaps the sinus opened and jugular vein tied, and still the recuperative powers of the body seem inefficient in starting the patient on to recovery—when a negative phase of great persistency has been established, and the protective processes of the body, overstimulated in the fight with infection, lie dormant, then the right serums will frequently supply temporarily what the body cells cannot produce. The patient is tided over a crisis, and when he has once passed it, the way is opened to recovery.

DR. L. J. GOUX, Detroit: The cases in which I have used vaccines covered about the same classification as that read by Dr. Haughey. In three cases I had autogenous vaccines made. In one case, a child with arthritis, the vaccine treatment was the only one used, with very good result. In some cases of children with glandular nodules in the neck, when it has been difficult to say just what was the cause, I have used the mixed vaccines, and have had very good success with the use of the stock vaccines.

DR. JOHN G. HUIZINGA, Grand Rapids: I have been interested more particularly in the application of vaccine treatment in case of atrophic rhinitis. I have treated eight or nine cases in the last year along this line, some with indifferent results, but in three I secured very satisfactory results.

DR. E. W. E. PATERSON: I have had four cases of laryngitis, one with almost complete aphonia, in which I have used vaccines with good results. I favor autogenous vaccines, but would not discourage the use of stock vaccines when we are not prepared to make the autogenous vaccines.

Modern Diagnostic Methods in the Surgery of the Kidney

DR. DANIEL N. EISENDRATH, Chicago: In cases of persistent or recurrent fever in which no other focus of infection can be found, the kidney should always be thought of as the seat of trouble. It is a common occurrence to see cases of the most severe renal infection without any signs pointing to the

urinary tract. The bladder should be examined and the ureters catheterized when the urine contains pus, or there are symptoms of cystitis, and local treatment does not help. I make it a routine practice to have roentgenograms made in every case of infection of the upper urinary tract. Not infrequently a calculus will be found as the source of trouble.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

September, X, No. 3, pp. 153-228

1 *Protein Need of Infants. B. R. Hoobler, Detroit.
2 *Studies in Infant Metabolism and Nutrition, Composition and Preparation of Protein Milk (Eiweissmilch). A. M. Courtney and H. L. Fales, New York.
3 *Diagnostic Significance of D'Espine's Sign. H. F. Stoll, Hartford, Conn.
4 Longitudinal Sinus as Place of Preference in Infancy for Intravenous Aspirations and Injections, Including Transfusion. H. F. Helmholz, Chicago.
5 *Studies on Epidemic Abortion Reactions in Children. J. P. Sedgwick and W. P. Larson, Minneapolis.
6 *Results of Von Pirquet Reactions. W. R. Ramsey, Minneapolis.
7 Does Bacillus Abortus (Bang) Infect Man? M. Nicoll, Jr., and J. S. Pratt, New York.
8 Quantitative Determinations of Nonprotein Nitrogen in Blood of Newborn. F. W. Schlutz and C. J. V. Pettibone, Minneapolis.

1. **Protein Need of Infants.**—Hoobler has followed the method of feeding low protein for the past three years and it is his belief that children do better, since the method allows the giving of much larger quantities of carbohydrates and fats without overfeeding the child, and readily permits the use of top, whole, skimmed or buttermilk formulas according to the clinical indications of each individual infant. In cases in which large quantities of milk are fed it is necessary to feed relatively low proportions of carbohydrates if one attempts at all to approximate the caloric need. Protein when fed in excess of need causes an increase in the energy metabolism. The increase is in proportion to the amount of protein oxidized, and not to the amount of protein added to the body. Protein when fed in excess does not reduce the amount of fat and carbohydrate metabolized, but the fat and carbohydrate need remains fairly constant, and unless the minimal need of fat and carbohydrate is supplied in the food the organism will draw on its stored-up fat and glycogen to supply the difference between the amount fed and that which is metabolized.

When protein is fed greatly above its need it tends to produce a condition of stupor which assumes serious proportions if such feeding is continued. This stupor gradually disappears as protein is reduced in the diet. This condition is best considered as a protein food injury and constitutes a clinical entity as definite in its symptomatology as that which arises from too prolonged use of a rich carbohydrate diet. The protein need of the growing infant is supplied when 7 per cent. of its caloric need is furnished in protein calories. A general rule which will approximate the protein need is to furnish three-quarter ounce of whole, skimmed or top milk, per pound weight of child, or if the metric system is applied, one twentieth of the body weight in skimmed, whole or top milk. To keep the protein calories in any formula approximately 7 per cent. of the total, Hoobler says, the following rule regarding the addition of sugar or cereal gruels or both may be followed: for each ounce of whole milk add one-third ounce of sugar or cereal. For each ounce of top 16 ounces (7 per cent.) milk add one-fourth ounce of sugar or cereal. For each ounce of top 10 ounces (10 per cent.) milk add one-sixth ounce of sugar or cereal.

2. **Composition and Preparation of Protein Milk.**—Courtney and Fales found that the chief variation in the composition of protein milk is in the fat. Uniformity is secured not only by the use of ingredients of uniform composition, but, what is much more important, by the exercise of great care in the handling of the curd. It should be suspended for a short time or allowed to rest for fifteen minutes on the sieve before manipulation to drain off the whey; care in pressing the curd through the sieve is also essential. Since the value of protein milk is in large measure due to its low sugar content, the washing of the curd with water is a useful means of removing an additional amount of sugar. When properly prepared the amount of protein in protein milk is quite constant and is usually somewhat greater than that of the original milk; it is nearly all casein. If the buttermilk is added while the curd is being rubbed through the sieve, it is unnecessary to repeat this part of the process. In the ash of protein milk the amount of calcium and phosphorus is slightly greater, that of sodium, potassium and chlorin is less than in whole milk, being reduced to a little more than one half the proportion present.

The authors caution that certain things are to be avoided in preparing protein milk: (1) stirring too much or too long while adding the rennin; (2) leaving the milk during curd formation in a cold place; (3) any unnecessary handling of the curd in straining off the whey or in washing or in pressing through the sieve; (4) subsequently heating beyond that required in feeding. The composition of protein milk obtained by Courtney and Fales from analyses made by them is: fat, 3.0 to 3.50 per cent.; sugar, 1.8 to 2.0; protein, 3.60 to 4.00; ash, 0.65.

3. **D'Espine's Sign.**—Stoll summarizes his study as follows: whispered bronchophony in the interscapular space (D'Espine's sign) is indicative of a pathologic process at the hilum of the lung. This may be due to enlarged glands the result of malignancy, leukemia, Hodgkin's disease, syphilis or any infectious disease of the lungs. He has also seen it several times in aortic aneurysm. Its presence in the delicate child is exceedingly suggestive of tuberculous involvement of the tracheobronchial glands. Occasionally enlargement of the bronchial glands is present when there is no change in the whispered voice. In old people in whom the usual physical signs of pulmonary tuberculosis are sometimes exceedingly difficult to elicit, the character of the whispered voice in the interscapular space should always be ascertained, as a well-marked D'Espine sign speaks for tuberculosis rather than for chronic bronchitis or emphysema. The diagnosis of clinical tuberculosis, however, Stoll says, rests on the sum total of physical signs and symptoms, not on one isolated sign.

5. **Epidemic Abortion Reactions in Children.**—In a series of newborn children who had as yet received no cow's milk the blood was collected by the authors from the cord at birth, or from the child's heel during the first few days after birth, and immediately examined. In all, forty-two such newborn children were examined, without a single positive reaction. Eighteen of the forty-two children were girls. Three of the infants died and postmortem examinations showed: (1) bronchopneumonia with cardiac dilatation; (2) congenital syphilis and bronchopneumonia. This child gave a positive Wassermann and a negative abortus reaction; (3) bronchopneumonia and congenital hydronephrosis. The case of one baby not included in the above series, as he received other feeding than breast milk, is exceptionally interesting. His blood gave a positive reaction using the *Bacillus abortus* as antigen. He was taken from the breast on the seventh day after birth as he had a high fever, the cause of which was not ascertained. He was then fed on artificial food containing cow's milk and on the twenty-first day the reaction was positive. This is the earliest positive bacillus abortion reaction observed (by the authors) and it is especially to be noted that the reaction was found two weeks after removal from the breast. The child recovered.

Another baby gave a positive reaction and had an enlarged spleen. It was 19 months old, with fair nutrition, and had been on a general diet. The postmortem examination showed empyema, abscess of the lung, suppurative coxitis and adenitis. As this reaction is carried out in the same manner as the Wassermann test except that the *Bacillus abortus* is used as an antigen, the fact that the blood of five children with

congenital syphilis gave negative reactions with this test should be recorded. As bone lesions suggestive of rickets have been produced in laboratory animals by injection of the *Bacillus abortus,* the fact that several marked cases of rickets gave negative reactions is of interest. Other conditions in which negative reactions were found were eczema, hydrocephalus, nephritis, atrophy, varicella, measles, diphtheria, bronchopneumonia, chorea, enteritis, anemia, imbecility and chronic pulmonary tuberculosis.

6. **Results of Von Pirquet Reactions.**—The tests recorded by Ramsey were made with old tuberculin and bovine tuberculin on the children of the state hospital for crippled and deformed children at St. Paul, together with the complement reactions made on the blood of the same children with the *Bacillus abortus* as antigen. There were in all 116 children examined, 58 boys and 58 girls. Von Pirquet reactions were made on all cases with old tuberculin and bovine tuberculin. Whenever a positive reaction was present for one, it was also present for the other. There were no exceptions to this rule. Of the 58 boys, 20 reacted positive and 38 negative. Of the 58 girls, 22 reacted positive and 36 negative—a total of 42 positives and 74 negatives. In 18 out of 20 positive reactions in boys, a clinical diagnosis of tuberculosis of the bone had been made. In the other two positive cases, one suffered from clubfoot and the other from infantile paralysis. In 15 out of the 22 positive von Pirquet reactions in girls, the clinical diagnosis was tuberculosis of the bones or joints. Of the other 7 cases, 1 had clubfoot, 2 dislocated hips, 2 rickets, and 2 curvature of the spine. Seventeen boys and 11 girls gave a negative von Pirquet when the clinical diagnosis was tuberculosis of the bone. Of the total number of 58 diagnosed clinically as tuberculosis, only 28 gave positive von Pirquet reactions.

American Journal of Physiology, Baltimore

September, XXXVIII, No. 3, pp. 313-413

9 Analysis of Certain Photic Reactions, with Reference to Weber-Fechner Law. Reactions of Blowfly Larva to Opposed Beams of Light. B. M. Patten, Boston.
10 *Influence of Extract of Posterior Lobe of Hypophysis on Secretion of Saliva. G. O. Solem and P. A. Lommen, Vermillion, S. D.
11 *Influence of Vagus Nerve on Gaseous Metabolism of Kidney. R. G. Pearce and E. P. Carter, Boston.
12 Changes in Iodin Content of Thyroid Following Changes in Blood Flow Through Gland. C. F. Watts, Chicago.
13 Photo-Electric Currents in Eye of Fish. E. C. Day, Syracuse, N. Y.
14 Comparative Rate at which Fluorescent and Nonfluorescent Bacteria are Killed by Exposure to Ultraviolet. W. E. Burge and A. J. Neill, Chicago.
15 Effects of Change in Auricular Tone and Amplitude of Auricular Systole on Ventricular Output. R Gesell, Washington, D. C.

10. **Influence of Hypophysis on Secretion of Saliva.**—In the experiments conducted by Solem and Lommen pituitary extract invariably caused a diminution in flow of blood and saliva from the submaxillary gland, as shown from results obtained from thirty dogs and one cat. The decrease in flow of saliva was greater than the accompanying decrease in blood flow. The slowing of blood was less marked if the injection was made during faradization of the chorda tympani than during pilocarpin stimulation, while the slowing of saliva was the same. Pilocarpin was relatively ineffective even when injected seven or eight minutes after pituitary extract. While epinephrin normally caused a vasodilatation of the gland and increase in salivary secretion, epinephrin during the action of pituitary extract had the normal effect on the blood flow but caused a diminution in salivary flow, probably due to the greater quantity of pituitary extract coming in contact with the gland. When pituitary extract was injected during the action of chrysotoxin, the decrease in the flow of saliva set in before the vasoconstriction in the gland occurred. In five out of seven cases, the flow of saliva slowed while there was active vasodilatation in the gland. From these results the authors conclude that the decrease in flow of saliva following the injection of pituitary extract is due to inhibition of the action of the secretory nerves to the submaxillary gland, but also due in part to the accompanying vasoconstriction, which is caused by direct action on the muscles of the arterioles or the effect on the peripheral endings of the vasomotor nerves, but more probably to the effect on both. The decrease in output of blood from the gland may be also due to the decreased activity of the gland.

11. **Influence of Vagus on Gaseous Exchange of Kidney.**—Pearce and Carter found that the oxygen consumption of the left kidney, before and during the stimulation of the vagus below the level of the heart and after section of the left splanchnic nerve, remains unchanged. This offers evidence against the supposed existence of renal secretory fibers in the vagus nerve.

American Journal of Tropical Disease and Preventive Medicine, New Orleans

August, III, No. 2, pp. 65-118

16 Results of Blood Cultures Bearing on Etiology of Filarial Diseases; Description of New Parasitic Bacillus Believed to be Causative Agent of Filariasis. B. H. Dutcher and P. L. Whitmarsh, U. S. Army.
17 Exclusion of Tropical Diseases by Means of Immigration Inspections. W. C. Billings, Angel Island, Calif.
18 Present Status of Our Knowledge of Leprosy. G. W. McCoy, Hawaii.

Annals of Surgery, Philadelphia

September, LXII, No. 3, pp. 257-384

19 Phenomena of Acidosis and Its Dominating Influence in Surgery. G. W. Crile, Cleveland.
20 *Literature of Fractures. T. W. Huntington, San Francisco.
21 End Results of Bone Fractures. W. L. Estes.
22 Autoplastic Repair of Fractures of Neck of Femur. C. Davison, Chicago.
23 Extension and Reduction of Transverse or Serrated Fractures of Femur. H. Gifford, Syracuse, N. Y.
24 Notes on Fractures. W. J. Ryan, Philadelphia.
25 Fractures of Sesamoid Bones of Thumb. P. G. Skillern, Jr., Philadelphia.
26 Arthroplasty of Elbow; Report of Five Cases. A. P. C. Ashhurst, Philadelphia.
27 Empyema; Exploration of Thorax with Primary Mobilization of Lung. H. Lilienthal, New York.
28 *Banti's Symptom Complex with Relation to Splenectomy. J. B. Blake, Boston.
29 Chronic Intestinal Stasis as Produced by Obstruction at Ileocecal Region and at Hepatic Flexure. R. B. Williams, Norfolk, Va.
30 Diphtherial and Pseudodiphtherial Primary Cutaneous Infection. A. E. Billings, Philadelphia.

20. **Literature of Fractures.**—A comprehensive survey of the literature of fractures, covering the past ten years, leads Huntington to the following conclusions: The public demands, and is entitled to, better results from fracture treatment than have hitherto been obtained. From 80 to 90 per cent. of long-bone fractures can be successfully treated by the closed method. Conservative treatment exacts a high degree of skill and close attention to details. Resort to the open method is of too frequent occurrence. The least possible amount of foreign fixation material should be the rule. Steel plates, in the treatment of fractures, are a menace from the the standpoint of permanency. The bone implant is the fixation material of choice. Intramedullary splints are inferior to the autogenous bone implant. Fixation material of whatever type is not to be relied on for maintenance of alignment. Cases of nonunion and faulty union which come to secondary operation indicate indifferent methods of primary treatment. Operative treatment of compound fractures should be withheld until the external wound healing is perfected. Many joint fractures can only be treated successfully by the open method. Normal contour and good function are closely related in end-results of all fractures.

28. **Banti's Symptom Complex Splenectomy.**—Blake advises that splenectomy in splenic anemia or Banti's symptom complex should be recommended under the following conditions: First, in adults, when the diagnosis is agreed on by a good physician and a competent surgeon. Second, when the condition of the patient is sufficiently good to withstand what may be a serious operation; or when a poor condition can be sufficiently improved by one or more previous transfusions. Third, in children, only after a thorough trial of all possible medical methods of treatment, including fresh air, sunshine, careful nursing, liberal and appropriate diet, as well as the judicious exhibition of drugs. In a large majority of cases, a high white count, or a considerable recurring or continuous

fever are contraindications. In children also the agreement of physician and surgeon is an essential preoperative requirement.

Arkansas Medical Society Journal, Little Rock

August, XII, No. 3, pp. 61-89

31 Importance of Legitimate Scientific Sexual Union in Development of Character and Production of Contentment and Happiness. C. S. Pettus, Little Rock.
32 Ectopic Gestation. W. A. Snodgrass, Little Rock.
33 Hydrotherapy. C. T. Drennen, Hot Springs.
34 Report of Clinic for Diseases of Eye, Medical Department, University of Arkansas, 1914 to 1915. F. Vinsonhaler, Little Rock.
35 Relation of Physician to Public Health and His Obligations. J. T. Clegg, Siloam Springs.
36 What Tuberculosis Cases Are Unsuitable for Sanatorium Treatment. F. P. Baker, Booneville.

Boston Medical and Surgical Journal

September 9, CLXXIII, No. 11, pp. 375-411

37 *Late Results of Operations for Correction of Foot Deformities Resulting from Poliomyelitis. H. W. Marshall and R. B. Osgood, Boston.
38 Carnivorous and Herbivorous Types in Man; Possibility and Utility of Their Recognition. J. Bryant, Boston.
39 *Pneumococcic Arthritis; Report of Six Cases. J. W. Sever, Boston.

37. **Operations for Correction of Foot Deformities.**—The varieties of surgical procedures employed by Marshall and Osgood in twenty-six cases with failures in only three cases were the following: Five cases of Achilles tendon lengthening or tenotomy. Five cases of plantar fasciotomy. Seven cases of tibialis anticus tendon transplantation for varus deformity. One case of tibialis posticus tendon transplantation for previously overcorrected valgus deformity. One case of tibialis posticus tendon transplantation into a weakened Achilles tendon. Five cases of peroneal tendon transplantation for valgus deformity. Five cases of peroneal tendon transplantation into weakened Achilles tendon. Six cases of extensor longus hallucis tendon transplantation laterally into head of first metatarsal bone for hyperextension and flexion of the great toe. Two cases of arthrodesis of the first phalangeal joint of the great toe associated with transplantation of extensor longus hallucis tendon. Nine cases of arthrodesis of smaller joints in connection with tendon transplantation, namely, calcaneo-cuboid joint, five instances; astragaloscaphoid joint, four instances. Five cases of osteotomy, namely, os calcis, two instances; astragalus, two instances, external cuneiform bone, one instance. One case was of insertion of a silk ligament from the tibia to the tarsus for valgus deformity.

There were four examples of calcaneus deformity, five of marked equinus, ten of decided varus, and twelve of valgus defects. Four calcaneovalgus deformities ended as follows: (1) a poor functional result from increased instability of the foot following transverse osteotomy of the os calcis and transplantation of peroneal tendons into the Achilles tendon. There was partial correction, however, of the anatomic defect; (2) slight functional improvement from an astragalectomy, but the patient is obliged to wear a long leg brace because of knee weakness; (3) a fair degree of improvement after an astragalectomy. The patient wears now only a leather ankle support; (4) an excellent result with nearly complete correction of deformity; good stability, and no braces needed after astragalectomy. Seven astragalectomies showed useful, stable feet in four cases, slight instability in two cases and serious instability in one instance. Arthrodeses of the ankle joint yielded solid useful ankles in good position three times. One was stable and useful with a few degrees of motion in the joint. Two relapsed into their former bad conditions and one of the two was followed by a successful astragalectomy. Five Achilles tendon lengthenings and tenotomies showed two perfect results, and three improvements from partial corrections; and no bad terminations. Five Achilles tendon strengthenings exhibited partial restorations of strength in four of the five instances. The fifth was no worse than in its original state.

39. **Pneumococcus Arthritis.**—The six cases cited by Sever represent various methods of infection by the pneumococcus, namely: From the mouth by way of a tooth infection. 2. By trauma without previous known pneumonia. 3. By a previous pneumonia followed by an otitis media. 4. By trauma followed by pneumonia and involvement of the joint in nine days. 5. Following several attacks of bronchopneumonia and immediately after an acute attack of otitis media. 6. Involvement of joint two weeks after an acute attack of lobar pneumonia. This case represents the only typical one. The fluid in all these cases was rather thin and greenish yellow when the joint was first opened, but as it continued to drain at the time of the operation the heavier pus escaped. It was during this period that the fibrin flakes were expressed. The mortality was three out of six cases, 50 per cent. The joints, so far as he has been able to determine, are practically normal in the cases Sever has been able to follow.

California State Journal of Medicine, San Francisco

August, XIII, No. 8, pp. 293-332

40 Some Typical Experiences with Syphilitic Patients. V. G. Vecki, San Francisco.
41 Angina Pectoris. W. W. Kerr, San Francisco.
42 Dermatitis Caused by Primula Poisoning. D. W. Montgomery and G. D. Culver, San Francisco.
43 Early Diagnosis of Pulmonary Tuberculosis. R. A. Peers, Colfax.
44 Occurrence of Heart Block in Acute Diseases. H. W. Allen, San Francisco.
45 Pitfalls in Diagnosis of Renal Lithiasis. M. Krotoszyner, San Francisco.
46 Pediatric Situation in Europe and Effect of War on Same. J. A. Colliver, Los Angeles.
47 Tuberculosis of Female Genitals. J. W. James, Sacramento.
48 Personal Experience with Cholecystectomy. L. W. Allen, San Francisco.

Journal-Lancet, Minneapolis

September 1, XXXV, No. 17, pp. 463-494

49 Clinical Significance of Blood Pressure. O. N. Meland, Dawson.
50 Reflexes in Health and in Organic and Functional Diseases. O. Sohlberg, Jr., St. Paul.
51 Value of Orthodiagraph. L. M. Field, Aberdeen, S. D.
52 *Estimation of Eosinophils of Blood in Diagnosis of Lung Conditions. T. A. Peppard, Minneapolis.
53 Recovery from Paralysis Following Decompression of Spinal Cord. E. H. Beckman, Rochester.

52. **Eosinophils of Blood in Diagnosis of Lung Conditions.**—It is Peppard's purpose to show that, in making a differential diagnosis between certain pulmonary diseases, namely, tuberculosis, chronic bronchitis, emphysema, bronchial asthma, asthmatic bronchitis, one may be aided by making a differential leukocyte count to determine the percentage of eosinophils. In practically every list is mentioned, as a cause of eosinophilia, bronchial asthma; and to this Peppard adds an associated condition, "asthmatic bronchitis," that is, a recurring bronchitis of the smaller tubes not necessarily associated with true asthmatic attacks. Given a doubtful case, with other doubtful tests, a low count of the eosinophils would be evidence on the side of the tuberculous condition. On the other hand, a count of from 4 to 6 per cent. or more would be testimony against the lesion being caused by an active tuberculous process.

Journal of Outdoor Life, New York

September, XII, No. 9, pp. 277-306

54 *Sunlight Treatment of Tuberculosis. G. B. Webb, Colorado Springs, Colo.
55 Foods and Their Preparation. L. A. Cauble, New York.
56 Cleansing Clinical Thermometers. C. Ludwig, Cleveland.
57 Red Cross Seals for 1915. C. M. De Forest.

54. **Sunlight Treatment of Tuberculosis.**—Webb has carried out Rollier's method of treatment for three years at Colorado Springs; but, while finding it to be of much benefit to patients with either bone, joint, or glandular tuberculosis (surgical tuberculosis), as well as to those patients with pulmonary tuberculosis, he is not yet able to share the same high degree of optimism for the method which is held by Rollier. He feels it wise to warn patients against the careless employment of sun baths without proper medical control, as harm can be done by them. The head should be protected especially at first by a light hat, and in the case of adults Rollier sometimes advises the covering of the heart with a wet compress.

Laryngoscope, St. Louis

August, XXV, No. 8, pp. 539-602

58 Leukoplakia Buccalis et Lingualis. R. Levy, Denver.
59 Labyrinth Operation; Frequency with which it is Demanded as Determined by Hospital and Private Statistics, Extending Over Period Ten Years. E. B. Dench, New York.
60 Cancer of Larynx Complicated with Laryngocele. H. Smith, New York.
61 Somnoform as Anesthetic. T. H. Halsted, Syracuse, N. Y.
62 Bárány's Cerebellar Localization. L. K. Guggenheim, St. Louis.
63 Two Cases of Foreign Bodies in Bronchi Complicated by General Emphysema. H. L. Lynah, New York.
64 Foreign Body in Left Bronchus. H. L. Lynah, New York.
65 Case of Chronic Frontal Sinusitis, Sphenoiditis, Influenzal Meningitis, Death, Necropsy. C. J. Imperatori, New York.
66 Hysterical Mutism Caused by Shell Explosion. M. Natier, Paris.
67 Improved Tonsillar Hemostat. J. A. Hagemann, Pittsburgh.
68 Anterior Commissure Laryngoscope. C. Jackson, Pittsburgh.

Medical Record, New York

September 11, LXXXVIII, No. 11, pp. 425-466

69 Blood Transfusion; Indications and Technic. G. I. Miller, Brooklyn.
70 Prophylaxis in Dementia Praecox and Other Psychoses. J. R. Ernst, Washington, D. C.
71 Pneumococcic Infection of Throat. W. C. Sandy, Columbia, S. C., and C. G. McGaffin, Kings Park.
72 *Relation of Landry's Paralysis to Poliomyelitis. M. Neustaedter, New York.
73 Medical Colleges Responsible for Many Spirit and Drug Addicts. T. D. Crothers, Hartford, Conn.
74 Prevention and Treatment of Deformities in Anterior Poliomyelitis. J. Grossman, New York.
75 Eczema and Bulkley Rice Diet. F. Tweddell, Summit, N. J.
76 *Simple Treatment for Ivy Poisoning. J. E. Lane, New Haven, Conn.
77 *New Way of Staining Cells in Cerebrospinal Fluid. B. Lemchen, Dunning, Ill.

72. **Relation of Landry's Paralysis to Poliomyelitis.**—Neustaedter believes that Landry's paralysis is a clinical entity with varying pathologic changes. These may be primarily in the peripheral nerves, and confined to them, or they may be myelitic only, and again neurocellular. Poliomyelitis, Neustaedter says, is a pathologic entity with varying symptom complexes. There may be flaccid paralyses, with muscle atrophy, or spastic paralysis, or cranial nerve involvement, also ataxias and tremors or mixed types.

76. **Treatment for Ivy Poisoning.**—The treatment employed by Lane is this: The affected areas are loosely covered with two or three thicknesses of gauze or cheesecloth, which is kept continually moist with a solution of boric acid, the strength of which is unimportant. The gauze is frequently changed in any case, but the frequency depends somewhat on whether there is much oozing from the blebs. The larger blebs are opened but it is unnecessary to touch the smaller ones. If the gauze is used more than once it is rinsed and boiled before it is reapplied. This is usually the whole treatment, but in cases in which the itching is intense some additional relief may be obtained from gentle sponging with a weak solution of alcohol when the gauze is changed. A simple ointment may be used for protection after healing has begun and the skin has become fairly smooth. The advantage of this treatment, in addition to those already mentioned, is that no trauma is inflicted and that if powder settles on the skin from evaporation of the liquid it is easily dissolved at the next application by using a more dilute solution.

77. **Staining Cells in Cerebrospinal Fluid.**—Lemchen takes benzidin and makes up a 2 per cent. solution in glacial acetic acid, which he calls Solution 1. The other solution is hydrogen peroxid. When ready to count the cells, take a small test-tube and put in Solution 1 with an equal amount of Solution 2, mixing the two together. Take a pipet and draw up the stain to 0.5 and then draw the spinal fluid to the 11 mark. The two are mixed together and then put on the counting chamber. Lemchen uses the Fuchs-Rosenthal. The red blood cells are stained blue and the polymorphous cells are stained a light yellow, while the nucleus is visible by having blue granules in it. Parts of the periphery are stained blue. In the lymphocytes, the periphery is stained, looking like a dark blue ring. The middle of the cells is not stained except in places there are blue granules. In the plasma cells, the periphery is stained dark blue, almost black and the middle of the cell is all clear—taking no stain at all.

Missouri State Medical Association Journal, St. Louis

August, XII, No. 8, pp. 353-398

78 Treatment of Syphilis. W. J. Wills, Springfield.
79 *Infantile Syphilis and Neosalvarsan. F. C. Neff, Kansas City.
80 Alternating Pulse. A. E. Taussig, St. Louis.
81 Case of Heart Block Illustrating Mode of Action of Vagus Nerve on Heart. G. C. Robinson, St. Louis.
82 Rational Obstetrics. G. A. Aiken, Malta Bend.
83 Some Modern Ideas in Dermatology. J. Grindon, St. Louis.
84 Heredity. J. L. Statler, Granger.
85 Autogenous Serum Therapy in Certain Dermatoses. R. S. Weiss, St. Louis.
86 Panama before Advent of Dr. Gorgas. J. E. Jennings, St. Louis.
87 Case of Erythema Multiforme with Conjunctival Involvement. M. L. C. Barnett, St. Louis.
88 Some Convenient Stereoscopic Figures. W. E. Shahan, St. Louis.

79. **Infantile Syphilis and Neosalvarsan.**—Thirteen infants that gave a pronounced Wassermann reaction, that had syphilitic symptoms or were not thriving well, were given neosalvarsan by Neff at two weeks' intervals as nearly as possible. All cases received the injection intravenously, usually in a vein of the scalp, otherwise in the external jugular. No untoward symptoms appeared from intravenous injection. Thirty-three intravenous injections were made. In some instances the solution leaked out past the needle. In two cases the resulting infiltration left an indurated mass for two or three weeks, but no sloughing or suppuration occurred. Neff used the remedy dissolved in about 5 c.c. of freshly distilled water, injected slowly with a Lüer syringe, and a three-quarter inch, No. 20 to 22-gauge needle with short level.

A small area of the scalp is shaved, cleansed, and alcohol and iodin applied. In most instances Neff followed Holt's dosage of 0.075 gm. under 6 months of age, 0.15 over that age, although larger doses have been used at times without injury. After observing the results from one or two doses of neosalvarsan, mercury was then begun and continued with subsequent injections of neosalvarsan when possible. The results show a rapid disappearance of cutaneous lesions, more rapid than with any other drug. One dose has usually been sufficient for this. The rhinitis and osseous lesions disappeared after two or three doses. In most of the cases the infant became as well in appearance as any infant similarly nourished. It is difficult to make a hospital syphilitic child gain on artificial food. Breast milk is almost a necessity. Three infants died, a mortality of 23 per cent. In the few instances in which repeated Wassermanns were made, little effect was noticed on the subsequent reaction.

New York Medical Journal

September 11, CII, No. 11, pp. 541-588

89 Effects of Tobacco and Alcohol on Cardiovascular System. R. N. Willson, Philadelphia.
90 Our Present Knowledge of Tuberculosis. M. E. Lapham, Highlands, N. C.
91 Chondrodystrophy; Report of Case. R. D. Moffett, New York.
92 Intra-Ocular Muscles in Tabes Dorsalis. L. C. Peter, Philadelphia.
93 Endameba Buccalis and Alveolodental Pyorrhea. G. C. Brunelle, New York, and G. Ginsberg, Hoboken, N. J.
94 Blepharochalasis. N. Jenison, New York.
95 Scarlet Fever. J. R. Graham, New York.
96 Posture and Arm Movements in Deep Breathing. J. F. Rogers, New Haven, Conn.
97 *Treatment of Paresis; Intralumbar Injections of Neosalvarsan. C. F. Read, Dunning Ill.
98 Treatment of Rigid Scoliosis. S. Kleinberg, New York.
99 Infant Mortality Eighty Years Ago. C. Herrman, New York.
100 Direct Laryngobronchoscopy and Esophagoscopy. C. B. Broder, New York.

97. **Treatment of Paresis.**—Twenty cases have been treated by Read with 123 injections by the lumbar route. In no case has the menstruum been less than 10 c.c. of the patient's own spinal fluid. The method has been that of Ravaut, and the intervals have been at least two weeks in all cases. The dose for the first five or six injections has been 3 mg., after which in a few cases it has been increased to 4.5 and

6 mg. All cases were treated during the last five months of 1914. All cases were those of male patients in varying stages of the disease and all with positive laboratory findings in the spinal fluid. During the treatment three patients died, but of these, two were in the final stages and death cannot be fairly attributed to treatment. In one case, the patient, already slightly spastic when received, became intensely spastic and died with symptoms of motor tract degeneration. Two patients suffered incontinence. A few complained of weakness, headache, and leg pains from time to time after treatment. A number, at various times, had a slight rise in temperature for a short time after treatment. One patient developed Charcot joint during treatment. One patient had convulsions following treatment, but has had others not connected with treatment.

The Wassermann of the blood serum in nine cases (not tested in remainder) remained 4+. In two it is now negative, but in one it was negative before treatment and in the other it was not tested. One negative and one faintly positive Wassermann in the spinal fluid have become strongly positive. One patient has entered a fair remission, but still shows positive fluid findings. Another is improved markedly, but is still evidently paretic. A number show improved conduct or physical health, which may possibly be the result of hospital care. In three cases the Wassermann in the spinal fluid has become weaker. From the foregoing results Read thinks it is fair to conclude that intralumbar treatment with neosalvarsan in small quantities is without effect, and that when pushed with the object of obtaining results, it is extremely apt to prove injurious. Its use in this manner is to be discouraged.

Northwest Medicine, Seattle, Wash.

September, VII, No. 9, pp. 273-304

101 Near Border Line of Quackery. C. W. Sharples, Seattle.
102 How and Why of Vaccination Against Small-Pox. J. N. Force, Berkeley, Calif.
103 Enterospasm Causing Intestinal Obstruction; Report of Case. A. A. Matthews, Spokane.
104 Emergency Gastro-Enterostomies in General Practice. C. N. Suttner, Walla Walla.
105 Intratracheal Insufflation. E. S. Jennings, Spokane.
106 Inoperable Carcinoma of Stomach at Twenty-Six Years of Age. E. O. Houda, Tacoma.
107 Heating of Operating Tables. J. A. Pettit, Portland, Ore.

New Jersey Medical Society Journal, Orange

September, XII, No. 9, pp. 417-480

108 Acute Pyelitis of Pregnancy. N. G. Price, Newark.
109 *Immunization of Pollenosis. S. Oppenheimer and M. J. Gottlieb, New York.
110 Infant Mortality Problem in New Jersey. J. Levy, Newark.

109. **Immunization of Pollenosis.**—The authors warn the profession against "hay fever" vaccines as exploited by the various pharmaceutic concerns. Their attention has been called recently to a vaccine that has lately been put on the market, which contains a mixture of a large number of pollen extracts. The mixture is to be given both in spring and fall cases. No diagnostic means are employed to determine which pollen or pollens are operative in a given case. Under these circumstances, they say, many a patient who is suffering from the spring variety of pollenosis, being already a fit subject for further sensitization, is placed in danger of becoming sensitized to those pollens which are active during the fall. Furthermore, pollen extracts deteriorate on standing and extremely toxic substances may be found in these extracts which may endanger the life of a patient. It is also stated that pollen extracts in large doses are extremely dangerous and with the dosage not properly controlled by experienced workers in this particular field, a calamity from mishandling may cast a shadow on a valuable proposition.

New York State Journal of Medicine

August, XV, No. 8, pp. 289-326

111 Midwife Problem in State of New York. J. Van Doren Young, New York.
112 Position of New York State Department of Health Relative to Control of Midwives. L. R. Williams, Albany.
113 Evolution and Treatment of Hyperthyroidism in Its Mild Types. H. Brooks, New York.
114 Cases of Dysthyroidism. J. M. Swan, Rochester.
115 Cervical Dilatation by Hydrostatic Pressure. W. T. Getman, Buffalo.
116 *Prognostic Value of Cholesterinemia in Chronic Nephritis. E. Henes, Jr., New York.
117 Psychanalysis and Its Field of Usefulness. C. R. Payne, Wadhams.
118 Bowel Obstruction Following Pelvic Operation. W. D. Johnson, Batavia.
119 Case of Chancre of Tongue. A. J. Gilmour, New York.
120 Observations Concerning Operative Treatment. O. A. Gordon, Jr., Brooklyn.
121 Notes Taken from My First Five Years' Practice. P. M. Neary, Cortland.
122 Result of Campaign Against Venereal Diseases by Physicians' Organization. P. B. Brooks, Norwich.

116. **Value of Cholesterinemia in Chronic Nephritis.**—Those clinical factors which in Henes' opinion must be taken into consideration to correctly interpret cholesterinemia are: (1) fever. Fever exerts a profound influence in reducing the cholesterin content of the blood. Experience has shown the author that only temperature above 100 F. is to be looked on as fever, in this connection; (2) jaundice, especially when caused by obstruction, increases the cholesterin of the blood. With hemolytic jaundice Henes has had practically no experience; (3) arteriosclerosis. The measure of cholesterinemia has been found to be increased in cases of progressive arteriosclerosis; (4) edema and ascites. Transudates, the author has found, contain an appreciable amount of cholesterin, whether found in the chest, abdomen, or subcutaneous tissue; the amount found in transudates undoubtedly was, originally, in the circulating blood, and should be taken into consideration; (5) pregnancy must always be taken into consideration; there is a progressive increase of cholesterin in the blood as pregnancy advances; (6) gallstones, when aware of their presence; his results in cases of cholelithiasis has shown astounding increases over the normal cholesterinemia; (7) from a limited experience with obesity and diabetes, Henes is led to believe that a hypercholesterinemia exists in these conditions.

Pennsylvania Medical Journal, Athens

August, XVIII, No. 11, pp. 847-912

123 Adventures on Highways and Byways of Medical Research. J. McFarland, Philadelphia.
124 Study of Eight Hundred and Forty-Eight Cases of Tonsillectomy. G. D. Murray, Scranton.
125 Nose, Throat and Ear as Neighboring Organs to Teeth. W. R. Butt, Philadelphia.
126 Glaucoma in Young Myope with Atrophy of Iris and Bullous Keratitis. E. Stieren, Pittsburgh.
127 Congenital Coralliform Cataract. E. Stieren, Pittsburgh.
128 Case of Ectropion. E. Stieren, Pittsburgh.
129 Case of Congenital Malformation of Cornea. E. A. Weisser, Pittsburgh.
130 Case of Ocular Injury. J. E. Willetts, Pittsburgh.
131 Medical Economics. A. A. Long, York.
132 Relationship of Consultant to Practitioner. J. H. Comroe, York.
133 Treatment of Eclampsia. C. G. Strickland, Erie.
134 Sporadic Elephantiasis. G. C. Davis, Milton.

South Carolina Medical Association Journal, Anderson

August, XI, No. 8, pp. 238-270

135 Reflections on Modern Methods of Treatment by Serum and Vaccines. W. S. Thayer, Baltimore.
136 Contact in Diphtheria. G. M. Mood, Charleston.
137 Plague. J. H. Taylor, Columbia.
138 Backward Child. C. W. Kollock, Charleston.
139 What the Laboratory has Done, and is Doing for General Practitioner. G. A. Neuffer, Abbeville.

Southern Medical Journal, Mobile

September, VIII, No. 9, pp. 745-830

140 Diagnosis in Uncinariasis. J. L. Ward, Columbia, S. C.
141 Memoranda from Malarial Surveys and Demonstration Work. H. R. Carter, Baltimore.
142 Administration of Quinin in Malaria. H. Boyd, Scottsboro.
143 Malarial Anemia. S. C. Jamison, New Orleans.
144 Clinical Notes on Tuberculous Immunity. B. M. Randolph, Washington, D. C.
145 Early Diagnosis of Typhoid; Reference to Complications. W. A. Weed, Birmingham.
146 Three Groups of Late Syphilis. J. H. Smith and W. B. Porter, Richmond, Va.
147 *Treatment of Syphilis of Central Nervous System; Report of Cases. W. B. Porter and J. H. Smith, Richmond, Va.

148 Complement Deviation Test as Guide in Infections of Urethra, Prostate and Vesicles. T. V. Williamson, Norfolk, and S. W. Budd, Richmond, Va.
149 *Abdominal Anomalies; Report of Four Unusual Cases. F. G. DuBose, Selma.
150 Cases Illustrating Orthopedic Treatment of Some of Disabilities Resulting from Infantile Paralysis. M. Hoke and F. G. Hodgson, Atlanta, Ga.
151 Hare-Lip Surgery; Essentials in Production of Scarless Incisions. H. P. Cole, Mobile.
152 Roentgen Ray Studies of Appendix. J. W. Squires, Charlotte, N. C.
153 Treatment of Eclampsia. T. J. Tuder, Keokee, Va.
154 Retroperitoneal Tumors. C. S. Lawrence, Winston-Salem, N. C.
155 Case of Prostatectomy. G. P. LaRoque, Richmond, Va.
156 Enormous Congenital Umbilical Hernia without Cutaneous Covering, Operation and Recovery. S. R. Benedict, Birmingham.
157 Compound Fracture and Dislocation of Knee Joint. J. Crawford, Yale, Va.
158 Traumatic Emphysema and Empyema. E. T. Dickinson, Wilson, N. C.
159 Trachoma in Virginia. J. A. White, Richmond, Va.
160 Trachoma. C. R. Dufour, Washington, D. C.
161 Acute Purulent Otitis Media Complicated by Mastoiditis and Temporo-Sphenoidal Abscess. R. W. Bledsoe, Covington, Ky.

147. **Syphilis of Central Nervous System.**—Porter and Smith have modified the technic of Swift and Ellis somewhat, and feel that this modification simplifies the process. Instead of using 12 c.c. of serum, they use all that can be obtained from 40 c.c. of blood, withdrawn one hour after the intravenous injection of 0.6 gm. salvarsan. Prior to the subdural injection of the serum they withdraw 30 c.c. of spinal fluid. Instead of diluting the serum with saline, they dilute with as much of the spinal fluid as is necessary to make the total volume equal the amount of spinal fluid withdrawn. In eliminating the saline they do away with a possible source of contamination as well as simplify the technic.

149. **Abdominal Anomalies.**—DuBose cites the following cases: 1. Coexisting intra-uterine and extra-uterine pregnancy at term; living infants. 2. Misplacement of both kidneys, lying below brim of pelvis. 3. A 64 pound ovarian cyst. 4. Loose body in peritoneal cavity; an oval flattened disk one-half inch thick, three-fourths inch wide and 1¼ inches long, with a serofibrinous coating, making the surfaces smooth. The interior was of degenerated tissue. The uterus was exposed, the right ovary was absent and the distal half of the right tube was absent. From the posterior uterine wall running across the top of the right broad ligament and adherent to its anterior surface was a narrow and strong adhesive band. In DuBose's opinion, this loop of adhesive membrane, subsequent to the attack of pelvic inflammation, became wrapped around the ovary and the distal half of the tube and amputated them. The foreign body found was evidently the result.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

August 21, II, No. 2851, pp. 281-316

1 *Influence of Intravenous Injections of Neosalvarsan on Arterial Blood Pressure. H. D. Rolleston.
2 Typhus Epidemic in Serbia, 1915. T. G. Maitland.
3 *Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. C. H. Vrooman.
4 Our Present Position with Regard to Prescription of Proprietary Foods in Infant Feeding. H. C. Cameron.
5 Calculi of Prostate. R. L. Spittel.
6 Causes and Treatment of Severe Pruritus Ani. P. Lockhart-Mummery.

1. **Influence of Neosalvarsan on Blood Pressure.**—The blood pressure was investigated by Rolleston in a hundred consecutive cases in which neosalvarsan was given intravenously for syphilis in almost all in the secondary stage. The average age of the patients was 24 years, and except for twelve who were 30 years of age and over, and for six under 20, were all between 20 and 30 years of age. The amount of neosalvarsan varied between 0.9 and 0.6 gm. The blood pressure (systolic and diastolic) was taken (1) on one or more days before the injection was given, (2) about seven hours after the injection, and (3) on three or sometimes four subsequent mornings. In nineteen of these cases the blood pressure was also taken during the intravenous injection of neosalvarsan. Included in the 100 cases were twelve cases in which the blood pressure was investigated in connection with both first and second injections of neosalvarsan, usually at a month's interval. Mercer's sphygmomanometer, with an arm cuff of 14 cm. was used. The auscultatory method was employed, the maximum systolic pressure being estimated as the mean between the points in which the auscultatory sound disappeared and reappeared, and the diastolic pressure at the time of the so-called fourth phase, in which the intensity of the auscultatory sound suddenly diminishes. Rolleston took all the blood pressure estimations himself, so that errors from more than one personal equation were avoided.

In seventy-seven out of the 100 cases the intravenous injection was followed by a fall in both the systolic and diastolic pressures. The average fall of the systolic pressure was 16 mm. Hg, and of the diastolic pressure 13 mm. Hg. Out of the twenty-three remaining cases there were eight in which both the systolic and diastolic pressures were higher after than they were before the injection, the average increase in both the pressures being 11 mm. Hg; eight cases in which the systolic pressure was higher after than before injection (average increase 52 mm. Hg), while the diastolic pressure was lower after than before injection (average fall 6.5 mm. Hg); six cases in which the diastolic pressure after was higher than before injection (average increase 4.5 mm. Hg), while the systolic pressure after was lower than before injection (average fall 8 mm. Hg); and one case in which both the systolic and diastolic pressures were the same before and after injection. In the systolic blood pressure there was a fall in eighty-three cases, as compared with a rise in sixteen, or in the proportion of 5 to 1. The average fall in the systolic pressure was 15.4 mm. Hg. In the diastolic blood pressure there was a fall in eighty-five cases, as compared with a rise in fourteen, or in the proportion of 6 to 1. The average fall in the diastolic pressure was 12.4 mm. Hg. The fall was therefore slightly less in the diastolic than in the systolic blood pressure.

Rolleston concludes his paper as follows: The average of both the systolic and diastolic blood pressures on the days after injection is generally lower than before injection, the fall in the systolic being slightly more marked than in the diastolic pressure. This fall, however, is probably not a direct result of the action of neosalvarsan, and, in part at least, may be due to rest in bed. The blood pressure seven hours after the intravenous injection of neosalvarsan is usually lower than it was before. The fall in the diastolic pressure is slightly less than that of the systolic pressure. The fall cannot be explained as due to fever. As compared with the blood pressure taken seven hours after the intravenous injection of neosalvarsan, the average of the blood pressure estimations on subsequent days is usually lower. This is more marked in the diastolic than in the systolic blood pressure. During the actual intravenous injection of neosalvarsan both the systolic and diastolic pressures are nearly always higher than on other occasions. This appears to be due to excitement. During the operation the pressures may vary considerably, the systolic blood pressure being more affected than the diastolic. The blood pressure before the first injection of neosalvarsan is nearly always higher than the blood pressure before the second injection of neosalvarsan, but here again mental excitement may be responsible. Finally, the general effect of intravenous injections of neosalvarsan is rather to lower, certainly not to increase, the arterial blood pressure.

3. **Artificial Pneumothorax in Treatment of Tuberculosis.**—According to Vrooman, artificial pneumothorax is a valuable addition to methods of treating tuberculosis, but unfortunately its application is restricted to not more than 5 per cent. of cases.

Journal of Tropical Medicine and Hygiene, London

August 16, XVIII, No. 16, pp. 181-192

7 Cure of Amebic Dysentery. A. J. Chalmers and R. G. Archibald.
8 Has Monowheel Stretcher Carriage Possibilities? J. A. Haran.
9 Case of Fibrosarcoma Four Years after Operation. A. Y. Massey.

Lancet, London

August 21, II, No. 4799, pp. 371-426

10 *New Theory of Causation of Enterostasis. A. Keith.
11 Bacteriology of Gas Gangrene. A. Fleming.
12 *Bacteriology of Peritoneal Exudate in Cases of Perforation of Stomach and Duodenum. L. S. Dudgeon and B. C. Maybury.
13 Atypical Epidemic with Note on Evolutionary Etiologic Factors in Disease. J. T. C. Nash.
14 Epidemic of Acute Hydrocele and Orchitis in British East Africa. L. Nicholls.
15 Temporary Blindness from Penetrating Bullet Wound of Occipital Lobe. A. E. Moore.
16 *New Sign and Its Value in Diagnosis of Pulmonary Tubercle. C. Riviere.

August 28, II, No. 4800, pp. 427-528

17 Students' Number.

10. **New Theory of Causation of Enterostasis.**—In passing along the alimentary tract, Keith states, food is propelled through a series of zones or segments, each furnished with its own pacemaker and its own rhythmical contractions. In the heart one finds two such zones, an auricular and a ventricular; in the normal heart the sino-auricular node is the master pacemaker. Irregularities of the same kind as are known to occur in the heart may occur in the nodal and conducting system of the alimentary canal. When such irregularities or blocks do occur one would expect to find them at the points in which one rhythmical zone or area passes into the succeeding zone. That is exactly what occurs. One finds a block in which the esophagus joins the stomach; another in which the gastric zone ends and the duodenal begins; in cases in which the duodenal zone passes into jejunal and in cases in which the jejuno-iliac passes into the ileocolic, a block may occur at any point of passage from a lower to a higher rhythm. At several of these junctional joints sphincters are situated and Keith admits the mechanism of such sphincters may become disordered and cause stasis of the alimentary contents, but, he says, it will probably be found that a disturbance in the action of a sphincter is but part of the disturbance which affects the entire rhythmical segment to which its belongs.

To obtain an orderly propulsion of the food along the whole length of the alimentary canal those various rhythmical zones must be closely coordinated in their action, and there is a growing body of evidence, both experimental and clinical, that points to a close coordination by means of a complicated system of reflexes. Disturbance in any one segment upsets the rhythm in all the segments. Disturbance in the excitability and rhythm of the pacemaker of the cecum will be reflected to the lower ileum. One can understand how stasis in the great bowel may be followed by ileal stasis, duodenal or gastric stasis, or how a disturbance of the conductivity or excitability of any of the rhythmical zones may ultimately give rise to stasis in all.

12. **Bacteriology of Peritoneal Exudate.**—The actual result of the examination of films by Dudgeon and Maybury of the peritoneal exudate in twenty-three cases showed absence of bacteria in thirteen and a positive finding in ten, while of these ten cases cocci represented as diplococci or streptococci were seen in each instance, and bacilli also in two cases which proved to be fatal. In two cases the *Bacillus coli*, together with streptococci were cultivated from the peritoneal exudate. Streptococci, however, have occurred more frequently than any other bacteria.

16. **Diagnosis of Pulmonary Tubercle.**—Riviere states that in pulmonary tuberculosis characteristic bands of percussion impairment of constant position, shape, and size are present over both lungs. These are found by skilful percussion, before any other sign of phthisis, in certain cases before symptoms, and persist throughout the course of the disease. They depend on no morbid structural changes, but are of reflex origin; though absent in health they can be produced by appropriate means in any normal chest. Their persistent presence denotes an irritation (always inflammation?) of the lung parenchyma of some causation not necessarily tuberculous. Incidentally they are of notable value in the diagnosis of phthisis. They will help to decide the presence or absence of a hidden focus in a case suspected of early tubercle, and they are useful in the exclusion of all catarrhal conditions not involving the lung parenchyma. Their reflex nature serves to explain the occurrence, unintelligible on other grounds, of percussion impairment in the earliest stages of pulmonary tuberculosis.

Gentle percussion is needed for the recognition of these bands in cases of early disease. A change of pitch in the percussion note is by far the surest guide to their presence; the element of "expectation," so liable to delude the ear, must be rigidly excluded. Percussion should proceed from resonance to dulness, and the stroke should be delivered with the right middle finger on a plexímeter finger (left index finger) pressed firmly on the chest wall parallel to the dull area; when the lower limit of the band has been found by percussion from below upward this should be marked with a skin pencil, and the upper limit looked for by percussion from above downward toward it. An important change of percussion note occurs between inspiration and expiration in the normal chest, and to a somewhat lesser degree in phthisis, the note being lower-pitched and more resonant during the latter phase. If any difficulty is experienced on this account, and this is likely to occur, the breathing should be arrested (without taking a forced inspiration) while percussion is proceeding. When the limits of the area have been pencilled the value of the observation should be checked by counting the vertebral spines down from the first dorsal (indicated by marking the upper limit of the lung resonance) to see whether the band obtained lies between the fifth and seventh spines or thereabouts, the level at which this lower dull area invariably falls.

In children the bands are most easily detected by percussion over both lungs at once, with the plexímeter finger laid right across the spine so as to cover the innermost end of each band of impairment. Percussion then proceeds from below upward till the lower border is found and marked and then from above downward to find the upper border. The same method is often convenient in adults also, but care must be taken in cases in which the vertebral spines are prominent, lest these press against the plexímeter finger and obscure the result by the introduction of bone conduction. The apical area is best appreciated by percussion upward with the plexímeter finger stretched across Krönig's area and pressed firmly against the chest wall. Normally the percussion note becomes lower and lower pitched as the top of the shoulder is ascended, but when the bands of impairment are present, a sudden rise of note occurs when the level of the first or second dorsal spine is reached.

Sei-I-Kwai Medical Journal, Tokyo

August, XXXIV, No. 8, pp. 41-44

18 Plastic Operation of Vagina and Case Operated on by Mori's Method. T. Hirano.
19 Death of Prisoners from Tuberculosis. Y. Furuse.
20 Roentgen Ray and Radium Treatment in Gynecology. K. Kurihara.
21 Vaccine Treatment of Whooping Cough. N. Honjo.
22 Some Spontaneous Fractures. R. Yajima.

Bulletin de l'Académie de Médecine, Paris

August 10, LXXIV, No. 32, pp. 139-188

23 Braces and Other Devices to Correct Paralysis. (Appareils pour "blessés nerveux.") P. Marie, H. Meige, A. Léri and D. Bouveret.
24 Mixed Vaccines. F. Widal. See Abstr. 47.
25 Treatment of Fracture of Lower Jaw. (Méthode directrice rationnelle dans le traitement des fractures du maxillaire inférieur.) Cavalié.
26 Compass for Localization of Projectiles. Debierne.
27 Experimental Research on Colloidal Gold. H. Busquet.
28 *Success of Specific Bacteriotherapy in Cholera in the Campaign in Serbia. Petrovitch.

August 17, No. 33, pp. 189-203

29 Adjustable Crutch. (Béquille rationnelle.) A. Pinard.
30 Mixed Vaccines against Typhoid and Paratyphoid. H. Vincent.
31 Attenuation of Pulse above Aneurysm. (Signe nouveau des anévrismes.) Couteaud.
32 Ligation of Veins above Suppurating Wounds in Limbs. (Les ligatures veineuses dans les infections pyohémiques des membres.) R. Le Fort.

33 Contracture and Spasms with Injury of Nerves and Retention of Foreign Body. (Accidents pseudo-tétaniques chez des blessés atteints de lésions des nerfs compliquées de la présence de corps étrangers.) R. Le Fort. See Paris Letter, p. 1042.

28. **Treatment of Cholera with Vaccines.**—Petrovitch reports that during the campaign in Serbia last August he treated cholera patients with Wright's anticholera vaccine and vaccine from the Paris Institut Pasteur. Benefit was apparent in every instance, he states, and the mortality was notably reduced. In the 1,153 mild cases all recovered except 2 patients who were too debilitated by privations of all kinds to regain their strength and died the eighth and fifteenth days of their convalescence. None died of 90 cases of medium intensity, while the mortality was 9.4 per cent. in a similar group not given vaccine treatment. In the 157 cases of extremely severe cholera, the mortality was 14.4 per cent. while it was 58 per cent. in a corresponding group of 120 cases given the ordinary treatment. He diluted the vaccine 1:10 or 1:50 with physiologic salt solution; the dose was from 0.5 to 3 c.c. of this dilution. He repeated the dose two or three times or more during the day in the severer cases, and he increased the amount of saline infused with the vaccine.

Bulletins de la Société de Pédiatrie, Paris

June, 1914, XVI, No. 6, pp. 329-424. Last indexed July 11, 1914, p. 202

34 Social Service in Children's Hospital at Paris. Nageotte-Wilbouchewitch.
35 *Acute Encephalitis in Children. J. Comby.
36 *The Blood Dust and the Bile Pigments and Salts in Infants' Stools. (Hémoconies, réactions des pigments et des sels biliaires dans les fèces des nourrissons.) Nobécourt and M. Maillet.
37 *Diseased Glands in Iliac Fossa Simulating Coxalgia. Savariaud.
38 *Sugar in Infant Feeding in Pathologic Conditions. (Résultats de l'alimentation sucrée des nourrissons malades.) Nobécourt and L. Nadal.
39 Total Intolerance for Starch in Ten-Months' Infant. (Intolérance pour les farines chez un bébé.) Nobécourt and Philippon.
40 Liquid Petrolatum in Treatment of Constipation in Infants and Children. (L'huile de paraffine dans le traitement de la constipation.) G. Schreiber.
41 Experimental Beriberi in Pigeons Fed Exclusively on Husked Barley. (Recherches sur les maladies alimentaires par "carence.") Weill and Mouriquand.
42 Advantages of Reduction of Congenital Dislocation of Hip Joint before Age of 2. Lance.
43 Lesions or Deformities Accompanying Congenital Hemispasm of the Lower Lip. G. Variot and F. Cailliau.
44 Exophthalmic Goiter in Girl under 9. P. S. Moret and Saison.
45 *Liability to Recurrence of Tendency to Hemorrhages in Children after Apparent Cure. (Etats hémorragipares dans la seconde enfance.) H. Triboulet, J. Rolland and Buc.

35. **Acute Encephalitis in Children.**—Comby insists that essential epilepsy, developing in a child without provocation or apparent cause, is not an inherited affection. It is not a family taint to be feared as a mysterious, inexorable evil, inevitably to be handed on from parents to children. This old idea must be abandoned and epilepsy recognized for what it is, namely, an acquired, accidental malady, the relics, most commonly, of an encephalitis. It is neither inherited nor transmissible. Chorea is another neurosis of the same character. It is likewise the expression of a mild, acute, curable encephalitis of infectious origin. Almost any infectious disease may provoke it; they all act by the intermediation of the brain as they attack some part of it. The course with epilepsy of this type is generally as in a case which he describes: At the age of 4 there was acute encephalitis from which the child apparently completely recovered. At 14 epileptiform convulsions developed and have recurred at intervals since. The girl at 18 is strong, intelligent and normal except for the epilepsy, and there is no history of epilepsy in the family. He emphasizes that acute encephalitis is more common than generally believed. Before the days of lumbar puncture it was generally labeled meningitis, but now we can distinguish between these, as with acute encephalitis the fluid is free from cells. Simple nonsuppurating, acute encephalitis may be localized or diffuse, and may occur at any age. Many cases of idiocy date from an acute encephalitis before or after birth. In two cases of pathologic febrile pregnancy the children were born with fever and nervous symptoms and grew up idiots. Thus we see that acquired and even congenital idiocy is not always a sign of a family taint. It may be the result of some accidental malady, some infection that may attack the healthiest families.

36. **Hemoconiae in the Blood in Relation to Bile Salts in the Stools of Infants.**—The findings are tabulated in eleven cases according to the proportion of hemoconiae in the blood, the weight, the diet, character of the stools and the content in bile pigment and bile salts. No constant parallelism between the blood dust and the bile salts in the stools was evident, and this is accepted as testifying to the fact that other factors besides the bile share in the digestion and absorption of fats.

37. **Glandular Disease in Iliac Fossa Simulating Hip-Joint Disease.**—Savariaud gives the details of two cases to illustrate the difficulty in differentiating this glandular trouble in some cases. The acute febrile process in the iliac glands caused signs of psoitis and periarticular contracture, suggesting in every respect hip-joint disease. Continuous extension and repose, and the rapid subsidence of all symptoms in the course of a few weeks cleared up the diagnosis. Study of these and similar cases shows that the idea of hip-joint disease can be dropped if there is no pain at night and in walking, and if the child limps less as it exercises. Also if there is no restriction to the movements of abduction and rotation and no pain from pressure on the back of the joint, and no signs of bone disease on roentgenoscopy.

38. **Sugar for Sick Infants.**—Nobécourt and Nadal here report the results of adding 10 per cent. ordinary sugar (saccharose), to the food the infants were getting. This was rice-water, buttermilk, milk, kefir or pea or bean broth in thirty cases described in detail. This large amount of sugar seemed to be instrumental in promptly arresting a tendency to excessive vomiting in two of four cases. In sixteen much debilitated infants or backward in developing, the high sugar content was generally well tolerated and in eight of the cases aided in a rapid and progressive increase in weight. One babe of 10 months was unable to take starch in any form but thrived well on the highly sweetened milk. Another child whom they describe as an "azotemic athrepsic," grew into vigorous health in a few months on the highly sweetened milk. No sugar was ever found in the stools or urine. In the eight other cases the cachexia continued unmodified. Six infants with acute dyspepsia took the sugar well and rapidly recovered. Other infants with bronchitis and other affections took the sugar well and it seemed to have a favorable influence on the course. No signs of intolerance of the sugar were observed in any of the infants. As a rule, the stools lose their diarrheic character. The sugar evidently sustains the strength and combats the destruction of tissues.

45. **Pseudohemophilia in Children.**—Triboulet refers to cases of intense anemia, with purpuric phenomena but coagulation normal, in schoolchildren. He reports a case to emphasize the necessity for being cautious in calling such a child "cured," even when years may have elapsed since the last manifestations. In this case the recurring attack followed a five weeks' stay at a seaside resort; the longest free interval was after a trip to the mountains. Dufour remarked in the discussion that he had sometimes been successful in such cases in utilizing anaphylactic effects as a systematic method of treatment.

Journal de Chirurgie, Paris

August, XIII, No. 3, pp. 241-528

46 *Operative Treatment of Skull Wounds in Field Ambulance. (Traitement opératoire des blessures du crâne dans une ambulance de l'avant.) A. Lapointe.

46. **Wounds of the Skull.**—Lapointe has operated in nearly 127 cases of wounds of the skull and has been impressed with the remarkable harmlessness of the wounds when the dura was not opened. On the other hand, the wounds involving the brain proved fatal in 58.75 per cent. of the 80 cases in this group. This grave outcome was due to infection in nearly every instance, and for this the inadequacy of the first-aid measures was generally responsible.

When the hair is close cropped or the scalp around the wound is shaved there is much less chance of infection, but he often found the hair long and matted with dried blood. The wounded did not reach the ambulance in his charge until the second or third day as a rule; only twenty-two were received the same day as the injury. The various types of skull wounds encountered are discussed in turn and the appropriate treatment.

Presse Médicale, Paris

August 19, XXIII, No. 38, pp. 305-312

47 *Mixed Antityphoid and Antiparatyphoid Vaccines. F. Widal.

47. **Vaccine Against Both Typhoid and Paratyphoid Infection.**—Widal studied the effect of the combined vaccine, noting especially the development of the agglutinins and of the sensitizers, in the blood of sixteen persons inoculated with the double and five with the triple vaccine. He regards the data presented as very encouraging.

Revue Médicale de la Suisse Romande, Geneva

August, XXXV, No. 8, pp. 413-468

48 *Micro-Analysis of the Urea in the Blood. Combe and M. Lévi.
49 Necropsy Findings in Case of Diffuse Peritonitis from Perforation of Diverticulum in Sigmoid Flexure. E. Kummer.
50 *Sunlight in Treatment of Children's Diseases. (De l'Héliothérapie dans un hôpital d'enfants en plaine.) L. Jeanneret.
51 *Suspension from Pole, with Extension, in Treatment of Fractured Leg. (De la méthode serbo-croate pour réduire les fractures du fémur et de la jambe.) A. Jentzer.
52 Alum Coating of Tube Cures Lesions from Prolonged Intubation. (Cas d'intubation prolongée guéri par l'introduction d'un tube enduit d'alun.) H. Mallet.

48. **The Urea Content of the Blood.**—Combe defines the difference between modern medicine of the day and of twenty years ago as the difference between pathologic physiology and pathologic anatomy. Twenty years ago the lesion was the main thing considered. Now we consider, along with the lesion, the way in which the organ and the organism adapt themselves to the lesion, and how we can help them to overcome its effects and compensate for missing functioning. In our study of this pathologic physiology, analysis of the blood is becoming more and more important, as the sugar and acidity of the blood in diabetes, the amino acids and cholesterol in liver disease, the uric acid in gout, and the urea and chlorids in kidney disease—all throw light on the pathologic processes involved. The great drawback to research on the blood is that from 10 to 20 c.c. of blood is required for most of the tests, and this practically excludes their application to children. Bang's method of micro-analysis for sugar requires only two drops of blood, and Combe and his co-workers have devised a similar technic with which it is possible to estimate from only 2 drops of blood the content in sodium chlorid, phosphoric acid, potassium, iron, or albumin. It is hoped to perfect the technic so that with it we may estimate further the calcium content, lactic acid, the amino acids and the alkalinity and acidity of the blood.

Combe and Lévi here describe in detail their "micromethod" for determining the urea content of the blood, and the findings on applying the test to the whole blood of 37 normal children from 6 to 14 years old. The maximum urea content to the liter was found to be 0.27 gm.; the minimum 0.16; the average 0.22; average for the serum alone, 0.27. In 25 children from 1 to 6 years old, 0.26 to 0.16; average 0.21; serum alone, 0.26. In 9 infants from 15 days to 12 months old, the range was from 0.24 to 0.16, average 0.19; serum alone, 0.23, and in 5 infants younger than this, from 0.25 to 0.14; average 0.17; serum alone, 0.21 urea to the liter. It was found that the urea of the serum could be estimated by multiplying the urea of the blood by 1.25.

The 2 drops of blood are drawn most conveniently, after scarifying, with the aid of a suction glass and bulb, the glass opening air-tight into a test tube below containing a little distilled water with a few drops of sodium citrate. In this way they obtain the 2 drops of blood needed, with an error margin of less than 1 per cent. This micromethod is based on the chemical combinations which urea forms with mercuric nitrate. The method is somewhat similar to Liebig's old technic which has acquired new scientific importance since Robertson published his technic for volumetric titration of minute quantities of mercury. Comparison with other tests, both in the laboratory and in the clinic, have apparently demonstrated beyond question the reliability of this method of micro-analysis of the blood.

50. **Heliotherapy in Children's Hospital.**—Jeanneret states that notwithstanding the city environment, great progress has been realized with heliotherapy in tuberculous affections in children at the Children's Hospital at Basel. He emphasizes further the remarkable effect of direct sunlight as a general stimulant and strength producer in nearly all sick children and in all convalescents. The sunlight, he says, seems to act especially on the musculature, strengthening it and providing conditions for favorable development. Doughy flesh grows hard and firm. The benefit from heliotherapy, he insists, is by no means limited to tuberculous affections; "the sun is the tonic par excellence, the ideal remedy for all debility in children. The child reacts to the sun like a plant that has grown white in the cellar, and just as the plant renews its chlorophyl supply and turns green, the child becomes transformed, renews its hemoglobin supply, and its skin and mucous membranes resume the hue of health." Jeanneret has served with Rollier at Leysin and he affirms that the sunlight cures tuberculosis at Basel just as well as at Leysin in the mountains, but to obtain equivalent results the course of treatment has to be twice as long. There are fewer days of sunshine, and during winter days without sunshine some of what has been gained is lost. The sunlight is less powerful than in the mountains as the denser atmosphere absorbs some of the rays. The action of the mountain climate on the blood-producing apparatus is also lacking, and, last but not least, the heat at Basel in summer renders the sunbaths enervating rather than stimulating, compelling the shortening of the exposures.

But after making all the above allowances, with time and patience, he declares, tuberculous bone lesions can be cured without going to the mountains. He comments on the drawbacks of keeping children a long time in city hospitals, and urges that the hospital should have an annex in the mountains where the children can be sent and cured in half the time. The exposures are commenced gradually, two for five minutes the first day, increasing to two for sixty minutes by the seventh day, and two for three hours by the twelfth. Exposures to the sunlight of February, for example, are made six or seven times as long as to the July sunlight. No mishaps have ever been observed; the greatest care is taken to prevent sunburn and itching.

Heliotherapy did not give brilliant results until the exposures were made general, and Rollier was the one to introduce this active and useful general heliotherapy. Jeanneret ascribes its action to the perfect functioning of the skin which it induces, promoting cutaneous respiration and elimination, and stimulating the skin at the same time, thus intensifying the defensive functions of the epithelial cells.

51. **Serbian Method of Treating Fractures.**—The limb is suspended from a bar fastened to the head of the bed and to a higher board standing upright at the foot. The suspension is with two, three or four triangular bandages, and the knee is slightly flexed. Extension can be thus applied in semiflexion; the suspension avoids danger of decubitus; dressings can be changed, and the bed pan used more conveniently, and the immobilization of the limb is not complete so that there is less danger of stiff joints. A still further advantage is that the semiflexion relaxes the muscles, and the fractured bones fit back into place more readily; hence the amount of traction can be much less than with other technics, while the limb heals with less shortening. Jentzer studied the method in Serbia and has been using it with constant satisfaction since his return to Switzerland.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 14, XLV, No. 33, pp. 1025-1056

53 *Diagnosis and Treatment of Suppuration in the Nasal Accessory Cavities. (Nasenhöhlenentzündungen.) F. Diebold.

August 21, No. 34, pp. 1057-1088

54 *Winckel's Disease in Two Infants in One Family. (Ueber familiäres Auftreten von Bluterkrankungen im Kindesalter.) F. Brandenberg.

53. **Suppuration in the Nasal Accessory Cavities.**—Diebold discusses the diagnosis in detail and emphasizes the great value of a stain as an aid in detecting pus and in locating its source. He has found hexaethyl violet (hexaethyl rosanilin chlorid) best adapted for the purpose, and has examined 107 patients with it, thus locating sinusitis in 122 of the accessory cavities. The stain aids further in softening up the thick secretion in the sinus, and the fetor is notably reduced even by one application. This stain does not dissolve readily in salt solution or blood, and hence there is no danger of toxic action. It is in a solid form; a small piece is melted on the end of a probe and introduced into the cavity in question. As it lies on the floor of the cavity, a single grain, not more than half a millimeter in diameter, will stain all the secretions accumulating there. The thicker the secretions, the longer before the crystals dissolve. The tint is usually most intense from the third to the sixth day but it may be still apparent by the sixth week. By this means the source of the secretion can be infallibly located. The method has proved very instructive in several cases of sinusitis complicated with lesions of the jaws or palate.

54. **Familial Disease of the Blood in Children.**—Brandenberg does not know of any other instance on record like the one he reports in which, in turn, in the same family, two apparently healthy, vigorous children developed Winckel's disease and died about a week after birth. In another family five girls developed normally but the four boys all died with symptoms of leukemia, confirmed by necropsy in two cases. Some of the cases of Winckel's disease on record developed in the form of small epidemics in maternities, but none is known previously of familial occurrence. He explains the disease as the result of hemolysis from some infection or toxin.

Deutsche medizinische Wochenschrift, Berlin

August 12, XLI, No. 33, pp. 965-996

55 Action as Antigens of Sensitized and Nonsensitized Blood Cells and Typhoid Bacteria. L. v. Liebermann and D. Acel.
56 Treatment of Typhoid with Besredka's Vaccine. E. Szecsy.
57 Complications of Wounds of the Lungs. (Hemothorax und Zwerchfellverwachsungen bei penetrierenden Brustverletzungen.) S. Kaminer and H. Zondek.
58 Fat Metabolism of the Cell, Tested by the Fat-Partial Antigens of the Tubercle Bacillus. H. Much and W. Müller.
59 *Epidural Injection. W. Enderle.
60 *Phosphaturia. L. Dünner.
61 *Analysis of Published Deaths Following Salvarsan. (Ueber Todesfälle nach Salvarsan.) B. Fischer. Commenced in No. 32.
62 Exclusive Salvarsan Treatment of Syphilis. R. Krefting.
63 Technic for Obtaining Blood from Rabbit. T. A. Venema.
64 Abdominal Wounds. (Zur Frage der Bauchschüsse.) Wieting Pasha.
65 Hard Traumatic Edema of Back of Hand. L. Levy.

59. **Epidural Injections.**—Enderle extols the advantages of injection of 20 c.c. of physiologic salt solution through the sacral hiatus as a reliable method for treating all forms of neuralgia in the legs, enuresis in children, and all functional disturbances of the urogenital system. It is so simple and harmless, he adds, that it is worth a trial even in gastric crises. The patient has to be in the knee-elbow position, and he gives four illustrations showing the exact anatomy of the region and the technic for the injections. He has been using this method for several years, and reports success in 90 per cent. of the cases. He ascribes the benefit to direct compression of the nerve plus a modification of the conditions of osmosis.

60. **Phosphaturia.**—Dünner found pronounced phosphaturia in a boy of 12 during an attack of polyneuritis, and both these disappeared together. In another case of polyneuritis, in a man of 29, there was also pronounced phosphaturia. At the height of his trouble 0.9 gm. lime was eliminated in the urine during the twenty-four hours, but subsided to 0.22 as the polyneuritis disappeared. The neurasthenia of patients with phosphaturia should receive proper treatment; the neurasthenia once conquered, the urine returns to normal, demonstrating anew the dependence of phosphaturia on conditions in the nervous system. In treatment, suggestion, change of scene, and food rich in fats are useful. Sodium bicarbonate is directly contraindicated, but it is possible that kaolin, charcoal or bismuth might benefit, as in hyperacidity of the stomach; this at least renders conditions less favorable for precipitation of the calcium in the urine, and thus it is harmlessly voided dissolved in the urine. He emphasizes the importance of distinguishing between phosphaturia and abnormal conditions in regard to acidity. The chief danger with phosphaturia is the formation of kidney stones. A lime-poor diet is advisable, and also copious drinking of water, avoiding alkaline waters. If we can succeed in increasing the acidity of the urine, even although we are unable to reduce the output of the phosphates, much is gained.

61. **Deaths Following Salvarsan.**—The first part of Fischer's article was reviewed in these columns Sept. 11, p. 985. His study of fatalities after the use of salvarsan has shown that in many instances some unsuspected disease was responsible for the fatality. In one case chemical investigation revealed evidences of mercurial poisoning, and this may have been responsible for the trouble in other cases. There is no evidence to date, he declares, that salvarsan has a toxic action on the liver cells. Acute yellow atrophy of the liver is the result of the syphilis itself, and is not the work of salvarsan. The toxic action of salvarsan does not correspond to the clinical picture of arsenic poisoning. The only injuries from salvarsan actually demonstrated to date are local necrosis at the point of the injection, and hemorrhagic encephalitis. The evidence to date exonerates salvarsan from all the other mishaps that have been credited to it.

Jahrbuch für Kinderheilkunde, Berlin

August, LXXXII, No. 2, pp. 87-174

66 Roentgen Examination of the Large Intestine in Infants and Children. (Die Röntgen-Untersuchungsergebnisse des Dickdarms im Säuglings- und im späteren Kindesalter.) I. Peteri.
67 *Thickness of the Abdominal Wall as Index of the State of Nourishment in Sick and Healthy Children. (Die Dicke des Fettpolsters bei Kindern.) S. Batkin.
68 Conditional Reflexes as Factors in Nodding Spasm in Children. (Erklärung der Entstehungsweise des Spasmus nutans beim Kinde mit Hilfe des Bedingungsreflexes.) J. Vas.
69 Otitis Media in Relation to Infant Pathology. (Beziehung der Mittelohrentzündung zu den Krankheiten des Säuglingsalters.) F. Scherer and O. Kutvirt.

67. **Thickness of Abdominal Wall as Index of State of Nourishment in Children.**—THE JOURNAL has called attention at other times to Oeder's index, the thickness of the layer of adipose tissue in the abdominal wall as a fold is taken up to the right of the umbilicus and its thickness measured with calipers. Batkin reports here the findings in 1,600 measurements made on 200 children, including forty-six newly born and twenty-seven healthy children. For better comparison, measurements were made also of a fold taken up on the arm, thigh, chin, etc. His research was undertaken to supply a standard for comparison of the "padding of fat" in health and in some of the more common diseases. It was remarkable in many instances how the eye was deceived in regard to the actual padding of fat, as shown by the correct caliper measurements and necropsy findings. The caliper index is not only an objective sign of the actual state of nourishment of the individual but shows its modification by age and disease and during recovery from sickness and permits comparison with other individuals and may thus warn when things are going wrong. But it is not a decisive criterion, merely a useful and convenient minor aid in our study of normal and pathologic physiology.

Münchener medizinische Wochenschrift, Munich

August 10, LXII, No. 32, pp. 1073-1104

70 *Influenza. P. C. C. Hübschmann.
71 Simple Method for Estimating the Nitrogen in the Urine. V. C. Myers (New York).
72 *Detection of Focal Reaction after Tuberculin Test. (Symptom zur Feststellung der Herdreaktion in der Lunge nach Tuberkulinimpfung.) M. v. Litzner.

73 Analysis of the Action of Nonspecific Measures in Surgical Tuberculosis. W. Müller.
74 Healing of Parenchymatous Keratitis under Salvarsan; Three Cases. Koenig.
75 Technic for Estimation of Complete Homonymous Right Hemianopsia. W. P. Reitsch.
76 Phenomena in the Circulatory Apparatus during Convalescence from Typhoid. F. M. Groedel.
77 Organic Injury of the Nervous Apparatus of the Ear in War. J. Zange.
78 Wire Extension Triangle for Fracture of the Upper Arm. E. Borchers.
79 Prognosis after Skull Wounds. (Schädelschüsse.) G. Engelhardt.
80 *Aid in Electric Treatment. (Individuelle Dauermarken für die elektrische Behandlung.) O. Stracker.
81 Tetanus Localized in Left Lumbar Plexus. U. Hammer.
82 Extension after Fracture of the Thigh in War. Roschke.
83 *Stool Obtainer. (Schnellere Methode der Stuhlentnahme bei Massenuntersuchungen auf Bazillenträger.) H. Ziemann.

70. **Influenza Epidemic.**—Hübschmann writes from Leipzig to the effect that he found recently in seventy of 110 cadavers micro-organisms which were apparently true influenza bacilli. They were in pure cultures in 31 per cent. that is, in nearly 30 per cent. of the entire number. The actual number is probably higher than this as the influenza bacillus is frail. In many cases of lung and brain affections it was the only germ found. He examined only cases with bronchitis, and was forced to the conclusion that infection with the influenza bacillus is prevailing in epidemic form and that the death rate is high. His data, he thinks, form a new link in the chain of evidence as to the causal importance of Pfeiffer's bacillus as the agent of epidemic influenza.

72. **The Focal Reaction to Tuberculin.**—Litzner long ago called attention to the fact that persons with an unstable nervous system, especially girls, are liable to react with higher temperature to an injection of tuberculin or even to a sham injection. A febrile reaction to tuberculin is thus not necessarily a sign of tuberculosis. On the other hand, with actual tuberculosis there may be a pronounced focal without a general reaction. This possibility should warn against ambulant tuberculin treatment. The focal reaction is hence the one of paramount importance, and he has found that it could be detected and estimated best by the change in the bronchophony, or, to use a more exact term, broncholoquy. The serous infiltration and hyperemia of the focus from the reaction localized in the focus provide better conditions for the transmission of the whispering voice. Before applying the tuberculin test he examines conditions as to bronchophony and then again after the test, as also each time after giving the tuberculin in a course of treatment. As the patient whispers sibilant numbers auscultation reveals the focal reaction when possibly nothing else could have permitted its detection. This sign has never failed him in the years he has been watching for it, and he urges others to try it and endorse it if their experience confirms his.

80. **Guide for Electric Treatment after Injury of Nerves.**—Stracker has found it impossible to mark the skin so that the marks would not wash off, or else they entailed suppuration in the sensitive skin. Such numbers of wounded men with severe injury of nerves require electric treatment at Vienna now that he finally hit on the use of the tattooing needle to mark the skin, and has been much pleased with the way it works. The imprint of the bunch of three or four needles at one time is not felt as a prick, and the point is indelibly marked. Each patient has a chart showing two arms and the corresponding points are marked on the chart; each point is accompanied with a figure showing the number of milliamperes required to excite the muscle at this point. Besides the saving of time, labor and avoidance of mistakes with this method, it has the advantage that this important task of electric treatment can afterward be safely left in the hands of a conscientious nurse.

83. **Stool Holder for Proctologic Examination.**—A stout glass test-tube, 28 cm. long and 1.5 cm. thick, has a small oval opening in one side not far from the rounded end. This end is introduced into the rectum and some of the stool within is scooped up into the tube. With a few dozens of these little tubes the search for bacilli carriers among the troops is much facilitated.

Therapie der Gegenwart, Berlin

August, LVI, No. 8, pp. 281-320

84 Treatment of Eclampsia. J. Veit.
85 *Linseed, Fleasced and Other Mucilage-Containing Seeds in Treatment of Constipation. (Schleimhaltige Pflanzensamen gegen Verstopfung.) O. Kohnstamm and M. Oppenheimer.
86 Bacteriologic Diagnosis in Field Laboratory. W. Oettinger.
87 *Pure Salicylic Acid in Treatment of Acute Articular Rheumatism. J. Zadek. Commenced in No. 7.
88 Bread in Wartime. (Brot in Kriegszeiten.) G. A. Waetzoldt.

85. **Treatment of Constipation.**—Kohnstamm combats constipation by having all meat, fish and poultry dropped from the diet and their place taken by milk and dishes made with milk, cocoa, milk soups, etc. Meat soups and broths can be taken, and aid in the digestion of the vegetables and milk dishes. He declares that on this diet constipation refractory for years or decades can be conquered once for all in from one to four days. After one or two weeks meat can be resumed once a day, especially white meat. He regards meat as the cause of the constipation, and it is sometimes necessary to drop all meat for a time once in a while. His aim is to substitute for the meat-putrefaction flora a milk-fermentation flora which usually continues to keep the upper hand on resumption of meat in the diet. In case the milk dishes and vegetables cause a tendency to flatulency which might be dangerous for the elderly or others with cardiovascular disturbance, and when it is necessary to hasten the emptying of the bowels, or it is impossible to procure milk—under these conditions he combats the constipation with mucilage-containing seeds. Notwithstanding the age-long use of linseed and fleaseed for various purposes, he does not know of their being used to combat constipation, but he has found them very useful in this line. The intestines do not seem to become habituated to them. As they are tasteless, they can be taken in any soup or other dish, and they never seem to cause irritation, while they lubricate as they pass along and facilitate peristalsis and defecation. Even when the intestines are inflamed, they have merely a soothing, not an irritating, action on the bowel. Both linseed and fleaseed swell under the influence of fluids, the latter the most, and this adds to the bulk of the feces and keeps them moist, while the mucilage of the seeds adds its action to that of the normal mucus in the gastro-intestinal tract. He relates the findings with comparative laboratory and clinical tests with these seeds, agar-agar, etc. He gave once or twice a day from 2 to 5 tablespoonfuls of the flax-seed, or from 2 to 4 teaspoonfuls of the fleaseed (Semen psylli). He warns not to bite the seeds.

87. **Pure Salicylic Acid in Acute Rheumatism.**—Zadek here concludes this study of the salicylates, based on 212 cases of their use in acute articular rheumatism. All his data confirm the advantages of pure salicylic acid rather than its salts. The first part of his article was summarized in these columns August 28, p. 834.

Zentralblatt für Gynäkologie, Leipzig

August 14, XXXIX, No. 33, pp. 571-586

89 Artificial Vagina Made from Rectum. (Fall von künstlicher Schcidenbildung.) H. Fehling.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 10, XXXVI, No. 55, pp. 849-864

90 *Pancreas Extract in Glucosuria from Pancreas Insufficiency. A. Massaglia.
91 Unreliability of the Landau Seroreaction in Syphilis. G. Recupero.
92 Alleged Hitherto Undescribed Part of the Hair Follicles. (Esistenza d'uno speciale sperone nei follicoli piliferi.) S. Giovannini.

90. **Pancreas Organotherapy for Guinea-Pigs with Glucosuria of Pancreatic Origin.**—Massaglia's experiments were not numerous but they showed that feeding pancreas extract to animals suffering from the consequences of insufficiency of pancreas functioning, arrested or attenuated the alimentary glucosuria already installed. When the pancreas extract was given with the sugar, no sugar appeared in the urine unless extraordinary amounts had been taken. By leaving even a small portion of the pancreas intact, it proved pos-

sible to ward off the experimental pancreatic diabetes. His findings justify, he thinks, pancreas extract treatment in clinical diabetes of the lean type.

Policlinico, Rome

August 15, XXII, No. 33, pp. 1089-1124

93 Subcutaneous Injections of Phenol in Tetanus and Sciatica. (Tetano traumatico guariti col metodo Baccelli.) E. Mondolfo, V. E. Ovazza and G. C. Rovatti.
94 Transportation of the Wounded in the Mountains. E. Mendes.

August, Surgical Section, No. 8, pp. 361-412

95 Experimental Pyocyaneus Osteomyelitis. G. Bolognesi.
96 *Retraction of Side of Chest as Sign of Pleural Effusion. (Il torace paradossale ed il suo trattamento chirurgico.) O. Cignozzi.
97 *Deviation of Complement with Echinococcus Disease. (La prova di Bordet e Gengou nella infestione echinococcicā dell'uomo.) L. C. Zapelloni. Commenced in No. 7.
98 *Urea Test for Functional Capacity of the Kidneys. (La prova dell'azoturia, come metodo di esame della funzione renale.) E. Pirondini. Commenced in No. 5.

96. **The Paradoxic Thorax.**—This is the term applied by Follet to the retraction of the side of the chest in which there is a pleural effusion. The sound side is rounded out and resonant while on the side of the effusion the interspaces are narrow and the chest wall flat or concave. Follet ascribed it to a defensive reaction, a reflex contraction of half of the muscular coat of the trunk, like the muscular contraction over inflamed viscera. This paradoxic thorax sign pointed the way to effectual operative measures in a case described in detail by Cignozzi. A primary purulent pleuritis had entailed adhesions and deformation of the chest, retraction occurring instead of the bulging common with empyema. This experience demonstrates that this sign is an index of a purulent pleuritis with rapid absorption. In this case the walls returned to normal shape in less than three weeks after resection of the seventh rib and clearing out of the focus. By the end of the second month there was no further sign of anything abnormal. This special form of pleurisy with retraction of the chest wall thus calls imperatively for operative measures.

97. **Deviation of Complement in Echinococcus Disease.**—Zapelloni tabulates the findings of 108 cases and analyzes the experiences reported by others. In the tables the suspected affection and the actual affection found are compared. In the total 108 there were only two cases in which the reaction was positive and no echinococcus could be found, but in six cases echinococcus disease was discovered with a negative response to the deviation of complement test. In all the other cases (56) of certain echinococcus disease the test was strongly positive, and constantly negative in the nonechinococcus cases (44).

98. **Urea Test for Kidney Functioning.**—The first part of Pirondini's article was summarized in these columns last week. He regards test polyuria and test azoturia as remarkably instructive means to estimate the functional capacity of the kidney, but ranks the urea test far above the other. The principle of intensification of the natural and spontaneous elimination of a substance which is a normal ingredient of the urine he thinks is an ideal method for a test. Experimental polyuria is less instructive because both renal and extrarenal factors are involved in this. The urea output is less independent of the kidney functioning. The urea ingested in the test is eliminated in a curve which resembles that of the water in test polyuria. It shows less influence from position and from cirrhosis of the liver, but the curve reflects unerringly the condition in the kidneys. It may reveal impairment of function when the test polyuria seems to indicate satisfactory work on the part of the kidneys. It is most instructive in cases of disease of the bladder or prostate with secondary disturbance in kidney functioning; also in investigating the capacity of each and both kidneys with surgical kidney, and for testing the functioning of the remaining kidney after nephrectomy.

Riforma Medica, Naples

August 14, XXX, No. 33, pp. 897-924

99 Research on the Blood with Chorio-Epithelioma and Infiltrating Mole. S. Cappellani.

Brazil-Medico, Rio de Janeiro

July 22, XXIX, No. 28, pp. 217-224

100 Rat-Bite Disease in Boy of 10. (Verificação no Rio de Janeiro da molestia sokodu—Rattenbisskrankheit—devida a mordedura de rato.) C. Chagas.

Russkiy Vrach, Petrograd

XIV, No. 17, pp. 385-408

101 *Wounds of the Blood Vessels in War. N. A. Bogoraz.
102 Palpation of the Gastro-Intestinal Tract and Its Diagnostic Value. K. M. Rutkevich.
103 Foreign and Russian Mineral Waters. L. B. Bertenson.
104 *Coagulation of Blood; Herudinized Blood. V. S. Sadikoff and A. A. Lozinsky.
105 Billon's Arsenobenzol as Substitute for Salvarsan and Neosalvarsan. D. S. Chapin.

No. 18, pp. 409-432

106 Surgery During the Present War, and Suggestion for Movable Operating Rooms. M. I. Rostovzeff.
107 Pathogenesis of Polycythemia. A. B. Balaian.
108 Immobilization Dressing with Extension for Fractures of Humerus in War. V. I. Kairukshtis.

No. 19, pp. 433-456

109 *Salvarsan and Immunity in Experimental Syphilis. T. V. Verbitzky.
110 *War Psychoneuroses. S. A. Soukhanoff.

101. **Wounds of Blood Vessels.**—Wounds of the blood vessels, according to Bogoraz, are the cause of death in 30 per cent. of those who die on the battle-field. Of 3,500 wounded that could be transported to the base hospital, 0.5 per cent. had wounds of the blood vessels. A frequent result of these wounds was the formation of an aneurysm, arterial or arteriovenous, provided there was no infection. If infection sets in before the formation of the aneurysm, violent and usually fatal hemorrhage followed. The treatment consisted in suturing the wounded vessel. The sutures are applied in the same manner as on the skin. If the vessels are so lacerated that sutures can not be used, then the vessel must be ligated above and below the bleeding place, as near the latter as possible. The results with both methods—suturing of the wounded vessel and ligation—were very good. The treatment of the aneurysms depends on their age. Four of the 10 patients recovered completely; 2 others also recovered after amputation of the thigh, and 4 died. Bogoraz had the opportunity to treat 32 patients with wounds of blood vessels; 18 of the men completely recovered, 3 recovered after amputation, and 11 died, including 7 who succumbed to severe septicemia before the operation.

104. **Coagulation of Blood; Herudinized Blood.**—When the product of the glands of the mouth of a leech—called herudin by its discoverer—is added to the blood directly or injected hypodermically, the blood is herudinized and does not coagulate. Sheep's blood thus herudinized and diluted several times with normal salt solution remains uncoagulated and shows no signs of hemolysis. A 0.5 per thousand solution of ricin or abrin acts in a similar way. Complete hemolysis occurs, however, after addition of a 0.5 per thousand solution of solanin, and a little later coagulation takes place. This action of solanin is due to its dissolving the membranes of the red corpuscles which become hardened from the action of ricin and abrin. Rabbits' blood behaves differently; a 0.5 per cent. solution of ricin causes blood coagulation, but no hemolysis; 0.5 per thousand solution of abrin causes tardy coagulation, while solanin in a 0.5 per thousand solution immediately leads to coagulation of the blood and to hemolysis. The blood of the guinea-pig, cat and man coagulates under ricin (0.5 per cent. solution of ricin and 0.5 per thousand solution of abrin), but is not affected by solanin. Pigeon's blood coagulates only from the 0.5 per cent. solution of ricin. A 10 per cent. solution of sodium chlorid does not change the blood of sheep, rabbit, guinea-pig, or man, but transforms the blood of the pigeon, duck and chicken into a jelly-like mass. Therefore the response of the blood of different animals to the action of abrin, ricin, solanin and normal salt solution may serve for its differentiation.

These experiments of Sadikoff and Lozinsky also led them to think that the chemical properties of the membrane of the red corpuscles have some share in the process of blood

coagulation. As addition of herudin to the blood preserves the red corpuscles for some days, it is thus possible to preserve the latter for hemolytic reactions, such as the Wassermann test, for instance. Hence, the practical value of herudinized blood.

109. **Experimental Syphilis and Immunity.** — Verbitzky studied on white mice and rats the possible causes of the specific action of salvarsan and neosalvarsan. One of the possible causes is the accumulation of antibodies after the spirochetes have been destroyed by the salvarsan. These antibodies evidently contribute to the sterilization of the body, rendering it immune against new infections with the same virus. This immunity is but temporary, lasting only from four to fifteen days, and apparently is not transmitted to the offspring born during the immunity of the parent. The antibodies do not pass into the milk, or only in such small amounts as to be negligible.

110. **War Psychoneuroses.**—Soukhanoff does not admit that the war generates special psychoses which might be referred to a new definite group of mental derangement. Only the external manifestations of the usual psychoses may be modified; the essential, fundamental symptoms and signs remain unchanged. The most common psychoneurosis, the traumatic, appears in two forms: the commotional type, due to air concussion of the central nervous system, and the psychogenous, hysterical type, caused by the emotional shock. Then there also occur combined forms in which the symptoms of both these types are found. In some cases, the psychogenous hysterical phenomena complicate the clinical picture of an already existing neurosis, such as psychasthenia and epilepsy. Finally, it must be admitted that air concussion may cause anatomic changes in the viscera and the central nervous system, even without external lesions.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 24, II, No. 4, pp. 637-708

111 *Hemorrhage with Ruptured Tubal Pregnancy. (Over de bloeding bij verscheuring of doorgroeiing van den wand des zwangeren eileiders.) G. C. Nijhoff.

112 *Testing Color Sense with Colored Filter for the Light. (Onderzoek van den kleurzin met een eenvoudig kleurfilter.) G. F. Rochat.

113 Antipyrin in Whooping Cough Convulsions. W. Akkersdijk.

July 31, No. 5, pp. 709-784

114 Florentine Pathologist of the Fifteenth Century. (Antonius Benivenius van Florence.) B. W. T. Nuijens.

115 Modern Psychiatry, Neurology and Surgery of the Nervous System. L. J. J. Muskens.

116 *Danger from Retention of Heat in Delirium Tremens. (Warmtestuwing bij delirium tremens.) J. G. Schnitzler.

August 7, No. 6, pp. 785-856

117 *Diabetes Mellitus in Children. C. De Lange and J. C. Schippers.

118 Paralysis of Right Phrenic and Cervical Sympathetic Nerves. D. Klinkert.

119 Turpentine Poisoning; Recovery. (Terpentijnvergiftiging.) J. De Jongh.

111. **Hemorrhage with Ruptured Tubal Pregnancy.**—Nijhoff discusses the reasons why the hemorrhage in this condition keeps up so long. He explains it by the anatomic and physiologic features of the syncytium, as he relates in detail. It almost seems as if there were some ferment in the syncytium which impedes coagulation.

112. **Testing the Color Sense.**—Rochat passes the light through a colored fluid, and obtains innumerable gradations of the color by the following device: The square deep dish holding the colored fluid is made in two parts, bisected from corner to corner to form two triangles. The longer sides of the triangular dishes are placed in contact to form the perfect square. By drawing one a little farther along, the layer of colored fluid formed by the juxtaposed dishes becomes thinner, and the tint thus lighter. The tint can thus be varied at will. He has found a solution of pyoctaninum aureum the best adapted for the purpose. The light from an Auer light, passing through ground glass to diffuse it, then through a hole in a screen, and then through the colored fluid, shows red or green according to the thickness of the fluid, and at one point looks white. The apparatus is particularly instructive in testing railroad employees for quickness of perception of different colored signals. It discloses at once any weakness or weakening in the color sense. The conditions of the test are more like those encountered in actual practical life than with other tests. Rochat is privat-docent of ophthalmology at Utrecht, and the apparatus was devised for use at the Netherlands Eye Infirmary there. An illustration of it is given.

116. **Treatment of Delirium Tremens.**—Schnitzler reports in detail three cases of delirium tremens to emphasize the necessity for paying more attention to the temperature than is usually done. The temperature balance in delirium tremens is readily upset, and a fatal rise may be entailed by some of the therapeutic measures applied. In his cases the patients had been so agitated that warm packs were given. The pack in one case was ordered at a temperature of 28 C. In fifteen minutes the man was unconscious and his temperature had run up to 43 C., pulse 186, respiration 60. He was rapidly unpacked and given stimulants, with ice to the head. The temperature dropped to 42.2 C. the pulse to 160, and respiration to 42, but Cheyne-Stokes respiration developed and the man died in less than two hours after having been given the warm pack. The two other patients also died within a few hours after a tepid pack, but the temperature was not taken in these latter hours. There seems every reason to assume that the interference with the normal radiation of heat by the wet pack was responsible for the upset in the temperature balance. He theorizes to explain the mechanism of this in delirium tremens which, he remarks, is a psychosis on a gross organic basis. The nervous system is diseased not only from the psychiatric standpoint but from the neurologic as well. The heat center is liable to be suffering with the other parts of the nervous system. In treatment, the general condition, the heart action and the temperature must be constantly supervised. He suggests that it might be found useful to cool off the body at times in the course of systematic application of the continuous bath in treatment of delirium tremens.

117. **Diabetes in Children.**—De Lange and Schippers remark that between 500 and 600 cases of diabetes in children are on record, and they review the literature on the subject. Recovery was mentioned in only about 30 of the 500 cases, and these were not traced long. They have encountered 6 cases in the last eleven years among the 10,848 child patients admitted to the Emma Hospital during that period, and report 2 further cases from Pel's service. The details of these 8 cases are given in full. All terminated fatally. The duration of the disease was from eight or nine months to two years and five months in those cases in which the date of onset is mentioned. According to the older literature, a slight rise in temperature seems to have been common. In the more recent publications on the subject nothing is said of higher temperatures. Adult diabetics generally show a tendency to a low range of temperature. The older literature also refers occasionally to red corpuscles in the urine, but nothing of the kind is mentioned in the recent literature. Very high ammonia content of the urine is repeatedly mentioned in reports of cases of diabetes in children. In one of the personal cases reported it reached 8.2 gm. in the twenty-four hours' urine when the child was taking 30 gm. sodium bicarbonate. In conclusion they report a case of transient glucosuria in an infant of eleven months with febrile bowel trouble. Glucose, acetone and diacetic acid were found in the urine for a few days but soon disappeared as conditions returned to normal. The nineteenth day glucoronic acid was found transiently in the urine but after this there were no further disturbances. The authors comment on the especially grave prognosis of diabetes in children; one reason may be because it is so difficult to enforce the necessary dietetic restrictions for children as it is impossible to reason with them. Their patients were 2, 4, 5, 6, 8, 11 and 12 years old, half of them girls.

Hospitalstidende, Copenhagen

September 1, LVIII, No. 35, pp. 878-900

120 Congenital Fistula in the Neck from Tonsil nearly to Clavicle. O. Gjellerup.

M3

This Issue Exceeds 72,000 Copies

THE JOURNAL

OF THE

American Medical Association

Annual Subscription, $5.00 — PUBLISHED WEEKLY — Single Copies, 15 Cents

Vol. LXV, No. 12 — **535 North Dearborn Street, CHICAGO, ILL.** — **SEPTEMBER 18, 1915**

H B Ward PhD
Urbana Ill

CONTENTS AND DIGEST

Intra-Urethral Operations for Pathologic Conditions in the Prostatic Urethra and at the Bladder Neck. Granville MacGowan, M.D., Los Angeles.....989

Multiple pathologic conditions of the posterior urethral region. Polypoid and papillomatous growths and their causes. Adenoid and cystic growths. Case reports.

Nitrous Oxid Analgesia in Obstetrics. Its Advantages Over the Freiburg Method. Carl H. Davis, M.D., Chicago.....992

Development of anesthetics. Scopolamin and morphin in obstetrics. Nitrous oxid in obstetrics. Choice of gas machine for analgesia. Cost of nitrous oxid-oxygen analgesia. Its advantages.

Morphin and Scopolamin Amnesia in Obstetrics. John Osborn Polak, M.D., Brooklyn.....994

Experience with the method. Its requisites and its advantages.

Papers of Drs. Davis and Polak discussed by Drs. Libby, Wakefield, Litzenburg, Parsons, Hoag, Breitstein, Kapp, Lazard, Gates, Mount, Livingston, Davis and Polak.

The Treatment of High Blood Pressure. Arthur R. Elliott, M.D., Chicago..999

Material used in the study. Clinical groups and their characteristics. Reduction of high blood pressure.

Infantile Scurvy. II. A New Aspect of the Symptomatology, Pathology and Diet. Alfred F. Hess, M.D., New York.....1003

Common conception of the disease. Symptomatology. Involvement of the circulatory system. Enlargement of the right heart. Edema. Involvement of the nervous system. Relation to other deficiency diseases. Dietetic treatment.

Further Observations on the Fate of Free Bone Transplants. W. L. Brown, M.D., and C. P. Brown, M.D., El Paso, Texas.....1007

Absorption of free transplants. Question of retention of the periosteum. Protocol of experiments.

Observations on the Intracutaneous Reaction of Schick in 455 Infants and Children. Rudolph Duryea Moffett, M.D., and Arthur C. Conrad, M.D., New York.....1010

Value of the Schick reaction in testing the efficiency of diphtheria antitoxin and differentiating doubtful membranes in the throat, as well as susceptible and nonsusceptible cases. Observations made at the Metropolitan Hospital, New York. Family immunity to diphtheria. Less expenditure for antitoxin required with the use of this test.

Myositis Ossificans Traumatica. Oscar M. Shere, M.D., Denver.....1012

Definition. Case history. Traumatic etiology of the bony growth. Its relation to osteosarcoma. Treatment.

Discussed by Drs. Lamson, Lewis, McGlannan and Shere.

Trachea Position. Gerald B. Webb, M.D., Alexius M. Forster, M.D., and G. Burton Gilbert, M.D., Colorado Springs, Colo.....1017

Deviation of the trachea; its occurrence and significance.

Cases from the Skin Clinic of Leland Stanford Jr. University School of

(Continued on next page)

Entered as Second-Class Matter, June 25, 1885, at the Post office at Chicago, Illinois, under Act of March 3, 1879.
Next Annual Session, Detroit, Michigan, June 12-16, 1916.
Copyright, 1915, by the American Medical Association.

New York Polyclinic Medical School and Hospital 341-351 West 50th Street NEW YORK CITY

General, Separate Clinical and Special Post-Graduate Courses of Individual Instruction. Laboratory, Cadaver and Operative Courses.
Courses of Practical Work under tutelage, for periods of three months, six months, one year, for specialists.
State particular information desired when writing. Address inquiries to JOHN A. WYETH, M.D., LL.D., President of the Faculty, or MR. JAMES U. NORRIS, Superintendent.
See BACK COVER October 2 Issue

HENRY B. WARD,
STATE UNIVERSITY,

Bulletin

SOUTH AMERICA

Recently one of our South American travelers secured in one week from one city of less than 150 physicians, orders for Saunders' Books totaling $924.00. The right kind of made-in-America books, coupled with the right kind of service!

Moynihan's Abdominal Operations

This *new (3d) edition* was so thoroughly revised that the work had to be reset from cover to cover. Over 150 pages of new matter and some 80 new illustrations were added, making 385 illustrations, five of them in colors — really *an atlas of abdominal surgery.* This surgery is a personal record of Moynihan's operative work. You get his own successful methods of diagnosis. You get his own technic, in every case fully illustrated with handsome pictures. You get the bacteriology of the stomach and intestines, sterilization and preparation of patient and operator. You get complications, sequels and after-care. Then the various operations are detailed with forceful clearness, discussing first gastric operations, following with intestinal operations, operations upon the liver, the pancreas, the spleen. Two new chapters added in this edition are *excision of gastric ulcer* and *complete gastrectomy,* giving the latest developments in these operative measures. The chapter on *complications* covers 40 pages, taking up peritonitis, lung complications, parotitis, hematemesis, acute gastric dilatation, phlebitis, and thrombosis.

Two octavos, totaling 1000 pages, with 385 illustrations. By Sir Berkeley Moynihan, M.S. (Lond.), F.R.C.S., of Leeds. Per set: Cloth, $10.00 net; Half Morocco, $13.00 net.

SAUNDERS, *Publishers*

See Page 3

CONTENTS AND DIGEST—Concluded

Medicine. Harry E. Alderson, M.D., San Francisco.....1018

Leukoplakia of tongue; tuberculosis verrucosa; lupus vulgaris; epithelioma; alopecia universalis; recurrent erysipelas, and keratosis palmaris and plantaris hereditaria.
Discussed by Drs. MacKee, Ormsby, Zeisler, Lain, Sutton, Markley, Fox and Chipman.

Adenoma of the Breast. Jacob L. Bubis, M.D., and Allen Graham, M.D., Cleveland.....1019

Report of case. Presence of accessory breast tissue in axilla. Response of physiologically active cells, anomalously placed, to physiologic stimulus for homologous tissue cells.

Gastro-Intestinal Studies. X. An Investigation of the Gastric Residuum in Over One Hundred Normal Cases. Chester C. Fowler, Ph.D., Martin E. Rehfuss, M.D., and Philip B. Hawk, Ph.D., Philadelphia.....1021

Removal of the residuum. Its quantity and cause. Purpose of the investigation. Methods. Averages on the compilation of the normal gastric residuum. Comment.

The Fallacy of the Indiscriminate Internal Use of Bulgarian Bacillus, with Some Evident Dangers. Orvall Smiley, M.D., Indianapolis.....1025

Acidosis produced by Bulgarian bacillus administered to patients suffering from emaciating diseases.

Foreign Bodies in the Throat. Thomas McSwiney Barrett, M.D., Dixmont, Pa.....1026

NEW INSTRUMENTS AND SUGGESTIONS

Local Anesthesia in Intravenous Injections. John H. Stokes, M.D., Chicago 1027

Irrigating Nozzle for Cystoscopy—Modification of the Young Urethroscope—Holder for Fulguration Wires. John W. Churchman, M.D., New Haven, Conn.....1027

Method of Finding Tubercle Bacilli in Spinal Fluid, and the Cell Count in Tuberculous Meningitis. Joseph Roby, M.D., Rochester, N. Y.....1027

An Improved Blood Cell Counting Chamber. C. C. Bass, M.D., New Orleans.....1028

A New and Handy Inoculation Needle. Frank M. Wood, M.D., Chicago..1029

Recent Simplifications of the Syringe Method of Transfusion. Lester J. Unger, M.D., New York.....1029

EDITORIALS

Study of the Older Medical Periodicals: A guide to medical history.....1030
Inherited Effects of Chronic Lead Poisoning: Indication that there is a definite blastophthoria in affected guinea-pigs.....1031
Scurvy in Mother and Fetus: Effect of diet on the fetus.....1031
Is Strychnin a "Cardiac Tonic"? Absence of justification for its use in heart failure 1032
Potassium Poisoning in Nephritis: Danger of a high potassium content of the blood 1033
Tuberculosis and Immunity: A retrospect 1034

Current Comment

Medical Licensure: Need of one board and one standard in each state for protection of the public 1035
Alkalosis as a Possible Pathologic Factor: Parathyroid tetany as an indication of increased alkalinity 1035
Osteopaths and the Harrison Law: Their demand, in several states, of the right to register 1035
Absorption from the Stomach: Absence of absorption through the gastric wall.....1036
The Phosphorus Content of Blood Serum: Lipoid phosphorus, inorganic phosphorus and protein-phosphorus derivatives 1036

MEDICAL NEWS

Alaska: Correction 1037
California: Japanese Leper Discovered—Personal—Jury Reduces Fees.....1037
Colorado: Sanitary Rules for the Home—To Abolish Police Surgeon—Personal.....1037
Florida: Physicians at Small Salaries Wanted—Personal—Instruction for Midwives—Enforcement of Health Laws Demanded—Regulations for School Inspection — Hospital Notes 1037
Illinois: Foot and Mouth Disease. Chicago: Personal 1038
Indiana: Sanatorium Company Dissolves — Sanitary Survey—Loan to Board of Health — Physicians Combine— Disease Prevention Day—Personal 1038
Iowa: Doctors' Building for Clinton—Personal —Vaccination 1038
Kentucky: Inspection of Clinics — County Health Survey—Dustless Streets and Health —Personal—Hospital Notes—July Work of the Tuberculosis Commission.....1038
Louisiana: Awards Tulane — Site for Sanatorium Purchased—Physicians Occupational Tax Opposed—Seeks Site for North Louisiana Pellagra Hospital—Personal.....1038
Maryland: Typhus at Bay View — Strike in Hospital — Personal — New House Staff at Johns Hopkins 1039
Massachusetts: Presentation of Bust of S. Weir Mitchell—Selection of School Doctors —Personal 1039
Michigan: Meeting of the Michigan State Medical Association 1039
Minnesota: Hospital for Indians to Open 1039
Montana: Personal—Spotted Fever.....1039
Nebraska: New Hospital for University..1039
New York: Personal — Convalescent Home Dedicated—Courses in Public Health. New York City: Personal—Physical Examination of Food Handlers.....1040
North Carolina: Damages for Soil Pollution —Erection of New Hospital Begun....1040
Pennsylvania: Personal — Typhoid Spreading in Danville. Philadelphia: Arraign Violators of the "Housing Act"—Central States Conference on Social Hygiene—Hotel Cooks and Waiters Must Have Director Ziegler's "O. K."—Thorough Sanitary Survey to Be Made of City Schools.....1040
Canada 1040
General 1041
War Notes 1041
Paris Letter: The War.....1042
Vienna Letter: The War.....1042
Berlin Letter 1043

MARRIAGES 1044

DEATHS 1044

PROPAGANDA FOR REFORM 1045

Two Reasons for the Perpetuation of the "Great American Fraud."
Articles Refused Recognition.
Verlie Gatlin's Wrinkle Remover.

CORRESPONDENCE 1048

The Horowitz-Beebe Cancer Cure — A Disclaimer.
Our First Vital Statistics Law.
The So-Called New Antiseptic.

QUERIES AND MINOR NOTES 1049

Preserving Pathologic Specimens.
Lactobacilline Preparations of the Franco-American Ferment Company.
Literature on Radioactive Waters.
Von Leube Treatment of Gastric Ulcer.
Axillary Hairs and Perspiration.
Health of Physicians.

MEDICAL EDUCATION AND STATE BOARDS OF REGISTRATION

Coming Examinations — Addenda to the Educational Number—Mississippi June Report—Pennsylvania June Report.....1050

BOOK NOTICES 1051

MISCELLANY

Creating an Efficient Health Department — Trachoma 1052

MEDICOLEGAL

Responsibility in Personal Injury Case for Malpractice of Surgeon—Frenzy from Chloral; Physician's Prescription as Defense to Crime; Opinions Derived from Medical Books — Contract of Board of Health with Member Also Town Physician to Attend Case of Smallpox 1053

SOCIETY PROCEEDINGS 1054

Coming Meetings.
Michigan State Medical Society.

CURRENT MEDICAL LITERATURE

American Medical Journals

Results of Cardiorrhaphy.....1055
Use of Caffein in Digitalis Arrhythmias—Brain Syphilis—Compression of Carotids in Epilepsy—Tubercle Bacilli in Blood of Tuberculous—Glucose Solutions as Prophylactic in Shock 1056
Endocarditis in Children — Tonsillectomy as Therapeutic Measure—Dermoid Cyst Showing Unusual Features.....1057
Action of Ethylhydrocuprein on Pneumococci —Effect of Irritation on Meninges—Studies of Metabolism in Dog—Function of Spleen in Experimental Infection—Laws Governing Rate of Excretion in Man—Case of Splenic Anemia — Pathology of Pernicious Anemia 1058
Diphtheria Antitoxin Intravenously Injected—Experimental Ligation of Splenic Arteries in Dogs 1059
Reconstruction of Common Bile Duct — Pylorus; Its Musculature—Extraperitoneal Appendix Vermiformis — Simplified Method of Blood Transfusion — Autoplastic Repair of Recent Fractures 1060
Closure of Right Rectus Incision.....1061

Foreign Medical Journals

Cultivation of Leprosy Bacillus — Hematuria Causes and Diagnosis — Sphenomaxillary Fossa—Alexander-Adams Operation.....1061
Migraine and Ocular Defects—Rubeola in Children—Splenectomy in Children—New Fracture After Healing of Bone Fractured by Projectile—Antimony and Potassium Tartrate in Leishmaniosis—Vaccine Therapy of Typhoid — Superheated Air in Gynecology 1062
Cryptogenous Peritonitis—Diagnosis of Horse-Shoe Kidney—Displacement of the Pylorus with Change of Position—Hypophysis Tumors—Traumatic Neuroses in War—"Hunger Sickness"—Progress of Regeneration of Nerves 1063
Symptoms of Anaphylaxis in Migraine—Prophylaxis of Epidemic Meningitis — Indicanemia—Open Puncture of the Pleura—Nourishing Beverage — Dyspepsia in Infants — Electricity Softens Scar Tissue.....1064
Uterine Cancer—Malignant Uterine Myomas—Tests of Functional Capacity of the Kidneys in the Pregnant and Parturient—Retroflexion of the Uterus—Blood Findings with Metastatic Tumor in the Bone Marrow—Treatment of Cancer with Autolysates.....1065
Gout of the Air Passages—Iodin Treatment of Wounds—Acute Puerperal Inversion.1066
Accumulation of Water in the Mouth—Obesity and Life Insurance—Vaccine Therapy of Typhoid—Ferments in the Blood and Urine in Nephritis—Differentiation of Exudates and Transudates—Research on Gastric Hyperacidity 1067
Prohibition in Russia—Prohibition and Delirium Tremens in Petrograd—Wright's Vaccines—Radium Treatment of Cancer of the Uterus—Abdominal Wounds in War—Phlegmonous Gastritis—Obstetric Table.....1068

CLIPPINGS FROM LAY EXCHANGES—TONICS AND SEDATIVES—BOOKS RECEIVED—THE PUBLIC SERVICE.....
.....Adv. Page 20

PAUL B. HOEBER 69 E. 59th St., NEW YORK : : AMERICAN, ENGLISH, GERMAN, FRENCH We supply any Medical Publication, no matter where or when publisht. **MEDICAL BOOKS**

If you wish to buy or sell books, electrical or surgical instruments, an auto, etc. place your announcement before two-thirds of the Physicians in the U. S. by advertising in the classified columns beginning on page 20

V65-13

SAUNDERS

"It is with words as with sunbeams—the more they are condensed the deeper they burn"—Southey

New Books and New Editions

Herrick's Neurology

READY NEXT WEEK

Professor Herrick's new work will aid the student to organize his knowledge and appreciate the significance of the nervous system as a mechanism right at the beginning of his study. It is sufficiently elementary to be used by students of elementary psychology in colleges and normal schools, by students of general zoology and comparative anatomy, and by medical students as a key to the interpretation of the larger works on neurology.

12mo of 360 pages, illustrated. By C. Judson Herrick, Ph.D., Professor of Neurology in the University of Chicago.

DeLee's Obstetrics

JUST OUT—NEW (2d) EDITION
NEW ARTICLE ON "TWILIGHT SLEEP"

For the second edition Dr. DeLee has subjected his successful work to a very searching revision. Many pages of new matter and many new and original illustrations have been added. The chapters on the Abderhalden pregnancy reaction, on "twilight sleep," on "dry labor," labor in old primiparæ, blood-pressure, and extraperitoneal cesarean section have been much enlarged.

Large octavo of 1087 pages, with 938 illustrations, 175 in colors. By Joseph B. DeLee, M.D., Professor of Obstetrics in the Northwestern University Medical School, Chicago.
Cloth, $8.00 net; Half Morocco, $9.50 net.

Gant on Diarrheas

JUST ISSUED

This new work is particularly full on *diagnosis and treatment.* The differential diagnosis of diarrheas of local and those of systemic disturbances is strongly brought out. You get reliable methods of simultaneously controlling associated constipation and diarrhea. There are special chapters on *nervous diarrheas* and those originating from gastrogenic and enterogenic dyspepsias.

Octavo of 604 pages, with 181 illustrations. By Samuel G. Gant, M.D., LL.D., Professor of Diseases of the Sigmoid Flexure, Colon, Rectum and Anus, New York Post-Graduate Medical School and Hospital.
Cloth, $6.00 net; Half Morocco, $7.50 net.

New Mayo Clinic Volume

JUST READY
THE 1914 VOLUME

This new Mayo Clinic Volume gives you all the important clinical papers, all the improved technic as developed at The Mayo Clinic during the past year. Although known as the 1914 volume, the work has been brought right down to date. In fact, many of the articles did not appear until *1915*, some being scheduled for as late as *May and June of this year.*

Octavo of 800 pages, illustrated. By William J. Mayo, M.D., Charles H. Mayo, M.D., and their Associates at The Mayo Clinic, Rochester, Minn.
Cloth, $5.50 net.

Coolidge on Nose and Throat

JUST OUT

This new book furnishes the student and practitioner a guide and ready reference to the important details of examination, diagnosis and treatment. Established facts are emphasized and unproved statements avoided. Anatomy and physiology are included.

Octavo of 360 pages, illustrated. By Algernon Coolidge, M.D., Professor of Laryngology, Harvard Medical School.
Cloth, $1.50 net.

Kyle on Nose and Throat

JUST READY
NEW (5th) EDITION

The *new (5th) edition* of Dr. Kyle's work shows an *increase of 100 pages* and some *40 new illustrations.* The following *new articles* have been added: Vaccine therapy; lactic bacteriotherapy in atrophic rhinitis; salvarsan; sphenopalatine ganglia neuralgia; negative air-pressure in accessory sinus disease; chronic hyperplastic ethmoiditis.

Octavo of 856 pages, with 272 illustrations, 27 in colors. By D. Braden Kyle, M.D., Professor of Laryngology and Rhinology, Jefferson Medical College.
Cloth, $4.50 net.

See also the two pages following

W. B. SAUNDERS COMPANY, Philadelphia and London

Canadian Agency: 406 Yonge St., Toronto Australian Agency: Centreway, 263 Collins St., Melbourne

SAUNDERS

"Words are the ways of actions"—Lavater

New Books and New Editions

Hadley on the Horse

JUST OUT

This new work correlates the structure and function of each organ of the body, and shows how the hidden parts are related to the form, movements, and utility of the animal. Then, in another part, you get a concise discussion of the causes, methods of prevention, and effects of disease.

12mo of 260 pages, illustrated. By FREDERICK B. HADLEY, D.V.M., Associate Professor of Veterinary Science, University of Wisconsin. Cloth, $1.50 net.

Kaupp on Poultry Culture

OUT TO-DAY

This work gives you the breeds and varieties of poultry, hygiene and sanitation, ventilation, poultry-house construction, equipment, ridding stock of vermin, internal parasites, and other diseases. You get the gross anatomy and functions of the digestive organs, food-stuffs, compounding rations, fattening, dressing, packing, selling, care of eggs, handling feathers, value of droppings as fertilizer, caponizing.

12mo of 418 pages, with 197 illustrations. By B. F. KAUPP, M.S., D.V.M., Poultry Investigator and Pathologist, North Carolina Experiment Station.

Tousey's Electricity, X-rays, Radium

SECOND EDITION

For this *new (2d) edition* Dr. Tousey has given his book a most severe revision. *New matter* to the extent of over *100 pages* has been added, and some *50 new illustrations.* Of particular note are the new articles on diathermy, sinusoidal currents, radiography with intensifying screens, the Coolidge and similar roentgen tubes, Tousey's method of x-ray dosage, and radium therapy.

Octavo of 1219 pages, with 801 illustrations, 19 in colors. By SINCLAIR TOUSEY, M.D., Consulting Surgeon to St. Bartholomew's Clinic, New York. Cloth, $7.50 net; Half Morocco, $9.00 net.

Cabot's Differential Diagnosis

VOL. I—NEW (3d) EDITION
VOL. II—JUST ISSUED

Dr. Cabot's works on *Differential Diagnosis* are *case-teaching diagnoses.* They train you so that when a patient comes into your office and says she has *fainting attacks,* for instance, a group of causes shoots into the field of attention like the figures on a cash register. Then the causes of each particular symptom are narrowed down by elimination.

Each an octavo of 750 pages, illustrated. By RICHARD C. CABOT, M.D., Assistant Professor of Clinical Medicine, Harvard Medical School. Per volume: Cloth, $5.50 net; Half Morocco, $7.00 net.

Smith's What to Eat and Why

JUST READY
NEW (2d) EDITION

Dr. Smith's book describes the fundamental elements of food and the principles underlying its use, gives the essential reasons *why* a change in diet in certain diseases is desirable, and tells you *how* to make this change. This edition contains new chapters on exercise and on rheumatism. The different affections of the stomach have been rewritten.

Octavo of 377 pages. By G. CARROLL SMITH, M.D., Boston, Mass. Cloth, $2.50 net

Prentiss' Embryology

JUST ISSUED

Professor Prentiss has written both a laboratory manual and a descriptive textbook combined. It is the only recent book describing *the chick and pig embryo.* You get a large number of original dissections of pig and human embryos, giving directions for making dissections of the nervous system, viscera, face, palate and tongue.

Large octavo of 400 pages, with 368 illustrations, many in colors. By CHARLES W. PRENTISS, Ph.D., formerly Professor of Microscopic Anatomy, Northwestern University Medical School. Cloth, $3.75 net.

See also the page preceding and the one opposite

W. B. SAUNDERS COMPANY, West Washington Square, Phila,

Canadian Agency: 406 Yonge St., Toronto Australian Agency: Centreway, 263 Collins St., Melbourne

SAUNDERS

"The word that is spoken perishes, the word that is written remains"—Latin

New Books and New Editions

Kolmer's Infection, Immunity, Specific Therapy

This is a work for general practitioner and laboratory worker alike, but particularly for the *general practitioner.* You get here the exact technic, step by step, of making *serums and autogenous vaccines* and their *actual use* in diagnosis and treatment. You get definite directions for injecting vaccines, serums, salvarsan, neosalvarsan; definite directions for the tuberculin, luetin, mallein, and similar tests.

Octavo of 900 pages, with 143 illustrations, 43 in colors drawn by Edwin F. Faber. By JOHN A. KOLMER, M.D., Dr.P.H., Instructor in Experimental Pathology, University of Pennsylvania.
Cloth, $6.00 net; Half Morocco, $7.50 net.

Morrow's Diagnostic and Therapeutic Technic

SECOND EDITION

For this *new (2d) edition,* Dr. Morrow's book—diagnostic and therapeutic procedures you perform every day—has been entirely reset and enlarged, much new matter being added throughout. Further, about fifty additional line-drawings have been added and a number of the old ones replaced by others.

Octavo of 830 pages, with 860 line-drawings. By ALBERT S. MORROW, M.D., Clinical Professor of Surgery at the New York Polyclinic. Cloth, $5.00 net; Half Morocco, $6.50 net.

Stevens' Practice of Medicine

JUST READY
NEW (10th) EDITION

In preparing this new edition Dr. Stevens has carefully revised the text throughout. He has entirely rewritten some of the chapters; added a number of new ones, and there is scarcely one he has not enlarged or otherwise changed by the addition of new matter.

12mo of 629 pages, illustrated. By A. A. STEVENS, M.D., Lecturer on Medicine, University of Pennsylvania. Flexible leather, $2.50 net.

McKenzie on Exercise

JUST ISSUED
NEW (2d) EDITION

New matter to the extent of *175 pages* has been added and *132 additional illustrations* have been included. These additions make the work express the very latest advances both in the developmental exercises and physical training of the school, gymnasium, field and playground, and the application of systematic exercises and athletics for the correction of deformities and certain functional derangements.

Octavo of 585 pages, with 478 illustrations. By R. TAIT MCKENZIE, M.D., Professor of Physical Education, and Director of the Department, University of Pennsylvania. Cloth, $4.00 net.

Bergey's Hygiene

NEW (5th) EDITION

Dr. Bergey's book covers every phase of sanitation and hygiene of interest to the physician and health officer. There are chapters on ventilation, heating, water-supply, sewage, food and dieting, meat inspection, personal, industrial, school, military and naval hygiene, soil, house construction, immunity, biologic aids to diagnosis, prophylaxis, disinfection.

Octavo of 531 pages, illustrated. By D. H. BERGEY, A.M., M.D., Assistant Professor of Bacteriology at the University of Pennsylvania. Cloth, $3.00 net.

Holland's Medical Chemistry

NEW (4th) EDITION

This *new (4th) edition* contains much new matter on radium, thorium, uranium, and vanadium; on the newer organic compounds of arsenic, carbohydrates and glucosids, synthetic local anesthetics allied to cocain, protective enzymes, hormones, and an entire chapter on feces. Also tests for the more exact study of metabolism and clinical chemistry, such as the Wassermann, the Abderhalden, etc.

Octavo of 678 pages, illustrated, some in colors. By JAMES W. HOLLAND, M.D., Emeritus Professor of Medical Chemistry and Toxicology at the Jefferson Medical College, Philadelphia. Cloth, $3.00 net.

See also the two pages preceding

W. B. SAUNDERS COMPANY, Philadelphia and London

Canadian Agency: 406 Yonge St., Toronto Australian Agency: Centreway, 263 Collins St., Melbourne

OFFICERS OF THE AMERICAN MEDICAL ASSOCIATION, 1915-1916

NEXT ANNUAL SESSION, DETROIT, MICH., 1916

PRESIDENT—William L. Rodman, Philadelphia.

PRESIDENT-ELECT—Rupert Blue, Washington, D. C.

FIRST VICE-PRESIDENT—Albert Vander Veer, Albany, N. Y.

SECOND VICE-PRESIDENT—George B. Evans, Dayton, Ohio.

THIRD VICE-PRESIDENT—Donald Campbell, Butte, Mont.

FOURTH VICE-PRESIDENT—Herbert C. Moffitt, San Francisco.

SECRETARY—Alexander R. Craig, 535 N. Dearborn St., Chicago.

TREASURER—William Allen Pusey, Chicago.

EDITOR AND GENERAL MANAGER—George H. Simmons, 535 N. Dearborn St., Chicago.

BOARD OF TRUSTEES—W. W. Grant, Denver, 1916; Frank J. Lutz, St. Louis, 1916; Oscar Dowling, Shreveport, La., 1916; Philip Marvel, Atlantic City, 1917; Philip Mills Jones, San Francisco, 1917; W. T. Sarles, Sparta, Wis., 1917; M. L. Harris, Secretary, Chicago, 1918; W. T. Councilman, Chairman, Boston, 1918; Thomas McDavitt, St. Paul, 1918.

JUDICIAL COUNCIL — Hubert Work, Pueblo, Colo., 1916; Randolph Winslow, Baltimore, 1917; A. B. Cooke, Los Angeles, Calif., 1918; Alexander Lambert, Chairman, New York, 1919; James E. Moore, Minneapolis, Minn., 1920; Alexander R. Craig, Secretary, 535 N. Dearborn St. Chicago.

COUNCIL ON HEALTH AND PUBLIC INSTRUCTION—H. B. Favill, Chairman, Chicago, 1916; Walter B. Cannon, Boston, 1917; W. S. Rankin, Raleigh, N. C., 1918; H. M. Bracken, Minneapolis, 1919; Milton Board, Louisville, Ky., 1920; Frederick R. Green, Secretary, 535 N. Dearborn St., Chicago.

COUNCIL ON MEDICAL EDUCATION—W. D. Haggard, Nashville, Tenn., 1916; James W. Holland, Philadelphia, 1917; H. D. Arnold, Boston, 1918; Arthur D. Bevan, Chairman, Chicago, 1919; Robert C. Coffey, Portland, Ore., 1920; N. P. Colwell, Secretary, 535 N. Dearborn St., Chicago.

COUNCIL ON SCIENTIFIC ASSEMBLY—George H. Simmons, Chicago, 1919; Roger S. Morris, Cincinnati, 1918; E. S. Judd, Rochester, Minn., 1917; J. Shelton Horsley, Richmond, Va., 1916; Alexander R. Craig. Secretary of the Association, ex-officio.

COUNCIL ON PHARMACY AND CHEMISTRY—O. T. Osborne, New Haven, Conn., 1916; Torald Sollmann, Cleveland, 1916; M. I. Wilbert, Washington, D. C., 1916; Reid Hunt, Boston, Mass, 1917; J. H. Long, Chicago, 1917; Julius Stieglitz, Chicago, 1917; David L. Edsall, Boston, 1918; R. A. Hatcher, New York City, 1918; A. W. Hewlett, Ann Arbor, Mich., 1918; John Howland, Baltimore, 1919; Henry Kramer, Philadelphia, 1919; C. L. Alsberg, Washington, D. C., 1919; John F. Anderson, Washington, D. C., 1920; F. G. Novy, Ann Arbor, Mich., 1920; George H. Simmons, Chairman, Chicago, 1920; W. A. Puckner, Secretary, 535 N. Dearborn St., Chicago.

OFFICERS OF SECTIONS, 1915-1916

PRACTICE OF MEDICINE—Chairman, Roger S. Morris, Cincinnati; Vice-Chairman, John A. Lichty, Pittsburgh; Secretary, James S. McLester, Empire Bldg., Birmingham, Ala.

SURGERY, GENERAL AND ABDOMINAL—Chairman, E. W. Andrews, Chicago; Vice-Chairman, Fred. T. Murphy, St. Louis; Secretary, E. S. Judd, Rochester, Minn.

OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY—Chairman, Edward Reynolds, Boston; Vice-Chairman, Alfred B. Spalding, San Francisco; Secretary, Brooke M. Anspach, 119 S. 20th St., Philadelphia.

OPHTHALMOLOGY—Chairman, Walter R. Parker, Detroit; Vice-Chairman, Vard H. Hulen, San Francisco; Secretary, George S. Derby, 7 Hereford St., Boston.

LARYNGOLOGY, OTOLOGY AND RHINOLOGY—Chairman, Hill Hastings, Los Angeles; Vice-Chairman, William R. Murray, Minneapolis; Secretary, Francis P. Emerson, 520 Commonwealth Ave., Boston.

DISEASES OF CHILDREN—Chairman, T. C. McCleave, Oakland, Calif.; Vice-Chairman, E. P. Copeland, Washington, D. C., Secretary, F. P. Gengenbach, 1434 Glenarm St., Denver.

PHARMACOLOGY AND THERAPEUTICS — Chairman, R. A. Hatcher, New York; Vice-Chairman, J. R. Arneill, Denver; Secretary, M. I. Wilbert, 25th and E Sts., N. W., Washington, D. C.

PATHOLOGY AND PHYSIOLOGY — Chairman, F. P. Gay, Berkeley, Calif.; Vice-Chairman, James Ewing, New York; Secretary, Isabella C. Herb, 110 S. Ashland Blvd., Chicago.

STOMATOLOGY—Chairman, F. B. Moorehead, Chicago; Vice-Chairman, Arthur D. Black, Chicago; Secretary, Eugene S. Talbot, 31 N. State St., Chicago.

NERVOUS AND MENTAL DISEASES—Chairman, George A. Moleen, Denver; Vice-Chairman, M. A. Bliss, St. Louis; Secretary, A. S. Hamilton, 513 Pillsbury Bldg., Minneapolis.

DERMATOLOGY—Chairman, Howard Morrow, San Francisco; Vice-Chairman, Everett S. Lain, Oklahoma City; Secretary, H. H. Hazen, 1621 Connecticut Ave., Washington, D. C.

PREVENTIVE MEDICINE AND PUBLIC HEALTH—Chairman, William C. Rucker, Washington, D. C.; Vice-Chairman, James Adams Hayne, Columbia, S. C.; Secretary, O. P. Geier, Ortiz Bldg., Cincinnati.

GENITO-URINARY DISEASES — Chairman, Louis E. Schmidt, Chicago; Vice-Chairman, Francis McCullum, Kansas City, Mo.; Secretary, W. F. Braasch, Rochester, Minn.

HOSPITALS—Chairman, L. W. Littig, Davenport, Iowa; Secretary, John A. Hornsby, Tower Bldg., Chicago.

ORTHOPEDIC SURGERY — Chairman, Russell A. Hibbs, New York; Vice-Chairman, E. W. Ryerson, Chicago; Secretary, Emil S. Geist, 614 Syndicate Bldg., Minneapolis.

The list of State Associations appeared in this space three weeks ago; the list of National Societies last week.

HIGH QUALITY

Combined with

Fine Pharmaceutical Finish

are the characteristics of the products of our laboratory, comprising a full and complete line of standard pharmaceuticals. The physician who expects a definite result should prescribe, and see that he gets the preparations made by

Henry K. Wampole & Co., Inc.

MANUFACTURING PHARMACISTS

Philadelphia - - U. S. A.

GRAY'S ANATOMY

Anatomy, Descriptive and Applied

By HENRY GRAY, F.R.S.

Fellow of the Royal College of Surgeons; Lecturer on Anatomy at St. George's Hospital Medical School, London.

NEW AMERICAN EDITION

THOROUGHLY REVISED AND RE-EDITED

WITH THE ORDINARY TERMINOLOGY FOLLOWED BY THE B N A

By EDWARD ANTHONY SPITZKA, M.D.

Professor of General Anatomy in the Jefferson Medical College, Philadelphia.

Imperial octavo, 1502 pages, with 1225 large and elaborate engravings. Cloth, $6.00 net; leather, $7.00 net.

In this revision every line has been critically considered and the whole volume has again been brought abreast of the latest advances with the most approved methods of presentation. The ordinary terminology is given precedence, but the Basle Anatomical Nomenclature is added in parentheses so that either can be used with facility.

A feature in which GRAY has always been unique—the names of the parts being engraved wherever possible, directly on the illustration—is carefully preserved. The reader is thus enabled to learn the nomenclature, positions, extent and relations of the parts at a glance, with the minimum of effort and the maximum of permanence, *in contrast with the mental waste caused by the old-fashioned and cheap system of reference letters or leaders.* Colors are used abundantly throughout, and a superb index, comprising both terminologies in a single alphabet, completes all the service which it is possible for a book to render. As a teaching instrument GRAY'S ANATOMY embodies all that careful thought and unstinted expenditure can combine in a text-book.

NEW ENGLISH EDITION

THOROUGHLY REVISED AND RE-EDITED

WITH THE BASLE ANATOMICAL NOMENCLATURE IN ENGLISH

By ROBERT HOWDEN, M.A., M.B., M.C.

Professor of Anatomy in the University of Durham, England.

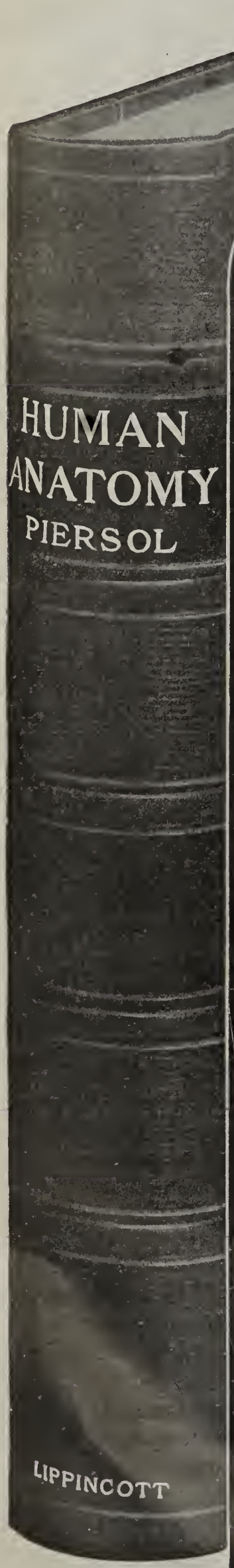
Imperial octavo, 1407 pages, with 1126 large and elaborate engravings. Cloth, 6.00 net; leather, $7.00 net.

In the English Edition, edited by Professor Howden, the most striking feature is the substitution of the Basle Anatomical Nomenclature in first place. According to the judgment of Professor Howden, in which the leading American anatomists concur, the B N A terms are given in English, except where the Latin form is universally used. Regardless of the expense of re-engraving, the B N A terms have been cut on the face of the parts in the illustrations wherever possible, so that this feature—unique in GRAY'S ANATOMY—is preserved. The reader thus learns at a glance the names, positions, extent and relations of the parts, and *avoids the immense waste of effort caused by the outworn system of reference letters or leaders.* Colors are abundantly used. A Glossary gives the equivalents of the three systems of nomenclature — the B N A in English, in Latin, and the ordinary terminology—in parallel columns, so that command of all is facilitated. Thus combining every facility from the didactic standpoint, GRAY has always been by far the easiest book from which to teach or learn anatomy.

PHILADELPHIA
706-8-10 Sansom Street

LEA & FEBIGER

NEW YORK
2 W. Forty-Fifth Street



Davis

JUST ISSUED
NEW THIRD EDITION

Applied Anatomy

By GWILYM G. DAVIS

Associate Professor of Applied Anatomy, University of Pennsylvania; Surgeon to the Episcopal, St. Joseph's, and Orthopædic Hospitals; Orthopædic Surgeon to the Philadelphia General Hospital

Octavo. 630 pages. 630 illustrations in colors and black. Cloth, $6.00.

Few books have appeared in recent years of more solid value to physician and surgeon alike than this well planned and well executed work. The central idea is to marshal the essential details of anatomical structure into a harmonious grouping, so that the reader can get, almost at a glance, a clear and accurate comprehension of the relations, normal and pathologic, of all structures of any region of the human body that may be the object of investigation.

The correlation of facts and the arrangement of the text are such that it puts in one's hands the most valuable treatise from a surgical standpoint.

It is one of the most fully illustrated works extant, over 600 illustrations, nearly all original and prepared especially for this book. These were made from preparations of fractures, dislocations, dissections, etc., made by the author and his assistants for this special purpose, and are of the highest obtainable quality.

Thomas

Applied Immunology

The Practical Application of Sera and Bacterins Prophylactically, Diagnostically and Therapeutically

INCLUDING AN APPENDIX ON

Serum Treatment of Hemorrhage, Organotherapy and Chemotherapy

By B. A. THOMAS, A.M., M.D. and R. H. IVY, M.D., D.D.S.

Professor of Genito-Urinary Surgery in the Polyclinic Hospital and College for Graduates in Medicine; Instructor in Surgery in the University of Pennsylvania

Assistant Instructor in Surgery in the University of Pennsylvania; Instructor in Genito-Urinary Surgery in the Polyclinic Hospital and College for Graduates in Medicine

Octavo. 325 pages. 54 illustrations. Cloth, $4.00.

The vast majority of works on the subject of "Immunity" are exhaustive treatises on the experimental and the theoretical phases of the subject and are often unintelligible and of little value to the average practising physician.

The primary object has been to crystallize and detail the practical phases of serum and bacterin applications in medicine, thereby enabling the general practitioner, with even a slight laboratory experience, to appreciate the significance of, and more competently apply the principles underlying immunology.

Simplified Infant Feeding

With Seventy-five Illustrative Cases

By ROGER H. DENNETT, B.S., M.D.

Adjunct Professor of Diseases of Children, New York Post-Graduate Medical School; Attending Physician of the Children's Department, New York Post-Graduate Hospital; Assistant Attending Physician at the Willard Parker Hospital and the Red Cross Hospital, New York

Octavo. 316 pages. 14 illustrations. Cloth, $3.00.

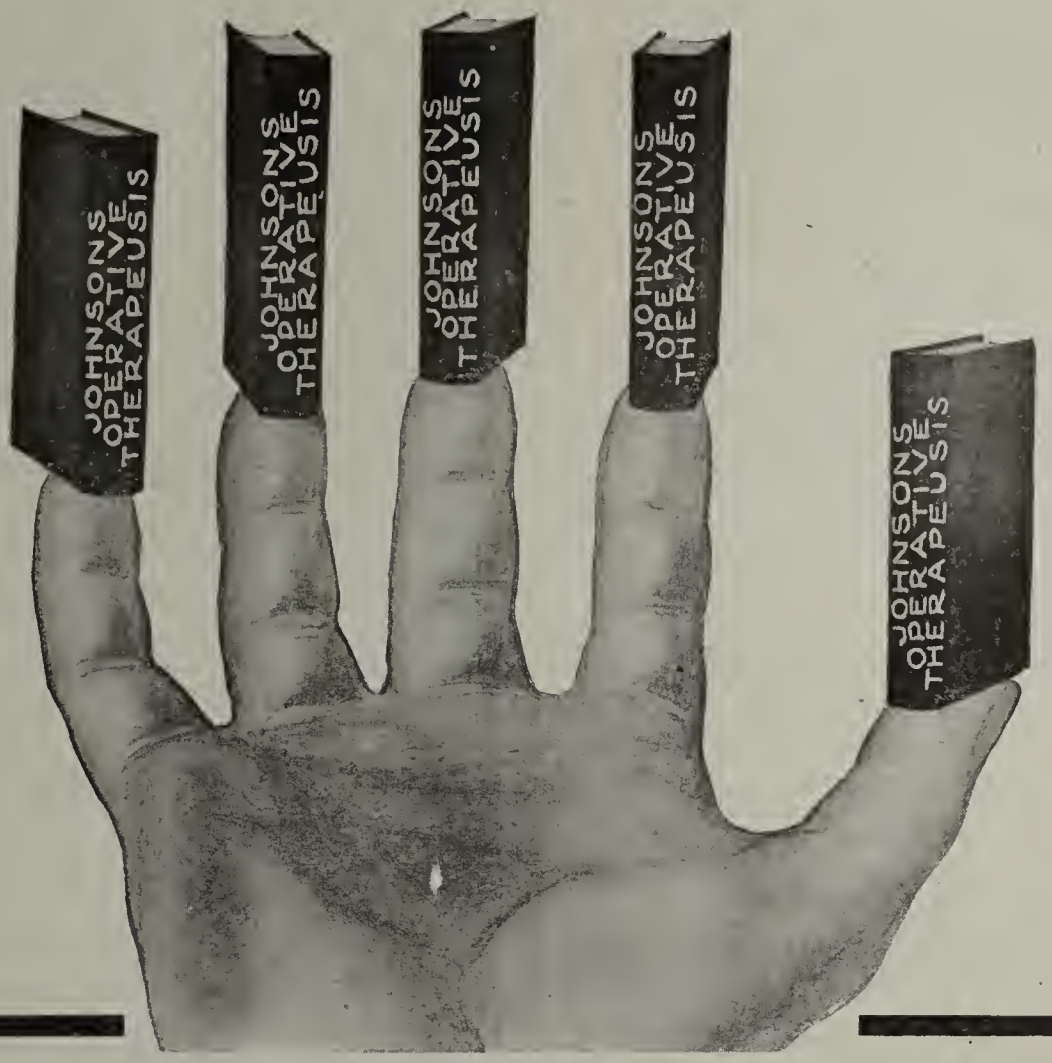
This is the only purely clinical book on Infant Feeding on the market, and it actually simplifies the subject for the general practitioner. This book does not deal with theories or generalities, but gives explicit directions for dealing with specific cases, with 75 case histories, and is not merely a résumé of the literature but a personal book.

J. B. LIPPINCOTT COMPANY

LONDON; Since 1875
13 John Street, Adelphi

PHILADELPHIA: Since 1792
East Washington Square

MONTREAL: Since 1896
Unity Building



AT YOUR FINGERS' TIPS—ALL THAT IS NEW AND RELIABLE IN OPERATIVE THERAPEUSIS

WITH this work as part of your equipment you possess every detail of Operative Therapeusis at your fingers' tips. You are in touch with the very last word on operative therapeusis, asepsis, anesthesia, prevention of faulty technic, post-operative treatment, the effective use of all extraneous life-saving devices—immunology, röntgenology, aspiration, etc., in brief, with every up-to-date life-saving expedient in minutest detail which has been proved to be the best by eminent men in all surgical therapeusis, operative and non-operative, for every known disease.

You are told, in this work, not only what to do but how to do it as it is being done by a specialist of repute on the subject discussed. And it is to its thoroughness in detail that the enthusiasm for this new work, which is being evinced by physicians all over the country, may be attributed. Its success to date has more than confirmed our advance prediction that it would be a monumental work. If you have not seen these volumes, it will pay you to send us this coupon which will bring to your desk complete information on their wide field of usefulness.

OPERATIVE THERAPEUSIS

EDITED BY ALEXANDER BRYAN JOHNSON

With 28 Plates and 2250 Specially Drawn Illustrations.

D. APPLETON & COMPANY

PUBLISHERS NEW YORK

9-25-15

D. Appleton & Company
NEW YORK

Please send me free complete information regarding

Johnson's Operative Therapeusis

Name.....

Address.....

.....

7%

California Street Improvement Bonds

Appeal to the conservative investor because they are safe and convenient. They are a first lien on close in City Real Estate, second only to taxes, and carry a large margin of security.

For the professional man they are especially well adapted, being issued in various denominations of from $25.00 up to several hundred and therefore suitable for a large or small investment.

If you want safety and large interest returns these bonds will meet your requirement. Legal investments for Savings Banks in California. Federal and California taxes exempt.

Price, Par and Accrued Interest

Write Today for Circulars

THE EMPIRE SECURITIES COMPANY

(Incorporated 1905)

1203 Hibernian Building, LOS ANGELES, CALIFORNIA

J. ALLAN OSMUN, PRESIDENT, President Whittier National Bank, Whittier Home Savings Bank. F. E. THAYER, VICE-PRES., MGR. A. H. CONGER, SEC'Y.

ANNOUNCEMENT

off the press November, 1915

EQUALLY VALUABLE TO THE

Physician, Surgeon and Roentgenologist

THE ROENTGEN DIAGNOSIS of SURGICAL LESIONS of the GASTRO-INTESTINAL TRACT

By ARIAL W. GEORGE, M.D.

(TUFTS)

Assistant Professor of the Department of Roentgenology, Tufts College Medical School; Consulting Roentgenologist to the Carney Hospital, Boston Dispensary and the Forsyth Dental Infirmary; Fellow of the Massachusetts Medical Society; Member of the American Roentgen Ray Society.

AND

RALPH D. LEONARD, A.B., M.D.

HARVARD

Assistant in the Roentgen Department of the Boston City Hospital; Instructor in Roentgenology at the Tufts College Medical School; Fellow of the Massachusetts Medical Society.

NOW READY

A Handsome Thirty-Two Page Prospectus Profusely Illustrated. *Sent Postpaid Upon Request*

THE COLONIAL MEDICAL PRESS

Colonial Building BOSTON

MADE IN AMERICA

Maltine Malt Soup Extract

—with which the preparation of Malt Soup becomes easy and satisfactory.

Pamphlet reflecting the views of DR. KELLER, and samples, will be sent to physicians on application.

THE MALTINE COMPANY, Brooklyn, N. Y.

A
REFERENCE HANDBOOK
OF
The Medical Sciences

EMBRACING

THE ENTIRE RANGE OF SCIENTIFIC AND PRACTICAL MEDICINE AND ALLIED SCIENCE

BY VARIOUS WRITERS



THIRD EDITION

Completely Revised and Rewritten

Edited by THOMAS LATHROP STEDMAN, A.M., M.D.

A complete authoritative encyclopedia of medicine, practical and up-to-date, and preeminently handy for reference. It is designed primarily for the busy general practitioner, who will find in it every topic germane to medicine and the allied sciences, in the form of short essays, most convenient for reference, and usually sufficiently full for all purposes.

Useful also to the Specialist, not only for the latest, summarized knowledge in his specialty, but also for ready reference on all medical subjects, information on which he is constantly obliged to have.

Many years ago nicknamed "The Doctor's Bible," this new third edition of the "Handbook" is veritably a medical library in itself.

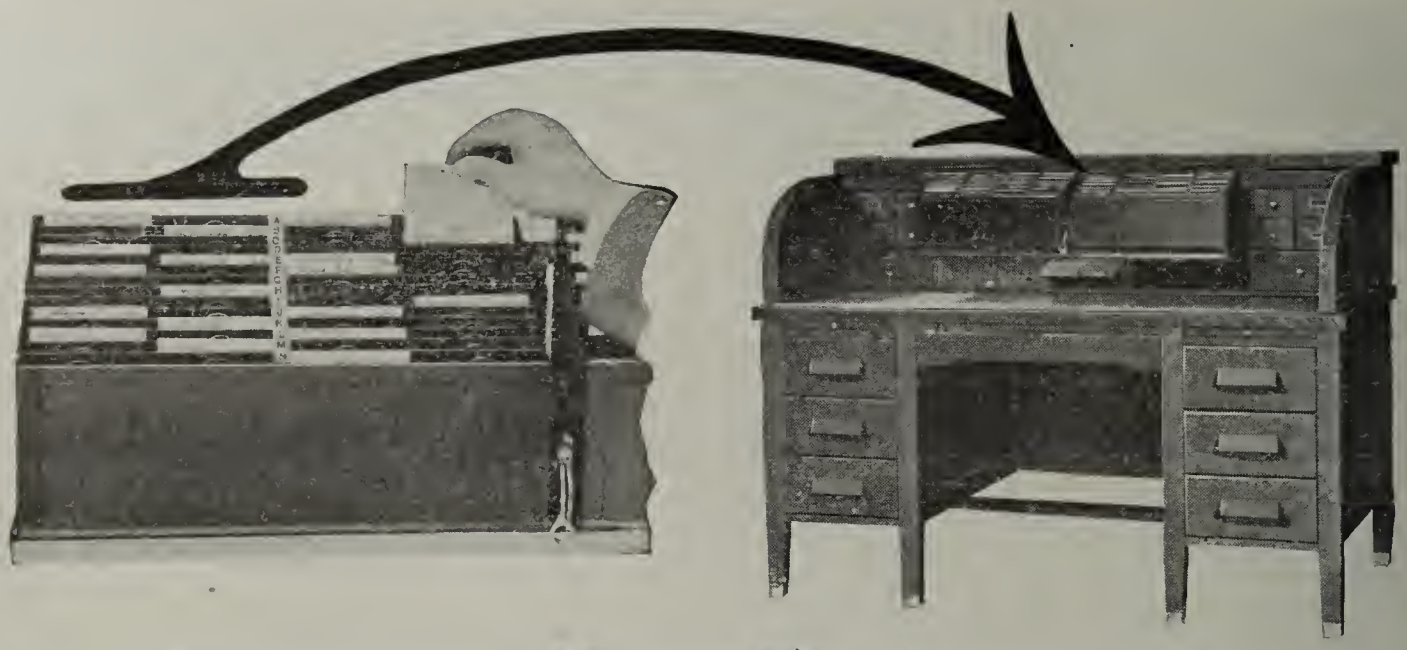
FIVE VOLUMES NOW PUBLISHED

COMPLETE IN EIGHT IMPERIAL QUARTO VOLUMES

Illustrated 16-page circular, sample pages and terms on request

Special Terms to Subscribers to Former Editions

WM. WOOD AND CO. — Publishers — NEW YORK



This is the heart → **but it pulsates here**

ALL PROFESSIONS

take high ground in subordinating money to the aims and ethics of their art; and rightly so. Physicians and surgeons are not exceptions. Yet in these modern complex times, it is certain that money is absolutely necessary for progress and accomplishment, and in no art is this so true as that of the medical profession.

Here is where we enter. We are specialists in *Simplified Systems for Doctors,* and doctors in every state endorse our system. By its speed, accuracy and simplicity, it takes care almost automatically, with the smallest amount of time, of Financial, as well as complete Case and Historical records. It records the charges and all other data, at the bedside, on the street or in the office, with *only one writing*. In his office its visibility and ease of operation appeal; wife, or assistant in the doctor's absence, is at home with it, and any calling patient who wants to pay need not "wait for the doctor." And the same is true if met on the street or in the patient's home.

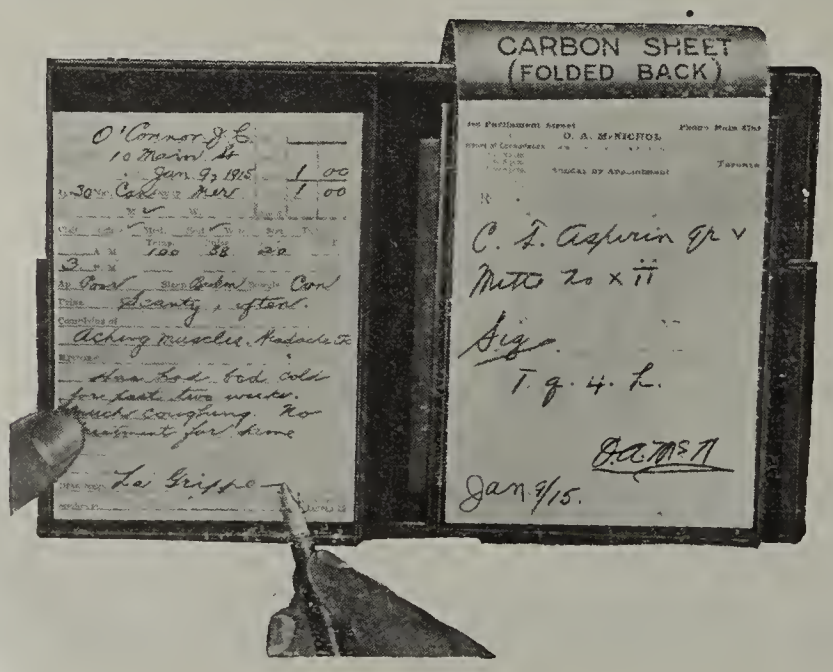
The system is housed in nine different cabinets, wood and metal, each one the most handsome, useful piece of equipment in the office. The Metal Cabinets are double walled and of the most modern fire-resisting construction, It will be a pleasure for us to send complete and clear information to any physician or surgeon.

The McCASKEY REGISTER COMPANY

Incorporated—Capital $3.000,000

ALLIANCE, OHIO U. S. A.

England and Canada---Dominion Register Co.



Diphtheria Antitoxin
that leaves nothing to be desired.

IN the preparation of our Antidiphtheric Serum the element of guesswork never enters. Modern scientific methods mark every step in the process of manufacture.

We maintain a large stock-farm, miles from the smoke and dust of the city, where are kept the animals used in serum production.

Our biological stables are provided with an abundance of light and fresh air and a perfect system of drainage. They are under the constant supervision of skilled veterinary surgeons.

Before admission to the stables each horse is subjected to a rigid physical examination, and no animal is eligible that has not been pronounced sound by expert veterinarians.

Immunization and bleeding of horses are conducted in accordance with modern surgical methods.

The product is marketed in hermetically sealed glass containers, and every lot is bacteriologically and physiologically tested.

CONCENTRATED

Antidiphtheric Serum

(GLOBULIN)



"A model of convenience and security."

PACKAGES.

Bio. 15— 500 antitoxic units.	Bio. 19— 4000 antitoxic units.
Bio. 16—1000 antitoxic units.	Bio. 20— 5000 antitoxic units.
Bio. 17—2000 antitoxic units.	Bio. 21— 7500 antitoxic units.
Bio. 18 –3000 antitoxic units.	Bio. 22—10,000 antitoxic units.

SPECIFY "P. D. & CO." ON ORDERS TO YOUR DRUGGIST.

Home Offices and Laboratories,
Detroit, Michigan.

Parke, Davis & Co.

Leucocyte Extract, Squibb

Prepared from healthy leucocytes according to Hiss. Indicated in general acute systemic infections where bacteriological diagnosis is uncertain. Also used in conjunction with the specific serums and vaccines in the treatment of *Erysipelas, Meningitis, Lobar Pneumonia, Septicemia, Pyemia* and *Furunculosis.*

No contra-indications are known.

For clinical report address:

E. R. SQUIBB & SONS **NEW YORK**



CELESTINS

VICHY

Bottled under the direct supervision of the FRENCH GOVERNMENT which guarantees Genuineness and Purity.

CAUTION—So-called **VICHY** *in Bulk or Siphon is not* **VICHY.**

IMPORTED ONLY IN BOTTLES

FRENCH REPUBLIC PROPERTY

Known for many years as the leading medicinally active

Natural Alkaline Water

Not Genuine without the word

CELESTINS



A SATISFACTORY SUMMER FOOD

In hot weather GAIL BORDEN EAGLE BRAND CONDENSED MILK has a great advantage over ordinary dairy milk. It is not necessary to store in an ice-box, for reasonable care in opening the can and keeping the contents covered, and storing in a cool place will keep the food clean and wholesome. As a milk supply for summer use



Gail Borden
EAGLE BRAND CONDENSED MILK
THE ORIGINAL



has no equal. If you are travelling a can of this well-known brand of Condensed Milk places at your disposal at all times a clean and safe milk supply for all purposes for which dairy milk is used.

HOT WEATHER DOES NOT AFFECT IT—IT POSSESSES A WIDE RANGE OF USES.

Samples, analysis, etc. will be mailed upon receipt of professional card.

Borden's Condensed Milk Co.
"Leaders of Quality"
Est. 1857 **New York**

In Gonorrhea and its Sequelae

internal medication is frequently neglected, not because its importance is underrated, but because patients soon revolt against santal oil and balsam preparations or derivatives. No need to choose between these two evils—Employ:

Arhovin

Arhovin most efficiently fulfills all the functions of santal oil and balsam therapy, but does *not* { irritate the stomach or kidneys, impart a tell-tale odor to the breath.



Tins of 50 capsules, each 4 minims.
Dosage: 1 to 2 capsules, three to six times daily, after meals.

Information and literature from

SCHERING & GLATZ, 150-152 Maiden Lane, New York.

Ask for it by name—

and thus avoid substitution

Horlick's

THE ORIGINAL MALTED MILK

A Few Items from Our Fee Table

$1.00	**Widal Test for Typhoid**	**$1.00**
$1.00	**Sputum Examination for T.B.**	**$1.00**
$1.00	**Throat Cultures for Diphtheria**	**$1.00**
$5.00	**Autogenous Vaccine**	**$5.00**

With the *exciting organism* isolated and indentified. Put up in ampules or 20 c.c. container.

$5.00	**Examination of Pathological Tissue**	**$5.00**
$5.00	**Wassermann Test**	**$5.00**

We do the Classical Wassermann Test. Any of the various modifications of the Wassermann Test made upon request without extra charge.

Sterile containers, and suitable culture media sent gratis upon request

NATIONAL PATHOLOGICAL LABORATORY, Inc.

CHICAGO, ILL.
5 S. Wabash Ave.

NEW YORK CITY
18 E. 41st Street

Where Effective:

FORMS
Powder
Liquid
Ointment

POLLANTIN

Dunbar's Hay Fever Serum, is effective *only* in ailments caused by *Pollen absorption*

Therefore it logically follows to make sure before using it, that the symptoms indicate Hay Fever, and not their simulation of other origin.

Pollantin is not injected, used externally only. Injection was first employed but discontinued for reason of causing itching, erythema and swelling at site of injection. Withal, however, external use proved greatly more beneficial and lasting in results.

Prophylactic treatment highly recommended.

Literature on request

Fritzsche Brothers—New York



Subjects, Editors, and the Order in which the Ten Volumes are Published

General Medicine. By Frank Billings, M.D., and J. H. Salisbury, M.D., Vol. I, about 400 pages. Price *$1.50*

General Surgery. By John B. Murphy, M.D., Vol. II, about 600 pages. Price *$2.00*

Eye, Ear, Nose and Throat. By Casey A. Wood, M.D., Albert H. Andrews, M.D., and W. L. Ballenger, M.D. Vol. III, about 350 pages. Price *$1.50*

Gynecology. By E. C. Dudley, M.D., and H. M. Stowe, M.D., Vol. IV, 230 about pages. Price *$1.35*

Pediatrics and Orthopedic Surgery. By I. A. Abt, M.D., and John Ridlon, M.D., Vol. V, about 230 pages. Price . *$1.35*

General Medicine. By Frank Billings, M.D., and J. H. Salisbury, M.D., Vol. VI, about 350 pages. Price *$1.50*

(Volume I of General Medicine takes up the lungs, heart, and the more general diseases, while Volume VI takes up the diseases of the digestive organs and diseases which are more prevalent in the summer and fall.)

Obstetrics. By Joseph B. DeLee, M.D., Vol. VII, about 230 pages. Price *$1.35*

Materia Medica and Therapeutics, Preventive Medicine, Climatology. By G. F. Butler, M.D., H. B. Favill, M.D. and Norman Bridge, M.D., Vol. VIII, about 350 pages. Price . *$1.50*

Skin and Venereal Diseases and Miscellaneous Topics. By Oliver S. Ormsby, M.D., and Harold N. Moyer, M.D., Vol. IX, about 230 pages. Price *$1.35*

Nervous and Mental Diseases. By H. T. Patrick, M.D., and Peter Bassoe, M.D. Vol. X, about 230 pages. Price . *$1.35*

GENERAL EDITOR, CHARLES L. MIX, M.D.

THE ABOVE PRICES ARE FOR SEPARATE VOLUMES
PRICE FOR COMPLETE SERIES (CARRIAGE PREPAID) **$10.00**

1915—Practical Medicine Series—1915

THE STANDARD AUTHORITY ON THE WORLD'S PROGRESS IN MEDICINE AND SURGERY

FOURTEENTH YEAR

This series solves, for the busy physician, the problem of keeping always up-to-date.

It offers, in small compass and at a low cost, a complete record of the most recent results of investigation and experience in Medicine and Surgery throughout the world, arranged and indexed with a view to perfect facility of reference. **Every source of information is utilized,** and the high quality of the editorship attests the highest excellence of material and presentation.

The series consists of ten volumes, published at about monthly intervals, the first volume appearing in March. **The subscription price** of the series is $10.00, payable $2.00 October 15, and $2.00 each month for four months thereafter. If you will sign and return the attached coupon, the publishers will be glad to send **Volumes I to V which are now ready, on approval.**

CONDITIONAL ORDER COUPON

(Sign and Return to the Publishers)

THE YEAR BOOK PUBLISHERS,

327 S. La Salle Street, Chicago, Ill.

You may send me for examination Volumes I to V of the **1915 Practical Medicine Series.** If I do not return them in ten days from their receipt, you may enter my subscription for the entire series of ten volumes, at $10.00, payable $2.00 October 15, and $2.00 each month for four months thereafter.

Carriage charges prepaid by the publishers.

NAME_____

DATE_____ ADDRESS_____

A.M.A. 8

Good Mineral Oil

must be pure oil entirely freed from all by-products—

must have the right viscosity—

must easily pass all the official tests—

should be tasteless—

should be "made in America for Americans"—

should be prepared for medicinal use—for physicians' prescriptions.

These are six of the "reasons why" YOU will like OUR Mineral Oil.

Efficiency, palatability and uniformity are others that will also appeal to you. Your druggist can supply

"Colorless Mineral Oil—S & D"
(Liquid Petrolatum)

SHARP & DOHME

Purveyors to the medical profession since 1860

Armour's LABORATORY PRODUCTS

When prescribing, specify Armour's and get preparations made from fresh material.

Lecithol—
Emulsion of lecithin.

Thyroids—
Standardized. Powder. ¼ grain, 1 grain and 2 grain tablets.

Pituitary Liquid—
Physiologically standardized. Free from preservatives.

Elixir of Enzymes—
Aid to digestion. Vehicle for iodids.

Red Bone Marrow—
Hematogenetic. Histogenetic.

100 Per Cent. True

Corpus Luteum (Armour) is made from true substance. The raw material is gathered in our abattoirs and we guarantee the products. True Corpus Luteum is therapeutically active and is the only Corpus Luteum that is to be depended on.

Corpus Luteum (Armour) is very valuable in certain functional disorders of women.

Corpus Luteum (Armour) is supplied in powder, 2 grain tablets, 2 and 5 grain capsules.

ARMOUR AND COMPANY
CHICAGO

CHICAGO CLINICAL LABORATORY ANALYTICAL
ESTABLISHED 1904 PROMPTNESS EFFICIENCY

25 E. Washington St. Phone, 3610 Randolph
CHICAGO, ILL.

All Serological Tests Now Reduced to $5.00

Wassermann test controlled by Noguchi or Hecht-Weinberg Methods.

Complement Fixation Test for Gonorrhea.

Abderhalden's Sero-Diagnosis of Pregnancy, Cancer or Dementia Praecox.

Lange's Colloidal Gold Test for differential diagnosis of Spinal Fluid.

We are prepared to perform all types of Laboratory examinations for diagnostic purposes and can assure you accuracy and efficiency from our staff of experienced workers in this field.

Fee tables for all examinations and full directions for forwarding specimens on request. Containers and culture media furnished.

WHY NOT AVAIL YOURSELF OF THE SERVICES OF THE CHICAGO LABORATORY FOR YOUR DIAGNOSTIC WORK?

Early Diagnosis is one of the most important factors in successful treatment. The Laboratory will often permit of a positive diagnosis before clinical symptoms are well defined.

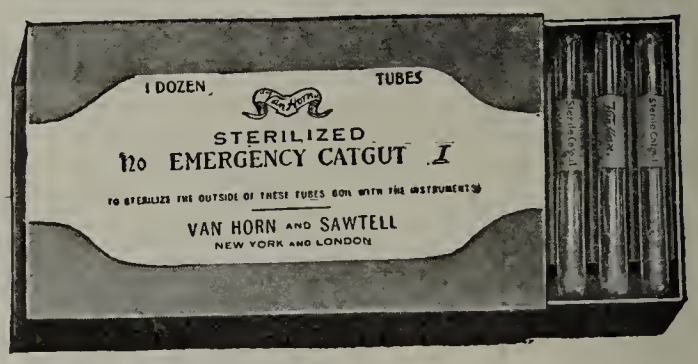
RALPH W. WEBSTER, M.D., Ph.D., Director of Chemical Department
THOMAS L. DAGG, M.D., Director of Pathological Department.
C. Churchill Croy, M.D., Director of Bacteriological Department.

Scalp and Face Wounds

can now be properly sutured *without waste.* Use a

"Van Horn" Emergency Tube

containing a 20-inch strand of plain or chromicized catgut. Sizes; 00, 0, 1, 2 and 3 in the plain, and 00, 0, 1 and 2 in the chromicized.



A Dollar a Dozen
At Your Dealer—or Sent Upon Receipt of Price. No Samples

VAN HORN and SAWTELL
New York, U. S. A. 15-17 E. 40th Street AND London, England 31-33 High Holborn

A PURE SOAP

For 40 Years the Standard of Its Class

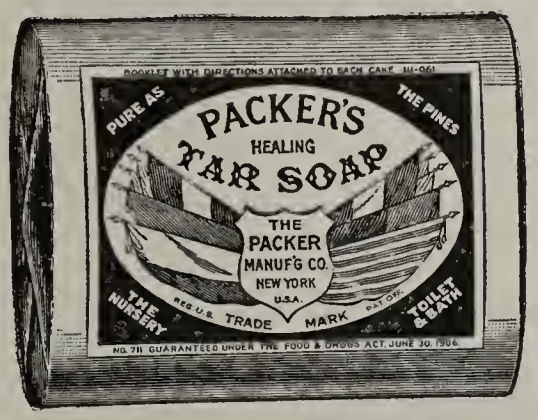
The purity, reliability, constant unvarying quality and special properties of **Packer's Tar Soap** have given it unique value for toilet, hygienic or therapeutic use. It is pleasant to use, and is unsurpassed for cleansing purposes.

INGREDIENTS:

PINE TAR
Antiseptic, deodorant, healing, anti-pruritic, tonic.

PURE GLYCERINE
Soothing, Softening and Cleansing.

SWEET VEGETABLE OILS
Emollient, healing.



USES:

For the Toilet and Bath.
In the Nursery.
In the Operating Room.
In the Obstetrical Chamber.
For the Scalp as a Shampoo.
Dandruff.
In many Skin Diseases as a preliminary and an adjunct to treatment.

FOR SAMPLES AND LITERATURE ADDRESS:

PACKER MFG. CO., 81 and 83 Fulton Street, New York

ARGYROL

(SILVER VITELLIN)

Has the property of allaying pain and other symptoms of inflammation.

Incidentally, its effects in eradicating germ-produced diseases has been proved Clinically by authorities, in thousands of cases during the past twelve years.

These facts explain why Argyrol is considered, the world over, a superior remedy in the treatment of gonorrhea (injection of 10 per cent. solution every three hours); also in inflammations of the eye, throat, nose and ear (25 per cent. solution instillation or local application).

Produced by

A. C. BARNES COMPANY

LONDON PHILADELPHIA SYDNEY

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 N. Dearborn St. Chicago, Ill.

Phone, Superior 884. Cable Address "Medic, Chicago"

Subscription prices, per annum in advance, including postage: Domestic, $5.00; Canadian, $6.50; Foreign, £1 12s.

Domestic rates include United States, Cuba, Mexico, Hawaii, Guam, Porto Rico, Canal Zone and Philippines.

SINGLE COPIES of this calendar year, 15 cents; of the previous calendar year, also 15 cents; two years old, 20 cents; three years old, 25 cents; in other words, 5 cents additional is charged for each year preceding the last calendar year.

REMITTANCES should be made by check, draft, registered letter, money or express order. *Currency should not be sent unless the letter is registered.* Stamps in amounts under one dollar are acceptable. Make all checks, etc., payable to "AMERICAN MEDICAL ASSOCIATION."

VOLUMES begin January and July.

CHANGE OF ADDRESS notice should give both old and new address, and state whether change is *permanent or temporary*. Notice must reach us *ten days* in advance.

WHEN COMMUNICATIONS concern more than one subject—manuscript, news items, reprints, change of address, payment of subscription, membership, information wanted, etc.—correspondents will confer a favor and will secure more prompt attention if they will write on a separate sheet for each subject.

WARNING: Pay no money to an agent unless he presents a letter showing authority for making collection.

ADVERTISEMENTS

Advertising forms go to press ten days in advance of the date of issue. In sending in copy time must be allowed for setting up advertisements and for sending proofs. No proprietary medicines can be advertised until approved by the Council on Pharmacy and Chemistry. Advertising rates will be sent on request.

CONTRIBUTIONS

EXCLUSIVE PUBLICATION: Articles are accepted for publication on condition that they are contributed solely to this journal.

COPYRIGHT: Matter appearing in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION is covered by copyright, but as a general thing, no objection will be made to the reproduction in reputable medical journals of anything in the columns of THE JOURNAL if proper credit be given.

CONTRIBUTIONS TYPEWRITTEN: Contributions should be typewritten—*double-spaced and with ample margins.* The expense is small to the author—the satisfaction is great to the editor and printer. We cannot promise to return unused manuscript, but try to do so in every instance. *Used manuscript is not returned.* Manuscripts should not be rolled.

ILLUSTRATIONS: Half-tones and zinc etchings will be furnished by THE JOURNAL when satisfactory photographs or drawings are supplied by the author. Negatives are not acceptable. Each illustration, table, etc., should bear the author's name on the back. Photographs should be clear and distinct; drawings should be made in black ink on white paper. While we cannot guarantee to return used photographs and drawings, we use our best endeavors to do so after the article is published.

ANONYMOUS CONTRIBUTIONS, whether for publication, for information, or in the way of criticism, are consigned to the waste-basket.

NEWS: Our readers are requested to send in items of news, also *marked* copies of newspapers containing matters of interest to physicians. We shall be glad to know the name of the sender in every instance.

"SUGGESTIONS TO MEDICAL AUTHORS"

This pamphlet of 27 pages, discussing the above-mentioned topics and many others, will be sent on receipt of 10 cents. It contains valuable information in regard to the preparation of articles for publication and the points which make an article acceptable.

PRICE LIST

A Price List will be sent on request, describing the various publications of the Asso-

(Continued on page 22)

Special Courses in

PEDIATRICS

for practitioners, will be given at the **Children's Memorial Hospital,** beginning October 4, 1915, continuing six weeks. The course will be **thoroughly practical, patients being studied at the bedside** and in the laboratory. Special attention to infant feeding.

For particulars address

RUSH MEDICAL COLLEGE, CHICAGO

THE PHILADELPHIA POST GRADUATE SCHOOL OF ROENTGENOLOGY

Next Session Nov. 1-29, 1915, occupying the student's entire time. Didactic and clinical teaching. Six Hospitals.

Faculty

Dr. George E. Pfahler — Dr. Henry K. Pancoast
Dr. Willis F. Manges — Dr. Wm. S. Newcomet
Mr. H. Clyde Snook — Dr. David R. Bowen (Sec'y).

Address the Secretary

922 So. Saint Bernard St. Philadelphia, Pa.

Courses in Anatomy, Pathology, Diseases, Treatment, and Operative Surgery of the

EAR, NOSE and THROAT

Classes Limited. Courses begin

Nov. 1, 1915—Jan. 3—March, 6 1916

For information, address

ALBERT H. ANDREWS, M.D., 32 N. State St., Chicago

The New York School of Refraction

WILLIAM MARTIN RICHARDS. M.D., Instr.

THE POWELLTON, Broadway and 97th St., NEW YORK

Full course in the principles and practice of refraction and all methods, subjective and objective, for the fitting of glasses. A diploma will be issued when the student is competent. Tuition fee, $100, accompanying application. See Annals of Ophthalmology, April, 1912.

CALIFORNIA

STATE BOARD CLASSES

San Francisco College of Medicine

Preparation in all subjects of the State Board examination, together with clinical and laboratory work.

Result of the April Examination

Applicants for License:	Passed.	Failed.
From this college.....20	19	1
From other sources.....73	54	16

Apply to **DR. H. D'ARCY POWER,**

BUTLER BUILDING, SAN FRANCISCO

WASHINGTON.

QUIZZING for this and other State Medical and Dental Examining Boards. Medical law recently changed. Write for new requirements. Oral quiz begins June 1st and December 1st of each year. Mail quiz may be taken at any time. Information given about all State Boards upon application. *Address*

DR. ARTHUR JORDAN, SEATTLE, WASH.
Nos. 416-417 Cobb Bldg.

ARMY AND NAVY QUIZ

Continuous existence since founded by Dr. Nash in 1897

Conducted by Drs. Cabell, Riggles and White. Course may begin at any time. Address

Dr. Julian Mayo Cabell, U. S. Army, *Retired,*
1730 M Street N.W. - Washington, D. C.

CYSTOSCOPY

AND URETERAL CATHETERIZATION TAUGHT ON THE LIVING SUBJECT

Plenty clinical material. No classes. Individual instruction. A practical and scientific course for the beginner.

For detailed information address

DRS. NAGEL and BERTLING
1850 Harrison Street CHICAGO, ILL.

PLEASE MENTION THE JOURNAL A. M. A. WHEN WRITING TO ADVERTISERS

BUSINESS OPPORTUNITIES

Advertisements under the following headings cost **$1.50 for 50 words or less,** additional words 3c. each. This rate applies for each insertion.

WANTED	**Partner**	**Sanitaria**
Apparatus	**Partnership**	**Drug Stores**
Assistant	**Situation**	**Locations for Sanit.**
Books	**FOR SALE**	**FOR RENT**
Intern	**Apparatus**	**EXCHANGE**
Location	**Practice**	**MISCELLANEOUS**
Locum Tenens		

RESULTS are better when an advertisement receives several consecutive insertions, and to those who remit $6 ($6.25 if answers are to be sent through this office) for four insertions of a 50-word advertisement we will give, *free, two more insertions* provided the first four do not consummate a deal.

NOTICE FOR FREE INSERTIONS.—Two free insertions are given advertisers who have not closed a deal after four consecutive insertions. We cannot permit advertisers to order six insertions in advance unless six times the one time rate is paid. Notice for free insertions must be received after the fourth appearance of the advt. and within two weeks following.

COUNTING WORDS.—Two initials, each abbreviation, figures consisting of five numerals or less are counted as separate words. Headings, and name and address are part of advertisement. When answers are sent % AMA—the key, "Add ——%AMA" is considered four words. Count words carefully. Write your copy plainly.

For the following classifications the rate is **$1.50 for 30 words or less**—additional words 5c. each. This rate applies for each insertion. No gratuitous insertions given under these headings.

Abstracting	**Medical Brokers**	**Med. Illustrators**
Automobiles	**Educational**	**Vacation Trips**
Auto accessories	**Publishers**	**Typewriters**
Carriages	**Tr. Sch. for Nurses**	**Printers**
Collections	**Nurses Wanted**	**Salesmen**

Miscellaneous Commercial Advts.

SPECIAL NOTE—A fee of 25c. is charged advertisers who have answers sent % A.M.A. No information can be furnished on keyed advertisements. Do not wire or write us for an address; mail your letter placing key number on envelope and it will be promptly forwarded.



This illustration represents one day's mail received for advertisers who had answers sent in care of THE JOURNAL.

Occasionally we receive notification from one who has answered an advertisement stating that he has had no reply and asking if his letter was transmitted. Letters sent in our care are forwarded promptly, but naturally we cannot compel an advertiser to answer all replies he receives.

It is advisable to send copies instead of original references

Classified ads. are Payable in advance
Rates for display ads. sent upon request

For current issue, ad. must reach us by 4:30 p. m. Monday.

Journal A.M.A., 535 N. Dearborn St. CHICAGO

N. B.—We exclude from our columns all known questionable ads. and appreciate notification from our readers relative to any misrepresentation.

APPOINTMENTS

WANTED—SANITARY INSPECTOR — Applications for the office of "Sanitary Inspector" of the city of Goldsboro, N. C., will be received by D. J. Broadhurst, city clerk Goldsboro, N. C., until 12 o'clock M., Oct. 2 1915. The duties of the office will be the enforcement of the sanitary and health ordinances of said city, which include the inspection of milk, meats and other foodstuffs. A copy of these ordinances may be had upon application to the city clerk. All applicants must be qualified to make milk and meat tests and must furnish references. Salary $100 per month. A

ASSISTANTS WANTED

WANTED—AN ASSISTANT WHO CAN DO laboratory work, urinalysis, blood and sputum examinations, vaccines, etc.; state age, experience, salary expected, in first letter. Add. Drs. J. B. C. and D., Anaheim, Calif. B

WANTED — ASSISTANT PHYSICIAN IN tuberculosis sanatorium in middle west; salary $75 per month and maintenance; applicant should be unmarried, healthy and of good habits; give age, medical school, year of graduation, experience in hospital and private practice; send references and recent photograph. Add. 8911 B, % AMA.

(Continued on page 22)

Adds only Healthful Qualities to the Food

The ingredients of Royal Baking Powder are known the world over. In Royal Baking Powder the leavening gas is produced by the admixture of bicarbonate of soda and pure cream of tartar, which is derived from grapes. This means that Royal Baking Powder has a wholesome effect on the digestive system and is therefore healthful to use in the family food.

Contains No Alum



Absolutely Pure

A M. A ANNOUNCEMENT

(*Continued from page 20*)

ciation; for example: Guide to Current Medical Literature, American Medical Directory, Handbook of Therapy, Laws Regulating Practice, New and Nonofficial Remedies, Nostrums and Quackery, Pamphlets on Defense of Research, Great American Fraud, Propaganda for Reform in Proprietary Medicines, Pamphlets on Medical Fakes and Fakers.

ARCHIVES OF INTERNAL MEDICINE

Monthly, $4 a year; to JOURNAL subscribers, $3. Single copy, 50 cents.

AMERICAN JOURNAL OF DISEASES OF CHILDREN

Monthly, $3 a year; to JOURNAL subscribers, $2. Single copy, 30 cents.

GUIDE TO CURRENT MEDICAL LITERATURE

Semi-annual, 50 cents a copy, $1.00 a year. An index medicus of the world.

AMERICAN MEDICAL ASSOCIATION,
535 N. DEARBORN STREET, CHICAGO

Clippings from Lay Exchanges

HIS AD CRIES ALOUD

GERMAN-AMERICAN Recital Specialist, Piles cured without the knife. Same floor Dockray Land Company. Examination free. Amarillo, Texas.—Amarillo (Texas) *Daily News.*

—o—

A NATURAL ERROR

Rufus Moran, Elkhart restaurant man, is named as defendant in a suit for damages filed by Mabel Adams, dressmaker. Moran, it is alleged, struck the Adams woman on the nose with his fist. Moran declared in defense that he mistook the woman for his wife.—Rochester (Ind.) *Sentinel.*

—o—

A SIMPLE EXPLANATION

Niles Joseph, homeless laborer, aged 34, died at St. Joseph's hospital, Saturday morning, after a year's illness. Surgeons said he died from the result of mitral regurgitation mitral stenuosis. In addition to this, his appendix was restrained from proper functions by adhesion to his sides, and he had anthracosis of both lungs.—Omaha (Neb.) *Bee.*

—o—

AN UNDESERVED FATE

Mrs. O. N. Daw is confined to her bed on account of the recent injury she sustained when she fell from a chair to the floor. Mrs. Daw was attempting to swat a fly at hand and stood upon the chair to reach the intended victim. He was further away than at first anticipated, and in an endeavor to reach him she fell as a result of becoming overbalanced. We trust her injury will soon give her no further trouble and will soon be well. She certainly is to be commended for her efforts to swat the fly, for if more of us did this we would find less disease in the world and conditions more healthful in general. Besides, the flies are a bothersome pest anyway.—Dixon (Pa.) *Telegraph.*

—o—

A PLEASANT LITTLE ITEM

The many friends of Mr. D. C. White, Registrar of Deaths, will be pleased to see him back at work much improved in health.—Charlottestown (Ont.) *Guardian.*

—o—

COMBINING BUSINESS WITH PLEASURE

The approaching marriage of Miss Chaunces Depew Haslett, the second daughter of C. W. Haslett, Democratic nominee for mayor, and Mrs. Haslett, and John Earl Christman of Coalton, was made known Monday. Mr. Haslett's invitation read as follows:

(*Continued on page 24*)

Army, Navy and Public Health Service Quiz

Course may begin at any time.
CONDUCTED BY
Major Walter D. Webb,
Major Medical Corps U. S. Army, Retired
Dr. Wm. Thornwall Davis,
Captain Medical Corps U. S. Army (Resigned)
ADDRESS
DR. WALTER D. WEBB
1803 Connecticut Ave., Washington, D.C.

W. A. FISHER, M.D., Pres., A. G. WHIPPERN, M.D., V-Pres
Chicago Eye, Ear, Nose and Throat College Post-Graduate Instruction
Diseases of the Eye, Ear, Nose and Throat, and Fitting of Glasses.
A House Physician is appointed in June and December. Open the year round. Write for announcement to
J. R. HOFFMAN, M.D., Sec'y, 235 W. Washington St., CHICAGO

Wassermann Laboratory
2159 Madison St., CHICAGO
Alcoholic Luetic Liver Extract and Amboceptors furnished. Wassermann Test, Autogenous Vaccines, Pathological Specimens examined. Intravenous Gravity Outfit.
GUINEA PIGS FOR SALE
Free Instructions how to do the Wassermann Test.

Therapeutic and Diagnostic Laboratory
Failure in diagnosis means therapeutic defeat. Our laboratory will assist you in winning. The finding of tubercle bacilli in sputum and urine, examination of stomach contents and feces, and differential counts of blood are mighty allies to the practicing physician. Autogenous Vaccines, Wassermann, Noguchi, Colloidal Gold test on spinal fluid for syphilis and tuberculosis; Tumor diagnosis. Correspondence on undiagnosed cases solicited. *Instruction in clinical laboratory work for physicians and nurses.*
Dr. Alex C. Wiener, Med. Dir.
A. NEVIN, Ass't., 32 North State St., Suite 400, Chicago, Ill.

$5000 for Accidental Death
$25 weekly indemnity for disability
Cost has never exceeded $13 per year, per member.
Considering the low cost of protection, you cannot afford to carry your own risk.
PHYSICIANS CASUALTY ASSOCIATION
of OMAHA, NEBRASKA
Conducted by physicians for physicians—a mutual organization.
Application blanks and descriptive literature free on request
E. E. ELLIOTT, Sec.
304 City National Bank Building
OMAHA - - - - NEBRASKA

DEPENDABLE PRODUCTS
DISPENSE YOUR OWN MEDICINES—There are many advantages in personally supervising the administration of drugs you use. We manufacture and ship direct to physicians in any part of the U. S. everything pharmaceutical, i. e., tablets, lozenges, ointments, etc. Every product is ready for immediate use, easily dispensed. We guarantee them true to label and of reliable potency. Our complete catalog should be in the hands of every physician who dispenses. Mailed free on request.
THE ZEMMER COMPANY
Chemists to the Medical Profession
Forbes Field Pittsburgh, Pa.

See page 20 for cost of classified and commercial announcement advertisements.

Continued from page 20

WANTED—A RESIDENT PATHOLOGIST—One who can take charge of the x-ray department as well as the laboratory preferred; this is a large general hospital located in a western city, has its own laboratory and, like the rest of the hospital, is modern in all its appointments and equipment; to avoid unnecessary correspondence, state age, school, whether married or single, experience, references, salary, etc.; communications confidential if so requested. Add. 8886 C, % AMA.

WANTED — RESIDENT PHYSICIANS AT the Pennsylvania State Sanatorium for tuberculosis at Mont Alto, Pa.; maintenance and annual salary of $800 to $1,200, depending on length of satisfactory service; applicants state age, health, married or single, medical college, year graduation, hospital experience and enclose professional references first letter to Dr. Samuel G. Dixon, Commissioner of Health, Harrisburg, Pa. B

WANTED—SINGLE ASSISTANT PHYSICIAN in insane hospital, located in the east; state age, education, where obtained, experience; references required; begin with salary $600 and maintenance; advancement for satisfactory services. Add. 8855 B, % AMA.

PHYSICIANS WANTED

WANTED—A RECENT GRADUATE PHYsician, with hospital experience, to take charge of first aid work in a large pharmaceutical manufacturing establishment and to handle correspondence. Add. 8885 C, % AMA.

WANTED — GRADUATES OF CLASS A schools, who have had at least one year's training, six months of which has been on the medical side, in a hospital of recognized standing; the work will be the physical examination of employees varied with some minor injury work and actual bedside practice; full time, fair salary; must be licensed in Ohio. Add. 8840 C, % AMA.

INTERNS WANTED

WANTED — TWO GRADUATE INTERNS for large Eastern State hospital for insane; salary $600 per year and all expenses; unmarried; opportunity for promotion excellent. Add. 8832 D, % AMA.

WANTED—THREE INTERNS JANUARY 1, 1916, 1915 graduates only; for particulars address Chief Resident Physician, Philadelphia General Hospital, Philadelphia, Pa. D

LOCATIONS WANTED

WANTED — BY MIDDLE-AGED PHYSIcian, unopposed or slightly opposed village and country practice; Illinois, Iowa or Colorado preferred; please give full particulars in first letter. Add. 8916 E. % AMA.

WANTED — LOCATION OR PARTNERship, in Illinois only; prefer small town; give full particulars in first letter, especially amount of practice, competition, fees, people, roads, etc.; must bear close investigation; state terms. Add. 8881 E, % AMA.

WANTED—LOCATION IN ILLINOIS OR Wisconsin, paying not less than $3,000 yearly; give full particulars as to size of town, number of doctors, fees, roads, schools and churches, why do you want to leave, what nationality are the people. Add. 8880 E, % AMA.

WANTED — CONTRACT PRACTICE IN coal mine, lumbering camp or other contract practice at once by regular physician licensed in Tennessee; graduate A+ school; married. Add. 8896 E, % AMA.

WANTED—PHYSICIAN AND SURGEON—Twenty-five years' practice; exceptional American and British qualifications; exemplary habits; desires location preferably in northern California, with view to getting busy without delay; would consider partnership to do surgery for busy practitioner or location where surgery may be extended. Add. 8897 E, % AMA.

WANTED—WISCONSIN LOCATION—village and country practice; American or English speaking people; live practice; modern village, good roads, schools and churches; prefer without real estate, unless modern and office connected, and terms given; describe fully, so voluminous correspondence is avoided; can come now, or before winter, as agreeable. Add. 8696 E, % A.M.

(*Continued on page 24*)



The Battle Creek Method of Treating Cases of Drug Addiction

Alcohol, Opium, Cocaine, Tobacco and Other Drug Habits

The Battle Creek Sanitarium is not an inebriate asylum. Cases requiring physical restraint or likely to disturb other patients are not received. For a large class of intelligent persons who have through suffering become entangled in the toils of a drug habit and who are ready to co-operate with a rational effort to deliver them from the drug and from its effects the Battle Creek Sanitarium method offers a rational, safe and remarkably comfortable means of relief and without publicity.

This is not a drug method. Drug methods often leave the patient's nervous system shattered and his condition so wretched that he is very liable soon to drift back into the old habit.

There are no tricks of hypnotism or "suggestion" in the Battle Creek Method. The rational physiologic means employed not only remove the craving for the drug but deliver the patient from the pain or neurasthenic miseries to relieve which the drug was first used, and if faithfully employed finally reinstate the patient by removing the morbid effects resulting from the use of the drug.

A fuller account of the Battle Creek Sanitarium Method of treating drug addiction in its various forms will be sent on receipt of the attached coupon.

The Battle Creek Sanitarium, Battle Creek, Mich.

Box 250
The SANITARIUM
Battle Creek, Michigan.

Please send to the undersigned full information concerning the Battle Creek method of treating cases of drug addiction.

Dr.....

Street.....

City.....

State.....

CLIPPINGS FROM LAY EX'S

(*Continued from page 22*)

"You are cordially invited to be present on the evening of September 1st 1915, at the celebration of the culmination of my dreams, to grow two blades of grass where one formerly grew, and the completion of my ideas of a sanitary dairy barn. After a long siege of three years in construction, it is now ready for your inspection.

"Immediately thereafter the marriage of my daughter, Chaunces, to Earl Christman of Coalton will take place on the front steps."—Wellston (Ohio) *Telegram.*

Tonics and Sedatives

ACTIVE PRINCIPLES

First Tramp—Would a pint of wood alcohol kill a guy, Bill?

Second Tramp—Would it! Why, that's the concentrated essence of fifty wood-piles.—*Exchange.*

—o—

PITILESS

"Some men have no hearts," said the tramp. "I've been a-tellin' that feller I am so dead broke that I have to sleep outdoors."

"Didn't that fetch him?"

"Naw. He tol' me he was a-doin' the same thing, and had to pay the doctor for tellin' him to do it."—*Christian Register.*

—o—

TOUGH ON THE BABY

A Canadian newspaper calls attention to a nursing bottle advertisement, which concludes with the words: "When the baby is done drinking it must be unscrewed and laid in a cool place under a tap. If the baby does not thrive on fresh milk it should be boiled."

—o—

POOR IMPROVEMENT

Doctor—Well, Casey, are the eyes improving?

Patient—Sure, they are, sir.

Doctor—Can you see better; can you see the nurse now?

Patient—Sure, I can thot, sir. Faith, she gets plainer and plainer every day.

—o—

A BAD BREAK

So Miss Passay is angry with her doctor. Why is that?"

"He tactlessly remarked that he would soon have her looking her old self again."—Boston *Transcript.*

—o—

OBLIGING

Mr. Bowen was having dinner with the Reillys and the 7-year-old son of the family was present.

"And what are you going to be when you grow up, young man?" asked Mr. Bowen of the little boy.

"Well," replied the boy, thoughtfully, "after I've been a minister to please mother, an' a judge to please father, I'm goin' to be a policeman."—*Exchange.*

—o—

HER ASSISTANCE

"I owe much of my success to my wife," remarked the literary man.

"Does she help you so much?" asked his friend.

"Well," explained the literary man, "she never comes near my desk to straighten things up."

—o—

HIS RULE

Meeting a correspondent at a friend's house, the editor said: "That was an excellent letter I got from you this morning and I am going to print it Saturday. But tell me, what rule do you follow for punctuation?"

"Why," said the gentleman, "the same rule that I learned when I was a boy. I put a semicolon every twelve words and two commas between each pair of semicolons.

(*Continued on next page*)

Some Bran
For Every Meal

Where you wish to advise whole-wheat foods—

Or establish bran habits—

Pettijohn's products supply the perfect means. In each the bran comes in dainty combination. The bran is in flake form and efficient. And there's 25 per cent. in each.

Fifty dainty foods may be made from these products, so that every meal may include one. You'll find these among the finest bran-flaked products known.

Pettijohn's

Two Bran Foods

Pettijohn's Breakfast Food—A soft wheat rolled into luscious flakes, hiding 25 per cent. unground bran. A morning dainty liked by everyone. 15c per package.

Pettijohn's Flour—Fine patent flour mixed with 25 per cent. special bran, largely in flake form. To be used like Graham flour in any recipe. 25c per large package.

The Quaker Oats Company
Chicago (1066)

(*Continued from page 22*)

WANTED—TO BUY ESTABLISHED PRACtice in city of 2,000 or more; with or without real estate; must bear strictest investigation; Nebraska, Illinois or Minnesota only; give full particulars regarding population, industries, nationality, schools, churches, roads and income for past four years; have the cash; can take possession December 1. Add. 8874 E, % AMA.

WANTED—LOCATION IN NORTHERN Missouri or Iowa; must be good paying, well established practice among American-born people; give full details as to fees, roads, competition, yearly cash business, why selling, churches and schools; what you have to sell and price of same in first letter. Add. 8755 E, % AMA.

WANTED — GENERAL PRACTICE OF $6,000 to $8,000 in California, Nevada or Oregon town of 3,000 to 5,000 (California preferred) by graduate California University '04; three years' hospital and seven years' experience in corporation work in both medicine and surgery; speak German and French, aged 35, good health and habits; will consider temporary partnership with ultimately taking over practice; proposition must bear strict investigation; have cash for right location. Add. 8787 E, % AMA.

WANTED — EYE, EAR, NOSE AND throat location by specialist; West or Middle West; will form partnership with right man; must be town over 5,000. Add. 8784 E, % AMA.

WANTED LOCATION—PHYSICIAN, AGED 35, married; in live town of 2,000 to 5,000, either Massachusetts or New York; will accept assistantship with object of purchasing or will purchase outright; will also consider contract practice; references A 1; graduate class A + college; wide experience; association past ten years the best. Add. 8797 E, % AMA.

WANTED—TO BUY PRACTICE OF RE-tiring practitioner or one discontinuing general practice, or gilt-edged contract; must be able to use automobile most of year; class A graduate; hospital training; 5 years' successful private practice; married, aged 32; good personality, exemplary habits; high fraternal affiliations; licensed Virginia and West Virginia. Add. 8776 E, % AMA.

LOCUM TENENS WANTED

WANTED—LOCUM TENENS, OCTOBER 1, for six weeks; village and country practice. Add. Dr. J. W. VanBlaricum, Minneola, Kan. F

PARTNERS WANTED

WANTED — EYE, EAR, NOSE AND throat man to associate himself with general practitioner in Lake St. district of Minneapolis; splendid opportunity; personal and thorough investigation solicited, but no information given by mail. Add. 8887 G, % AMA.

WANTED—PARTNER—$300 TAKES HALF interest in good growing general practice; one of the best parts Indiana; fine place to live; stone roads; Big Four and traction; fees fair; collections good; partner can have 75 per cent. of collections until he gets his money back; should have auto; splendid town 1,000 population; competition ordinary; outside interests demand part of my time; will spend part of each week in office; will sell remaining interest percentage basis after partner has control of practice; splendid chance for physician with good references and experience; prefer married man. Add. 8910 G, % AMA.

PARTNERSHIP WANTED

WANTED—PARTNERSHIP — EYE, EAR, nose, throat; am American; have family; teetotaler; good address; Knight Templar; speak French and German; graduate of University of Wisconsin and of Rush; have had 25 years' continuous experience in general medicine and this specialty and am doing work of high order; when in Chicago associated with best men there and took much postgraduate work; owing to sickness a few years ago and fool investments I am now in small western city doing only specialty work, mostly referred from neighboring towns; want to get back into larger city and more work; have no cash to invest, but want partnership or assistantship with partnership or purchase later in view; can go now; choicest references given and required. Add. 8895 H, % AMA.

(*Continued on next page*)

TONICS AND SEDATIVES

(*Continued from preceding page*)

DOCTOR KNEW

"My doctor told me I would have to quit eating so much meat."

"Did you laugh him to scorn?"

"I did at first; but when he sent in his bill, I found he was right."—Washington *Star.*

—o—

WASTED EFFORTS

A small boy was taken to see the pigs. He looked at them thoughtfully and asked, "Did God make pigs?"

"Yes," his mother replied.

"Well," remarked the boy, "I should have thought He'd have made something a little pleasanter."—*Pub. Health Jour.*

—o—

FOR EMERGENCY

Mr. Tompkins was obliged to stop over night at a small country hotel. He was shown to his room by the one boy the place afforded, a colored lad.

"I am glad there's a rope here in case of fire," commented Mr. Tompkins, as he surveyed the room, "but what's the idea of putting a Bible in the room in such a prominent place?"

"Dat am intended foh use, sah," replied the boy, "in case de fire am too far advanced foh yo' to make yo' escape, sah."—*Hygiene and the Child.*

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

—o—

DISEASES OF THE NERVOUS SYSTEM. A Textbook of Neurology and Psychiatry. By Smith Ely Jelliffe, M.D., Ph.D., Adjunct Professor of Diseases of the Mind and Nervous System, New York Post-Graduate Medical School and Hospital, and William A. White, M.D., Superintendent of the Government Hospital for the Insane, Washington, D. C. Cloth. Price, $6 net. Pp. 796, with 341 illustrations. Philadelphia: Lea & Febiger, 1915.

ON PHARMACO-THERAPY AND PREVENTIVE INOCULATION APPLIED TO PNEUMONIA IN THE AFRICAN NATIVE. With a Discourse on the Logical Methods Which Ought to be Employed in the Evaluation of Therapeutic Agents. By Sir Almroth E. Wright, M.D., F.R.S. Cloth. Price, $2 net. Pp. 118. New York: Paul B. Hoeber, 1915.

THE BOOK OF THE FLY. A Nature Study of the House-Fly and Its Kin, the Fly-Plague and A Cure. By G. Hurlstone Hardy, with an Introduction by Halford Ross. Cloth. Price, 80 cents. Pp. 124, with illustrations. New York: Rebman Co., 1915.

A MANUAL OF GYNECOLOGY FOR STUDENTS AND PRACTITIONERS. By Samuel J. Cameron, Assistant to the Regius Professor of Midwifery, University of Glasgow. Cloth. Price, $5. Pp. 552, with 232 illustrations. New York: Longmans, Green & Co., 1915.

OPHTHALMOSCOPIC DIAGNOSIS FOR GENERAL PRACTITIONERS AND STUDENTS. By George W. Jean, A.B., M.D., Instructor in Ophthalmology, in the School of Ophthalmology of the New York Eye and Ear Infirmary. Cloth. Price, $1. Pp. 123, with 68 illustrations. New York: E. B. Meyrowitz, 1915.

THE PREVALENCE OF SYPHILIS IN THE ARMY. By Edward B. Vedder, Captain, Medical Corps. Paper. Pp. 110. War Department, Office of the Surgeon-General, Bulletin No. 8. Washington: Government Printing Office, 1915.

PHYSICAL DIAGNOSIS. By Richard C. Cabot, M.D., Assistant Professor of Medicine in Harvard University. Sixth Edition. Cloth. Price, $3.25 net. Pp. 521, with 274 illustrations. New York: William Wood & Co., 1915.

(*Continued on next page*)

WASSERMANN TEST $5.00

(Including Noguchi Control Test)

Expert work and prompt reports assured

Our technique is accurate and reports perfectly dependable. We enjoy facilities and advantages which merit your preference. If you are practicing in the west, it will be to your advantage to send your specimens to our laboratories Reports telegraphed without extra charge. Fee list and containers mailed on request.

PACIFIC WASSERMANN LABORATORIES

San Francisco, Cal. - Pacific Bldg. | Los Angeles, Cal. - Hollingsworth Bldg.
Oakland, Cal. - - Physicians Bldg. | Seattle, Wash. - - Green Bldg.

ILLINOIS TRAINING SCHOOL FOR NURSES

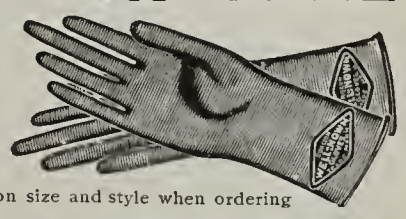
FOUNDED IN 1880

Offers an up-to-date course in theoretical instruction and practical training to women who wish to enter the nursing profession.
Favorable applicants must meet the requirements of good health, of age (19-35), and of good moral character, having had one year of High School or its educational equivalent.
The instruction covers a period of three years, practical instruction being obtained in Cook County Hospital and private hospitals.
The school catalogue and blanks will be sent on application to the Superintendent of Nurses,
Mary C. Wheeler, R.N., 509 Honore Street, Chicago, Illinois.

PUT YOUR HANDS IN OUR CARE

"WELL-NOWN" Gloves Afford You Unlimited Protection In Your Operations

Used by **Eminent** Surgeons and **Prominent** Hospitals everywhere.
Fresh Rubber **Perfect** Fit—**Sterilization** and **Wearing** Quality **Guaranteed** or **Money Refunded.**



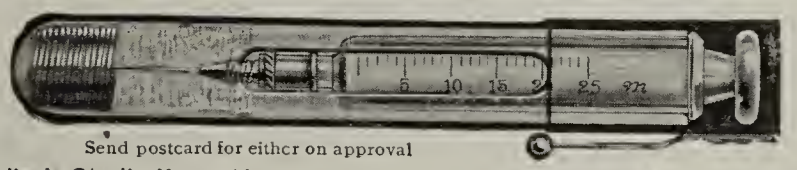
SENT PREPAID ON RECEIPT OF PRICE (Foreign postage extra).

	2 pairs	6 pairs	1 doz. pairs
Medium Weight, smooth - - -	$1.00	$3.00	$5.00
Medium Weight Pebbled Non-Slip	1.20	3.60	5.75

Tissue Cots, assorted sizes, 3 doz. (no less) 50c

L. T. KINNEY & CO., 56 E. Randolph St., Chicago, Ill. Sizes 6 to 10. Mention size and style when ordering

Advertising rates for space in the JOURNAL sent on request



Send postcard for either on approval

Dudley's Sterile Hypo with all glass syringe, two nickeloid needles, **$2.00.** Ready for instant use, no boiling, will not leak if inverted, breakage impossible, 70% alcohol visible, carried like a fountain pen. Aseptic case with all glass syringe, two platine needles, **$2.00.**
Dudley's Sterile Thermometer, one min., alcohol proof markings, patented case, **$1.00.** double case, with mouth and rectal thermometer, **$2.00.** Thermometer alone 3 for **$1.00.**
Sent on approval, 10% off cash with order. Sold direct. Send today.
F. C. DUDLEY, M.D., 320 East 18th Street, BROOKLYN, N. Y.

HOSPITALS FURNISHED NURSES

Hospitals desiring nurses should write or wire us; we can promptly send or put you in touch with competent experienced nurses located and wanting positions in your state. Every applicant unqualifiedly recommended. Our service rendered without charge to hospitals.
AZNOE'S CENTRAL REGISTRY FOR NURSES
3544 Grand Boulevard, Chicago, Illinois.

Stationery For Professional Men—Letterheads envelopes, etc., for physicians, druggists, dentists. Finest quality *Engravureprint* process at about one-half the price of ordinary printing. Portfolio of samples and price-list sent free upon request. Write for them *today!*
Eugene Smith Co., 151 Fox St., Aurora, Ill.

LABELS AND STATIONERY
OUR STYLES ARE ORIGINAL
Many of our customers have dealt with us for 12 years. There's a reason. **JACOBUS PRINTING COMPANY,** 1627 Madison St. CHICAGO. Send for Catalogs Now

OPTIC PROJECTION
By Simon Henry Gage, B.S. and Henry Phelps Gage, Ph.D.
Principles, installation and use of all forms of Projection Apparatus, including directions for showing refractive eye defects on the screen.
For a review of this work, see The Journal, Jan. 16, p. 268.
Library Buckram, 8vo., pp. 731, $3.00 Postpaid
16-page circular on request.
Comstock Publishing Company
124 Roberts Place ITHACA, N. Y.

(*Continued from preceding page*)

WANTED — WOMAN PHYSICIAN, FORmerly teacher and lecturer, ambitious, conscientious worker, diplomatic, having spent year graduate study, wants association with oculist, otolaryngologist or progressive general practitioner; skilful anesthetist and refractionist; able to remove tonsils, etc.; do ordinary laboratory work; institutional experience in executive capacity; details first letter, please. Add. 8908 H, % AMA.

WANTED — INTERNIST WISHES ASSOciation, partnership or indication of proper location; first-class, well-trained man; no dead weight; out ten years; specializing six years; Protestant, married; School A and up to date; healthy and no bad habits; would prefer California and only first-class men or man in association considered. Add. 8904 H, % AMA.

WANTED—TO FORM PARTNERSHIP OR assistantship with surgeon or practitioner, or buy practice paying $4,000 to $10,000 if proposition stands investigation; am 30, married, degree and M.D.; Class A school; one year internship; three years' medical and surgical practice; total abstainer, Protestant, Mason; very highest references as to morals and ability possibilities; present location too small. Add.. 8606 H, % AMA.

WANTED—A PARTNERSHIP OR A LOcation for practice in a city, by a recent graduate of an A + school; best hospital training in pediatrics and obstetrics; best of references and credentials. Add. 8767 H, % AMA.

SITUATIONS WANTED

WANTED—SALARIED CONTRACT PRACtice, assistantship or institutional work; physician, aged 24, married, no children; registered in Georgia and Florida with reciprocating privileges; graduate Atlanta Medical College; Class A college; 18 months' hospital experience; positively no bad habits. Add., stating particulars, remuneration, etc., 705, F. V. Kniest, Omaha, Neb. I

WANTED — A LABORATORY POSITION by a 1915 woman medical graduate; in or near Philadelphia, Pa., preferred, but not essential. Add. A. Freese, 3813 North Sydenham St., Philadelphia, Pa. I

(*Continued on next page*)

BOOKS RECEIVED

(Continued from preceding page)

NATURE AND NURTURE IN MENTAL DEVELOPMENT. By F. W. Mott, M.D., F.R.S., F.R.C.P., Pathologist to the London County Asylums. Cloth. Price, $1.50. Pp. 151. New York: Paul B. Hoeber, 1915.

T.B. PLAYING THE LONE GAME CONSUMPTION. By Thomas Crawford Galbreath. Paper. Price, 25 cents. Pp. 80, with 4 illustrations. New York: Journal of the Outdoor Life Publishing Company, 1915.

CANE SUGAR AND HEART DISEASE. By Arthur Goulston, M.A., M.D. Cloth. Price, $2 net. Pp. 107. New York: Paul B. Hoeber, 1915.

FOOD—WHAT IT IS AND DOES. By Edith Greer. Cloth. Price, $1. Pp. 251, with illustrations. Boston: Ginn & Co., 1915.

WARP AND WOOF. By L. Pierce Clark. Boards. Price, $1.35. Pp. 190. Riverside, Conn.: Hillacre Bookhouse, 1915.

The Public Service

U. S. Public Health Service

Changes for the seven days ended Sept. 8, 1915:

Perry, J. C., senior surgeon, granted 5 days' leave of absence from Sept. 3, 1915.

Wertenbaker, C. P., surgeon, granted 1 month's leave on account of sickness from Sept. 1, 1915.

Cumming, Hugh S., surgeon, leave of absence for 15 days from Sept. 1, 1915, amended to read "15 days' leave of absence from Sept. 4, 1915."

Mathewson, H. S., surgeon, granted 10 days' leave of absence, to be taken when convenient during the month of September.

Lavinder, C. H., surgeon, granted 14 days' leave of absence, to be taken when convenient during the month of September.

Glover, M. W., surgeon, detailed on request of the secretary of agriculture to cooperate with the Bureau of Chemistry of that department in investigations under the amendment of Aug. 23, 1912, of Section 8 of the Food and Drugs Act.

Burkhalter, John T., surgeon, granted 2 weeks' leave of absence on account of sickness from Aug. 31, 1915.

Foster, A. D., surgeon, granted 3 days' leave of absence from Sept. 2, 1915.

Frost, W. H., P. A. surgeon, directed to proceed to Harrisburg, Pa., for conference with commissioner of health and to arrange for securing such data as may be practicable relating to the Ohio River and Delaware River watersheds.

Leake, J. P., P. A. surgeon, Bureau letter dated Aug. 12, 1915, granting 14 days' leave of absence from August 18, revoked.

Draper, W. F., P. A. surgeon, directed to assist Surg. H. S. Cumming in investigations of the pollution of coastal waters in New Jersey and adjoining states.

Wayson, N. E., asst.-surgeon, relieved from duty at San Francisco and directed on request president State Board of Health to proceed immediately to Reno, Nev., for duty in state board laboratory; thence to proceed to Washington, D. C., for duty in the Hygienic Laboratory.

Cox, O. H., asst.-surgeon, granted 7 days' leave of absence from Sept. 5, 1915.

—o—

Medical Department, U. S. Army

Changes for the week ended Sept. 17, 1915:

Failing, Brayton E., first lieut., M. R. C., is ordered to active duty and will proceed to Fort Hancock, N. J., and report to the commanding officer for duty.

Leave of absence for six months on surgeon's certificate of disability is granted First Lieut. Charles L. Baker, M. R. C.

Coffey, Albion McD., first lieut., M. R. C., will proceed to Fort Sam Houston, Texas, and report to the commanding general Southern Department, for assignment to temporary duty in that department.

(*Continued on next page*)



Equal to Both Extreme Tests

There are two cardinal tests of the surgeon's rubber glove —and both are adequately met by the

Miller Surgical Rubber Gloves

The one extreme is when on the hand of a surgeon at the time of the operation. This is always a crisis. The glove must give protection; must be flexible; must, in fact, fit like a coat of skin and not rob the operator of his confidence or skill, nor hamper his movements nor distract his attention. Besides being equal to the demands of protection, the ***Miller*** rubber glove fits so perfectly that the operator is unconscious that he is wearing them.

The other extreme is after the operation when the glove must be sterilized. Owing to the high quality of materials, workmanship and inspections responsible for the ***Miller*** gloves, they will stand the most repeated sterilizations. Physicians the world over appreciate the difference between ***Miller*** rubber gloves and nondescript rubber gloves. If you have never tried ***Miller*** gloves write us at once. Furnished in smooth and rough finish, in all sizes.

THE MILLER RUBBER CO.
Akron, Ohio, U.S.A.



(Continued from preceding page)

WANTED—SALARIED POSITION — CORporation, institution, mining, assistantship or locum tenens; consider purchasing good location or partnership private hospital; aged 32; single; A plus graduate, 1905; eight years' government service, including three hospitals; excellent professional and moral testimonials; registered New York, New Jersey, Pennsylvania; state salary and particulars. Add. 8866 I, % AMA.

WANTED — ASSISTANTSHIP IN GENeral practice until March, 1916, by 1915 graduate of Class A school of Chicago; aged 25, single; licensed in Illinois; prefer Middle West; can come October 1; state salary and give particulars; can furnish references. Add. 8806 I, % AMA.

WANTED — BY WOMAN PHYSICIAN — Position as assistant in institution; have held position of chief woman physician in large state hospital for insane and epileptics and can furnish good testimonials; or a position as manager or superintendent of small institution; have conducted hospitals successfully, making them self-supporting. Add. 8821 I, % AMA.

WANTED — SITUATION — AMERICAN physician and optician, 42, married, desires connection with sanatorium, hospital or other institution in or near Chicago, part or full time; good refractionist and fitter; hold B.S. and M.S. degree; experienced teacher of natural and medical sciences; seven years in sanatorium work before studying medicine. Add. 8891 I, % AMA.

WANTED—ASSISTANTSHIP WITH OCUlist in large city (Chicago preferred); am 38 years of age, single, Protestant, fine personality, perfect health; graduate Class A university (eastern); two years hospital internship; have specialized eye, ear, nose and throat past seven years; at present with well-known clinic in middle west; want to devote entire time to ophthalmology; correspondence confidential; personal interview necessary. Add. 8868 I, % AMA.

WANTED—POSITION AS SUPERINTENdent, manager or assistant; ten years' experience as superintendent; finest New York City references; married, no children; graduate School A. Add. Apartment 402, "The Ardmore," Oakland, Calif. I

WANTED — SALARIED SITUATION — male; aged 31; single; class A graduate; hospital 1 year 4 months; private practice 1 year; English or German; ordinary laboratory work, give anesthetics; no bad habits; references if desired; consider hospital or assistant to physician; $90 and maintenance, or $110 without it, per month. Add. 8852 I, % AMA.

WANTED—POSITION—AGED 42 — MARried; registered in Michigan; graduate P. & S., St. Louis, 1896; position desired with doctor or institutional or contract work; salary $100 a month or equivalent; general practice, obstetrical work; experienced in modern methods of giving anesthetics; wife graduate nurse and could also work if desired. Add. 708, F. V. Kniest, Medical Broker, Omaha, Neb. I

WANTED—A WOMAN PHYSICIAN WITH experience would like a position in hospital, sanatorium or school; am registered in Massachusetts and Wyoming and reciprocate with several states. Add. 8888 I, % AMA.

WANTED — SALARIED POSITION AS assistant physician or supervisor in a state insane or private hospital; hold a New York state medical license; desire any state reciprocating; am at present and have been for 5 years connected with a state hospital; unencumbered; references. Add. 8906 I, % AMA.

WANTED—INTERNSHIP, CONTRACT OR assistantship by physician; single, aged 28; graduate Class A school, 1912; one year hospital experience; 2 years' practice; registered in Alabama and Louisiana; hospital work preferred; willing to work for fair salary with promotion; please state particulars and salary in first letter; reference furnished if desired. Add. Dr. McInnis L. Goff, Crichton, Mobile County, Ala. I

WANTED — BY EYE, EAR, NOSE AND throat specialist, position as assistant to oculist and aurist in large city; only first-class man doing large amount surgery considered; am 33 years of age, single, Protestant, good personality; graduate Class A university; highest possible references; personal interview necessary. Add. 8859 I. % AMA.

THE PUBLIC SERVICE

(*Continued from preceding page*)

Ramsay, George D., first lieut., M. R. C., is ordered to active duty and will report to the commanding officer, Fort Adams, R. I., for duty.

Peed, George P., capt., M. C., is relieved from further temporary duty at the Port of Embarkation, Galveston, Texas, and will proceed to Fort Sam Houston, Texas, and report to the commanding general, Southern Department, for assignment to temporary duty.

Wall, Francis M., first lieut., M. R. C., is relieved from temporary duty at Douglas, Ariz., and from further duty at Fort Columbia, Wash., and will proceed to Benicia Arsenal, Cal., for duty.

Stallman, George P., first lieut., M. R. C., on the arrival at Benicia Arsenal, Cal., of First Lieut. Francis M. Wall, M. R. C., will proceed to Douglas, Ariz., and report for temporary duty.

Fuller, Leigh A., major, M. C., is relieved from duty at Brownsville, Texas, and from duty at Fort Brady, Mich., and will proceed to Fort D. A. Russell, Wyo., for duty.

Carswell, Robt. L., capt., M. C., will proceed at once to Texas City, Texas, for duty in command of Ambulance Company No. 5.

Cushing, Harvey, first lieut., M. R. C., is ordered to active duty and will report in person Sept. 13, 1915, to the Surgeon General of the Army for duty until Sept. 17, 1915.

Leave of absence for one month, effective on relief from duty at Fort Leavenworth, Kan., is granted First Lieut. Hugh G. Voorhies, dental surgeon.

Hall, Horace C., first lieut., M. R. C., is ordered to active duty and will report to the commanding officer, Ninth Infantry, for duty.

The assignment of First Lieut. Daniel B. Edwards, M. R. C., to active duty at Fort Screven, Ga., Aug. 9, 1915, to Aug. 27, 1915, inclusive, under verbal orders, is confirmed and approved.

Each of the following-named officers of the M. C. will repair to this city and report to the commandant, Army Medical School, on or before Sept. 30, 1915, for the purpose of taking a special course of instruction, and on completion of course will return to proper state: Capt. Lucisu L. Hopwood, Capt. Lee R. Dunbar, Capt. William S. Shields, Capt. Craig R. Snyder, Capt. Charles L. Foster. On completion of temporary duty at West Point, N. Y., Capt. Joseph F. Siler, M. C., will also report to the commandant, Army Medical School.

Leave of absence for four months, to take effect on his relief from his present duties, is granted Capt. Edward M. Talbott, M. C.

Ruffner, Ernest L., major, M. C., on the expiration of leave of absence, will proceed to Columbus, Ohio, and take station at that place for duty as inspector-instructor of the fourth sanitary district.

New Patents

Patents of Interest to Physicians

1104390. Invalid bedstead, Ralph A. Stanley, Gladstone, Ill.

1104575. Bandage fastener, Sylvanus H. Swope, Greenville, Ohio.

1104157. Ophthalmic mounting, Joel C. Wells and N. M. Baker, Southbridge, Mass.

1105275. Hypodermic syringe, Raymond E. Ingalls, Seattle, Wash.

1104908. Antiseptic protector, Thomas Lamb, Brooklyn.

1105278. Producing a mixture of camphene and isobornyl acetate from pinene hydrochlorid, Carl Ruder, Wandsbek, Germany.

1105105. Surgical appliance, W. O. Sherman, Pittsburgh.

1108617. Invalid-bed, John R. Phillips, Poughkeepsie, N. Y.

1109318. Surgical inhaler, A. W. Browne, Prince Bay, N. Y. and F. L. Wallace, Lansdowne, Pa.

1109072. Pill injector, John Kozmousky, Boston.

1109083. Portable stretcher, Michael Saltis, Fort William McKinley, P. I.



SEND FOR CATALOGUE ILLUSTRATING OVER 150 SIZES AND STYLES OF

PHYSICIANS' BAGS and CASES

WESTERN LEATHER MFG. CO.
MAKERS
184 W. Lake St. Chicago

Of Course, Doctor, You Know



Good teeth mean good health and a good body

BABY EDUCATOR

Is a Food Teething Ring made from pulverized honey-sweetened cereals baked so hard that just a little is eaten at a time as it becomes moistened by the saliva.

The Baby Educator Food Ring pacifies the teething baby and at the same time develops the teeth and jaws. Better than tasteless and foodless rubber rings.

EDUCATOR CRACKERS

Doctor, may we send you free samples? Your name on a post card will do.

Johnson Educator Food Co.
30 Batterymarch St., Boston.

POMPEIAN OLIVE OIL
ALWAYS FRESH
PURE-SWEET-WHOLESOME

ALLEN'S SURGICAL POLISH

as fine and soft as cream

MANUFACTURED ESPECIALLY FOR
Silver and Nickel Instruments
White Cabinet Cases and Glass

Order from your dealer—25 cents. By parcel post 28 cents in stamps. *Address*

G. W. Allen & Co.
269 Wash. St. Portland, Oregon

PLEASE MENTION THE JOURNAL A. M. A. WHEN WRITING TO ADVERTISERS

(*Continued from preceding page*)

WANTED — LOCATION ON STRAIGHT salary or part salary; aged 32, married; best references; have handled railroad, mining, lumber contract work and private practice; two years' hospital training. Box 36, Georgetown, Colo. I

WANTED — SALARIED POSITION WITH physician or hospital by graduate medical school of Harvard University; aged 35; American; no tobacco, liquors, drugs; two years' hospital training, general medicine, obstetrics, in Boston and New York; good anesthetist; general laboratory work; registered; reciprocate 30 states; would take locum tenens. Add. 8871 I, % AMA.

WANTED — BUSINESS MANAGER — ASsistant steward or steward-dietitian's position in hospital or institution; 10 years' hotel, hospital and sanatorium experience; married man, aged 30; good knowledge of dietetics; first-class experience in buying supplies and management of help; will guarantee efficient and economical service; best references. Add. 8814 I, % AMA.

WANTED — BY WOMAN PHYSICIAN, graduate of regular school, position as assistant in doctor's office, superintendent small hospital, operating room head, city or child welfare work; four years' experience as superintendent small hospital; experienced anesthetist; good manager; best references. Add. 8898 I, % AMA.

WANTED — AN ASSISTANTSHIP, SALaried position or prolonged locum tenens by graduate A1 school; good hospital training and some general experience; single; American; good habits; aged 32; references furnished. Add. 8899 I, % AMA.

WANTED—BY GRADUATE OF A PLUS school; two years in Chicago hospitals; two years in general practice; can do any kind of surgery; special work in G.-U. and rectal surgery; place in west with busy surgeon, with or without hospital; can furnish best of references. Add. 8858 I, % AMA.

WANTED—POSITION — TUBERCULOSIS institution—resident physician; aged 27; healthy, single, graduate class A medical college; good general hospital training; fair knowledge tuberculosis; wish continue specializing this branch; intend following institutional work number years; present employed large tuberculosis sanatorium; good reasons for changing; excellent references. Add. 8780 I, % AMA.

WANTED—ASSISTANTSHIP WITH BUSY physician, surgeon or in hospital at once; single, age 29; graduate Class A school; one year general hospital training, sanitarium experience and assistant to physician having private hospital for two years; postgraduate at Chicago Policlinic in summer of 1914; German speaking physician; give full particulars in first letter; references furnished. Add. 8686 I, % AMA.

WANTED—SALARIED POSITION—GRADuate A1 school; aged 25, single, American; one year hospital training; capable of doing surgical assisting, laboratory or psychopathic work; at present private assistant; wish hospital work. Add. 8860 I, % AMA.

WANTED — POSITION AS A DETAIL man; graduate Class A school; ten years experience in general practice, hospital and advanced work; single and good habits; reasons for wanting such position, having sold my location. Add. 8837 I, % AMA.

NURSES LOCATION WANTED

WANTED — BY A REGISTERED NURSE, graduate of large eastern hospital, position as superintendent of hospital of about 150 beds; have had many years' experience in similar positions; experienced training school instructress and buyer of hospital supplies; thoroughly capable; excellent credentials; middle west preferred. Add. 8893, % AMA.

MISCELLANEOUS WANTED

WANTED—ADVERTISING COPY WRITER —Must be familiar with medical terms; one with a knowledge of drawing preferred; state experience and salary expected. Add. 8883 J, % AMA.

APPARATUS, ETC., FOR SALE

FOR SALE—ONE M'CASKEY REGISTER system, never used; cost $100; will sell for $80; also hot air apparatus, new; cost $20; will sell for $15. Add. 8901 K, % AMA.

(*Continued on next page*)

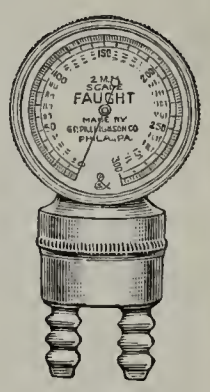
PILLING FAUGHT BLOOD PRESSURE

CONVENIENT—ACCURATE—RELIABLE
SELF-CONTAINED

The Recognized Standard throughout the World—wherever True Merit is given its Due



16 OTHER REASONS WHY



You OBSTETRICIAN Cannot

Afford to be Without a

Pilling Faught Apparatus—

See page 91 in the Faught Primer, Fifth Edition. (Price 25 cts.)

1—Is Accurate.
2—Scale reads to 300 mm.
3—Scale is graduated in millimeters of mercury.
4—Dial is adjustable.
5—Is of convenient size.
6—Is always reliable.
7—Action is positive.
8—Arm band is standard size.
9—Operation is the simplest.
10—Arm band is sterilizable.
11—Not a spring instrument.
12—Accepted by insurance companies.
13—Used throughout the world.
14—Designed to meet your needs.
15—Used by the United States Government.
16—Takes systolic, diastolic and pulse pressures.

Price, complete, with arm-band inflating pump, in durable morocco case..... **$22.50 NET**

Signed certificate and a copy of Faught's Primer on Blood Pressure with every apparatus

Made only by

GEORGE P. PILLING & SON CO.

Philadelphia, Pa.

FOR SALE—BETZ DRY HOT-AIR BODY apparatus; heated by gasoline; practically new; first check for $30 (thirty) buys it. Dr. John H. Edge, Toccoa, Ga. K

FOR SALE — NEW ALLISON TABLE—Army and Navy folding enameled operating table with leather cushion; physicians' scale (Fairbanks); baby scale; new oak instrument cabinet; two-bowl immersion stand; enameled adjustable bedside stand; Mayo aluminum instrument stand; Tycos blood-pressure apparatus; particulars on request. Add. 8867 K, % AMA.

MEYER 18" COIL OUTFIT in QUARTER sawed dark golden oak with closed-in cabinet. Table has regulating rheostat quick break switch, instantaneous interrupter control. Coil equipped with 6 inductances, chemical reducer control, series spark gaps, milliammeter and three reels, platinum point interrupter. Coil guaranteed for 5 years. Price, $225. The Wm. Meyer Co., 825 Washington Blvd., Chicago, Ill. K

FOR SALE—FINE YALE CHAIR NEWLY upholstered, looks like new, $35; McDannold chair, $25. National Physicians' Exchange, 30 E. Randolph St., Chicago, Ill.

GET CREDIT FOR YOUR WORK—MARK your x-ray plates with your name. It's necessary in medicolegal cases. We'll give you a plate marker *free* with an order for a dozen Paragon X-Ray Plates—unsurpassed for speed and accuracy. We want you to try them—*we guarantee satisfaction.* Send this adv. with order if you want a plate marker free. Geo. W. Brady & Co., 754 S. Western Ave., Chicago.

FOR SALE—CHEAP—A WM. MEYER INterrupterless Transformer, as good as new, with manufacturer's guarantee for four years more. Add. 8805 K, % AMA.

PRACTICES FOR SALE

FOR SALE—CALIFORNIA—$2,500 PRACtice, office fixtures, drugs, household and kitchen furniture for $500; $325 without x-ray and switchboard; town of 1,400; good surrounding country; fine roads, fruit, schools, churches; city water; electricity; one easy competitor; collections 95 per cent.; fine climate, green grass and blooming roses all winter. M. P. Crisler, Rocklin, Calif. N

FOR SALE—COLORADO—$250 BUYS UNopposed $3,000 practice, introduction and office equipment costing $250 in small town in excellent fruit, irrigation farming and stock-raising section; money from start; collections 95 per cent.; no long drives; excellent auto roads, churches, schools; American people; possession at once. Add. 8914 N, % AMA.

FOR SALE — WESTERN COLORADO—Drug store and practice of $1,200 in small but growing railroad town; good school and church advantages; new ditch will increase population greatly; nearest competitors 12 miles; sell stock and fixtures for invoice price, about $850; residence optional; going to specialize. Add. 8917 N, % AMA.

FOR SALE — IDAHO CONTRACT PRACtice; cash income about $4,500 year; appointments transferable; large territory; contracts pay about $3,000; outside practice about $1,500 more; fine climate; price for equipment, household goods, etc., $800; mining and stock country. Add. 709, F. V. Kniest, Medical Broker, Omaha, Neb. N

FOR SALE—NORTHERN ILLINOIS—24 miles from Chicago; $3,800 unopposed village and country practice in richest dairying district in state; excellent roads; collections 98 per cent.; German-American people; competition average 7 miles; eight-room house and office combined; large barn, garden, garage, horse, buggy, drugs, office fixtures; appointments transferable; price $4,000, part cash; balance easy terms; or will sell practice and equipment separately and rent property; this is an exceptional opportunity and must be seen to be appreciated; will give thorough introduction; specializing. Add. 8652 N, % AMA.

FOR SALE—NORTHERN ILLINOIS RAILroad town of 900; a $4,500 practice, established over 20 years; $700 cash for office equipment, some drugs and thorough introduction; must be married man and have some cash. Add. 8877 N, % AMA.

FOR SALE — ILLINOIS — UNOPPOSED $2,500 practice in rich part of state; can turn this splendid practice over to successor for price ranging from $200 to $2,000, depending on what is wanted by purchaser. Add. 8884 N, % AMA.

(Continued on next page)

A.M.A. BINDERS

Why not save your A.M.A. Journals? With our SIMPLEX BINDER it is easy. You can bind them at home yourself with very little trouble. Send 15 cents in stamps (to pay postage and packing) for a sample. S. J. MATHERSON.
820 W. 35th Street, CHICAGO.

"AMBUMATIC" WASHABLE ABDOMINAL
SUPPORTERS



Patented. Made buckled or laced.
DO THE WORK "JUST RIGHT"
ADJUSTABLE FOR "LIFT-UP" OR "BINDER SUPPORT"
To any part of the abdomen. Adapted to any person, any condition requiring efficient, comfortable support.
Call or send day for folder, order blanks and catalog.

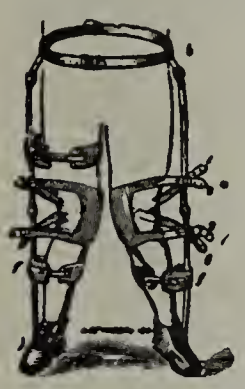
We Are Experts in Corrective
ORTHOPEDIC APPLIANCES
ELASTIC STOCKINGS, TRUSSES, CORSETS, ETC.
Your correspondence solicited, given careful attention and full information. Phone Cent. 4623

ORDER THE AMBULATORY PNEUMATIC SPLINT
To secure greatest comfort, shortest period of confinement, best results and health for your
FRACTURES
of leg, knee, thigh, and hip patients. All dealers and direct from us. Wire order. State fracture, which limb, sex. Send for booklet, prices, etc. Recommend it.

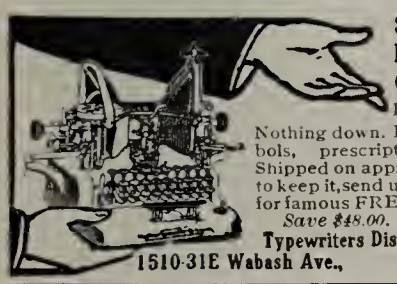


Amb. Pneu. Splint Mfg. Co., 30 (A.) E. Randolph Street, Chicago

Doctor:—
Order Orthopedic Appliances Direct from Our Factory
Our system of measurement insures correct fitting, even in extreme cases. Scientific workmanship guaranteed consistent with AA-I material and service. Braces for spinal curvature, bow legs, weak ankles and deformities of every description. Elastic stockings, artificial limbs, trusses, abdominal supporters, etc., at factory prices. Our orthopedic department is supervised by an expert who has had over 25 years experience in this special work. We guarantee you best possible therapeutic results and pleased patients. Let us send you blank forms and directions for taking measurements, complete catalog, etc.



The Wolfertz Deformity Appliance & Truss Mfg. Co.
Established 1886—Incorporated 1906
154 N. Fifth Avenue Chicago, Illinois



$4 a Month
Buys This Visible Oliver Typewriter
FREE Trial.
Nothing down. Prints medical symbols, prescriptions, labels, etc. Shipped on approval. If you want to keep it, send us $4 a month. Send for famous FREE typewriter book.
Save $48.00. Write today.
Typewriters Distributing Syndicate
1510-31E Wabash Ave., Chicago

"QUALITY FIRST"
BOOK BINDING
For $1.50 per volume we will bind THE JOURNAL in half leather, cloth joints, leather corners, cloth sides or Latest Process Full Buckram. This price applies also to other journals of a similar size. **OUR STRONG POINT** is magazine binding. Send your books or send a postal to
THE BOOK SHOP BINDERY
Tel. North 633. 314 W. Superior St., Chicago

FOR SALE — CENTRAL ILLINOIS — A $3,000 practice in a town of 700; good roads, schools and churches; one competitor; office equipment, practice and drugs for $550; possession given at once; going to city to specialize. Add. 8800 N, % AMA.

FOR SALE—IOWA—GENERAL PRACTICE and hospital; fine county seat town; Iowa reciprocates; holds 20 beds; part cash, easy terms on balance; hospital filled to capacity; buildings and grounds cost $15,000; big discount as going to coast; investigation invited on business, prospects, established practice and details. Add. 701, F. V. Kniest, Medical Broker, Omaha, Neb. N

FOR SALE—NORTHERN ILLINOIS—EXcellent location for German physician; town of 600; practice, office equipment, drugs and driving outfit for $500; will sell or rent home; possession given at once; come and investigate. Add. 8815 N, % AMA.

FOR SALE—SOUTH CENTRAL ILLINOIS —Village and country practice of $3,000; home, two lots, barn and outbuildings in heart of town; established 8 years; 1 competitor; 12 miles to nearest town; rich country; price, $2,000; part cash, balance easy terms; auto and equipment optional. Add. 8844 N, % AMA.

FOR SALE—NORTH CENTRAL ILLINOIS —$5,000 medical and surgical practice, (rich farming district), purchaser should do major surgery. Beautiful modern home fit for hospital, worth $10,000, price $7,000, $2,000 down; will accept one-half purchaser's income for balance; will consider trade on land in corn belt or city property. Reason for leaving, retiring. Add. 8812 N, % AMA.

FOR SALE—N. E. ILLINOIS—$4,500 PRACtice in town of 5,000; American population; competition right; collections 95 per cent.; good high school and college; paved streets and macadam roads; no real estate; practice and introduction to purchaser of drugs, instruments and office furniture; price $700; $450 cash required; specializing. Add. 8834 N, % AMA.

FOR SALE—CENTRAL INDIANA—LARGE village and country practice to purchaser of my residence and office property; both equipped with all modern conveniences; $8,000 cash; absolute value of property far greater; good collections, roads, farms, schools, churches, railroad and interurban; hourly service to Indianapolis; best reasons for selling; a snap for somebody. Add. 8882 N, % AMA.

FOR SALE—EAST CENTRAL IOWA— $3,000 unopposed practice; inland town 300; good school and churches; unusually large, rich farming community; good graveled roads; collections first class; $700 buys practice, drugs, instruments and office fixtures; act quickly; going into partnership. Add. 8786 N, % AMA.

FOR SALE—IOWA GENERAL PRACTICE —So much better if you can do surgery, eye, ear, nose and throat; no one of that class here; town 800; on account of appointment will discount largely; few hundred swings deal; practice $3,000 year; accredited high school; large territory; good roads; several appointments; easy competition; rent 3 office rooms $10 month; no real estate. Add. 707, F. V. Kniest, Medical Broker, Omaha, Neb. N

FOR SALE—EASTERN IOWA — UNOPposed practice, established over 35 years, free to purchaser of my new modern residence and office, with excellent office furniture, equipment and drugs in live railroad town 300; very rich farming community; took in $3,700 last year; going to city; price, $3,600; requires half cash to buy. Add. 8878 N, % AMA.

FOR SALE—KANSAS—$3,000 UNOPPOSED practice in town of 250; large territory; in gas and oil belt of southeast Kansas; 2-room office on Main St.; two lots, office furniture; all for $1,000 if taken in next 30 days. Add. 8889 N, % AMA.

FOR SALE—MASSACHUSETTS—A WELLestablished village and country practice; an excellent location in town 50 miles south of Boston; exceptional circumstances places this on the market. For further particulars add. Box 322, Marion, Mass. N

FOR SALE — MICHIGAN — UNOPPOSED $3,000 village and country practice; excellent community; good opportunity for young man; do own dispensing; complete new office equipment, furniture and drugs; $400 cash; will transfer well paying appointment; reason for selling, going to specialize; avoid useless correspondence. Add. 8609 N, % AMA.

(Continued on next page)

Electrically Lighted Surgical Instruments

The more brilliant illumination and lower temperature of the tungsten lamps with which they are now equipped, have greatly increased the usefulness of E. S. I. Co. instruments, such as

Jackson Bronchoscopes
and Laryngeal Specula
Holmes Nasopharyngoscopes
Tuttle and *Lynch*
Procto-Sigmoidoscopes
Braasch Cystoscopes
Koch, Swinburne and *Young*
Urethroscopes

Modern General Diagnostic Outfit

This Outfit now weighs but 4½ pounds, and measures 3½ x 7 x 15 inches, making it very convenient to carry.

While any E. S. I. Co. instruments desired may be assembled in this Outfit, the ones listed below are usually chosen and are furnished unless otherwise specified.

1 Tungsten Battery with adapter and conducting cords
1 Auriscope, Style B. with three specula (furnished with or without handle)
1 Laryngoscope
1 Tongue Depressor
1 General Diagnostic Illuminator
2 Koch Urethroscopes (any size)
1 Light Carrier for Urethroscopes (interchangeable)
1 E. S. I. Co. Proctoscope (any size)
1 Light Carrier for Proctoscope

Price: Case with battery and instruments listed above, complete - $40.00

Eighth Edition of Catalogue

The Eighth Edition of our illustrated and descriptive Catalogue has just been completed and we will be pleased to send a copy upon request.

Origination begets Imitation
For your own protection be sure every instrument is marked "E. S. I. Co."

ELECTRO SURGICAL INSTRUMENT COMPANY
ROCHESTER, N. Y.

E·S·I·Co·

FOR SALE—MICHIGAN—NEAR DETROIT —Large general and obstetrical practice; annual income $2,500 net; prosperous village and rich surrounding country of 4,000; good collections; am compelled to sell quickly on account of health; $1,000 buys my drugs, instruments, books and office fixtures; fullest investigation invited; don't answer unless you mean business and have the money. Add. 8730 N, % AMA.

FOR SALE—DETROIT, MICHIGAN—TO purchaser of modern equipment, which cost $2,000, I will turn over desirable practice gratis, and introduce buyer; good class of patients; location established 10 years; commercial enterprise requires my immediate attention; who wants a real bargain for $1,700 cash? For particulars add. 8781 N, % AMA.

FOR SALE — EASTERN MINNESOTA— Practice $4,000 to $5,000 per year, 35 miles northeast of St. Paul on Soo Line on beautiful St. Croix River; no competition; territory nearly unlimited; town 6,000 people; several small inland towns within practice; $1,000 cash and $500 on bankable note or $1,500 cash; if no money need not answer; a complete line of drugs goes with practice; I will thoroughly introduce my successor. Add. 8903 N, % AMA.

FOR SALE—MINNESOTA — EYE, EAR, nose and throat practice of $3,000 net in a city of 20,000; reason for selling is locating in a larger city. Add. 8907 N, % AMA.

FOR SALE—MISSOURI — WILL INTRODUCE in $3,000 yearly cash practice reliable physician who buys my well-located property; no blue sky to sell; a sacrifice; population 350; one competitor; farming district; American people; high school, churches; good roads; $500 down; balance terms; full particulars upon inquiry. Clay Allen, Blairstown, Mo. N

FOR SALE—MISSOURI — CITY 100,000— $20,000 practice, established 15 years; excellent hospital facilities; three-room office well equipped, heart of city; rent reasonable; Chalmers roadster, Velie five-passenger optional; rich country; healthy climate; low death rate; business unlimited; money from the start; reason for selling, foreign service; price right. Add. 8900 N, % AMA.

FOR SALE — SOUTHEAST MISSOURI — Practice of $2,500 in city of 3,000; water system, electric light and good schools; 16 old line life; local surgeon for two roads; $750 buys office and practice; giving attention to other business interests. Add. 8853 N, % AMA.

FOR SALE—NORTHERN CENTRAL NEbraska; practice in good farming and stock raising community running $3,000 to $3,500 yearly; 95 per cent. collections; town 600, electric lights, water, good schools, good roads; practice increased by dispensing; married man can do well; owner going to specialize; price, $300, including equipment and small stock medicines. Add. 8757 N, % AMA.

FOR SALE — NEBRASKA — IN COUNTY seat town, 1,500 population; accredited high school; waterworks; electric lights; one of the best farming sections in state; competition right (2 competitors); business averages $5,000 per annum; twelve-room house (suitable for hospital), and detached office, on three lots with large shade trees, centrally located; appointments as medical examiner to all old line companies, and railroad surgeon, transferable; the price for all, $6,500, is a low price for the real estate alone; am going to specialize. Add. 8796 N, % AMA.

FOR SALE — NEBRASKA — $3,500 PRACtice free to purchaser of my income property paying 10 per cent. net; population 500; large territory in fine country; good schools, churches and roads; competition right; appointments and practice transferred; will introduce successor; immediate possession; main line railroad; income will support; can get rich here; price $4,000. Add. 8831 N, % AMA.

FOR SALE—SOUTHERN NEBRASKA— $2,500 practice free to purchaser of good fireproof building and small drug stock; town 200, main line Burlington; stock and farming community; good roads; American people; distances to competition 8, 9, 12 and 20 miles. Add. Dr. Pinkerton, Bostwick, Neb. N

FOR SALE — NEVADA — UNOPPOSED, well-established $3,200 cash practice; drugs, office and household furniture at cost; $400 turns the deal; a man looking for an A1 proposition will do well to personally investigate. Add. 8894 N, % AMA.

National (the original) Glycerinized Vaccine makes careful technique worth while. It is pure. Fifteen cents per point or tube.

National Vaccine and Antitoxin Institute
"Oldest in America"
Washington, D. C.

FOR SALE—NEW JERSEY — 70 MILES from New York City; unopposed all-country practice; established 30 years; in August I did $633 actual practice; will guarantee new comer to do at least $4,000 the first year; property $5,000, its actual value, includes Ford, two horses and two complete driving outfits and some household goods; macadam roads; graduate who needs money and practical experience will need little capital to start here. Add. 8872 N, % AMA.

FOR SALE—NEW YORK—EXCEPTIONAL opportunity to obtain a $3,000 practice; village of 1,500, with all modern improvements; surrounded by fine farming country; competition right; price, $500 cash for good will, office outfit and introduction; must sell at once; good reasons; do not reply unless you mean business. Add. 8879 N, % AMA.

FOR SALE — NORTH DAKOTA — UNOPposed practice and drug store in well settled prosperous community; practice, $4,000; can be easily increased; competition light; good fees, fine roads, fine crops; drug store produces good income and can be handled nicely with practice; opportunity for surgery; leaving for city. Add. 8602 N, % AMA.

FOR SALE—NEW MEXICO—$3,000 PRACtice; cash collections 80 per cent.; home cost above $2,500; will sell all, including some office furniture, for $2,000; half cash; climate ideal; good town, white people; a genuine bargain; am going to specialize. Add. 8892 N, % AMA.

FOR SALE—NEW YORK—$3,000 VILLAGE and country practice; town of 800, large farming territory; collections good; one competitor; brick residence on paved street, with modern improvements; 3 acres bordering the lake; sale price $5,000, or $400 buys drugs, instruments, fixtures, carriages, sleigh; will rent offices. Add. Box 205, Cassadaga, N. Y. N

FOR SALE—NEW YORK—MY PRACTICE, home and offices; practice $3,000; collections 90 per cent.; premises in excellent condition; occupied by me for 42 years; fine opportunity for an energetic physician and surgeon; practice easily doubled; full particulars and reason for selling given. Add. Dr. R. S. Harnden, Waverly, N. Y. N

FOR SALE—NEW HAMPSHIRE — $4,000 village and country practice with residence; fine roads; population 1,500; collections over 90 per cent.; house 10 rooms, including office and bath, electric lights, town water, sewer connection, hot-water heat, garage, one-half acre land; one competitor; Protestant and Catholic churches; fine railroad facilities; good schools; a high grade business and can transfer mostly entire work to good man; am going to larger center; price, $3,500; terms. Add. 8913 N, % AMA.

FOR SALE—CENTRAL OHIO—$3,000 UNopposed village and country practice established 25 years; two railroads; pikes; first grade high school; four churches; gas; local railroad surgeon, township physician, transferable; eight-room house, three-room office, barn, garage; price, $2,500; $1,000 cash, balance to suit; must sell immediately; hospital appointment. Add. 8825 N, % AMA.

FOR SALE—OHIO—ACCOUNT DEATH OF leading physician and surgeon, the office fixtures consisting of surgical outfit and drugs with all cases and fixtures will be sold; office for rent; the doctor had occupied offices 22 years; want man who can do major surgery of town; near Cleveland. Add. 8777 N, % AMA.

FOR SALE — PENNSYLVANIA — EIGHT miles from York, Pa.; $3,500 to $4,500 general practice and outfit, with 11-room house, large barn and garage, large lawn, fruit, one acre ground, in borough, surrounded by good farming community; no competition; 2½ miles to trolley railroad, Lincoln highway; $1,500 to $2,500 will handle; act quickly; have bought home of deceased physician in large place. Add. Dr. Harbold, Dallastown, Pa. N

FOR SALE—SOUTH DAKOTA GENERAL practice; to English speaking doctor practice goes $4,000 and if German speaking also will go to $5,000 or $6,000; population 1,000; large territory; never a failure of crops; in best part state; high school; office equipment and residence for sale; part cash; railway junction; waterworks, electric lights, etc.; easy competition; one competitor; territory 12 to 20 miles. Add. Dr. R. H. Payne, Tripp, S. D. N

(Continued on next page)

FOR SALE—NORTH DAKOTA—$4,500 UNopposed practice in town of 300 population; country well settled by good farmers; roads always good; fine crops; large territory and big opportunity to increase practice; opening for surgeon; nearest 50 miles; leaving for P. G. work; $300; must be taken by October 10. Add. 8915 N, % AMA.

FOR SALE — PHILADELPHIA — ON ACcount of death, practice of leading physician; the office fixtures consisting of furniture, drugs, surgical instruments, medical books, automobile; office for rent; the doctor has occupied these offices for 18 years; nearest physician 2½ miles; exceptional opportunity. Add. 8849 N, % AMA.

FOR SALE—TEXAS—IF ANYONE WANTS a real bargain I will sell my residence for $3,000; this is $500 less than cost; healthy climate; good pay, $2,000 to $3,000 unopposed practice on railroad; best of reasons for selling; if you mean business come at once. Dr. S. M. Henry, Groom, Texas. N

FOR SALE—TEXAS—$6,000 PRACTICE IN a small railroad town; I will sell one-half interest in a $12,000 practice, property, books, instruments, office furniture, in fact a practice with everything to start business; a congenial up-to-date physician as partner; for $5,000, $3,500 cash, terms on balance; purchaser must be a member of the Christian church—a reason for this. Add. 8766 N, % AMA.

FOR SALE — SOUTHERN VIRGINIA—$3,000 general practice in thriving village on railroad close to city for price of real estate, which is $2,500; $1,000 cash, balance in one and and two years, to bear interest from date; competition right; good roads; good farming community; collections good; going to specialize. Add. 8912 N, % AMA.

FOR SALE—WEST VIRGINIA — THREE splendid propositions under control of one physician; if you are a well-trained surgeon with $1,000 or a physician-druggist with $2,500 to $4,500 or a strong physician with or without capital, write; no real estate; simply equipment at invoice; introduction and good will free; say what you want in first letter. Add. 8909 N, % AMA.

FOR SALE—WEST VIRGINIA—N. W. part of central section, 8 miles from B. & O. railroad; center of oil and gas fields; practice and small hospital; did over $7,000 surgery in one year; also good general practice; low price and favorable terms for property and equipment; good reason for selling; write for full particulars. Add. 8826 N, % AMA.

FOR SALE — WISCONSIN — PRACTICE $4,800 yearly; city of 3,500 located on beautiful river; office outfit consists of x-ray, fine stock drugs, operating chair, instrument cabinet, etc.; real estate, 10-room house, with heat, light and water; two fine lots on best street; price complete, $4,700; $2,000 cash required; will subdivide real estate; investigate. Add. 8798 N, % AMA.

FOR SALE — WISCONSIN — UNOPPOSED well paying practice in growing railroad village of 350; electric lights; rich farming country; practice, office equipment, large stock of drugs, driving outfit (2 horses, etc.); $1,500 cash; large, beautiful property, best in town, $6,000; will rent it; this is a first class proposition. Add. 8739 N, % AMA.

FOR SALE — WISCONSIN — VILLAGE practice; population of district 4,000; 90 per cent. Norwegian; county seat; good schools; good collections; one other physician who is not Norwegian; will sell for value of modern residence ($3,500); practice good for five to eight thousand dollars yearly; going to specialize. Add. 8830 N, % AMA.

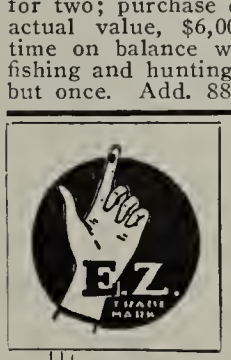
FOR SALE—WISCONSIN—AM LEAVING an unopposed village and country practice, $2,500 annually; village 250; surrounded by rich farmers; collections 100 per cent.; fees good; money ready when your work is done; house, office, barn and large garden, $10 per month; nothing to sell, but drugs and practice. Add. 8854 N, % AMA.

FOR SALE—WISCONSIN — UNOPPOSED $2,700 to $3,000 village and country practice; German-American and mixed community; town on railroad; established 15 years; rich dairy country; collections 100 per cent.; village contains three stores, creamery, two churches, graded public school and bank; competitors, 6, 8, 9 miles; sale includes practice and real estate of one modern house, hot-water heating, gas light, sewerage system, garage, barn, office attached residence; terms on application; this is a golden opportunity. Add. 8902 N, % AMA.

FOR SALE—WISCONSIN — $5,500 PRACtice, village and country, for inventory value of equipment; no real estate; excellent opportunity for German physician; poor health reason for selling. Add. 8905 N, % AMA.

FOR SALE — WOMAN'S PRACTICE southwest; city of 20,000; altitude and climate ideal for tuberculosis; annual collections, $3,500; competent woman with experience and right personality can make living from start; with all or part equipment, $500 to $1,000. Add. 8782 N, % AMA.

FOR SALE — WYOMING—A CAPABLE physician who wants a practice in a county seat town of 1,000, with high school, churches, public library, etc., electric lights, waterworks and sewerage, can make money from the start and when established an income of $5,000 or more; practice established 25 years; practically unopposed; one other physician and room for two; purchase of my residence at less than actual value, $6,000; $2,000 down and long time on balance will secure this; good roads, fishing and hunting; this is a snap and appears but once. Add. 8890 N, % AMA.



The E. Z. Self-Cementing, Self-Vulcanizing Glove Patch

Saves hours of time and distasteful drudgery to those who have torn or punctured rubber gloves to mend. Best of all, saves money!

Takes only 60 seconds to apply, and through invaluable E. Z. process actually vulcanizes to the glove while sterilizing, and each successive boiling serves to make it more integral.

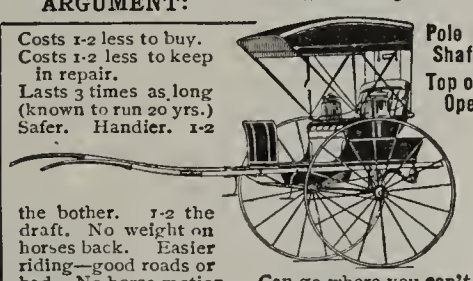
Non-poisonous and non-infecting. Always a permanent patch. So easy, so sure, so clean!

Trial envelope containing 12 E. Z. Patches, with full directions, for 25c. Hospital size, 100 patches for $1.00. Sample on request.

The E. Z. Patch Co.
AKRON, OHIO

The Genuine Hammock Cart
ARGUMENT: vs. THE BUGGY

Costs 1-2 less to buy.
Costs 1-2 less to keep in repair.
Lasts 3 times as long (known to run 20 yrs.)
Safer. Handier. 1-2 the bother. 1-2 the draft. No weight on horses back. Easier riding—good roads or bad. No horse-motion.



Can go where you can't with a buggy. A vehicle for hard service. Pays for itself in saving of horse flesh and horse feed.

Write for Circular D and Sheet of Testimony
The Eureka Co., Rock Falls, Ill.
Sole Makers



BARGAINS

Display Samples and Second Hand Office Furniture.

Write for our list No. 2 of Special prices on Tables, Chairs, Cabinets and Office Accessories.

W. D. ALLISON COMPANY, 915 N. Alabama St., Indianapolis, Ind.

FOR SALE—WYOMING—A GOOD PAYing drug store and practice with it, located in inland town in heart of prosperous cattle, sheep raising and farming country; stock invoices $3,000, sales $4,500 yearly; practice pays $250 per month, very little credit; sales can be increased to $6,000 with little spare capital; no competition for 50 miles; good proposition for doctor. Box C, Kaycee, Wyo.

LOCATIONS FOR SANITARIA

FOR SALE — LOCATION FOR SANITArium; Champion Lake, Nebraska; bathing resort; gasoline launch running there now; altitude 3,500 feet; just the right place for invalid to stop a while before going higher; 3 miles from O. L. and D. Route; 200 miles to Denver, Colo.; good territory for a physician; six-room house, barn and outbuildings; block and 4 lots; price, $2,000. Write T. T. Jordan, Flovis, Iowa. P

FOR SALE — SHIRRA HOMESTEAD IN Arlington Heights, Illinois, a suburb of Chicago; the house has 13 large rooms and broad veranda; large lawn, shade and fruit trees, garden, etc., and part or all of 5 acres of land; water, gas, electricity and sewer; ideal for private sanitarium; a bargain to close estate; easy terms; would rent. Add. W. E. Shirra, 901 Otis Bldg., Chicago. P

FOR SALE—TWO PROPERTIES EMInently suited for sanitarium, hospital or college; one property is located in heart of Chicago near medical center; 50 rooms; now running as hospital; the other is located in suburb of Chicago; seven acres of beautiful parks and gardens; 40 rooms, baths, own water plant; fertile vegetable gardens; must be seen to be appreciated; nothing in the West better suited for sanitarium; a bargain to close estate; easy terms; would rent. Add. W. E. Shirra, 901 Otis Bldg., Chicago. P

MISCELLANEOUS

WARNING — MEYER INTERRUPTERLESS X-Ray Machines are guaranteed to the original purchaser only, and this guarantee is not transferable nor is it binding on the manufacturer if the apparatus is used or handled by an inexperienced and not properly qualified person. Very truly yours, The Wm. Meyer Co.

MEDICAL BROKERS

CONTRACT PRACTICES AND SALARIED positions. Doctors having contract practices, salaried appointments or salaried positions any kind to relinquish, please advise me with full particulars. F. V. Kniest, Bee Bldg., Omaha, Neb. EE

DOCTOR, IF YOU WISH TO BUY INTO practice, write for our list. It is free. If you want to sell, want partner, write for terms. Physicians and nurses placed in salaried positions. Terms on request. We furnish interns, assistants, locum tenens, nurses, free to physicians and hospitals. Halbur Exchange, Halbur, Iowa. EE

SPECIAL ATTENTION — HOUSE OF Kniest. Estab. 1904. Gilt-edge references. National Clearance House for U. S. and Canada for doctors wanting to sell or buy a practice. (No charge for filing your deal.) For doctors wanting locum tenens, permanent positions of any kind, partnerships or business outside medical lines. For doctors wanting partners, assistants, nurses (no charge for assistants), associations, etc. All manner of medical deals handled and furnished in U. S. or Canada. Service likewise for dentists, veterinarians, nurses. Drug positions, all kinds. Drug stores sold and furnished. If possible come direct to Omaha, make deposit and get what you want, otherwise write F. V. Kniest, R. P., Bee Bldg., Omaha, Neb.

PUBLISHERS AND PRINTERS

HOW TO DIAGNOSE SURGICAL LESIONS of the gastro-intestinal tract by means of the Roentgen rays. A new book by two authoritative roentgenologists now in press. We have a handsome 32-page prospectus, fully illustrated, which we will mail free on request. Note our adv. on page 10, this issue. Add. Colonial Med. Press, Colonial Bldg., Boston, Mass. GG

ENGRAVED BIRTH ANNOUNCEMENTS with envelopes, 25 for $1. Engraved wedding announcements with two sets of envelopes and 100 calling cards for the bride for $7.50. The quality of these will please you. Samples sent on request. Southworth Engraving Co., Milford, Conn. GG

(*Continued on next page*)

STEEL DIE EMBOSSED STATIONERY — Distinctive and impressive for the medical profession; will send samples and prices upon request. Hammond Printing Co., Fremont, Neb

HOSPITAL EFFICIENCY

ALL THE BURDEN AND RESPONSIbility of locating, planning, financing, constructing, organizing of both business and technical administrations, evolving and instituting modern efficiency managements and permanent supervision of the administrations of hospitals, public or private, is assumed by The American Hospital Corporation, Suite No. 80, 50 East 41st Street, New York City.

SALESMEN WANTED

WANTED — SALESMEN CALLING ON physicians, surgeons and x-ray men to carry prospectus of George and Leonard's "The Roentgen Diagnosis of Surgical Lesions of the Gastro-Intestinal Tract." Practically sells itself. The latest, most complete and most practical work of its kind on the market. See adv. page 10. Price, $10; liberal commission. Give experience, references and territory traveled. The Colonial Medical Press, Colonial Bldg., Boston, Mass.

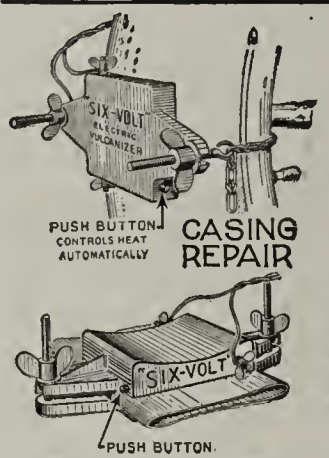
WE HAVE SOME EXCELLENT TERRItory open for this season where there should be a ready sale for medical books among the resident physicians. We want canvassers, not peddlers; men with experience and resource. Add. Rebman Company, 141-143-145 West 36th St., New York City. JJ

SANITARIUMS, HOSPITALS

DO YOU KNOW THAT ST. JOSEPH'S Sanitarium, Silver City, N. M., a nonsectarian institution conducted by the Sisters of St. Joseph, offers treatment for tuberculosis at reasonable rates in one of the best regions of the southwest? Country not barren. Altitude 6,000 feet. City modern. U. S. Army Tuberculosis Hospital within a few miles. For information and booklet add. Sister Superior. PP

STENOGRAPHERS

GEO. B. COCK,
Franklin Bank Building, Philadelphia, Pa.
Est. 1896. Experience 35 yrs.: medical, 11.



Save Tire Money

Use a "PREMIER" Portable Electric Vulcanizer. Controls heat automatically—cannot burn repairs. Simple to operate—press button and forget it. **Complete Outfit $3.50,** for storage battery or 110 volt. *Circulars free.*

PREMIER ELECTRIC CO., 4041 Ravenswood Ave., Chicago

"EMCO" AUTOMOBILE OIL No. 300

is refined by us from Pennsylvania Crude Oil. It contains No Carbon, has High Fire Test, Low Cold Test and Great Viscosity.

Sold by all dealers or will be shipped direct from our refinery, Bradford, Pa., in 5 or 10 gallon cans, barrels or half barrels. Your money back if not satisfactory in every respect.

Prices and samples upon request.

New York Office—Maritime Bldg., 8-10 Bridge St.

EMERY MANUFACTURING CO., Bradford, Pa.

TRIPLE TREADED TIRES



Puncture Proof—Skid Proof—Oil Proof

All the features of the highest priced tires, combined in one tire—At the price of a plain tread tire or less.

Triple Treads are guaranteed 3500 miles
Send for circulars and descriptive booklet.

TRIPLE TREAD MFG. CO.
1649 Michigan Ave. CHICAGO

IDEAL CLIMATIC CONDITIONS FOR the treatment of tuberculosis are found at Colorado Springs, Colo. From our roof garden you can enjoy a magnificent view of Pike's Peak. The accommodations we offer patients both for comfort, recreation and medical supervision are unsurpassed. Let us send you or patients you may designate a copy of our illustrated booklet. Cragmor Sanatorium, Colorado Springs, Colo. PP

INVESTMENTS

A MUNICIPAL BOND PAYING 7 PER cent. interest. They are California street improvement bonds. We offer our clients only the select issues and they are acknowledged to be unusually attractive as an investment. Every bond carries a large margin of security. Complete descriptive circulars mailed on request. Additional data are given in our adv. on page 10, this issue. Empire Securities Co., 1203 Hibernian Bldg., Los Angeles, Calif. QQ

MISCELLANEOUS COM. ADVTS.

SURGEONS' RUBBER GLOVES — TWO pairs for $1. We also sell the nonslip "pebbled" glove. The sterilization and wearing qualities of our gloves are fully guaranteed. For prices on quantities, etc., refer to our adv. on page 25, this issue. L. T. Kinney & Co., 56 E. Randolph St., Chicago, Ill.

OUR HAMMOCK CART WILL GO OVER roads that you cannot cover with a buggy. We make it with a detachable storm front. If the roads and hills you must travel are tough and steep, let us explain to you how easy you can travel them with our hammock cart. Write today saying "send me Circular D and sheet of testimony." Add. Eureka Co., Rock Falls, Ill.

INTERNAL DISEASES OF THE EYE—CAN you recognize such lesions? The drawings in our book, "The Pocket Atlas of the Fundus Oculi," are all taken from life, and when studied in connection with the explanatory text will give you a practical working knowledge of the subject. Price, $2.50. For full description refer to our adv. on the back cover, this issue. F. A. Hardy & Co., 10 S. Wabash Ave., Chicago, Ill. KK



For Accidents in the Dark

When there's a wreck on the road at night and you're called to attend the wounded—whenever your services are needed in dark places—it may mean lives saved and surely it means convenience if you have at your command the bright light of an

EVEREADY FLASHLIGHT

a complete electric light that you can carry in your pocket or handbag ready to flash ahead of you or to set beside you at your work. A sturdy light, as well made as a surgical instrument. Wind or rain can't put it out or make it flicker; it can't cause fires or explosions.

Among the 75 styles selling at 75c to $7.50, there's sure to be one that just suits you. No. 6991, illustrated, is nickel plated, vest pocket light, cigarette case types selling at $1.00 in United States, $1.10 in Canada.

Look for the special Eveready displays in dealers' windows, October 1-9, and write us for complete illustrated catalogue No. 4.

AMERICAN EVER READY WORKS
of National Carbon Co.
Long Island City, New York

The Superiority of the Carnes Arm is Recognized by Leading Surgeons



See Fifth Edition of "Operative Surgery," page 1094 by Dr. J. F. Binnie; also Volume Six "Keen's Surgery," pages 918-922 inclusive. It embodies the movements of the natural hand and arm, and is built for service as well as appearance.

Send For Full Particulars.

CARNES ARTIFICIAL LIMB CO.
KANSAS CITY - - MISSOURI



SIZES:

8¼ x 3½
9¾ x 4¾
13¼ x 5
16 x 6
Depth 3 inches

PROMETHEUS

ELECTRIC INSTRUMENT STERILIZERS
ARE NOW SAFE AGAINST RUNNING DRY
GUARANTEED FOR FIVE YEARS

Ask your dealer for Demonstration or give us his name.

The Prometheus Electric Company
243 East 43d Street NEW YORK CITY

Dr. RUDOLPH MATAS' ADJUSTABLE METALLIC INTERDENTAL SPLINT

For the Treatment of Fracture of the Lower Jaw. Mouth-pieces or dental plates are supplied in three sizes: Adult's, youth's and child's. Two sizes Chin-pieces.



THE McDERMOTT SURGICAL INSTRUMENT CO., Ltd.

736-738 Poydras St., New Orleans, La.

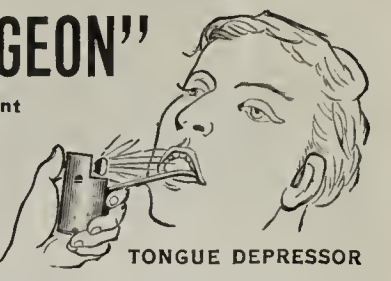
Also makers of the Caine Warm Ether Apparatus

"DE LYTE SURGEON"



Just What You Want

ELECTRIC ILLUMINATING CASE FOR EVERY PURPOSE AND USE



This is an Ideal Complete Illuminating Case that is compact enough to carry in the vest pocket, that enables the physician to be prepared for every emergency where a good light is required, and an advantage in making his daily calls, i.e., to Examine and Treat the Throat, especially children; it saves time by using the non-gaggable tongue depressor.



For Examining and Treating Ear through the ear speculum, magnifying and illuminating the tympanic membranes, ,Examining the Nares through the nasal speculumr showing the turbinates and allowing packing unde direct illumination.



This Magnifving Glass is excellent for illuminating and locating foreign bodies in the eye, also splinters or skin eruption; together with trans-illumination of the sinuses. Head-Band also for Obstetric Work or any Emergency Operation when both hands are required with no reflection of light in the eyes; doing away with the head mirror.



This Complete Outfit with all attachments, including the Tongue Depressor, Ear Speculum, Nasal Speculum, Magnifying Glass, the new Arc Light Ever-ready Battery Head-Band and Leather Case to carry them is Only **$6.00** prepaid; money refunded if not satisfied after 10 days' trial.



Made, patented and guaranteed by

WEDER SURGICAL MFG. CO.

4545 Germantown Ave. Philadelphia, Pa.

AGAR-AGAR

DR. MAX EINHORN FORMULAS

SAMPLES AND PRICE LIST Mailed on Request

PREPARATIONS

THE REINSCHILD CHEMICAL CO., BARCLAY ST. **NEW YORK**

Bowles Stethoscope

Price, $4.00 **Has No Superior** **Price, $4.00**

For Sale by All Surgical Dealers

Made Only by G. P. PILLING & SON COMPANY, PHILADELPHIA, U.S.A.

MANHATTAN EYE, EAR AND THROAT HOSPITAL AND MEDICAL SCHOOL

Fall Semester Starts October First

Graded and Individual Instruction in each branch of the Specialties including Laboratory Courses.

Limited Number of Advanced Students

accommodated in Special Students' Clinics

Among Special Courses Open to Advanced Students, there are:

Courses in Operative Surgery.
Courses in Diagnosis and Treatment of Labyrinthine Disease.
Courses in Bronchoscopy.
Courses in Diagnosis of Diseases of the Eye, the Ear and the Throat.
Laboratory Courses, etc.

Arrangements may be made for any special work the student desires and for which the Faculty believes him competent to undertake.

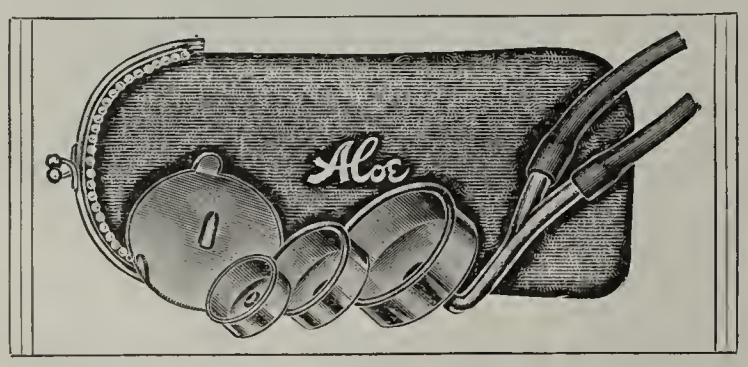
When applying, state education and previous experience

For further particulars address,

SECRETARY, 210 East 64th Street, NEW YORK CITY

THE SINGER
Sound-Intensifying Stethoscope

Designed by Dr. J. J. Singer
St. Louis, Mo.



SIMPLE — COMPACT — DURABLE

The three resonators, of different sizes, make possible perfect auscultation on all parts of the body, and intensify sounds without changing their character. As a Blood Pressure Stethoscope, THE SINGER is in a field alone.

SANITARY AND UNBREAKABLE

PRICE, complete with Felt Case, $3.50

A. S. ALOE CO. SURGICAL SUPPLY DEPT. 515 Olive St., ST. LOUIS, MO.



MEINECKE
"PERFECTION" COMBINED
BED AND DOUCHE PAN

THE MOST COMFORTABLE AND SANITARY BED PAN IN THE WORLD
USED IN OVER 2000 HOSPITALS IN THE U.S.

Reasons Why Every Doctor Should Recommend the "Perfection"

It is a Most Comfortable Bed Pan, because it is made to fit the Body.

It is a Most Sanitary Bed Pan, because it does away with the objectionable Spout

a Combined Bed and Douche Pan and is intended to be used for both purposes. It is therefore a most satisfactory Bed Pan for Use in Maternity Cases.

ON SALE AT LEADING DRUG STORES

No. 1. Porcelain .....(*Retail Prices for New York*)...$2.50
No. 3. Gray Enameled..(*Philadelphia and Boston*)... 4.00
No. 4. White Enameled (*Elsewhere, plus Ex. from N. Y.*)... 5.00

If you cannot get the "Perfection" at your Drug Store, we will send either kind upon receipt of Money Order, at above prices *and 50c. additional for Express Charges if East of the Rocky Mountains.*

Meinecke & Co. 48-50 PARK PLACE New York

INCREASED OPPORTUNITIES *for* Post Graduate Medical Work in Chicago

The Chicago Policlinic and The Chicago Post Graduate School have affiliated and are now able to offer greatly increased opportunities and facilities for systematic post graduate work. These institutions are conducted as a single school, one ticket admitting the holder to the joint work of both institutions, and the schedules of clinics and didactic instruction are so arranged that anyone wishing to pursue special lines will find all day work in the specialty. Personal instruction is given in all departments, including laboratory work and operative work on the cadaver. For details write either

The Chicago Policlinic
M. L. Harris, Sec'y.
Dept. B, 219 W. Chicago Ave.

The Post-Graduate Medical School of Chicago
Emil Ries, Sec'y.
Dept. B, 2400 S. Dearborn St.

New York Post-Graduate Medical School and Hospital

Twentieth Street and Second Avenue

SPRING AND SUMMER SESSIONS, 1915

Owing to the European war and the consequent inability of physicians to study abroad, the attention of the medical profession is directed to the especially favorable opportunities offered in this School, to obtain special courses in any department of medicine or surgery equal to those given in Berlin or Vienna. Students may devote the entire day throughout the winter session to many branches of study in which they are particularly interested.

GENERAL AND SEPARATE clinical courses are continuous throughout the year, and arranged to allow of matriculation at any time. A special feature is made of the fracture clinics, which are among the largest in the country.

The Hospital provides for the care of over 400 patients, and offers exceptional opportunities for extensive bedside teaching. Nine operating rooms; five lecture amphitheatres; over 6,000 operations yearly.

All branches of medical and surgical teaching, including ample facilities for surgical diagnosis, surgical technique and post-operative treatment are offered in the GENERAL, the OPERATIVE and the SPECIAL courses.

For further detailed particulars apply to

GEORGE GRAY WARD, Jr., M.D., Secretary of the Faculty — **305 East 20th Street, NEW YORK CITY**

NEW YORK POLYCLINIC Medical School and Hospital

341-351 West 50th Street, New York City

General, Separate Clinical, and **Special Post-Graduate Courses** of **Individual Instruction** as **Assistants. Laboratory, Cadaver** and **Operative Courses** in all branches.
Individual Instruction in the following branches:

Physical Diagnosis
Infant Feeding and Diagnosis
Tuberculosis (pulmonary, glandular, bone)
Drug Addictions and Toxemias
Diseases of the Stomach (including dietetics)
Dermatology (including laboratory work)
Gynecology (operative; non-operative)
X-Ray and Electro-Therapeutics
Hernia (local anesthesia)
Cystoscopy (male and female)
Urethroscopy
Rectal Diseases
Neurology and Neurological Surgery (brain, spinal cord, peripheral nerves)

For further information, address

JOHN A. WYETH, M.D., LL.D., President of the Faculty, or Mr. JAMES U. NORRIS, Superintendent

ILLINOIS POST-GRADUATE SCHOOL

General clinics are conducted in Surgery, Gynecology, Orthopedics, Pediatrics, Obstetrics, Dermatology, Diseases of the Genito-Urinary Tract, Clinical Medicine, Eye, Ear, Nose and Throat.

PROFESSOR PAUL GRONNERUD CONDUCTS SPECIAL COURSES IN OPERATIVE SURGERY AND SURGICAL ANATOMY, TOGETHER WITH SPECIAL WORK UPON DOG.

Courses are given in Laboratory Diagnosis—covering Blood, Bacteria, Urinalysis and Gastric Contents. Also practical courses in the Wassermann Reaction. Noguchi and Gonorrhea Fixation, Colloidal Gold and Nonne Tests are given.

Address JAMES A. CLARK, M.D., Secretary — **1844 W. Harrison Street, CHICAGO, ILL.**

W. A. Fisher, M.D., President — A. G. Wippern, M.D., Vice-President

Chicago Eye, Ear, Nose and Throat College

POST-GRADUATE INSTRUCTION

Diseases of the Eye, Ear, Nose and Throat and Fitting of Glasses

A House Physician is appointed in June and December.
Open the year round. Write for announcement to

J. R. HOFFMAN, M.D., Secretary, 235 WEST WASHINGTON STREET, CHICAGO

LOS ANGELES MEDICAL DEPARTMENT

University of California

A School for Graduates of Medicine

The Los Angeles Medical Department offers clinical work throughout the year, and combined didactic and clinical courses at other periods.

Clinical facilities of dispensary and hospital unusually good.

For catalogue or other information address

DR. GEORGE H. KRESS, Dean, 737 North Broadway, Los Angeles, Cal.

NEW ORLEANS POLYCLINIC

Graduate School of Medicine, Tulane University of La.

Twenty-ninth Annual Session opens Sept. 27, 1915, and closes June 3, 1916

Physicians will find the Polyclinic an excellent means for posting themselves upon modern progress in all branches of medicine and surgery. The specialties are fully taught, including laboratory and cadaveric work. For further information, address:

CHARLES CHASSAIGNAC, M.D., Dean,
NEW ORLEANS POLYCLINIC,
Post Office Drawer 770. NEW ORLEANS

NEW YORK SCHOOL OF ROENTGENOLOGY

Courses given during November and March only
Instruction for Graduates in Medicine

Lectures and individual instruction with practical work in all branches of Roentgenology will be given daily during the course by members of the faculty. Classes will be limited. When applying, state education and previous experience in Roentgenology.

Lewis Gregory Cole, M.D., Dean **William H. Stewart, M.D., Secretary**

For particulars, address

NEW YORK SCHOOL OF ROENTGENOLOGY
103 Park Avenue - - - - New York City

THE

HERMAN KNAPP MEMORIAL EYE HOSPITAL

57th Street and 10th Avenue, NEW YORK CITY

A new hospital building devoted exclusively to *Eye Diseases* offers to post-graduates an *all-day course of instruction* in all branches of Ophthalmology, which begins on the 1st of October, January, or April, and lasts *two months*. For further particulars address

SECRETARY, 500 W. 57th St., NEW YORK

THE NEW YORK EYE and EAR INFIRMARY

School of Ophthalmology and Otology—For Graduates of Medicine.

Clinics daily by the Surgical staff of the Infirmary. Special courses in Ophthalmoscopy, Refraction, Operative Surgery of the Eye and Ear, Pathology and External Diseases of the Eye.

The abundant clinical material at this well-known institution affords students an unusual opportunity for obtaining a practical knowledge of these special subjects. Two vacancies in the House Staff exist in March, July and November of each year. For particulars address the Secretary,

DR. GEORGE S. DIXON, New York Eye and Ear Infirmary.

THE ANNOUNCEMENTS OF "CLASS A" MEDICAL SCHOOLS ALONE ARE ACCEPTED FOR THESE COLUMNS

It is of great importance to every prospective student of medicine that he should know the classification of the various medical institutions as fixed by the Council on Medical Education of the American Medical Association. This information is contained in pamphlet 91 which will be sent on receipt of 4c to cover cost of mailing.

The American Medical Association
535 N. Dearborn Street, Chicago, Ill.

University of Alabama
SCHOOL OF MEDICINE Mobile Ala.

Educational Requirements for Admission:—Two years of collegiate work, to include Physics, Chemistry, Biology and a modern foreign language, in addition to the full four year fourteen unit high school course.

The Combined Course: leading to the degrees of B.S. and M.D. in six years, is now offered by the University, and is recommended to all intending students. *For Catalogue and Information Address:*

THE DEAN, School of Medicine, University of Alabama, Mobile, Alabama

School of Medicine of
HOWARD UNIVERSITY

Including Medical, Dental and Pharmaceutic Colleges

1867-1915

STEPHEN M. NEWMAN, D.D., President **EDWARD A. BALLOCH, M.D., Dean**

The FORTY-EIGHTH ANNUAL SESSION will begin October 1, 1915, and continue eight months. Requires for admission to Medical College two years of college work including courses in inorganic and organic chemistry, qualitative analysis, physics, biology and either French or German. Full corps of instructors, well equipped laboratories, unexcelled hospital facilities. For catalog or information concerning Medical, Dental, Pharmaceutic or Post-Graduate courses, write

W. C. McNeill, M.D., Secretary.
Fifth & "W" Streets, N. W. Washington, D. C.

RUSH MEDICAL COLLEGE

IN AFFILIATION WITH

THE UNIVERSITY OF CHICAGO

AUTUMN QUARTER COMMENCES OCTOBER 1, 1915

Classes limited. Application for admission should be made promptly. For particulars, address

RUSH MEDICAL COLLEGE, Chicago, Ill.

Northwestern University Medical School

ARTHUR ROBIN EDWARDS, M.A., M.D., Dean

Requires for admission two years of college work including courses in inorganic chemistry, qualitative analysis, physics, biology and either French or German. Strong traditions. High scholastic standing. Seven hospitals. Three dispensaries. Six-year combined courses. For description of courses and advantages, address

The Registrar 2431 DEARBORN STREET, CHICAGO

University of Louisville
MEDICAL DEPARTMENT

Seventy-eight Annnal Session begins Sept. 28, 1915. Entrance Requirements. One year of College work in Physics, Chemistry, Biology and a modern foreign anguage, in addition to the 14 units' work in an accredited, standard high-schools.

A premedical course of instruction is given in the Academic department of the University.

Well equipped laboratories under full-time teachers.

Clinical work in the New Million-dollar Public Hospital. For further information and catalogue, address the Dean,

HENRY ENOS TULEY, M.D., Louisville, Ky.

Tufts College Medical School

BOSTON, MASSACHUSETTS

This School offers to men and women a four years' graded course, including all departments of the study of Medicine.

Its Laboratory facilities and Clinical advantages are unsurpassed.

The next session begins the last Wednesday in September and continues until June. For further information or for catalogue address

FRANK E. HASKINS, M.D., *Secretary*
Tufts College Medical School Boston, Mass.

The Boy's Venereal Peril

This brochure is written in plain, simple words so that a youth of 12 years can understand it. Explains the dangers attendant upon indulgence in sexual irregularities and evil results following vicious sexual habits. Written especially for the instruction of the pubescent youth to forewarn him concerning the diresome consequences which follow the contraction of venereal diseases.

Price 4c per copy; 10 copies 35c postpaid.

Special prices on quantities. Red paper cover, 56 pp.

AMERICAN MEDICAL ASSOCIATION, 535 N. Dearborn St., CHICAGO



EMORY UNIVERSITY

(Atlanta Medical College)

(Established 1854) ATLANTA, GEORGIA

Next session begins Sept. 27, 1915, and ends May 30, 1916.

ENTRANCE requirements are those of Class "A" Medical Colleges. Combined B.S. and M.D. course in six years. Four large buildings used exclusively for teaching purposes. Abundant clinical material in City Hospital and College Dispensary. New $200,000 teaching hospital being built. Laboratory facilities unsurpassed. Tuition $150.00. Registration book closes October 2.

For catalogue write to **W. S. ELKIN, Dean, ATLANTA, GEORGIA**

University of Maryland, School of Medicine
AND
College of Physicians and Surgeons

Requirements for Admission: One year of College work in a modern language, Chemistry, Biology and Physics in addition to an approved four year high school course.

Facilities for Teaching: Abundant laboratory space and equipment. Three large general hospitals absolutely controlled by the Faculty and thirteen hospitals devoted to specialties in which clinical teaching is done.
The next regular session will open October 1st, 1915.

For catalogue apply either to—**Arthur M. Shipley, M.D. Acting Dean, University of Maryland, Green & Lombard Sts.** or to **William F. Lockwood, M.D., Dean, College of Physicians and Surgeons, Calvert & Saratoga Sts., Baltimore, Md.**

UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL

Next Session Begins October 5, 1915

The equivalent of two years of work in the College of Literature, Science and the Arts, in the University is required for admission to this school, the same to include Chemistry (General, Qualitative Analysis and Organic); Biology and Physics, one year of each; and two years of either French or German.

Combined courses leading to the degrees of B.S. and M.D., or to the degrees of A.B. and M.D., are offered.

The laboratories are well equipped and the University Hospital affords ample clinical material.

Opportunity is given in all the laboratories for properly qualified persons to carry on original investigation, and credit toward the higher academic degrees, A.M., Sc.D., Ph.D. and D.P.H., may be obtained for such work. *For announcement and further information, address*

C. W. EDMUNDS, M.D., Secretary - ANN ARBOR, MICH.

The University of Minnesota — The Medical School

Minimum Admission Requirements—High School course, including two years of Latin. Two years of work in a recognized College of Science, Literature and the Arts, including one year in physics, zoology and rhetoric. Two years in chemistry, and a reading knowledge of German, leading, after two years in medicine, to the degree of B. S.
Combined Courses—At the end of two years of such college work, plus the first two years in medicine, students are eligible for the B. S. degree; at the end of three years of college work, plus one year in medicine, students are eligible for the B. A. degree.
Course of Medical Study—Four years of graded instruction in laboratories, hospitals and out-patient department; a fifth year in intern service in approved hospitals, or a year of advanced work in the school laboratories or in public health study.
The Graduate School in Medicine is a department of The Graduate School proper of the University of Minnesota. It has been organized in affiliation with The Mayo Foundation for Medical Education and Research. Students in the Graduate School may elect studies in the medical laboratories toward the degrees of M.A., M.S., Ph.D., or Sc.D. Graduate students in medicine may be registered for work in the University and at The Mayo Foundation jointly. The University and the Foundation offer:
Teaching Fellowships—Opportunity is offered in the clinical departments for graduate students who desire to devote three years to the study of special branches in medicine; assisting meanwhile in the conduct of clinical teaching; annual stipends being provided.
Graduate Scholarships—Also offered to a limited number of graduate students, who give a minor measure of assistance in teaching and receive abatement of tuition fees.
Tuition Fees—$150.00 per annum, not including summer school. No tuition fee charged for fifth year work. Graduate courses, $150.00 a year.
Summer School in Medicine—In June and July; offers special courses to graduates and undergraduates for the review of regular work or the study of advanced problems.
The Twenty-Eighth Annual course of study begins on Tuesday, September 7th, 1915.

Address, THE MEDICAL SCHOOL, UNIVERSITY OF MINNESOTA, Minneapolis, Minnesota

CORNELL UNIVERSITY MEDICAL COLLEGE

Holders of a Baccalaureate degree or Seniors who can present a degree before entering the Second Year, who also present the requisite courses in Chemistry, Physics and Biology, are admitted from recognized Colleges or Scientific Schools. The session opens on the last Wednesday in September. The first year is devoted to Anatomy, Chemistry and Physiology, and may be taken either in Ithaca or New York City. The last three years are chiefly clinical and must be taken in New York City. For further information address

The Dean, CORNELL UNIVERSITY MEDICAL COLLEGE,
First Avenue and 28th Street. - - New York City

SYRACUSE UNIVERSITY
COLLEGE OF MEDICINE

ENTRANCE REQUIREMENTS: Two years in a registered College or School of Science. Combination courses recognized.
LABORATORY COURSES in well equipped laboratories under full time teachers.
CLINICAL COURSES in the University Hospital, one general, one special, and the municipal hospitals and in the dispensary adjoining the college, in all of which senior students serve as clinical clerks.

Address The Secretary of the College of Medicine, 307 Orange St., Syracuse, N. Y.

THE LONG ISLAND COLLEGE HOSPITAL
(Near Borough Hall, Brooklyn)

THE fifty-eighth annual session of the medical college begins September 20, 1915. The minimum requirements for admission to the four year course, leading to the degree, M.D., include one year of college work in physics, chemistry, biology and a modern language; or the successful completion of the premedical year at the Long Island College Hospital. For further information write to **Dr. Otto V. Huffman, Secretary of the College Faculty, Polhemus Memorial Clinic, Henry and Amity Sts., Brooklyn, New York.**

University of Pittsburgh
THE SCHOOL OF MEDICINE

The candidate for enrollment must have completed the regulation high school course and two years of work in a recognized college. The essential college work comprises courses in Chemistry (Inorganic and Organic) Physics, Biology and German or French.
The School of Medicine in connection with the College of the University offers a six-year course (degrees of B.S. and M.D. in six years) for which the entrance requirements are four years of recognized high school work, or its equivalent.
A thoroughly equipped new laboratory building has been erected upon the University campus. Clinical work is given to small sections in affiliated Pittsburgh Hospitals. Required work includes residence in Maternity Hospital, with board and room furnished.
Thirtieth Annual Session begins Sept. 27, 1915. For bulletin and information, address

Thomas Shaw Arbuthnot, M.D., (Dean), Grant Boulevard., Pittsburgh, Pa.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA

66th year begins September 15, 1915. Entrance requirements: two years of college work, including Chemistry, Physics, Biology and two languages other than English (one of which must be French or German).
Excellent laboratories. Full-time teachers. Clinical advantages: dispensaries, clinics, bedside instruction, out-patient obstetrical service. New and well equipped hospital. Post-graduate instruction.

For announcement and further information, address

Clara Marshall, M.D., Dean, Box 600, N. College Ave. & 21st St., Phila., Pa.

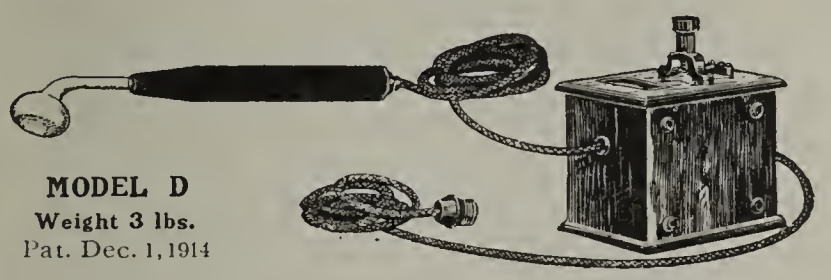
MEDICAL COLLEGE OF VIRGINIA

MEDICAL COLLEGE OF VIRGINIA — UNIVERSITY COLLEGE OF MEDICINE
Consolidated

Stuart McGuire, M.D., Dean — A. L. Gray, M.D., Chairman

New College Building, completely equipped, and modern laboratories. Extensive Dispensary service. Individual instruction, experienced Faculty, practical curriculum. For catalog or information, address **J. R. McCAULEY, Secretary, 1142 E. Clay St., Richmond, Virginia**

ATTENTION! DOCTOR, *Please*



MODEL D
Weight 3 lbs.
Pat. Dec. 1, 1914

HIGH POWER, SAFE, CONVENIENT AND ECONOMICAL

The Rogers Violet Ray High Frequency Generator

It marks the highest development in **PORTABLE** generators. *Stronger—safer—more durable than ever.* Extremely efficient and fully guaranteed. Works on either direct or alternating current, or can be furnished to operate with dry batteries where necessary.

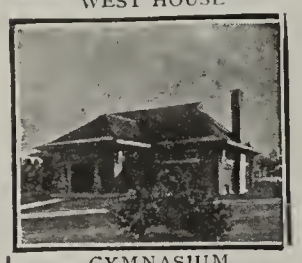
Send for booklet A.

THE ROGERS ELECTRIC LABORATORIES CO.
2056 E. Fourth St. CLEVELAND, OHIO

THE MILWAUKEE SANITARIUM


ENTRANCE


WEST HOUSE


GYMNASIUM

Established in 1884

For Mental and Nervous Diseases
WAUWATOSA, WIS.

Wauwatosa is a suburb of Milwaukee, on C. M. & St. P. Ry., 2½ hours from Chicago, 15 minutes from Milwaukee, 5 minutes from all cars. Two lines street cars. Complete facilities and equipment, as heretofore announced.

Psychopathic Hospital: Continuous baths, fire-proof building, separate grounds.

West House: Rooms en suite with private bath.

Gymnasium and recreation building: physical culture, "Zander" machines, shower baths.

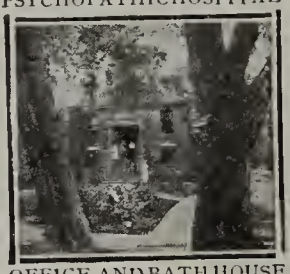
Modern bath house: Hydrotherapy, Electrotherapy, Mechanotherapy.

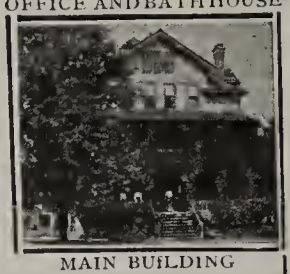
Thirty acres beautiful hill, forest and lawn. Five houses, Individualized treatment. Descriptive booklet will be sent on application,

Richard Dewey, A.M., M.D
Eugene Chaney, M.D. Herbert W. Powers, M.D.

CHICAGO OFFICE
Marshall Field & Co. Annex Bldg.
Wednesdays 1 to 3 o'clock except July aud August.


PSYCHOPATHIC HOSPITAL


OFFICE AND BATH HOUSE


MAIN BUILDING

ESTABLISHED 1901

The Charles B. Towns Hospital

OPEN TO ALL PHYSICIANS

293 CENTRAL PARK WEST, AT 89TH ST.
NEW YORK

ADMINISTERS DEFINITE TREATMENT FOR DRUG AND ALCOHOLIC ADDICTION

Exclusive accommodations. Suitable provision made for patients of moderate means. Absolute privacy. Limited stay. Definite fee arranged in advance covering entire cost of treatment. Staff of three resident physicians. Consulting physicians constantly in communication.

Booklets and other descriptive matter sent on request.

Dr. Moody's Sanitarium, San Antonio, Texas,

For Nervous and Mental Diseases, Drug and Alcohol Addictions. Established 1903. Location and Climate delightful. Approved diagnostic and therapeutic methods; 7 buildings, each with separate lawns, bath rooms ensuite; 100 rooms; modern equipments; 15 acres, 350 shade trees. **G. H. MOODY, M.D., Supt. T. L. MOODY, M.D., Res. Phys. J. A. McINTOSH, M.D., Res. Phys.**



KENILWORTH SANITARIUM

(Established 1905)

KENILWORTH, ILL.

(C.& N.W.Railway. Six miles north of Chicago)

Built and equipped for the treatment of nervous and mental diseases. Approved diagnostic and therapeutic methods. An adequate night nursing service maintained. Sound-proof rooms with forced ventilation. Elegant appointments. Bath rooms en suite, steam heating, electric lighting, electric elevator.

RESIDENT MEDICAL STAFF:

Margaret S. Grant, M.D. Assistant Physician
Sherman Brown, M.D., Medical Superintendent
Sanger Brown, M.D., Chief-of-Staff.

Chicago Office, 59 East Madison Street

Telephone Randolph 5794. Hours 11 to 1, by appointment only.

All correspondence should be addressed to

Kenilworth Sanitarium, Kenilworth, Ill.





OXFORD RETREAT A private hospital for Nervous and Mental Diseases, Alcoholic and Narcotic Inebriety. Incorporated 1883. Separate departments for men and women. Careful attention to proper classification, every convenience, and any accommodation desired. Facilities unsurpassed. Electricity, Hydrotherapy and Massage. Site elevated, retired and beautiful. Ninety-six acres in lawn and forest.

THE PINES A Neuropathic Hospital for women only. Mental cases not received in this building. First class in all its appointments. Under the same control and medical management as the Oxford Retreat. Thirty-nine miles from Cincinnati, eighty-four miles from Indianapolis, on C. H. & D. R. R.; ten trains daily.

For references, terms and descriptive circular address

R. HARVEY COOK, Physician-in-Chief, Oxford, Butler County, Ohio



Lakeside and The Cottage

The Lake Geneva Sanitariums

Comprise three separate Institutions, having separate buildings and separate grounds under one management, as follows:

1—Lakeside Sanitarium for medical and general sanitarium cases. It includes two buildings, with handsome grounds of ten acres on the shores of Lake Geneva.

2—Oakwood Springs Sanitarium for mental cases and nervous cases requiring guardianship. It is situated on high grounds, in a park of seventy-three acres of exceptional beauty, overlooking the lake and city of Lake Geneva. It is one-half mile distant from Lakeside Sanitarium.

3—The Surgical Hospital for surgical cases, with well equipped operating room and large, handsome, airy bedrooms having large windows, and a beautiful outlook.

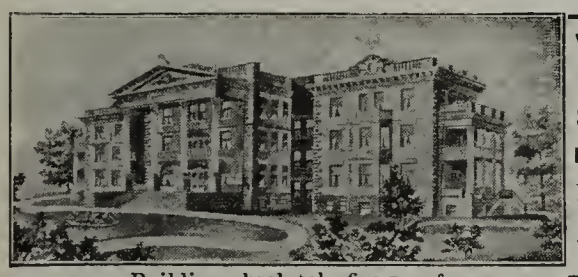


Oakwood

For Further Information address

DR. OSCAR A. KING, Supt., LAKE GENEVA

Or at Private Office, 72 Madison St., Cor. State St., Phone Cent. 2508, Chicago, Ill.



Building absolutely fire-proof

WAUKESHA SPRINGS SANITARIUM

FOR NERVOUS DISEASES

BYRON M. CAPLES, M.D.
Superintendent

WAUKESHA : WIS.

Waldheim Park

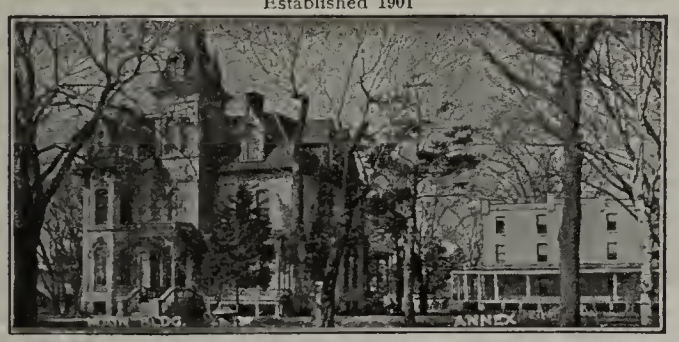
A modernly equipped home for the cure and treatment of chronic and nervous diseases and an excellent place for the convalescent. ¶ Located in the lake region of Waukesha County, on the north shores of Oconomowoc Lake, and surrounded by 35 Acres of Park.

For particulars write to

Dr. J. H. VOJE, Prop.
Oconomowoc, Wis.

Dr. Broughton's Sanitarium

Established 1901



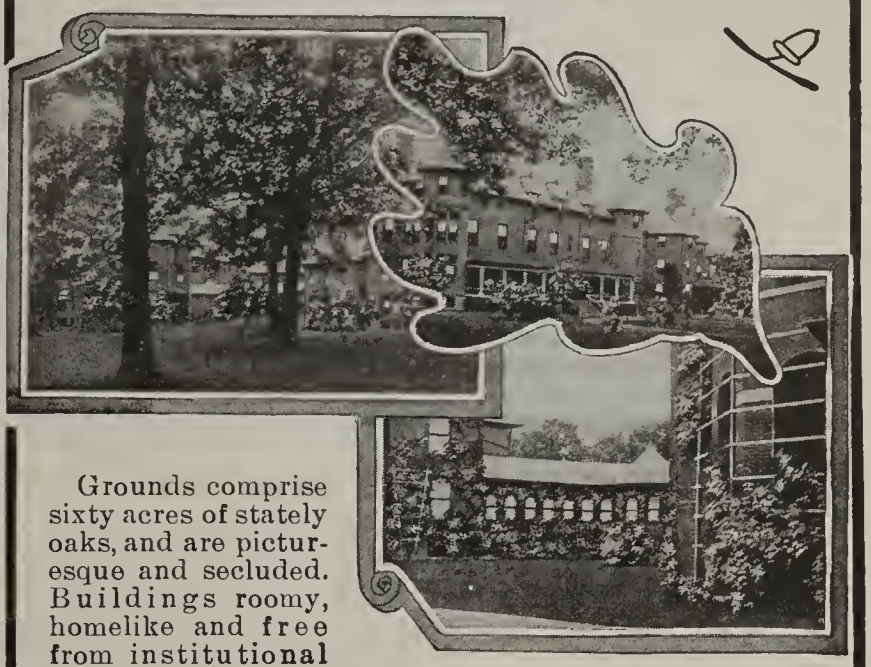
For Opium, Morphine, Cocaine and Other Drug Addictions, including Alcohol and Special Nervous Cases.

Methods easy, regular, humane. Good heat, light, water, help, board, etc. Number limited to 44. A well kept home. Address

DR. BROUGHTON'S SANITARIUM
Dr. G. A. Weirick, Supt.
Phone 536 2007 S. Main St. ROCKFORD, ILL.

Oak Grove Hospital

For Nervous and Mental Diseases



Grounds comprise sixty acres of stately oaks, and are picturesque and secluded. Buildings roomy, homelike and free from institutional features. Interiors bright and cheerful. Luxurious furnishings, superior appointments and skilled attendance. First-class cuisine. Static, Galvanic and Faradic Apparatus, Baruch hydrotherapeutic equipment, Turkish and Russian Baths, and Massage. Use of Gymnasium, Billiard Room, Bowling Alley, and Carriages, Free.

For terms address

DR. C. B. BURR, Medical Director, FLINT, MICHIGAN

FAIRMOUNT HOME

A Well-Equipped Institution



Exclusively for the scientific treatment of narcotic and alcoholic addictions. For detailed method, write for circular and reprints of papers read at the American Medical Association.

A. J. PRESSEY, M.D.
W. H. HOSKINS, Mgr.
A. F. IRWIN, M.D.
Physician in Charge
900 Fairmount St.
2219 Fairmount Road (New)
CLEVELAND, OHIO



A Private Hospital for Mental and Nervous Disorders

DR. F. W. LANGDON, Medical Director
DR. B. A. WILLIAMS, Resident Physician
DR. EMERSON A. NORTH, Resident Physician
DR. GEORGIA E. FINLEY Matron
H. P. COLLINS, Business Manager
COLLEGE HILL, CINCINNATI, OHIO



New Mexico Cottage Sanatorium
Silver City, New Mexico

FOR SUITABLE CASES OF PULMONARY AND LARYNGEAL TUBERCULOSIS

E. S. BULLOCK, M.D. } Physicians
I. D. LOEWY, M.D. }

WAYNE MacV. WILSON, Manager
E. D. NIXSON, Assistant Manager

Summer Climate Ideal Beautiful situation in the mountains of southern New Mexico. Climatic conditions wonderfully perfect. Cool summers. Moderate winters. A flood of sunshine at all seasons. Food excellent and abundant. All the milk our patients can consume from our own dairy of selected cows. Moderate charge. Separate cottages for patients. Complete hospital building for febrile cases. Separate amusement pavilions for men and women. Physicians in constant attendance. Livery for use of patients. Well equipped laboratory, treatment rooms, etc. All forms of tuberculosis received. Special attention to laryngeal tuberculosis. Tuberculin administered in suitable cases and in addition compression of the lung. Complete X-ray apparatus. One of the largest and best equipped institutions for tuberculosis in America. Patients received only through physicians.

WRITE TO THE MANAGER FOR DESCRIPTIVE BOOKLET A.

NEURONHURST



Dr. W. B. Fletcher's Sanatorium

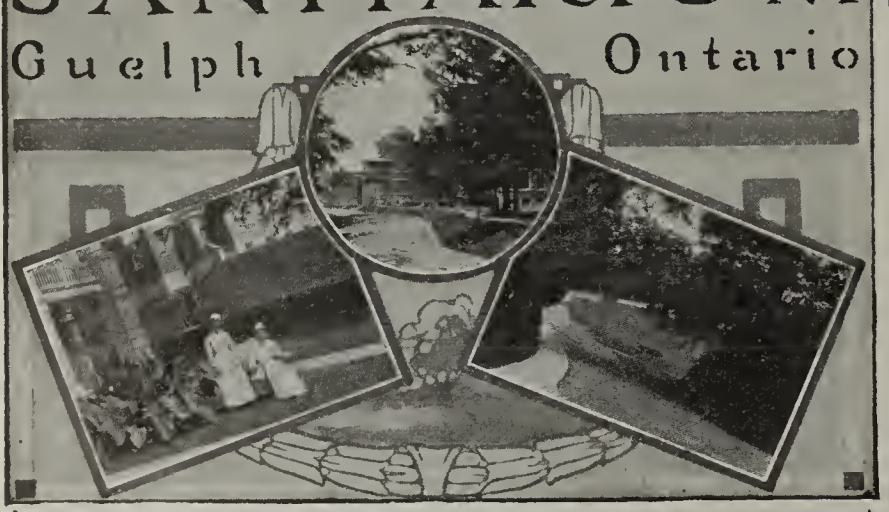
For Mental and Nervous Diseases

A strictly pyschopathic hospital for the treatment of all forms of disease arising from organic or functional derangement of the Brain and Spinal Cord. Buildings fully equipped with every modern appliance which has been demonstrated to have value as a remedial or curative power; our Electro- and Hydrotherapeutic advantages are unexcelled. Physicians desiring to place their patients in our care will receive every ethical attention. For particulars and terms apply to

Dr. Mary A. Spink, Supt.
1140 E. Market St., Indianapolis, Ind.

HOMEWOOD SANITARIUM

Guelph Ontario



FOR NERVOUS AND MENTAL DISEASES and Selected Habit cases.

SEVEN NEW BUILDINGS, four of which are residential.

GROUNDS comprise 75 acres of woods and lawns.

RECREATION. *In Summer*—Golf, Tennis, Lawn Bowling, Croquet and Quoits. *In Winter*—Gymnasiums, Bowling Alleys, Billiards, Skating, Skiing, Snow-Shoeing and Tobogganing.

DIVERSION. Occupational Rooms, Music Rooms, and Library.

TREATMENT. Daily Medical Attention, Hydrotherapy, Electricity and Massage.

ACCOMMODATION. Single rooms, Rooms with bath, or complete Suites.

A GOOD CUISINE.

GUELPH is situated on the Grand Trunk and Canadian Pacific Railways, seventy miles from Niagara Falls.

RATES are reasonable. For information apply A. T. HOBBS, Medical Superintendent.

IDYLEASE INN

Newfoundland, N. J.



A Modern Health Resort situated among the hills of Northern New Jersey, one thousand feet above the sea, forty-six miles from New York. A modern steam heated building, broad verandas, sun parlor, good air, pure water, excellent table, delightful walks and drives through beautiful mountain scenery.

All Forms of Hydro-Therapy and Massage. A quiet, homelike place for semi-invalids, convalescents, neurasthenics and those desiring change of environment. Every facility for treating cases of neuralgia, sciatica, lumbago and rheumatism. **No tubercular nor objectionable cases.** *Let us send you our booklet.* Telephone 21 Newfoundland.

D. E. Drake, M.D., Supt. and Res. Phy., **H. H. Cate, M.D.**, Asst., **Geo. A. Day**, Asst. Supt.

GLOCKNER SANATORIUM

Colorado Springs, Colorado

Climate **Care** **Comforts**



THE HOME FROM HOME FOR THE HEALTH SEEKER

Oldest tubercular institution in famous Pike's Peak Region, located amid scenic grandeur while possessing all the modern conveniences of the age.

Rain-fall 15 inches annually. Altitude 6000 feet. The year-round climate aseptic—high, dry, invigorating. A $300,000 completely equipped sanatorium with surgical annex. Rates $15 to $35 weekly.

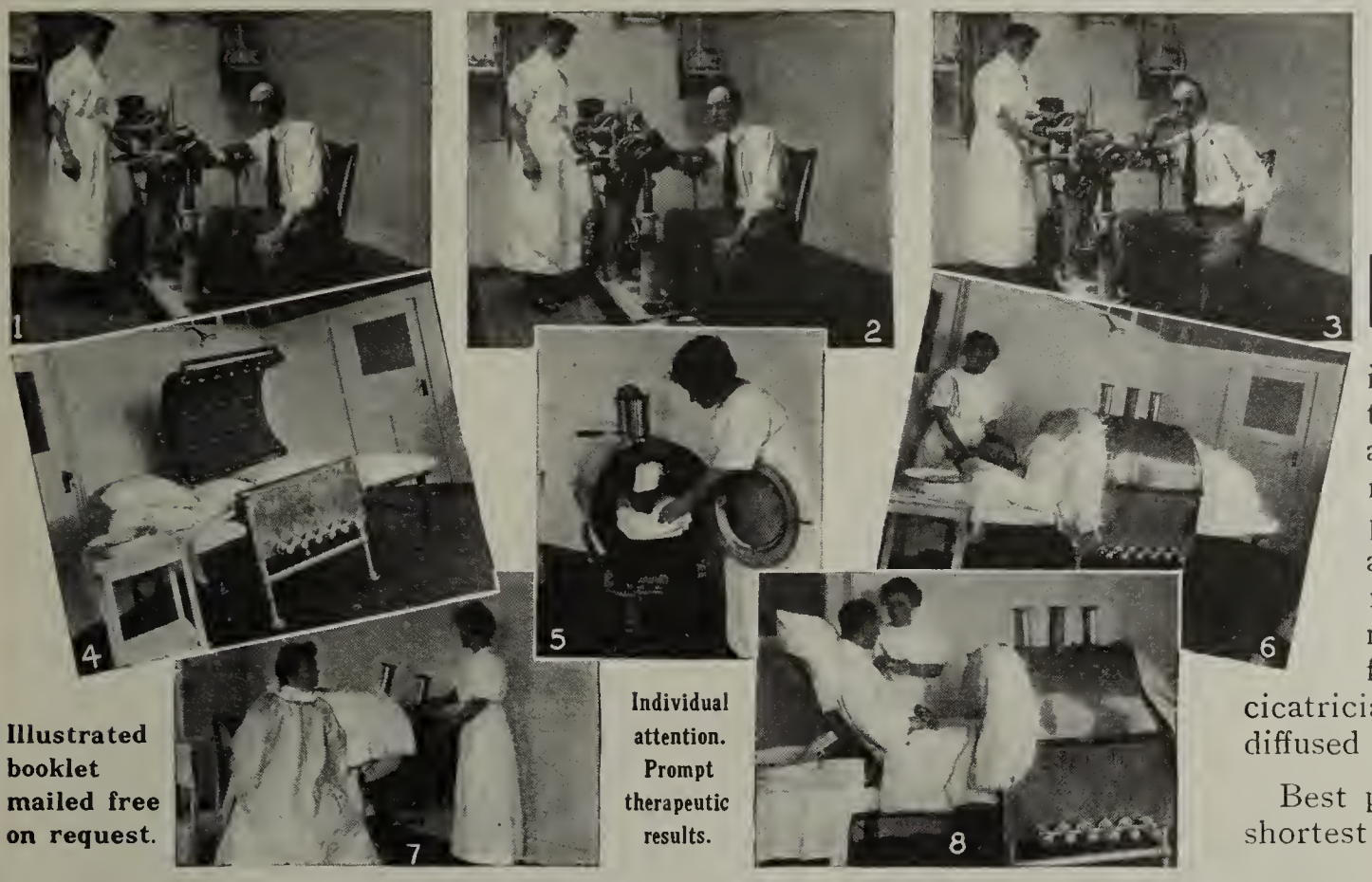
FOUNDED IN 1889 *Write Sister Superior for Illustrated Booklet.* IN OUR 25th YEAR

Superheated Dry Air Treatment

Diminishes pain and causes active elimination, produces absorption of effusion and deposits in joints; breaks up adhesions; reduces inflammatory processes; actively sedative.

For Mechano-Therapeutic Treatment

we use the Arthromotor. Gives painless, active and passive movements; prevents organization of exudates, fibrous ankylosis of joints muscular atrophy; deforming contractions of muscles, etc.



THE SPRAGUE INSTITUTE

is equipped with the most modern apparatus. Our methods have proven remarkably successful in removing traumatic exudates, fibrous ankylosis, cicatricial malformations, diffused adhesions, etc.

Best possible results in shortest possible time.

Illustrated booklet mailed free on request.

Individual attention. Prompt therapeutic results.

Every ethical courtesy extended physicians.

THE SPRAGUE INSTITUTE 141-5 W. 36th St., **New York City**

Our extensive experience is at your command.

SAINT JOSEPH SANATORIUM ALBUQUERQUE, NEW MEXICO



FOR THE TREATMENT OF TUBERCULOSIS

OLIVER T. HYDE - Medical Director

Beautiful sheltered situation in the famous climate of Albuquerque. Altitude 5000 feet. Annual rainfall 7½ inches. A modern institution designed to fulfill not only every requirement for the scientific treatment of tuberculosis, but to furnish as well every comfort. Rooms in fire proof main building have each private sleeping porch and bath. Detached cottages having private sleeping porches with and without bath. Also individual bungalows. Steam heated throughout. Efficient nursing service. Rates $80.00 to $100.00 per month.

Write for Descriptive Booklet



Drug Addiction and Alcoholism

THE HYGEIA SANITARIUM is maintained exclusively for the treatment of those who have become addicted to the use of drugs and wish, without suffering or publicity, to be freed from the habit and its craving. The method employed is that described in the article entitled "The Treatment of Narcotic Addiction" The Journal A. M. A., June 21, 1913. Each patient is given a thorough examination, clinical and laboratory, and treatment modified accordingly. A *fixed charge* is made on entrance, which covers all expenses. Resident Physicians—Trained Nurses.

A full account of the Hygeia Sanitarium method will be sent upon request.

THE HYGEIA SANITARIUM

DR. WM. K. McLAUGHLIN, Med. Supt.

2715 Michigan Avenue - - - - - - CHICAGO, ILL.

CRAGMOR SANATORIUM, Colorado Springs, Colorado

Altitude 6200 Feet

FOR THE TREATMENT OF TUBERCULOSIS



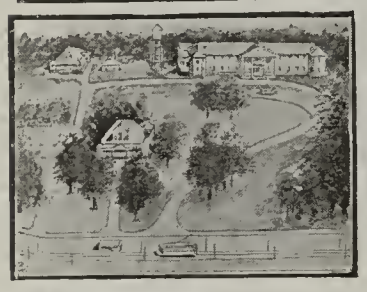
Ideal climate the year around. New building opened October 1st. Each apartment has individual corner sleeping porch. Entire building is covered with roof garden, commanding a wonderful view of the Pike's Peak Region. Private baths.

This building represents the latest in sanatorium construction and equipment. We are prepared not only to offer our patients unsurpassed advantages in the way of climatic conditions, but also to give them scientific care and pleasant surroundings

MEDICAL DIRECTORS

Alexius M Forster, M.D. Physician in Chief.
Gerald B. Webb, M.D. } Consultants.
George Burton Gilbert, M.D. }
Mary L. Whitney, R.N., Superintendent.

For full particulars address the Physician in Chief.



Dr. Brawner's Sanitarium

ATLANTA, GA.

A private, homelike sanitarium for the care and treatment of Nervous and Mental Diseases. Drug and Alcohol addictions. Hydrotherapeutic department complete. Grounds consist of eighty (80) acres of beautifully shaded lawns, with tennis, croquet, gardening and other outdoor recreations. Climate unexcelled. Rates moderate. Address,

DR. JAS. N. BRAWNER,
Physician-in-Charge, ATLANTA, GA.

LYNNHURST SANITARIUM

For Nervous Diseases, Mild Mental Disorders; an Improved Treatment for Opium-Morphin Addiction, which Eliminates Suffering and Craving.

Situated in the suburbs of Memphis, Tennessee, on **28 acres** of beautiful woodland and ornamental shrubbery. **Modern and approved methods in construction and equipment.** Thorough ventilation, sanitary plumbing, low pressure steam heat, electric light and fire protection. Pure water. Experienced nurses. **Special facilities for giving hydrotherapy, electrotherapy, massage, physical culture and rest treatment.** *Address*

S. T. RUCKER, M.D., Office, Goodwyn Institute MEMPHIS, TENN.

Grace Lutheran Sanatorium for Tuberculosis

San Antonio, Texas

Individual cottages, or rooms in modern building with sleeping porches.
High Class Institution.
Excellent Climate.
Moderate Rates.

REV. PAUL F. HEIN, Supt.



THE CIPES SANATORIUM

For Pulmonary and Laryngeal Tuberculosis

ALBUQUERQUE, NEW MEXICO



All modern improvements. Bungalows with individual screened porches, hot and cold running water, bath and toilet, electric lights and call bells, etc. Rates $20.00 to $25.00 per week. No Extras. Write for booklet.

J. S. CIPES, M. D.
Physician in charge

THE SACRED HEART SANITARIUM, MILWAUKEE

A Delightful, Homelike, Restful Place.

Especially suited for the care and treatment of all metabolic, eliminative and chronic systemic disorders. Unsurpassed advantages for Rest, Quiet, Recuperation and efficient Medical Supervision. Psycopathic hospital on separate grounds, 4 blocks from sanitarium, under same management For descriptive booklet address

Sister Superioror Dr. S. S. Stack, Med. Supt.



THE WILGUS SANITARIUM ROCKFORD, ILL.

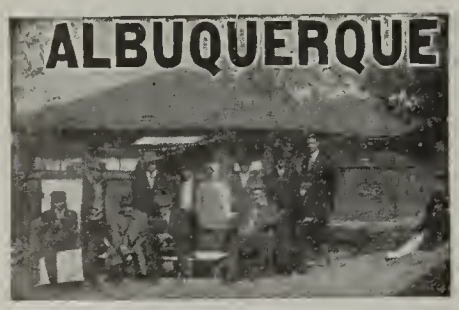
For Mental and Nervous Diseases

Under the supervision of DR. SIDNEY D. WILGUS, formerly superintendent Elgin and Kankakee State Hospitals. Address DR. SIDNEY D. WILGUS, Box 304, Rockford, Ill. Long distance Bell phone 3767. Chicago address, 25 E. Washington St.

Send for a pamphlet. Telephone Central 1098

ALBUQUERQUE SANATORIUM

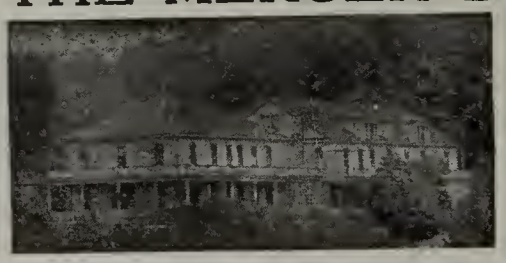
FOR TUBERCULOSIS



Write for booklet giving full description of institution and climate of Albuquerque, N. M.

A. G. SHORTLE, M.D.,
LEROY S PETERS, M.D.,
Associate Physicians.

THE MERCER SANITARIUM



FOR NERVOUS AND MENTAL DISEASES

Two hours from Pittsburgh. Occupational Treatment. Hydrotherapy. 1500 feet Elevation.

Address.

W. W. Richardson, M.D.
Mercer, Pa.

(Formerly Chief Physician, State Hospital for Insane, Norristown, Pa.)

SUNMOUNT SANATORIUM

SANTA FE, N. M.

For TUBERCULOSIS

Unusual climatic advantages and location. Under direction of F. E. MERA, M.D., Resident Physician. Rates Reasonable.

Write for booklet and further particulars, to

SUNMOUNT SANATORIUM :: Box 10, Santa Fe, New Mexico

PETTEY & WALLACE SANITARIUM



FOR THE TREATMENT OF DRUG ADDICTION, ALCOHOLISM, MENTAL & NERVOUS DISEASES

A quiet, home-like, private, high-class institution. Licensed. Strictly ethical. Complete equipment. Best accomodations.
Resident physician and trained nurses.
Drug patients treated by Dr. Pettey's original method under his personal supervision.
Detached building for mental patients.

MEMPHIS TENNESSEE



The PUNTON SANITARIUM

A private home Sanitarium for nervous and mild mental diseases. For information, address

G. Wilse Robinson, M.D.
Supt.
3001 Lydia Ave.,
Kansas City, Mo.

THE NORBURY SANATORIUM JACKSONVILLE ILLINOIS

(Established by Dr. Frank P. Norbury, 1901). **Incorporated and Licensed**

"MAPLEWOOD"—"MAPLECREST"

Private Residential Homes for the treatment of Nervous and Mental Disorders. Especia attention given to the treatment, by approved modern methods, of the Psychoneuroses, Exhaustion states and selected Psychoses.

Capacity 38 Beds—Over 1,100 Patients Have Received Treatment

Dr. Frank P. Norbury, MEDICAL DIRECTOR. (Late Alienist, State Board of Administration. Formerly Supt., Kankakee State Hospital.)
Dr. Albert H. Dollear, RESIDENT PHYSICIAN, (Late Clinical Asst. State Psychopathic Institute, Kankakee. Formerly Asst. Supt. Watertown State Hospital.) **Address Communications**
THE NORBURY SANATORIUM, 806 S. Diamond St., Jacksonville, Illinois
Springfield Office: DR. FRANK P. NORBURY, 407 S. Seventh St., by appointmen

THE
Hendricks Sanatorium
EL PASO, TEX.
For the Treatment of Tuberculosis
CHARLES M. HENDRICKS
Medical Director



ONE of the most modern and thoroughly equipped private institutions for the treatment of all forms of tuberculosis. High class accommodations. Fireproof construction. Individual sleeping porches. Private baths throughout. Excellent cuisine. Altitude moderate (4000 feet). Climate ideal all of the year. *For further information, address*
ROBERT D. HARVEY, Pres.
The Hendricks Sanatorium, El Paso, Tex.

THE GRANDVIEW SANITARIUM

FOR MENTAL CASES, NERVOUS DISEASES, ALCOHOLISM AND DRUG HABIT.

Especial feature of treatment is INDIVIDUAL CARE AND TRAINING. No ward service. Location ideal. Grounds large, well wooded, high, quiet and accessible. Separate buildings, recently refurnished.

Office hours at city office, 712 Mercantile Library Building, 11 : 00 a. m. to 12 : 00 m.

DR. J. M. RATLIFF,
successor to Dr. Brooks F. Beebe, deceased.
SANITARIUM, Glenway Ave., Price Hill CINCINNATI, OHIO.



Felicia Farm
New Hamburgh, N. Y.

An exceptional School for nervous, delicate and emotional girls needing medical supervision and nursing care.

For further particulars address

W. Conyers Herring, M.D
New Hamburgh, N. Y.
or
New York City Office
64 West 56th St.
Telephone 7085 Plaza

LAS ENCINAS
A place for the Treatment of Nervous and General Diseases, Near Pasadena, California



Situated in a grove of 20 acres of Live Oaks in the country near Pasadena. Large central building and cottages. All chronic organic disorders received. No cases of Tuberculosis or Insanity received.

STEPHEN SMITH, Med.Dir.
Board of Directors : Drs. Norman Bridge, H. G. Brainerd, J. H. McBride, W. Jarvis Barlow, F. C. E Mattison.

PASADENA, CAL

FAIR OAKS
SUMMIT, N. J.

For the care and treatment of nervous affections, neurasthenia, states of simple depression due to business or other stress, exhaustion psychoses, and selected habit cases. Voluntary cases only. No objectionable case of any kind accepted. Summit is twenty miles from and the highest point within thirty miles of N. Y. City upon the D. L. & W. R. R. Convalescents will find Fair Oaks an ideal place for rest and recuperation

DR. ELIOT CORTON
(Formerly First Asst. Physician to the N. J. State Hospital at Morris Plains).
SUMMIT, N. J. L. D. 'Phone 143

NEW YORK CITY OFFICE:
DR. T. P. PROUT
23 W. 36th St. Hours 1 to 3 on Tues. Thurs. and Sat. Phone 3812 Greeley

DR. GIVENS' SANITARIUM
STAMFORD CONN.

For the Treatment of Nervons and Mild Mental Diseases and General Invalidism.

Separate Department for Alcoholic and Drug Patients Arranged on the Cottage Plan. Beautifully located on a hill overlooking Stamford and Long Island Sound—50 minutes distant from New York City—30 trains each way daily. Telephone No. 70.

For descriptive booklet address

A. J. GIVENS, M.D., Stamford, Conn.



The Allison

LINE OF PHYSICIANS' APPLIANCES

Send for Catalog

SPECIALISTS' CHAIRS
CABINETS
IRRIGATING TABLES
VIBRATORS
ACCESSORIES and
RECEPTION ROOM FURNITURE

Style 8 "Craftsman Chair" Fountain Cuspidor

Automatic Examining Tables
For Specialist or General Practitioner
Send for List No. 2 of Display Samples and Refinished Goods
Special Discounts for 30 Days

W. D. ALLISON CO.
Manufacturers
915 N. Alabama St., Indianapolis, Ind.

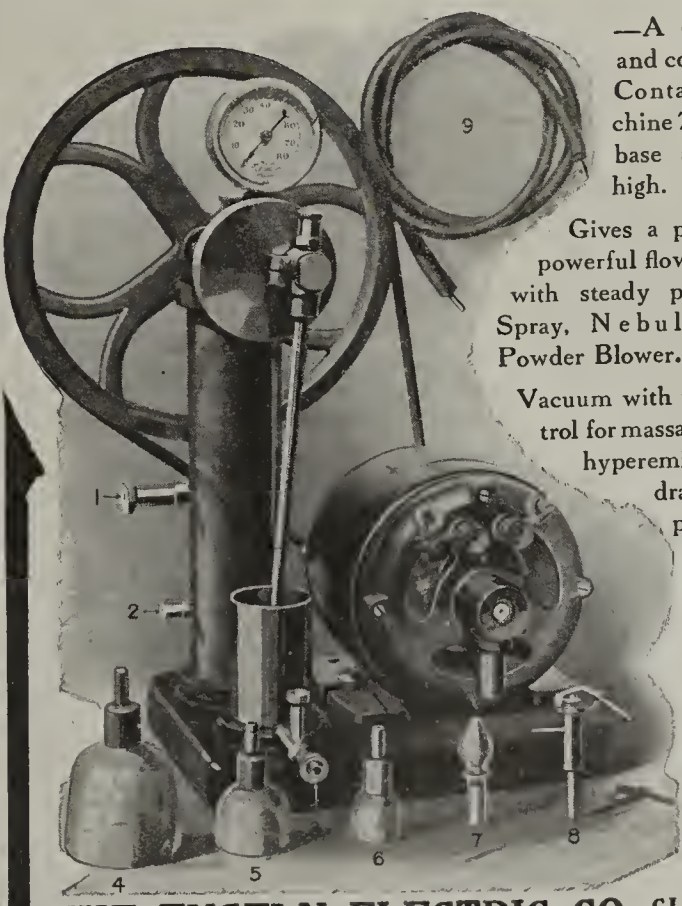
PRINCIPAL AGENCIES
110 E. 23d St., New York
121 N. Wabash Ave., Chicago
691 Boylston St., Boston
25 S. 17th St., Philadelphia
304 Empire Building, Pittsburgh
Baker-Detweiler Bldg., Los Angeles



Irrigating Table. Style 138
Irrigating Stand No. 2

AT LAST
A PERFECT PUMP

The Engeln Tankless Air and Vacuum Pump



—A complete and compact Self-Contained Machine 7 in. by 9 in. base and 16 in. high.

Gives a positive and powerful flow of pure air with steady pressure for. Spray, Nebulizer and. Powder Blower.

Vacuum with perfect control for massage, cupping, hyperemia and for draining purposes, tonsils and peritoneal infections.

Ask your dealer or send for descriptive circular.

THE ENGELN ELECTRIC CO. CLEVELAND, OHIO

THE POTTENGER SANATORIUM MONROVIA CALIFORNIA

For Diseases of the LUNGS and THROAT



A thoroughly equipped institution for the scientific treatment of tuberculosis. High class accommodations. Ideal all-year-round climate. Surrounded by orange groves and beautiful mountain scenery.

Forty-five minutes from Los Angeles.

F. M. POTTENGER
A.M., M.D., LL.D.
Medical Director.

J. E. POTTENGER
A.B., M.D.
Assistant Medical Director and Chief of Laboratory.

George H. Evans, M.D.
Medical Consultant,
San Francisco.

For Particulars address
POTTENGER SANATORIUM, MONROVIA CAL.

Los Angeles office, 1100-1101 Title Insurance Bldg.
Fifth and Spring Sts.

Mountain Valley Springs Sanitarium

A quiet Mountain Resort for the treatment of *Renal*, *Cardiac* and *circulatory* diseases, *Diabetes*, *Gout*, *Rheumatism* and other disturbances of metabolism requiring extra elimination. Within a few miles of America's great health resort–Arkansas' Hot Springs, which is under *Government* supervision and regulation. Freedom from city noise and distractions. The Famous Mountain Valley Springs on the grounds; actively *Diuretic*, *Palatable* and of *low salt content*. Homelike hotel with modern convenience. Individualized diet and water drinking based on thorough analysis of case, and adjusted from day to day to fit patient's condition. Invigorating mountain air, plenty of sunshine and a mild equable climate. Competent medical supervision by a resident physician. Home physician's orders carefully carried out. Weekly reports on request. Rest, baths, and exercise as indicated. Graduated exercise for *Heart* and *High Blood Pressure* cases. Patients taught to adjust themselves to changed conditions of living, necessitated by damaged heart, blood vessels and kidneys. No Infectious, Alcoholic or Insane cases accepted. Rates reasonable. Accommodations good. Booklet and further information on request.



Mountain Valley Springs Company
Mountain Valley, Ark.

Wildwood Hall

A Sanatorium-School for Study, Education and Treatment of Children requiring Special Attention. Armamentarium and curriculum sufficiently comprehensive to admit treatment and training in a wide variety of conditions interfering with physical and mental efficiency.

Observation Term. Three months of scientific study of the child from all standpoints; physical, mental and educational, followed by advice regarding subsequent management.

Regular Course. Continuous throughout the year; study, treatment and education.

Summer Term. For delicate or nervous children especially, and for those lacking proficiency in certain studies. An opportunity to regain lost ground while attaining the sound body so necessary to a sound mind.

Permanent Care for those unable to meet the exactions of every-day life. Private cottages erected to meet requirements when desired.

Children Convalescent from acute illness or from operations requiring "building up" are received for short periods.

Every effort made to maintain atmosphere of cultivated, well-equipped private country home. Number limited to twelve children, carefully selected. Applications considered in order received. Apply E. BOSWORTH McCREADY, M.D., Wildwood, Pa. 909 Keenan Bldg., Pittsburgh, Pa.

HIGHLAND HOSPITAL



Succeeding Doctor Carroll's Sanitarium. An institution employing all rational methods for the treatment of Nervous, Habit and Mental cases; especially emphasizing Rest, Climate, Water, Diet and Work.

Robt. S. Carroll, Medical Director. Asheville, N. C.

Bancroft Training School

Founded 1883 by Margaret Bancroft

BTS Subnormal

A home for the treatment and training of BACKWARD and MENTALLY SUBNORMAL CHILDREN. Winter quarters (18 acres) in beautiful Philadelphia suburb; summer schools (28 acres) at Owl's Head on the Maine coast. Enrollment limited to 50 pupils, both sexes. Staff consists of 76 employees, including resident physician, 10 teachers, 29 nurses and attendants. Physicians who desire to retain supervision of their cases will have full co-operation of resident and consulting staff. Circular on request. E. A. Farrington, M.D., Box 133, Haddonfield, N.J.

BROOKWOOD SCHOOL *for* NERVOUS and BACKWARD CHILDREN

LANSDOWNE, PENNSYLVANIA

Seven miles from Philadelphia. Number limited to 12 pupils. Summers at the seashore. Home privileges. Individual training. Articulation, music, gymnastics, hand work of all kinds. Seven acres. Address, R. W. BREWSTER

The TRAINING SCHOOL at VINELAND, N.J.

Devoted to the interests of those whose minds have not developed normally.

Home spirit. Schools, shops, farm. Department of child study, 25 buildings. Opening of colonies permits enrollment of more private pupils.

Address E. R. JOHNSTONE, Supt., Vineland, N.J.

THE RICHARD GUNDRY HOME

HARLEM LODGE

CATONSVILLE, BALTIMORE, MD.

A private Sanitarium for the treatment of Mental and Nervous Diseases, Drug and Alcoholic Addictions.

For rates and illustrated booklet apply

DR. RICHARD F. GUNDRY, Box 44, Catonsville

Dr. McKAY'S SANITARIUM

2902 Colfax Avenue. DENVER, COLORADO
A Thoroughly Equipped Ethical Institution for the treatment of
Alcohol and Drug Addictions
DEAR DOCTOR—Our method renders the treatment of Morphinism as painless as an operation under anæsthesia. Write for brochure and reprints. Yours fraternally,
JNO. H. McKAY, Med. Dir.

RIVER CREST SANITARIUM

ASTORIA, L. I. NEW YORK CITY

For **NERVOUS AND MENTAL DISEASES**, including committed and voluntary patients. **Alcoholic and narcotic habitues. Modern Equipment.**

Home-like private retreat, in large park overlooking New York City. Separate building for **DRUG AND ALCOHOLIC CASES.** Villas for special cases.

J. JOS. KINDRED, M.D., Consultant
WM. E. DOLD, M.D., Physician in Charge
N. Y. City Office, 616 Madison Av. Hours 3-4.
Sanitarium 'Phone, 820 Astoria

PASADENA SANITARIUM

Located near Interurban Electric Lines between
LOS ANGELES and PASADENA, CALIFORNIA
For General Invalidism, Nervous and Mental Diseases, Alcoholism and Drug Addictions.

A high-class, homelike, private place in most beautiful portion of Southern California; forty acres grounds; separate buildings, new and modern; complete segregation cases: scientific equipment; individual treatment; rates reasonable. City office in both Los Angeles and Pasadena. Dr. T. W. BISHOP, Medical Director. P.O. address, South Pasadena, Cal.

DR. CASE'S SANITARIUM, ESTAB. 1904

For Narcotic Drug Addictions

Methods safe, brief and successful. A high class place, combining the facilities of a sanitarium with comforts and freedom of a private home. Individual treatment. All drug patients under Dr. Case's personal care. For terms, etc. write

CALVIN L. CASE, M.D. 3500 Telegraph Ave., Oakland, Cal
Reference: any member of the Alameda County Medical Association.

Experienced care and training given nervous and backward, or typical and difficult children

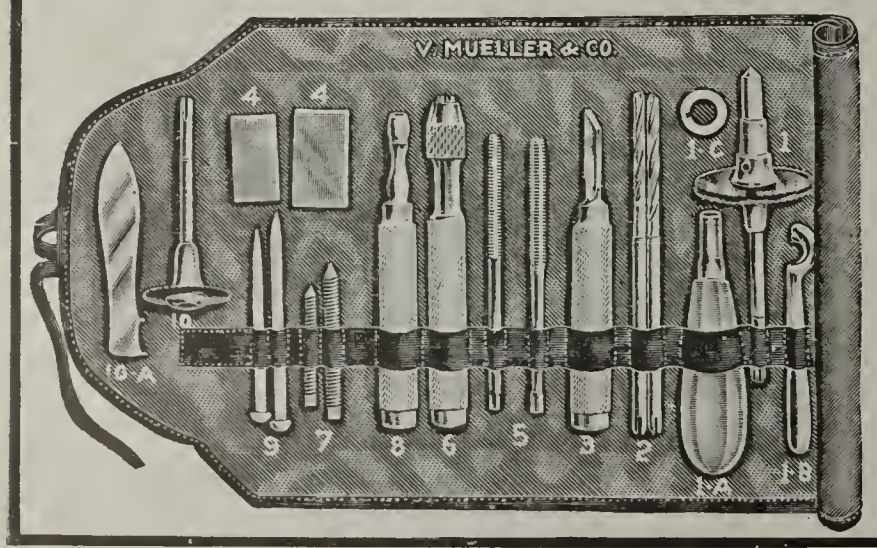
BEAUTIFUL and healthy location in Philadelphia suburb. Elevation 450 feet. Springfield water and all modern conveniences, own vegetable garden, fruit, poultry, etc. Excellent professional endorsements. For terms and references address

BELL PHONE: Newtown Sq. 3-R
AGNES SMITH
Newtown Square, Del. Co., Pa.

The ARGO LYING-IN HOSPITAL

A private maternity home, under the management of the Argo Hospital, affording every kindness and protection to its patients and their infants. Graduate nurses and attending physicians. Rates, $10 to $15 per week. *Correspondence solicited from Physicians.*

Address, Rose Massoth, R.N., Supt.
Phone Summit 178-M ARGO, ILL. Cook County



Absorbable Material

Ivory Plates, Screws and Pegs for the Treatment of fractures as used by DR. PAUL B. MAGNUSON, CHICAGO

The complete set of instruments contains in addition to those here illustrated, 8 twist drills for the different sizes of plates, screws and taps. Two each extra ivory plates, screws and pegs, and 3 gauges for measurements, put up either in washable roll as illustrated or on metal nickel-plated stand. See this Journal, Oct. 25, 1913, page 1514. *Made by*

V. MUELLER & CO.
Makers of Instruments for the Specialist in Every Branch of Surgery
1771-1781 Ogden Avenue :: :: :: CHICAGO

This Space Reserved for

FRIES BROTHERS'

(Manufacturers, 92 Reade St., N. Y.)

"KELENE"

(Pure Chloride of Ethyl)

In Graduated Tubes
For Local, Also General Anaesthesia

Sole Distributors for the United States

MERCK & CO.

New York Rahway St. Louis

PLEASE CUT THIS OUT AND FILE

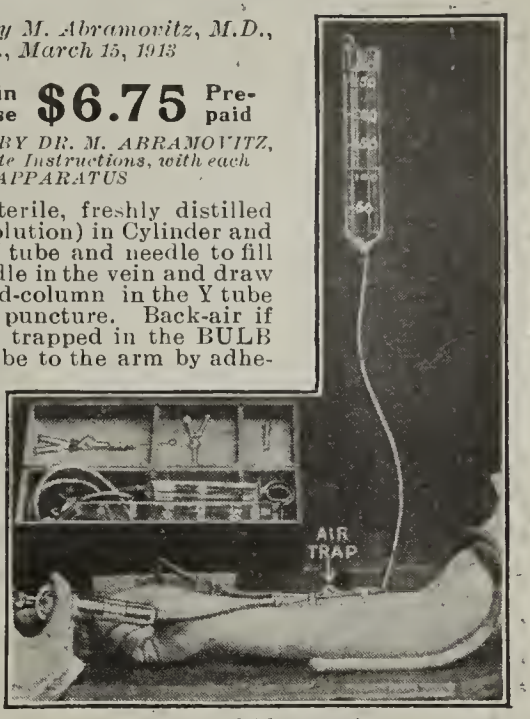
COMBINED METHOD APPARATUS

For SALVARSAN, NEOSALVARSAN and Intravenous Injection of NORMAL SALT Solution (for QUICK results in Hemorrhage)

Devised and described by M. Abramovitz, M.D., Journal A.M.A., March 15, 1913

PRICE: Complete in Hardwood Polished Case **$6.75** Prepaid

A SIGNED CERTIFICATE BY DR. M. ABRAMOVITZ, also Reprints and Complete Instructions, with each ORIGINAL APPARATUS



An Actual Photograph.

TECHNIQUE: Place sterile, freshly distilled water (or normal salt solution) in Cylinder and Syringe, allow tubing Y tube and needle to fill with water. Insert needle in the vein and draw Piston slightly. A blood-column in the Y tube indicates a successful puncture. Back-air if any, is at the same time trapped in the BULB of the Y tube. Fix Y tube to the arm by adhesive while injecting the blood back in the vein and washing it away with the water in the Syringe which *further assures that the needle IS IN THE VEIN.* The Pinch-cock is now opened, thus allowing the Gravity to flow while the solution is made and added into the Cylinder. The Syringe is refilled by drawing the Piston - **The Needle Flow remains Uninterrupted.** When filled, close Pinch-cock and inject. It is thus repeated until ALL the solution is injected.

THE UNIQUE ADVANTAGES

ONE PERSON APPARATUS, no assistant needed. AIR TRAPPING. "Gravity" or "Syringe" at will. Continnous Flow, clotless. Simple. All Glass. Compact. Portable. Very Reasonable.

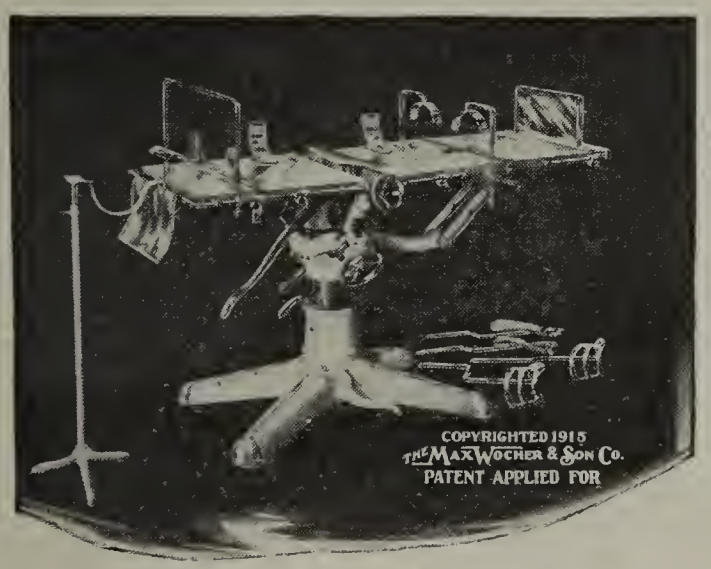
ADOPTED and IN USE by the U. S. PUBLIC HEALTH SERVICE whom we supply.

Sent on receipt of Check, Money Order or C.O.D. by the Sole Authorized Makers.

THE INTRAVENOUS APPARATUS CO., BALTIMORE, M.D. Station J

The Representative American Operating Table

1916 MODEL



The Cincinnati Pedestal Automatic Operating Table

Every known position can be obtained. Has no slow-operating Gear Wheels, but is controlled by fulcrum and locked with Locking Device Lever.

It can be Revolved, Elevated, Lowered, Tilted, Slanted, Inclined, etc., at the operator's will.

Write for description in detail

THE MAX WOCHER & SON CO.

19-23 W. 6th Street - - Cincinnati, Ohio

TRADE **VIM** MARK
REGISTERED

ALL-GLASS SYRINGES

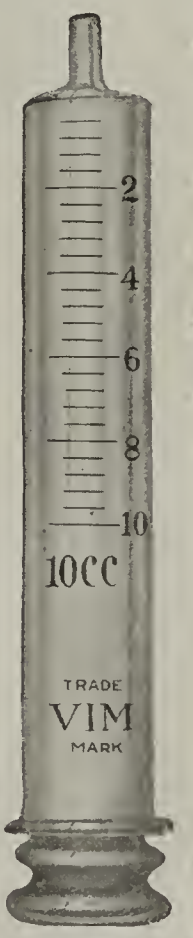
Vim Syringes will demonstrate to the practitioner their superiority.

Made of "All-Glass" annealed. Piston and chamber air tight. Will withstand boiling water. Easily sterilized. Graduated correctly with an "open scale."

Vim Syringes are what you want.

Proof of these facts will be found in our new booklet which we wait to send you—write for it today.

Vim needles should always be used in connection with Vim Syringes, but any well-made standard American Luer needle will fit all Vim Syringes.



MacGregor Instrument Co.

Roslindale - - - Boston, Mass.

DR. EPSTEIN'S
Micro-Saccharimeter



This instrument embodies the easiest method for estimating the sugar content in the blood.

While formerly, with costly and elaborate colorimetric apparatus, 2 cc. of blood were necessary for the test, the Micro-Saccharimeter requires only 0.2 cc. or even 0.1 cc.

This factor makes the apparatus most desirable for clinical work on children.

Due to its simple method, the test is completed in seven to ten minutes and the results are most accurate.

PRICE, complete with directions . . . $9.00

Write for pamphlet No. A98

United States Branch: E. LEITZ WETZLAR **30 East 18th Street New York**

The STORM BINDER and ABDOMINAL SUPPORTER
(PATENTED)

No Leather

No Whalebones

No Rubber Elastic



Washable as Underwear

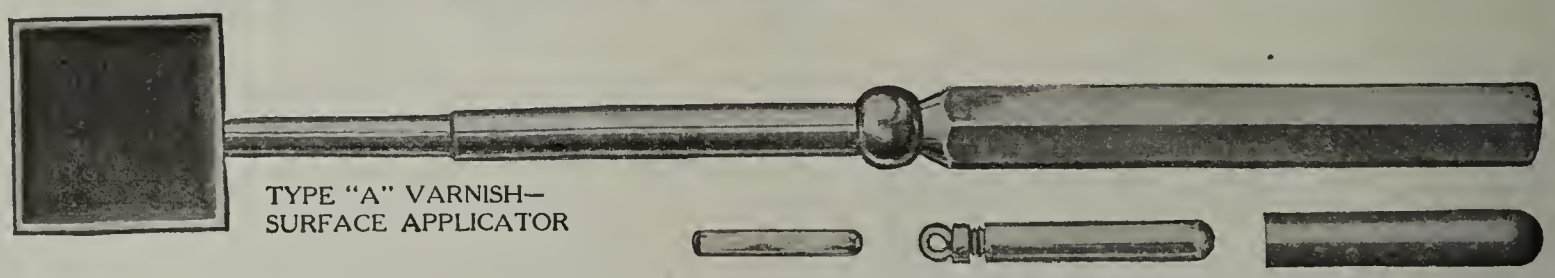
Men, Women, Children and Babies

For Hernia, Relaxed Sacroiliac Articulations, Floating Kidney, High and Low Operations, Ptosis, Pregnancy, Obesity, Pertussis, etc.

Send for new folder and testimonials of physicians. General mai orders filled at Philadelphia only—within twenty-four hours.

KATHERINE L. STORM, M.D.

1541 Diamond Street, Philadelphia



TYPE "A" VARNISH—SURFACE APPLICATOR

TYPE "B" TUBE—UNIVERSAL APPLICATOR

CHLORIDE BROMIDE

RADIUM

SULPHATE CARBONATE

RADIUM ELEMENT CONTENT GUARANTEED

Send for Descriptive and Clinical Literature

RADIUM CHEMICAL CO. General Offices and Laboratories FORBES AND MEYRAN AVENUES **PITTSBURGH, PA.**

O-Cedar Polish

"Makes Dusting Dustless"

neutralizes the harmful effects of dust.

Extensively used in leading Hospitals, Institutions and wherever sanitary and hygienic surroundings are essential.

Awarded Gold Medal of Honor Panama-Pacific International Exposition
Awarded Gold Medal Panama-California Exposition

O-Cedar Polish is sold by all dealers, grocers, druggists, hardware and department stores in 25c to $3.00 sizes. Your money promptly refunded if you are not delighted with O-Cedar Polish. Drop us a postal for free sample.

Channell Chemical Company, Chicago-Toronto-London-Berlin



Rent This Microscope 9 Months Then It's Yours

The Celebrated Spencer Microscope and Complete Bacteriological Outfit with Centrifuge. On terms so easy that you can't afford to miss this offer.

You cannot get a better microscope than the one offered. It is a genuine Spencer, fully equipped with triple nose piece, three high power objective lenses, quick screw sub-stage and other latest improvements. Magnifying power of one thousand times. You couldn't buy a finer microscope if you wanted to. It will adequately meet any requirement that a physician or surgeon could possibly ask of a microscope.

Our Easy Rental Purchase Plan

Pays Its Own Rent—The only real expense will be the first month's rent. After that the saving and the extra fees it earns for you will not only pay the rent but make additional money that you are now compelled to lose. It will make money for you while it is paying for itself.

No Extras—The outfit is complete. Besides the famous Spencer Microscope a full Bacteriological set, centrifuge, stains, slides, etc., is included.

No Red Tape—No "ifs or ands"—no interest, no extras. You get the outfit on first month's rent. After that pay the rent for nine months and it's your absolute property. The rent each month does not amount to any more than the fee you charge for a single microscopic examination.

Send for Particulars—Send to-day, without obligations, for complete particulars of this extraordinary offer. Learn how you can own a famous Spencer Microscope and Bacteriological outfit by making it pay for itself. Tear out and mail the coupon now. It will open wide new avenues of profit. You will be under no obligations.

A. S. ALOE CO. Sales Agents Spencer Microscopes **St. Louis, Mo.**

COUPON

A. S. ALOE CO., 515 Olive St., St. Louis, Mo.

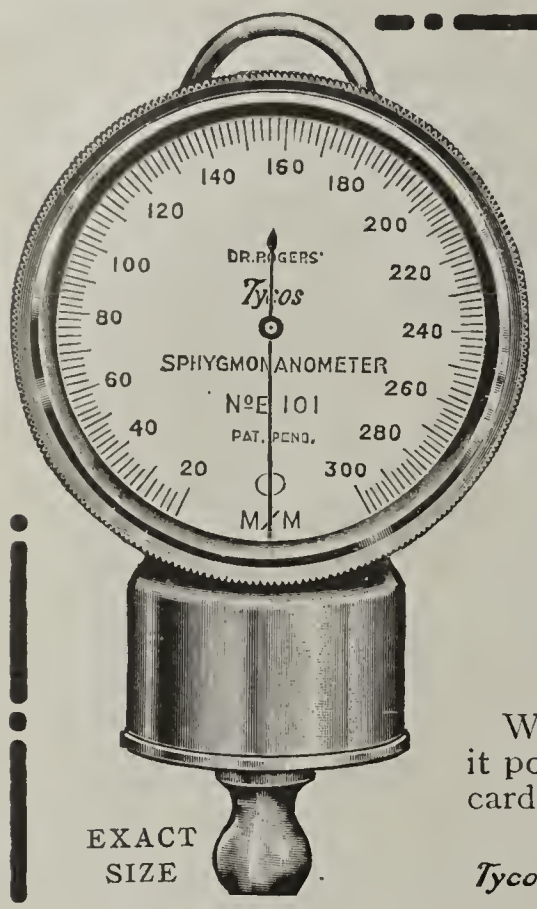
Send, without placing me under any obligation, full particulars of how I can own a Spencer Microscope and Bacteriological outfit for only nine months' rent.

Name .....

Street .....

City ..... State .....

A.M.A. 9-25-15



EXACT SIZE

"Blood Pressure Manual"

A Valuable Book for Doctors

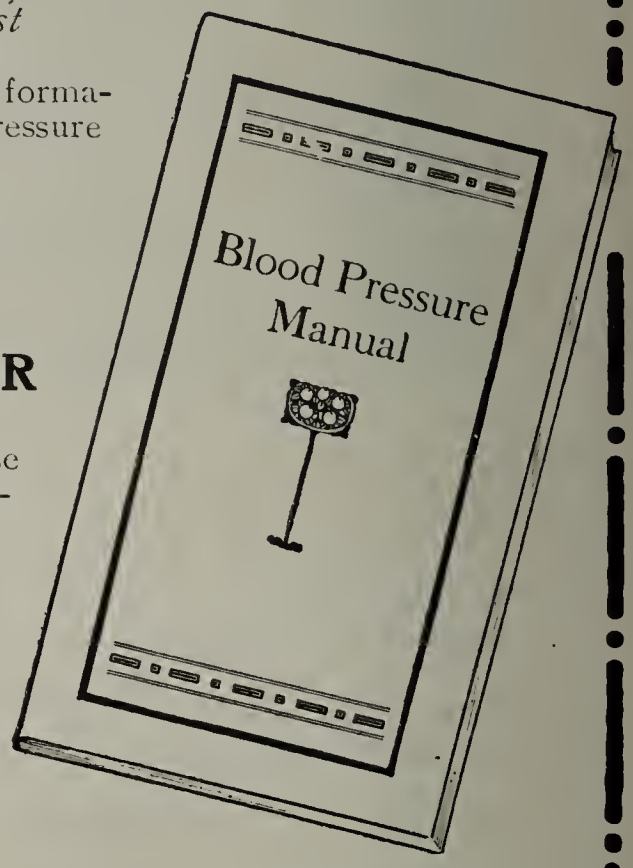
Mailed on your request

Contains up to the minute information on the value of Blood Pressure Tests and fully describes the

Dr. Rogers' *Tycos*

SELF-VERIFYING SPHYGMOMANOMETER

Worthy of your consideration, because it positively verifies itself. Send a postcard today.

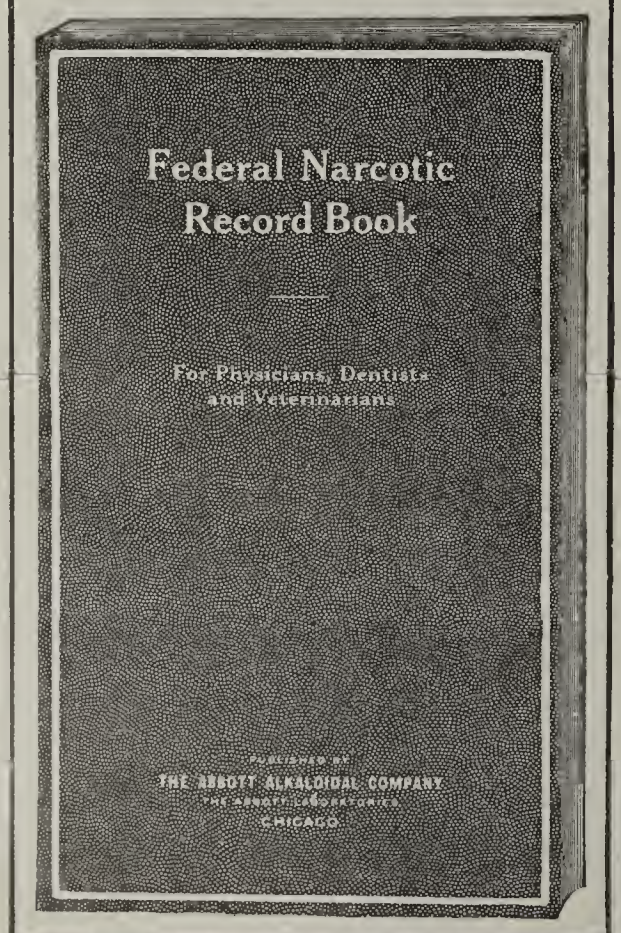


Tycos **PRODUCTS**

Tycos Fever Thermometers
Cambridge Electrocardiograph
Tycos Urinary Glassware

Taylor Instrument Companies
Rochester, N. Y.

Obey the Law!



THE penalties provided for the violation of the Federal Narcotic Act are very high. It is provided "that any person who violates or fails to comply with any of the requirements of this Act shall, on conviction, be fined not more than $2,000, or be imprisoned not more than five years, or both, in the discretion of the court." Why take this chance?

Use Abbott's Federal Narcotic Record Book

A Daily Record of Narcotics Dispensed or Distributed—It Fits the Pocket

Other books are large and cumbersome, suited merely for office records. Abbott's Federal Narcotic Record Book is 4¼x7 inches in size—just right for the pocket or satchel, and **suitable for bedside records.** It contains an accurate and practical digest of the Federal Antinarcotic Law, as it affects Physicians, Pharmacists, Veterinarians and Dentists, covering the following points:

- Who Are Affected by the Law
- With What Drugs the Law is Concerned
- The License and How It Is Secured
- Routine to Be Followed in Ordering Drugs
- How the Bill Affects the Prescribing of Narcotic Drugs
- Returned Goods
- Inventories of Narcotic Drugs and Penalties

This Digest has been pronounced by a Government Official the best he has seen.

The book contains 100 pages, arranged in compliance with the law for the keeping of records of drugs dispensed or distributed, and permitting of 1000 individual entries. There are forms, also, for the inventory and affidavit of inventory—a most complete and comprehensive record system.

Properly kept this system—the most convenient yet devised—fulfills all the requirements of the Federal Antinarcotic Law. It incorporates many new features and eliminates the weak points in other systems.

Its price, cloth bound, is only 25c, or in flexible leather binding 75c, postpaid.

SEND FOR IT TODAY

THE ABBOTT LABORATORIES
[THE ABBOTT ALKALOIDAL CO.]
CHICAGO
SEATTLE SAN FRANCISCO LOS ANGELES NEW YORK



New Spencer Microscope No. 44H

with side fine adjustment (lever type), completely equipped for Medical work, including oil immersion objective. **$65.00**

The Simple Dignity of Cold Fact has Sufficed to Give

SPENCER MICROSCOPES

and optics an undisputed leadership. The hysteria of superlative expressions and big gun typography has never characterized our work. We are perfectly satisfied to have the physicians accept our statement, "*Spencer instruments are built to meet the most critical need.*" The thousands of letters which we have received from satisfied customers, expressing their appreciation of the meritorious features of our instruments, are our reward.

The features of practical usability, features which make for convenience and comfort in use as well as efficiency and durability, which have made these thousands more than satisfied, are all incorporated in the Spencer Microscope which you will get when you order. Every instrument is thoroughly guaranteed.

Catalog Free on Request.



New Spencer Portable Microscope No. 60H

with side fine adjustment (lever type) completely equipped for Medical work, including oil immersion objective. **$100.00**

SPENCER LENS COMPANY BUFFALO, N. Y.

Castle-Rochester Sterilizing Outfits



FOR MODERN OFFICES

The necessary Sterilizers to carry out the aseptic treatment of minor surgical operations and emergency cases are an essential part of Modern Office Equipment.

It is the practice of those physicians and surgeons who have established reputations with their patients for thoroughness and attention to technique effecting right results, to see that every article coming in contact with an open wound is absolutely ***sterile.***

In the **CASTLE-ROCHESTER OUTFITS** we offer the necessary sterilizing facilities for Modern Offices. They are furnished for gas, gasoline, alcohol, steam or electric heating. If you are not entirely satisfied with your present equipment—

J-9-15

Ask your dealer for circular, or write directly to us. Use coupon.

CASTLE

WILMOT CASTLE CO.

805 St. Paul St., Rochester, N. Y.

Sterilizing and Bacteriological Apparatus for Offices and Hospitals.

Gentlemen:
Kindly send literature and prices on Castle-Rochester Sterilizing Outfits.

Dr.....

Address.....

STANDARD OIL COMPANY

INCORPORATED IN CALIFORNIA

STANDARD OIL BUILDING

SAN FRANCISCO, CAL. Sept 7th 1915.

SUBJECT:

Announcing

Calol

Liquid Petrolatum

Heavy

Sp. Grav. .886 to .892 at 15°C.

Sp. Grav. .881 to .887 at 25°C.

(Petrolatum Liquidum) (Petrolatum Liquidum, Heavy)

(Liquid Paraffine) (Paraffinum Liquidum)

The Specific Gravity of this oil makes it especially adaptable for the uses for which such oils are indicated. This high gravity is obtained only from Petroleum oils of the Naphthene Series. Naphthene Series Petroleum is produced only in Russia and California. Calol Liquid Petrolatum Heavy, is manufactured from selected California Crude Petroleum.

Odorless – Colorless – Tasteless – Purity Unexcelled.

Conforms to U.S.P.; B.P.; C.F.; G.P.; Ph. Rossica and others

Samples will be sent to physicians on request.

Manufactured Only by

Standard Oil Company,

(California)

200 Bush St., San Francisco, Calif.

The Nemo "Self-Help" Exposition

From Monday, Oct. 4th to Saturday, Oct. 9th

In Principal Stores and Corset Shops Throughout the United States

TO THE MEDICAL PROFESSION: After many years of private experimenting, and six months of public test, we are convinced that the Nemo Wonderlift Corset is an effective substitute for separate abdominal binders and bandages; and that, in a large majority of cases, it will prove vastly superior to the best of such appliances.

During the past six months, to our personal knowledge, the Nemo Wonderlift Corset has been critically examined by not less than five hundred physicians, most of whom have generously endorsed it, and are now prescribing it in cases where visceral support is indicated. We do not know of a single instance of adverse criticism.

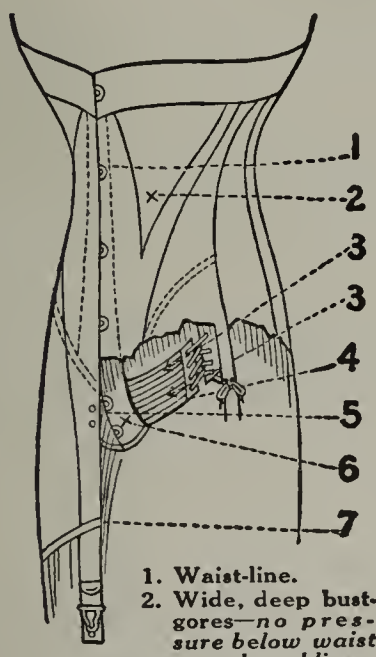
It is our desire, therefore, to quickly acquaint the medical profession and their patients with this ENTIRELY NEW kind of hygienic service. To that end we have arranged for a special display of Nemo Wonderlift Corsets during the week beginning October 4. This will be observed in the principal stores throughout the country, in many of which one of our own representatives will be in attendance.

This is a special invitation to physicians to investigate what we believe to be a long-wanted medical adjunct, and an easy and sure solution to thousands of bothersome cases.

For your own benefit, therefore, we ask you to study the Wonderlift. We believe that you will quickly and cordially endorse our claims as to its *prophylactic* and *therapeutic* qualities, and its great HUMANITARIAN VALUE in preventing and helping to relieve the ills from which thousands of women are suffering.

A description of the Nemo Wonderlift is given below.

A Truly *Scientific* Supporting Corset



1. Waist-line.
2. Wide, deep bust-gores—*no pressure below waist on stomach and liver.*
3. Adjustable semi-elastic binder (*oblique muscles*).
4. Poupart's ligament.
5. Symphysis pubis.
6. Curved steels—*no pressure over bladder.*
7. Garters attached to semi-detached skirt—*no undue pressure on abdomen.*

SELF-HELP Nemo WONDERLIFT

The semi-elastic bandlets are in exact apposition to the internal broad ligament, and, in position and action, closely simulate the lifting and supporting functions of the external and internal oblique muscles. The inner side-lacing permits exact individual adjustment, each side being independent of the other, thus providing for inequalities in size and shape of abdomen. The mechanical construction is such that *the entire weight of support is carried upon the hip bones*, thus protecting the kidneys from undue pressure and the spinal column from distortion.

For various forms of ptosis. Valuable in inoperable floating kidney. A great help in ante-partum, post-partum, obesity, hernia. In acute conditions, the corset acts as a splint to the internal organs and their ligaments, giving them "physiological rest" until the organs and ligaments regain their tone.

This New Kind of Binder "Stays Put!"

It keeps its place. It gives *added comfort*. It does not bulk the figure, but *reduces* it. It accomplishes its purpose *without offending the woman's pride of figure*. Your patient will wear this corset gladly. Too often she throws the binder aside the minute your back is turned.

It is *inexpensive*. The price of this corset is $5.00 — less than the cost of the cheapest binder; and it's a big value, simply as a *corset*, at $5, saying nothing of this new supporting feature.

We shall be glad to furnish further information on request.

The Nemo Hygienic-Fashion Institute, 120 East 16th St., New York, U. S. A.



The "Premier" Interrupterless Transformer

X-Ray Equipment
Its Value to Your Work

HAVE you considered carefully what X-Ray Equipment means to you?

The time will come—and soon—when every progressive doctor will consider the X-Ray as a necessary part of his working equipment—and you can be a leader in a wonderful field, if you investigate this valuable aid to diagnostic work—*NOW.*

Instantaneous Radiographs

SCHEIDEL-WESTERN Equipment will assure you of instantaneous Radiographs of the deeper tissues, the moving organs, and in fact, any part of the body.

Ask yourself if this feature would not make your work easier in kidney, stomach, and bladder conditions.

Fractures

Consider your fracture cases. Can you not think of many times when a Roentgenogram of a fracture would have eased your mind—and the mind of your patient?

Certainly, it means something to you to *know* that you are right, and to be able to prove it.

State Laws

Several states have already passed a law making the X-Ray Plate a necessary piece of evidence in personal damage suits.

Are you prepared for this profitable work?

Mail Coupon To-day

The attached coupon will tell you of SCHEIDEL-WESTERN Service and SCHEIDEL-WESTERN Equipment.

You can not afford to neglect this opportunity. You owe it to yourself to send this coupon, to us, TO-DAY.

SCHEIDEL-WESTERN X-RAY CO., Chicago, Ill., GENTLEMEN:—I am considering the purchase of X-Ray Apparatus. Please tell me of its advantages, its costs, and why your apparatus is best for me.

.....

.....

.....

.....

COUPON

SCHEIDEL-WESTERN X-RAY COMPANY

Largest Manufacturers of X-Ray Apparatus in the World

737-739 W. Van Buren Street CHICAGO, ILLINOIS

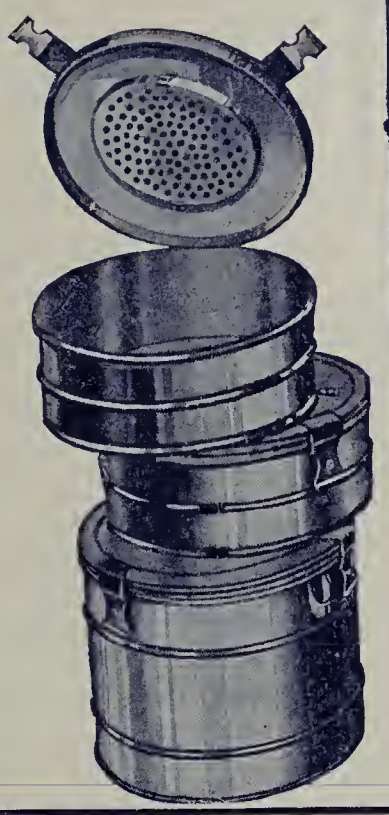
New York Office 110 E. 23rd St.

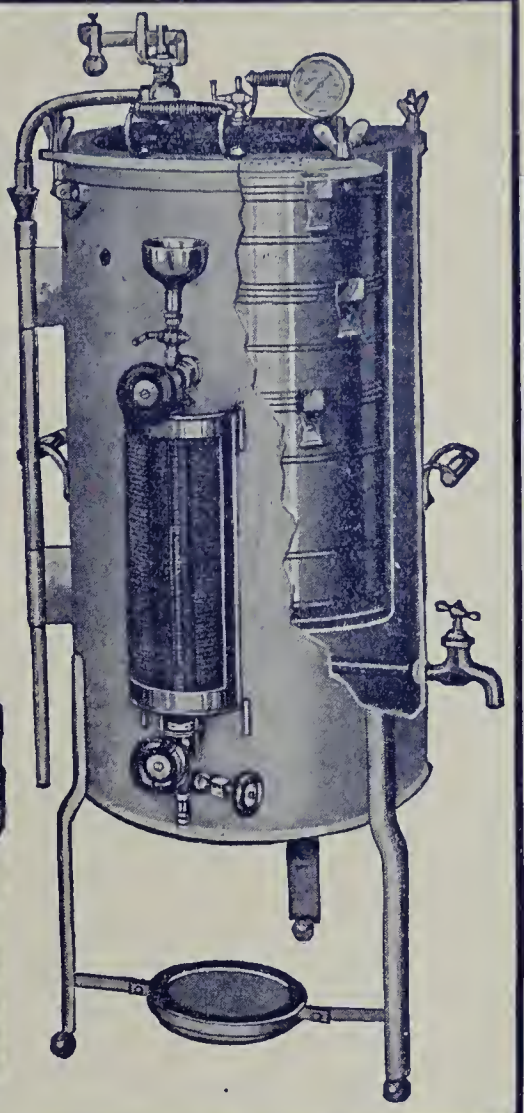
Why 100% Efficiency

London Pressure Sterilizers are made of copper. their drums are made of copper, the tanks are made of copper, the top is made of aluminum; the steam gauge registers both pressure and temperature. Copper will not rust, neither will aluminum. Don't be deceived by flashy advertisements of Sterilizers made of iron which does rust.

When a frying pan broke into society they dignified it by making it of copper and calling it a "Chafing Dish." When an iron fruit preserving kettle, manufactured by a foundry, climbed into hospital society they put a pressure gauge on it, and called it a "Sterilizer," but **they forgot to make it of copper.**

The 12x20 inch London Pressure Sterilizer contains three germ proof Sterilizing Drums. Bandages, dressings, etc., can be sterilized and kept in the Drums until ready to be used. No fear of them being soiled by iron rust, and they are always delivered to the operating room in a sterile condition.





Why 100% Efficiency in the London Pressure Sterilizer

Because it is made of non-corrosive metal; Because the dressings come in contact with nothing but copper tinned; Because they can be taken from the Sterilizer dry after being subjected to a pressure of 15 pounds of live steam and a temperature of 250 degrees Fahrenheit; Because there are no valves to get out of order; Because there are no hinges to drop down; Because a practical nurse or doctor can operate it inside of ten minutes after it is unpacked.

Time is the test. We want you to be the judge.

London Pressure Sterilizers equipped with gas, steam or gasoline heaters sell for $100.00 and are *worth it.*

FRANK S. BETZ CO., Hammond, Ind.

Chicago Sales Department: 30 E. Randolph Street

BECAUSE it is a non-proprietary sugar scientifically prepared for physicians, not the public, and

BECAUSE of the brilliant results attained by its use in infant feeding,

MEAD'S DEXTRI-MALTOSE

(Malt Sugar)

is now employed at a majority of the leading children's institutions and many milk stations of the United States.

For description, see "New and Nonofficial Remedies," or write for literature and samples.

MEAD JOHNSON and COMPANY, JERSEY CITY, N. J.

For Your Surgical Cases



In 4-oz., 8-oz., 16-oz., quart and half gallon bottles.

PATIENTS gain strength more rapidly if given Armour's Grape Juice when first nourishment is allowed. It has positive health-giving qualities. Claimed by the profession to be an ideal combination of food and medicine. Medical men everywhere have been quick to utilize the valuable qualities of Grape Juice.

Armour's Grape Juice

Bottled Where the Best Grapes Grow

Is the first light crush of rich, sound, luscious Concord Grapes. Pressed the day gathered.

The Grape Juice with the natural flavor.

Unsweetened Unfermented Undiluted

ARMOUR AND COMPANY

New York Post-Graduate

MEDICAL SCHOOL AND HOSPITAL

Twentieth Street and Second Avenue

SUMMER SESSION, 1915

Owing to the European war and the consequent inability of physicians to study abroad, the attention of the medical profession is directed to the especially favorable opportunities offered in this School, to obtain special courses in any department of medicine or surgery equal to those given in Berlin or Vienna. Students may devote the entire day throughont the winter session to many branches of study in which they are particularly interested.

GENERAL AND SEPARATE clinical courses are continuous throughout the year, and arranged to allow of matriculation at any time. A special feature is made of the fracture clinics, which are among the largest in the country.

The Hospital provides for the care of over 400 patients, and offers exceptional opportunities for extensive bedside teaching. Nine operating rooms; five lecture amphitheatres; over 6.000 operations yearly.

All branches of medical and surgical teaching, including ample facilities for surgical diagnosis, surgical technique and post-operative treatment are offered in the GENERAL, the OPERATIVE and the SPECIAL courses.

For further detailed particulars apply to

GEORGE GRAY WARD, Jr., M.D., Secretary of the Faculty
305 East 20th Street, NEW YORK CITY

50% Better

Prevention Defense Indemnity

1 All claims or suits for alleged civil malpractice, error or mistake, for which our contract holder,
2 Or his estate is sued, whether the act or omission was his own
3 Or that of any other person (not necessarily an assistant or agent)
4 All such claims arising in suits involving the collection of professional fees
5 All claims arising in autopsies, inquests and in the prescribing and handling of drugs and medicines.
6 Defense through the court of last resort and until all legal remedies are exhausted
7 Without limit as to amount expended.
8 You have a voice in the selection of local council.
9 If we lose, we pay to amount specified, in addition to the unlimited defense.
10 The only contract containing all the above features and which is protection per se. ***A sample upon request.***

The MEDICAL PROTECTIVE CO.

of **Fort Wayne, Indiana**

Professional Protection, Exclusively



UNIVERSITY OF ILLINOIS-URBANA
3 0112 110715304